# Assignment 2 – NLP 2022201060

## 1. Feed Forward Neural Network POS Tagging:

I have implemented a Feed Forward Neural Network (FFNN) model named 'FFNN\_Model' for Part-of-Speech (POS) tagging. The model takes embeddings of the target token along with its preceding and succeeding tokens as input.

**For example**, given the sentence "An apple a day keeps the doctor away" and considering p = 2 and s = 3, the model would take embeddings for ["An", "apple", "a", "day", "keeps", "the"] to predict the POS tag for the word "a".

The architecture consists of an embedding layer, followed by a fully connected layer (FC1) and a final output layer (FC2) for predicting the POS tag. During training, the model computes the loss using negative log-likelihood loss and optimizes the parameters using backpropagation. Finally, the model's performance is evaluated using accuracy metrics.

## 2. Recurrent Neural Network POS Tagging:

I have implemented a model for POS tagging using a Recurrent Neural Network (RNN), specifically an LSTM (Long Short-Term Memory) model. The model takes the embeddings for all tokens in a sentence and outputs the corresponding POS tags in sequence.

For instance, given the sentence "An apple a day keeps the doctor away," the model processes the embeddings for ["An", "apple", "a", "day", "keeps", "the", "doctor", "away"] to produce the POS tags for each word in the sentence ["DET", "NOUN", "DET", "NOUN", "VERB", "DET", "NOUN", "ADV"].

The architecture consists of an embedding layer, followed by an LSTM layer, and finally a fully connected layer (FC) for predicting the POS tags. During training, the model computes the loss using negative log-likelihood loss and optimizes the parameters using backpropagation. Additionally, the model's performance is evaluated using accuracy metrics.

## 3. Hyperparameter Tuning:

## 3.1 Feed Forward Neural Network POS Tagger Hyperparameters used:

**Best Configuration:** 

{'config': {'p': 4, 's': 4, 'emb\_dim': 256, 'hidden\_dim': 256, 'l\_rate': 0.001}, 'epoch\_accuracies': [85.5988172001541, 91.34547397381202, 93.2050716105364, 94.08447456782876, 94.59089602328022, 95.15561640113923, 95.47744215289737, 95.58243599295947, 95.76724360097528, 95.94061054833338, 96.14693089041964, 96.14769220090793, 96.19514958135566, 96.31583232106567, 96.3785120244062, 96.52659696941947]}

#### **Evaluation Metrics:**

Configuration: {'p': 3, 's': 4, 'emb\_dim': 128, 'hidden\_dim': 256, 'l\_rate': 0.001}

Dev Set Loss: 0.16506005058151674 Dev Set Accuracy: 95.36548301477033 Test Set Loss: 0.17378641299057143 Test Set Accuracy: 95.03486487039035

Configuration: {'p': 4, 's': 4, 'emb\_dim': 256, 'hidden\_dim': 256, 'l\_rate': 0.001}

Dev Set Loss: 0.12286211723747471 Dev Set Accuracy: 96.52659696941947 Test Set Loss: 0.129026093322056 Test Set Accuracy: 95.81376052935974

Configuration: {'p': 2, 's': 4, 'emb\_dim': 256, 'hidden\_dim': 512, 'l\_rate': 0.001}

Dev Set Loss: 0.12220320546560136 Dev Set Accuracy: 96.40927318658784 Test Set Loss: 0.12348212035648576 Test Set Accuracy: 96.10077440527598

#### 3.2 Recurrent Neural Network POS Tagger

#### Hyperparameters used:

Best Configuration:

('config': ('num layers': 1, 'emb dim': 128, 'hidden dim': 256, 'I rate': 0.001}, 'epoch accuracies': [48.09685822414417, 61.93401223785189, 68.82044253131167, 73.30321437890795, 76.28994798284734, 78.29912055778429, 80.51393812732084, 82.33919649485955, 83.68875950620973, 84.64065277646142, 85.87404943893593, 86.6885765753639, 87.2282209145187, 88.02321435425955, 88.44808589710307, 89.01300373698817, 89.66403908161172, 90.29370202408835, 90.62030419863373, 90.96161829868363, 91.23469277824273, 91.44726296308254, 91.73035561126119, 91.8934090243185, 92.08563022783262, 92.20909180607238, 92.47119342269619, 92.57126542123233, 92.65634087244912, 92.7589264741815, 92.89869418456625, 92.95544157066519, 93.08855653451191, 93.1598531740904, 93.2899960687384, 93.42003312497002, 93.52669441337194, 93.63181714625651, 93.87765972305539, 93.94567406890046, 94.05328892076716, 94.16565537294859, 94.2233403879715, 94.18758547167052, 94.25043500498147, 94.29382847158314, 94.33794051525001, 94.43658110420114, 94.45293491535017, 94.55413797037643]}

#### **Evaluation Metrics:**

Configuration: {'num\_layers': 1, 'emb\_dim': 128, 'hidden\_dim': 256, 'l rate': 0.001}

Dev Set Loss: 0.1866757374609671 Dev Set Accuracy: 94.55413797037643 Test Set Loss: 0.1882900218222896 Test Set Accuracy: 94.80529560864434

Configuration: {'num\_layers': 2, 'emb\_dim': 256, 'hidden\_dim': 512,

'I rate': 0.001}

Dev Set Loss: 0.20579714101298996 Dev Set Accuracy: 93.77212088224873 Test Set Loss: 0.20378532451296621 Test Set Accuracy: 94.52349322750862

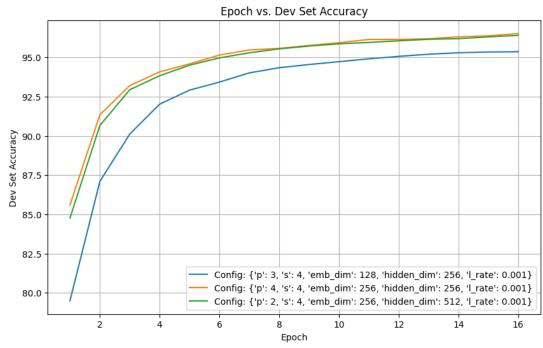
Configuration: {'num layers': 3, 'emb dim': 512, 'hidden dim': 1024,

'I rate': 0.001}

Dev Set Loss: 0.3366416381265167 Dev Set Accuracy: 90.14771593265164 Test Set Loss: 0.34520844849301957 Test Set Accuracy: 90.49974308960475

## 4. Analysis:

#### 4.1 Feed Forward Neural Network POS Tagging Experiments

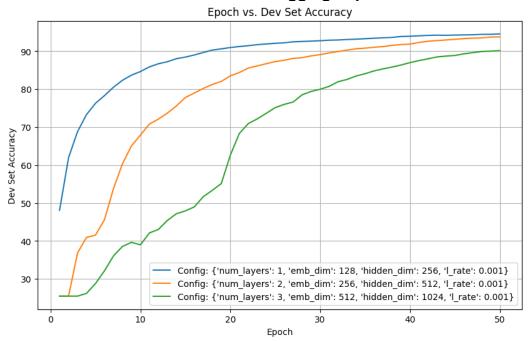


We can observe by looking at the above graph the best-performing Feed Forward Neural Network (FFNN) configuration, with a window size of 4 for both previous and successive tokens, along with an embedding and hidden dimension of 256 each, achieved impressive accuracy rates of 96.53% on the development set and 95.81% on the test set. This configuration outperformed others, such as one with a smaller window size of 3, which achieved slightly

lower accuracy, and another with a larger hidden dimension of 512, which performed comparably well.

Additionally, the FFNN models consistently improved in accuracy over epochs, with the best configuration reaching its peak accuracy after several epochs.

#### 4.2 Recurrent Neural Network POS Tagging Experiments:



The evaluation of different model configurations reveals interesting insights. The best-performing configuration, with a single layer, an embedding dimension of 128, and a hidden dimension of 256, achieved remarkable accuracy on both the development and test sets, with accuracies of 94.55% and 94.81%, respectively. This indicates that a simpler architecture may yield impressive results in POS tagging tasks specially in the given data set in case of LSTM of RNN based models. In contrast, configurations with two or three layers and larger embedding and hidden dimensions exhibited slightly lower accuracy and higher loss values. For instance, the configuration with three layers and larger dimensions achieved a lower accuracy of 90.15% on the development set and 90.50% on the test set.

Moreover, it is noteworthy that beyond 40 epochs, the models showed only marginal improvements in accuracy, typically in the range of 0.x%. Furthermore, from epoch 45 onwards, the first two configurations performed similarly in terms of accuracy, indicating a plateauing effect in the model's learning curve.

#### 5. Evaluation Metrics:

Sentence: what are the coach flights between dallas and baltimore leaving august tenth and returning august <unk>

True tags: PRON AUX DET NOUN NOUN ADP PROPN CCONJ PROPN VERB NOUN ADJ CCONJ VERB NOUN NUM

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN CCONJ PROPN VERB

NOUN ADJ CCONJ ADJ ADJ AUX

Classification Report:

	precis	sion	recall	f1-scc	ore su	pport
1	1.	00	1.00	1.00	) ;	2
2	1.	00	1.00	1.00	)	1
3	1.	00	0.75	0.86	3 4	4
4	1.	00	0.50	0.67	7	2
5	1.	00	1.00	1.00	)	1
6	1.	00	1.00	1.00	)	1
7	0.	33	1.00	0.50	)	1
8	0.	50	1.00	0.67	7	1
9	1.	00	0.00	0.00	)	1
10	) 1	.00	1.00	1.0	0	2
accur	acy			0.81	1	6
macro	avg	0.88	3 0	.82	0.77	16
weighted	d avg	0.9	3 (	0.81	0.81	16

Sentence: i want a flight from nashville to seattle that arrives no later than 3 pm True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB DET ADJ ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN NOUN NOUN VERB NOUN NOUN

Classification Report:

	pred	cisior	n re	call	f1-sc	ore	supp	ort
1		0.67	1.	00	8.0	0	2	
2		1.00	0.	75	8.0	6	4	
3		0.40	1.	00	0.5	7	2	
4		0.50	0.	50	0.5	0	2	
5		1.00	0.	50	0.6	7	2	
6		1.00		00	1.0		1	
7		1.00		00	0.0		1	
9		1.00	0.	00	0.0	0	1	
accur	acy				0.6		15	
macro	_		0.82	_	.59	0.5	-	15
weighte	d avg	)	0.81	(	0.67	0.0	63	15

Sentence: i need a flight leaving kansas city to chicago leaving next wednesday and returning the following day

True tags: PRON VERB DET NOUN VERB PROPN PROPN ADP PROPN VERB ADJ NOUN CCONJ VERB DET VERB NOUN

Predicted tags: PRON VERB DET NOUN VERB VERB PROPN ADP PROPN VERB ADJ NOUN CCONJ ADJ DET ADJ NOUN

Classification Report:

1	1.00	0.67	0.80	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	3
4	0.75	0.60	0.67	5
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
7	0.33	1.00	0.50	1
10	1.00	1.00	1.00	1

accuracy		0.8	2 17	
macro avg	0.89	0.91	0.87	17
weighted avg	0.89	0.82	0.84	17

Sentence: explain meal codes <unk> <unk> True tags: VERB NOUN NOUN PROPN PROPN Predicted tags: NOUN NOUN PROPN PROPN AUX

Classification Report:

precision recall f1-score support 1 0.50 0.50 0.50 2 3 0.50 0.50 0.50 2 4 1.00 0.00 1 0.00 8 0.00 1.00 0.00 0 0.40 accuracy 5 macro avg 0.50 0.50 0.25 5 weighted avg 0.60 0.40 5 0.40

Sentence: show me all flights from atlanta to san francisco which leave the day after tomorrow after 5 <unk> pm

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PRON VERB DET NOUN ADP NOUN ADP NUM ADV NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN DET

VERB DET NOUN ADP NOUN ADP NUM AUX NOUN

	precis	ion	recall	f1-sco	re supp	ort
1	1.0	00	1.00	1.00	3	
2	1.0	00	1.00	1.00	4	
3	1.0	00	1.00	1.00	4	
4	1.0	00	1.00	1.00	2	
5	0.6	37	1.00	0.80	2	
6	1.0	00	0.50	0.67	2	
8	0.0	00	1.00	0.00	0	
9	1.0	00	1.00	1.00	1	
11	1.	00	0.00	0.00	) 1	
accur	acy			0.89	19	
macro	avg	0.85	5 0	.83	0.72	19
weighted	d avg	0.9	6 (	0.89	0.89	19

Sentence: i need a flight from toronto to montreal reaching montreal early on friday True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN VERB PROPN ADJ ADP NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN ADJ ADP NOUN

Classification Report:

	preci	sion	recall	f1-so	core	supp	ort
1	0	.75	1.00	0.8	36	3	
2	2 1	.00	1.00	1.0	00	3	
3	3 1	.00	1.00	1.0	00	2	
4	1	.00	0.50	0.6	67	2	
5	5 1	.00	1.00	1.0	00	1	
6	5 1	.00	1.00	1.0	00	1	
7	' 1	.00	1.00	1.0	00	1	
accur	асу			0.9	2	13	
macro weighte	_	0.9 0.	96 ( 94	).93 0.92	0.9 0.9	-	13 13

Sentence: are there any flights from new york to montreal canada leaving on thursday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN

Predicted tags: AUX PRON DET NOUN ADP PROPN PROPN ADP PROPN NOUN VERB ADP NOUN

Classification Report:

	precisio	on re	call	f1-scor	e supp	ort
1	1.0	0 0.	75	0.86	4	
2	1.0	0 1.	00	1.00	3	
3	0.6	7 1.	00	0.80	2	
4	1.0	0 0.	50	0.67	2	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	0.0	0 1.	00	0.00	0	
accur	acy			0.85	13	
macro	avg	0.81	0.8	89 (	0.76	13
weighted	d avg	0.95	0	.85	0.87	13

Sentence: show me ground transportation in philadelphia on monday morning True tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Classification Report:

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	1.00	1.00	1.00	2

	3	1.0	00	1.0	0	1.0	0	4	
	4	1.0	00	1.0	0	1.0	0	1	
	6	1.0	0	1.0	0	1.0	0	1	
acc	curacy	y				1.0	0	9	
mad	cro av	/g	1.0	00	1.0	00	1.00	)	9
weigh	nted a	vg	1	.00	1.	.00	1.0	0	9

Sentence: find a flight from toronto to san diego with a layover in dc on delta airlines True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP DET

NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	upport
1	1.0	00	1.00	1.0	0	6
2	1.0	00	1.00	1.0	0	5
3	1.0	00	1.00	1.0	0	2
4	1.0	00	1.00	1.0	0	1
5	1.0	00	1.00	1.0	0	2
accura	асу			1.0	0 1	6
macro	avg	1.0	0 1	.00	1.00	16
weighted	d avg	1.0	00	1.00	1.00	16

Sentence: what is restriction ap80
True tags: PRON AUX NOUN PROPN
Predicted tags: PRON AUX NOUN PROPN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accuracy	/		1.00	4	
macro av	⁄g 1.	00 1	.00 1.0	00	4
weighted a	vg 1	.00	1.00 1.	.00	4

Sentence: list the arizona airport

True tags: VERB DET PROPN PROPN Predicted tags: VERB DET NOUN NOUN

pı	recision	recall	f1-score	support
1	1.00	0.00	0.00	2
3	0.00	1.00	0.00	0
4	1.00	1.00	1.00	1

5 1.00 1.00 1.00 1

accuracy 0.50 4

macro avg 0.75 0.75 0.50 4

weighted avg 1.00 0.50 0.50 4

Sentence: what are the nonstop flights on america west or southwest air from kansas city to burbank on saturday may twenty two

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN CCONJ PROPN PROPN ADP PROPN ADP PROPN ADP NOUN NOUN NUM NUM Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN NOUN ADJ ADJ PROPN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM PROPN Classification Report:

	precis	sion	recall	f1-scor	e supp	ort
1	0.	.83	0.71	0.77	7	
2	1.	.00	1.00	1.00	4	
3	0.	.80	1.00	0.89	4	
5	1.	.00	1.00	1.00	1	
6	1.	.00	1.00	1.00	1	
7	0	.00	1.00	0.00	0	
8	1.	.00	1.00	1.00	1	
9	1.	.00	0.50	0.67	2	
10	) 1	.00	0.00	0.00	1	
accur	асу			0.81	21	
macro weighted	•	0.8 9.0			).70 0.82	21 21
_	_					

Sentence: what times does the late afternoon flight leave from washington for denver True tags: DET NOUN AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON AUX AUX DET NOUN NOUN NOUN VERB ADP PROPN ADP PROPN

0.0000		•	11 64		
	precisio	on red	call f1-s	core su	upport
1	1.00	0 1.0	00 1.	00	2
2	_	-			2
3	0.6	7 0.0	67 O.	67	3
4	1.0	). 1.	00 1.	00	1
5	1.0	0.5	50 0.	67	2
6	0.0	0 1.0	00 0.	00	0
7	1.0	0.0	00 0.	00	1
8	0.5	0 1.0	00 0.	67	1
accur	acy		0.	_	2
macro	avg	0.77	0.77	0.62	12
weighted	d avg	0.88	0.75	0.75	12

Sentence: what does the meal code s stand for

True tags: PRON AUX DET NOUN NOUN PROPN VERB ADP

Predicted tags: PRON AUX DET NOUN NOUN PROPN PROPN ADP

Classification Report:

р	recision	recall	f1-score	supp	ort
1	0.50	1.00	0.67	1	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accurac	:y		0.88	8	
macro a	vg 0.9	93 0	.86 0.8	31	8
weighted a	avg 0	.94 (	0 88.0	.83	8

Sentence: is there ground transportation from the memphis airport into town when if i arrive at <unk> in the morning

True tags: VERB PRON NOUN NOUN ADP DET PROPN PROPN ADP PROPN

ADV ADP PRON VERB ADP NUM ADP DET NOUN

Predicted tags: AUX PRON NOUN NOUN ADP DET PROPN PROPN

NOUN PROPN VERB PRON VERB ADP AUX ADP DET NOUN

Classification Report:

			•				
	prec	ision	reca	all f1-s	score	supp	ort
1	(	0.50	0.6	7 0	.57	3	
2	•	1.00	0.6	0 0	.75	5	
3	(	0.75	1.0	0 0	.86	3	
4	(	0.50	0.5	0 0	.50	2	
5	•	1.00	1.0	0 1	.00	2	
6	•	1.00	1.0	0 1	.00	2	
8	(	0.00	1.0	0 0	.00	0	
9	•	1.00	0.0	0 0	.00	1	
11		1.00	0.0	0 (	0.00	1	
accur	acy			_	.68	19	
macro	_		.75	0.64	0.5		19
weighte	d avg	(	0.83	0.68	8 0.	69	19

Sentence: what flights between dfw and oakland arrive in oakland between <unk> am and <unk> pm

True tags: DET NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN ADP NUM NOUN CCONJ NUM NOUN

Predicted tags: PRON NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN

ADP PROPN NOUN CCONJ PROPN NOUN

Classification Report:

	1	0.6	0	1.0	0	0.7	5	3	
	2	1.00		1.0	0	1.0	0	3	
	3	1.0	0	1.00		1.0	0	3	
	4	1.0	0	1.00		1.0	0	1	
	5	1.0	0	0.0	0	0.0	0	1	
	6	0.00		1.00		0.0	0	0	
	9	1.0	0	0.00		0.0	0	2	
	10	1.0	00	1.0	00	1.0	00	2	
acc	uracy	,				0.80	)	15	
mac	cro av	g	0.8	32	0.7	5	0.59	)	15
weigh	ted av	/g	0.	92	0.8	80	0.7	5	15

Sentence: what are the flights on mondays that travel from charlotte north carolina to phoenix arizona

True tags: PRON AUX DET NOUN ADP PROPN ADP VERB ADP PROPN ADV

PROPN ADP PROPN PROPN
Predicted tags: PRON AUX DET NOUN ADP NOUN ADP VERB ADP PROPN

PROPN PROPN ADP PROPN VERB

Classification Report:

p	recision	recall	f1-score	supp	ort
1	0.75	0.60	0.67	5	
2	1.00	1.00	1.00	4	
3	0.50	1.00	0.67	1	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accurac	СУ		0.80	15	
macro a weighted	•		.82 0.7 0.80 0.	75 78	15 15
5	0		_		_

Sentence: what kind of ground transportation is there in washington dc True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN PROPN Predicted tags: PRON NOUN ADP NOUN NOUN AUX PRON ADP PROPN PROPN Classification Report:

١	orecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3
4	1.00	0.00	0.00	1
5	1.00	0.00	0.00	1
6	0.50	1.00	0.67	1
8	0.00	1.00	0.00	0
accura	су		0.80	10

macro avg	0.79	0.71	0.52	10
weighted ava	0.95	0.80	0.77	10

Sentence: in economy class from dallas to baltimore arriving july seventh i <unk> like to know what <unk> the cheapest ticket possible

True tags: ADP NOUN NOUN ADP PROPN ADP PROPN VERB NOUN ADJ PRON AUX VERB PART VERB PRON AUX DET ADJ NOUN ADJ

Predicted tags: ADP PROPN NOUN ADP PROPN ADP PROPN VERB NOUN NOUN PRON AUX VERB PART VERB PRON AUX DET ADJ NOUN NOUN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	0.60	0.75	0.67	4	
4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	2	
7	1.00	0.33	0.50	3	
8	1.00	1.00	1.00	2	
12	1.00	1.00	1.00	1	
accurac	y		0.86	21	
macro avweighted a	•		.90 0.8 0.86 0.	89 85	21 21
woigintou o	19 0	.00 (	0.00	00	

Sentence: show flights from baltimore to san francisco between 6 pm and 8 pm on friday

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN CCONJ NUM NOUN ADP NOUN

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

NOUN CCONJ PROPN NOUN ADP NOUN

Classification Report:

	pred	cisio	n re	ecall	f1-s	core	supp	ort
1		0.60	1	.00	0.	75	3	
2		1.00		.00		00	4	
3	}	1.00	1	.00	1.	.00	4	
4	Ļ	1.00	1	.00	1.	.00	1	
9	)	1.00	C	00.0	0.	.00	2	
10	0	1.00	)	1.00	1	.00	1	
					_			
accur	•			_	_	87	15	
macro weighte	_		0.93 0.92		.83 0.87	0.7 0.	79 82	15 15
•								

Sentence: what meals are available on dl <unk> which <unk> arrives in san

francisco at <unk> am

True tags: DET NOUN AUX ADJ ADP PROPN NUM DET PROPN VERB ADP PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN AUX ADJ ADP PROPN PROPN DET AUX PROPN ADP PROPN ADP PROPN NOUN

Classification Report:

	•							• •	
	1	0.5	0	0.7	5	0.6	60	4	
	2	1.0	0	1.0	0	1.0	00	3	
	3	1.0	0	1.0	0	1.0	00	2	
	4	1.0	0	0.0	0	0.0	00	1	
	5	1.0	0	0.5	0	0.6	67	2	
	6	0.0	0	1.0	0	0.0	00	0	
	7	1.0	0	1.0	0	1.0	00	1	
	8	0.5	0	1.0	0	0.6	67	1	
	9	1.0	0	0.0	0	0.0	00	2	
acc	curac	;y				0.6	9	16	
mad	cro a	vg	0.	78	0.	69	0.5	55	16
weigh	ited a	avg	C	).84	0	.69	0.	65	16

precision recall f1-score support

Sentence: i want to fly from kansas city to chicago next wednesday arriving in the evening and returning the next day

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ NOUN VERB ADP DET NOUN CCONJ VERB DET ADJ NOUN

Predicted tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN PROPN NOUN VERB ADP DET NOUN CCONJ ADJ DET ADJ NOUN Classification Report:

	precision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	1.00	0.75	0.86	4
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
7	0.50	0.50	0.50	2
10	1.00	1.00	1.00	1
12	1.00	1.00	1.00	1
accura	ісу		0.90	20
macro weighted	0	-	.92 0.9 0.90 0.	90 20
weignted	avy 0	.51	J.50 U.	20

Sentence: please book for me a flight on twa from washington dc to san francisco earliest possible time

True tags: INTJ VERB ADP PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN ADV ADJ NOUN

Predicted tags: INTJ NOUN ADP PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN NOUN

Classification Report:

```
0.71
       1
                    1.00
                            0.83
                                      5
      2
            1.00
                            1.00
                                      4
                    1.00
                                      2
       3
            0.67
                    1.00
                            0.80
      4
            1.00
                                      1
                    0.00
                            0.00
      5
            1.00
                                      1
                    1.00
                            1.00
      6
            1.00
                    1.00
                            1.00
                                      1
      7
                    0.00
                            0.00
                                      1
            1.00
      11
             1.00
                    0.00
                             0.00
                                       1
      13
             1.00
                     1.00
                             1.00
                                       1
  accuracy
                            0.82
                                     17
 macro avg
                0.93
                        0.67
                                 0.63
                                          17
weighted avg
                 0.88
                         0.82
                                 0.75
                                           17
```

Sentence: is there a red eye flight from san jose to nashville on wednesday the nineteenth of may

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ ADP NOUN

Predicted tags: AUX PRON DET NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET NOUN ADP PROPN

Classification Report:

	precisi	on red	call f1-	score s	support
1	0.7	5 1.	00 C	).86	3
2	1.0	0 1.	00 1	.00	4
3	0.5	0 0.	50 C	).50	4
4	1.0	0 0.	00 C	0.00	1
5	1.0	0 1.	00 1	.00	2
6	1.0	0 1.	00 1	.00	1
7	0.0	0 0.	00 C	0.00	2
8	0.0	0 1.	00 C	0.00	0
accur	acy		0	.71	17
macro	avg	0.66	0.69	0.54	17
weighted	d avg	0.72	0.71	0.6	8 17

Sentence: i <unk> like to arrange for two friends to fly into los angeles next saturday evening one of the people is coming from kansas city and the other is coming from las vegas

True tags: PRON AUX VERB PART VERB ADP NUM NOUN PART VERB ADP PROPN PROPN ADJ NOUN NOUN NUM ADP DET NOUN AUX VERB ADP PROPN PROPN CCONJ DET ADJ AUX VERB ADP PROPN PROPN PROPN Predicted tags: PRON AUX VERB PART VERB ADP PROPN VERB ADP VERB VERB PROPN PROPN PROPN NOUN NOUN NUM ADP DET NOUN AUX NOUN ADP PROPN PROPN CCONJ DET ADJ AUX ADJ ADP PROPN PROPN Classification Report:

precision recall f1-score support

1 0.75 1.00 0.86 6

2	0.80	0.80	0.80	5	
3	0.75	0.75	0.75	4	
4	0.60	0.60	0.60	5	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	0.50	0.50	0.50	2	
8	1.00	1.00	1.00	3	
9	1.00	0.50	0.67	2	
10	1.00	1.00	1.00	1	
12	1.00	0.50	0.67	2	
accuracy	,		0.79	33	
macro av	g 0.8	35 0.	79 0.8	30	33

weighted avg 0.79 0.78 33 0.80

Sentence: what is restriction ap <unk>

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

Classification Report:

precision recall f1-score support 1 0.50 1.00 0.67 1 3 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 9 1.00 0.00 0.00 0.80 5 accuracy macro avq 0.90 0.80 0.73 5 0.80 5 weighted avg 0.90 0.73

Sentence: what is restriction ap 80

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

Classification Report:

precision recall f1-score support 1 0.50 1.00 0.67 1 3 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 9 1.00 1 0.00 0.00 5 0.80 accuracy macro avg 0.90 0.80 0.73 5 weighted avg 0.80 0.73 5 0.90

Sentence: show me all flights from philadelphia to san francisco with one stop in dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM

**NOUN ADP PROPN** 

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP

NUM NUM ADP PROPN Classification Report:

	precisi	on re	ecall	f1-sc	ore	suppo	ort
					_	_	
1	1.0	0 1	00.1	1.0	00	4	
2	1.0	0 1	00.1	1.0	0	4	
3	1.0	0 0	0.50	0.6	57	2	
4	1.0	0 1	00.1	1.0	0	1	
5	1.0	0 1	00.1	1.0	0	1	
6	1.0	0 1	00.1	1.0	0	1	
9	0.5	0 1	00.1	0.6	57	1	
accur	acy			0.9	3	14	
macro	•	0.93	0	.93	0.90	0	14
weighted	•	0.96	6 (	0.93	0.9	93	14
5	9						

Sentence: show me the flights from miami to san diego with one stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP

NUM NUM ADP PROPN

Classification Report:

precision recall f1-score support

	proofe	1011	1000	<b>4</b> 11		3010	оарр	Oit
1	1.	00	1.0	0	1.0	00	4	
2	1.	00	1.0	0	1.0	00	4	
3	1.	00	0.5	0	0.0	67	2	
4	1.	00	1.0	0	1.0	00	1	
5	1.	00	1.0	0	1.0	00	1	
6	1.	00	1.0	0	1.0	00	1	
9	0.	50	1.0	0	0.0	67	1	
accur	асу				0.9	93	14	
macro	avg	0.9	93	0.	93	0.9	90	14
weighte	d avg	0	.96	0	.93	0.	.93	14

Sentence: do you have a flight from atlanta to charlotte north carolina next monday True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN ADV PROPN ADJ NOUN

Predicted tags: VERB PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB ADJ NOUN

р	recision	recall	f1-score	support
1	0.67	0.67	0.67	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2

Sentence: i would like to book an early morning flight from tampa florida to charlotte north carolina on april sixth

True tags: PRON AUX VERB PART VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ

Predicted tags: PRON AUX VERB PART VERB ADP ADJ NOUN NOUN ADP

PROPN PROPN ADP PROPN PROPN VERB ADP NOUN PROPN

Classification Report:

	nre	cisio	n	recal	l f	1_ec	ora	supp	ort
	pie	CISIO		iccai	٠.	1-30	OIC	Supp	OIL
	1	0.60	)	0.75		0.6	7	4	
	2	0.75	5	1.00		0.8	6	3	
	3	1.00	)	1.00		1.0	0	3	
	4	0.67	7	1.00		0.8	0	2	
	5	1.00	)	0.00		0.0	0	1	
	6	1.00	)	1.00		1.0	0	1	
	7	1.00	)	0.50		0.6	7	2	
	8	1.00	)	1.00		1.0	0	1	
•	11	1.00	)	0.00	)	0.0	00	1	
•	12	1.0	0	1.00	)	1.0	00	1	
accu	ıracy					0.79		19	
macr weighte	o avg ed av		0.90		0.7 0.		0.7 0.	-	19 19

Sentence: now i <unk> like flights from philadelphia to pittsburgh leaving between 430 and 530 pm

True tags: ADV PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB ADP NUM CCONJ NUM NOUN

Predicted tags: NOUN PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB ADP PROPN CCONJ PROPN NOUN

Classification Report:

precision recall f1-score support 1 0.50 1.00 0.67 2 2 1.00 1.00 3 1.00 3 2 0.67 1.00 0.80 4 1.00 1.00 1.00 2 6 1.00 1.00 1.00 1 1.00 1 8 1.00 1.00

9	1.00	0.0	00	0.00	)	2	
10	1.00	1.	00	1.0	0	1	
11	1.00	0.	00	0.0	0	1	
accuracy				0.80	,	15	
macro avo	g C	).91	0.7	<sup>7</sup> 8	0.72		15
weighted av	′g	0.89	0.	80	0.73		15

Sentence: from sfo to denver

True tags: ADP PROPN ADP PROPN Predicted tags: ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 2 1 2 1.00 2 1.00 1.00 1.00 accuracy macro avg 1.00 1.00 1.00 4 weighted avg 1.00 1.00 1.00 4

Sentence: what is the lowest fare from bwi to salt lake city

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN ADP PROPN PRO

**PROPN** 

Classification Report:

	precis	ion re	call	f1-sco	re sup	port
1	1.	00 1	.00	1.00	4	
2	1.	00 1	.00	1.00	2	
3	0.	50 1	.00	0.67	' 1	
5	1.	00 1	.00	1.00	) 1	
6	1.	00 1	.00	1.00	) 1	
7	1.	00 0	.00	0.00	) 1	
8	1.	00 1	.00	1.00	1	
accur	асу			0.91	11	
macro	avg	0.93	0	.86	0.81	11
weighte	d avg	0.95	(	0.91	0.88	11

Sentence: flight numbers from minneapolis to long beach on june twenty six

True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM NUM Predicted tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM PROPN

р	recision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3

9 1.00 0.50 0.67 2

accuracy 0.91 11 macro avg 0.94 0.88 0.88 11 weighted avg 0.93 0.91 0.90 11

Sentence: which is the flight number for the us air flight from philadelphia to boston is it <unk> or is it <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP PROPN ADP PROPN AUX PRON NUM CCONJ AUX PRON NUM

Predicted tags: DET AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP

PROPN ADP PROPN PROPN PROPN AUX AUX VERB AUX

Classification Report:

O 1010 O 1110	•••••					
	precisi	ion re	ecall	f1-sco	re sup	port
1	0.5	57 1	.00	0.73	4	
2			.00	1.00		
3	1.0	00 1	.00	1.00	3	
4	0.0	00 1	.00	0.00	0	
5	0.6	67 1	.00	0.80	2	
6	1.0	0 0	.00	0.00	3	
8	0.5	50 0	.67	0.57	3	
9	1.0	0 0	.00	0.00	2	
10	) 1.	00 (	0.00	0.00	) 1	
accur	асу			0.67	21	
macro weighted	_	0.75 0.82	_	.63 0.67	0.46 0.58	21 21

Sentence: how much would car rental cost in atlanta

True tags: ADV ADV AUX NOUN ADJ VERB ADP PROPN Predicted tags: ADV VERB AUX AUX DET NOUN ADP PROPN

Classification Report:

	precis	ion r	ecall	f1-sco	ore su	pport
1	1.0	00	1.00	1.00	) .	1
2	1.0	00 1	1.00	1.00	) .	1
3	0.0	00 0	0.00	0.00	) .	1
4	0.0	00 0	0.00	0.00	) .	1
5	0.0	00 1	1.00	0.00	) (	)
7	1.0	00 0	0.00	0.00	) .	1
8	0.	50 ′	1.00	0.67	7	1
11	1.	00	0.50	0.6	7	2
accur	acy			0.50	) 8	3
macro	avg	0.56	0	.56	0.42	8
weighted	d avg	0.69	9 (	0.50	0.50	8
_	_					

Sentence: please list the prices for a rental car in pittsburgh

True tags: INTJ VERB DET NOUN ADP DET ADJ NOUN ADP PROPN

Predicted tags: INTJ VERB DET NOUN ADP DET NOUN NOUN ADP PROPN

Classification Report:

ı	orecision	recall	f1-scor	e supp	ort
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	2	
3	0.67	1.00	0.80	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	2	
7	1.00	0.00	0.00	1	
13	1.00	1.00	1.00	1	
accura	су		0.90	10	
macro a	avg 0.	95 C	).86 (	0.83	10
weighted	avg 0	.93	0.90	0.86	10

Sentence: what does the restriction <unk> mean True tags: PRON AUX DET NOUN PROPN VERB Predicted tags: PRON AUX DET NOUN AUX VERB

Classification Report:

	precisi	on re	call	f1-sc	ore su	pport
1	1.0	0 0	.00	0.0	o .	1
3	1.0	0 1.	.00	1.0	) .	1
4	1.0	0 1.	.00	1.0	) .	1
5	1.0	0 1.	.00	1.0	) ·	1
6	1.0	0 1.	.00	1.0	) ·	1
8	0.5	0 1	.00	0.6	7	1
accur	acy			0.83	3 6	;
macro	avg	0.92	0	.83	0.78	6
weighted	d avg	0.92	(	0.83	0.78	6

Sentence: list nonstop flights from baltimore washington to oakland that arrive

between <unk> and <unk> pm

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP

NUM CCONJ NUM NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN ADP VERB

ADP PROPN CCONJ PROPN NOUN

	pr	ecision	recall	f1-score	support
	1	0.60	1.00	0.75	3
	2	1.00	1.00	1.00	4
	3	1.00	1.00	1.00	3
	4	1.00	1.00	1.00	2
	9	1.00	0.00	0.00	2
	10	1.00	1.00	1.00	1
accı	uracy	/		0.87	15

macro avg	0.93	0.83	0.79	15
weighted avg	0.92	0.87	0.82	15

Sentence: list all of the daily flights arriving in denver from 8 to 9 pm

True tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP NUM ADP

**NUM NOUN** 

Predicted tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP PROPN

ADP PROPN NOUN Classification Report:

		- 1				
	precision	on re	call	f1-sco	ore su	pport
1	0.3	3 1.	.00	0.50	) 1	
2	1.0	0 1.	.00	1.00	) 4	ļ
3	1.0	0 1.	.00	1.00	) 2	2
4	1.0	0 1.	.00	1.00	) 2	2
5	1.0	0 1.	.00	1.00	) 2	<u>)</u>
7	1.0	0 1.	.00	1.00	) 1	
9	1.0	0 0.	.00	0.00	) 2	<u> </u>
accur	асу			0.86	14	1
macro	_	0.90	_	.86	0.79	14
weighte	d avg	0.95	(	0.86	0.82	14

Sentence: get flights from milwaukee to <unk>

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on red	call f1-	score	suppor	t
1	1.0	0 1.	00 1	1.00	2	
2	1.0	0 1.	00 1	.00	2	
3	1.0	0 1.	00 1	.00	1	
4	1.0	0 1.	00 1	.00	1	
accur	acy		1	.00	6	
macro	avg	1.00	1.00	1.00	) 6	)
weighted	d avg	1.00	1.00	1.0	0	6

Sentence: what is the earliest flight from boston to bwi that serves a snack

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP

PROPN DET PROPN Classification Report:

p	recision	recall	f1-score	support
1	0.50	1.00	0.67	2
2	1.00	1.00	1.00	3
3	1.00	0.50	0.67	2
4	1.00	0.00	0.00	1

5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	СУ		0.85	13	
	_		- ·		

macro avg 0.94 0.81 0.79 13 weighted avg 0.92 0.85 0.82 13

Sentence: is bwi washington

True tags: VERB PROPN PROPN Predicted tags: AUX ADJ PROPN

Classification Report:

precision recall f1-score support 2 1.00 0.50 0.67 4 1.00 0.00 0.00 1 7 0.00 1.00 0.00 0 8 0.00 0.00 0 1.00 0.33 accuracy 0.50 3 macro avg 0.62 0.17 weighted avg 1.00 0.33 0.44 3

Sentence: what are the cities that american airlines serves

True tags: PRON AUX DET NOUN ADP PROPN PROPN VERB

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN

Classification Report:

	precision	n recall	f1-score	suppo	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	асу		0.88	8	
macro weighted	U		0.86 0.8 0.88 0	33 .82	8
worgine	4 449	0.02	0.00	.02	9

Sentence: which cities are serviced by both american and delta airlines

True tags: DET NOUN AUX VERB ADP DET PROPN CCONJ PROPN PROPN Predicted tags: DET NOUN AUX ADJ ADP PROPN PROPN CCONJ PROPN

**PROPN** 

Classification Report:

precision recall f1-score support 0.75 1.00 0.86 3

2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	0.00	0.00	1	
5	1.00	0.50	0.67	2	
7	0.00	1.00	0.00	0	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy			0.80	10	
macro av	g 0.8	34 0.	.81 0.	69	10
weighted av	/g 0.	.93 0	08.0	).79	10

Sentence: show me all the us air flights to pittsburgh between 12 and 4 in the

afternoon

True tags: VERB PRON DET DET PROPN PROPN NOUN ADP PROPN ADP NUM CCONJ NUM ADP DET NOUN

Predicted tags: VERB PRON DET DET PROPN PROPN NOUN ADP PROPN ADP

PROPN CCONJ PROPN ADP DET NOUN

Classification Report:

	preci	sion	rec	all	f1-sc	ore	supp	ort
1	0	.60	1.0	0	0.7	<b>'</b> 5	3	
2	1	.00	1.0	0	1.0	0	3	
3	1	.00	1.0	0	1.0	0	2	
4	1	.00	1.0	0	1.0	0	1	
5	1	.00	1.0	0	1.0	0	3	
6	1	.00	1.0	0	1.0	0	1	
9	1	.00	0.0	0	0.0	0	2	
10	) 1	1.00	1.0	00	1.0	00	1	
accur	асу				0.8	8	16	
macro	avg	0.	95	0	.88	3.0	34	16
weighted	d avg	C	0.93	(	38.0	0.	83	16

Sentence: what is the cost of limousine service in philadelphia

True tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN

	precis	ion re	ecall	f1-sc	ore s	uppor	t
1			.00	1.0		1	
2			.00	1.0	-	2	
3 5			.00	1.0 1.0	-	3 1	
6			.00	1.0	-	1	
8			.00	1.0		1	
accur	асу			1.00	)	9	
macro weighte	_	1.00 1.00		.00 1.00	1.00 1.00	7	9 9

Sentence: how much does the limousine service cost within pittsburgh

True tags: ADV ADV AUX DET NOUN NOUN VERB ADP PROPN

Predicted tags: ADV VERB AUX DET NOUN NOUN NOUN VERB PROPN

Classification Report:

Old Collic	auo to <sub>l</sub>					
	precision	n reca	all f1-s	core	suppo	ort
1	1.00	1.0	0 1.0	00	1	
2	1.00	0.0	0.0	00	1	
3	0.67	1.0	0.0	80	2	
4	0.00	0.0	0.0	00	1	
5	1.00	1.0	0 1.0	00	1	
8	1.00	1.0	0 1.0	00	1	
11	1.00	0.5	0 0.	67	2	
accura	асу		0.6	67	9	
macro	avg (	0.81	0.64	0.64	4	9
weighted	l avg	0.81	0.67	0.6	6	9

Sentence: on november twenty third of this <unk> 1991 i <unk> like to fly from atlanta to denver and i <unk> like to fly on delta

True tags: ADP NOUN NUM PROPN ADP DET NOUN NUM PRON AUX VERB PART VERB ADP PROPN ADP PROPN CCONJ PRON AUX VERB PART VERB ADP PROPN

Predicted tags: ADP PROPN NUM ADJ ADP PROPN PROPN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN CCONJ PRON AUX VERB PART VERB ADP PROPN

Classification Report:

	preci	sion	recall	f1-score	e supp	ort
1	0	.50	0.75	0.60	4	
2	1	.00	1.00	1.00	5	
3	0	.00	0.00	0.00	2	
4	1	.00	1.00	1.00	4	
5	1	.00	0.00	0.00	1	
6	1	.00	1.00	1.00	2	
7	0	.00	1.00	0.00	0	
8	1	.00	1.00	1.00	2	
9	1	.00	0.50	0.67	2	
10	) .	1.00	1.00	1.00	1	
12	2	1.00	1.00	1.00	2	
accur	acy			0.80	25	
macro weighte	avg	0.7 0.			.66 0.79	25 25
5	5					

Sentence: can you tell me the flights on october fifteenth 1991 from boston to oakland

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADJ NUM ADP PROPN ADP PROPN

Predicted tags: AUX PRON VERB PRON DET NOUN ADP PROPN PROPN NOUN ADP PROPN ADP PROPN

Classification Report:

	prec	ision	rec	all	f1-so	core	supp	ort
1	(	).75	1.0	0	0.8	36	3	
2	-	.00	1.0	0	1.0	00	3	
3	(	0.50	1.0	0	0.6	67	1	
4	1	.00	1.0	0	1.0	00	1	
5	1	.00	1.0	0	1.0	00	1	
6	1	.00	1.0	0	1.0	00	2	
7		.00	0.0	0	0.0	00	1	
8		.00	1.0	0	1.0	00	1	
9	1	1.00	0.0	0	0.0	00	1	
accur	acy				0.8	86	14	
macro	avg	0	.92	0	.78	0.7	72	14
weighte	d avg		0.91	(	0.86	0.	.80	14

Sentence: show me all united flights from denver to san francisco for september first 1991

True tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADJ NUM

Predicted tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADD NOUN ADJ NOUN

Classification Report:

	precisi	on re	ecall	f1-sco	ore su	pport
1	1.0	0 1	.00	1.00	) 4	ļ
2	1.0	0 1	.00	1.00	) 3	3
3	0.6	7 1	.00	0.80	) 2	2
4	1.0	0 1	.00	1.00	) 1	
5	1.0	0 1	.00	1.00	) 1	
6	1.0	0 1	.00	1.00	) 1	
7	1.0	0 1	.00	1.00	) 1	
9	1.0	0 0	.00	0.00	) 1	
accura	асу			0.93	3 14	1
macro weighted	_	0.96 0.95	_	.88 ).93	0.85 0.90	14 14
*	_					

Sentence: information on american airline flights from washington to philadelphia early morning times of flight

True tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADJ NOUN NOUN ADP NOUN

Predicted tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADJ

NOUN NOUN ADP NOUN

Classification Report:

Sentence: please give me the flight times i would like to fly from boston to baltimore in the morning before 8

True tags: INTJ VERB PRON DET NOUN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NUM

Predicted tags: INTJ VERB PRON DET NOUN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN Classification Report:

	pre	cisio	n	recall	f1_	SCO	re s	upp	ort
	pio	0.0.0		oodii	• •	000	0	чрр	Oit
	1	0.67	,	1.00	(	08.0		2	
	2	1.00	)	1.00	1	00.1		4	
	3	1.00	)	1.00	1	00.1		3	
	4	1.00	)	1.00	1	00.1		3	
	5	1.00	)	1.00	1	00.1		2	
	6	1.00	)	1.00	1	00.1		2	
	8	1.00	)	1.00	1	00.1		1	
	9	1.00	)	0.00	C	00.0		1	
1	12	1.0	0	1.00		1.00	)	1	
1	13	1.0	0	1.00		1.00	)	1	
					_				
	ıracy				_	.95		20	
	o avg		0.97		0.90		0.88		20
weighte	ed av	g	0.9	7	0.95	)	0.93		20

Sentence: please list the flight times for boston to pittsburgh

True tags: INTJ VERB DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: INTJ VERB DET NOUN NOUN ADP PROPN ADP PROPN

	precisio	n recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
13	3 1.0	0 1.00	1.00	1
accura	acy		1.00	9
macro	avg	1.00	1.00 1.0	00 9
weighted	d avg	1.00	1.00 1	.00 9

Sentence: show me all flights and fares from dallas to san francisco

True tags: VERB PRON DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

PROPN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	ісу		1.00	11	
macro	avg 1.	.00 1	.00 1.0	00	11
weighted	avg 1	1.00	1.00 1	.00	11

Sentence: please list me the flights and their cost of all airlines flying from denver to baltimore

True tags: INTJ VERB PRON DET NOUN CCONJ DET NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: INTJ VERB PRON DET NOUN CCONJ ADP NOUN ADP DET NOUN ADP ADP PROPN ADP PROPN

Classification Report:

рі	precision		f1-score	support	
1	1.00	1.00	1.00	2	
2	0.60	1.00	0.75	3	
3	1.00	1.00	1.00	3	
4	1.00	0.50	0.67	2	
5	1.00	0.67	0.80	3	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accurac	y		0.88	16	
macro av	•		0.90 0.9 0.88 0.	00 16 87 1	

Sentence: give me the flights and fares on december twenty seventh from

indianapolis to orlando

True tags: VERB PRON DET NOUN CCONJ NOUN ADP NOUN NUM ADJ ADP

PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN CCONJ NOUN ADP NOUN NUM NOUN

ADP PROPN ADP PROPN

Classification Report:

1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	0.75	1.00	0.86	3
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
9	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
ooouroo			0.02	11

accuracy		0.9	3 14	
macro avg	0.97	0.89	0.87	14
weighted avg	0.95	0.93	0.90	14

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

	precision		recall f1-score			upport
1	1.0	00 (	0.00	0.0	0	1
6	1.0	00 ′	1.00	1.0	0	1
8	0.5	50	1.00	0.6	7	1
accur	201			0.67	7	3
	•					•
macro	avg	0.83	0	.67	0.56	3
weighte	d avg	0.83	3 (	0.67	0.56	3

Sentence: is there ground transportation from Iga into new york city

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN Predicted tags: AUX PRON NOUN NOUN ADP PROPN PROPN PROPN PROPN

**PROPN** 

Classification Report:

	precisi	on r	recall f1-s		ore su	pport
1	3.0	30 ′	1.00	0.89	9 4	4
2	1.0	00 (	0.50	0.6	7 :	2
3	1.0	00 1	1.00	1.0	<b>)</b> (	2
4	1.0	00 (	0.00	0.0	)	1
6	1.0	00 1	1.00	1.0	)	1
8	0.0	00 1	1.00	0.0	) C	0
accur	асу			0.80	) 1	0
macro	avg	0.80	0	.75	0.59	10
weighte	_	0.92	2 (	0.80	0.79	10
•	•					

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

#### Classification Report:

	precis	ion	recal	l f1-so	f1-score		ort
1	1.0	00	0.00	0.0	00	1	
6	1.0	00	1.00	1.0	00	1	
8	0.	50	1.00	0.6	67	1	
accur	асу			0.6	57	3	
macro	avg	3.0	33	0.67	0.5	6	3
weighted	d avg	0.	.83	0.67	0.	56	3

Sentence: how far is toronto international from downtown True tags: ADV ADV AUX PROPN PROPN ADP NOUN Predicted tags: ADV ADP AUX PROPN VERB ADP NOUN

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	1.	00	0.50	0.67	7	2
2	0.	50	1.00	0.67	7	1
3	1.	00	1.00	1.00	)	1
4	0.	00	1.00	0.00	)	0
8	1.	00	1.00	1.00	)	1
11	1	.00	0.50	0.6	7	2
accur	acv			0.71	-	7
macro	•	0.7	5 0	.83	0.67	7
weighted	_	0.9	93 (	0.71	0.76	7

Sentence: how far is los angeles international from downtown True tags: ADV ADV AUX PROPN PROPN ADP NOUN Predicted tags: ADV ADP AUX PROPN PROPN PROPN ADP NOUN

Classification Report:

pr	ecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	3	
2	0.50	1.00	0.67	1	
3	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
11	1.00	0.50	0.67	2	
accurac	y		0.88	8	
macro av weighted a	0		.90 0.8 0.88 0.	37 .87	8 8

Sentence: how long does a flight from baltimore to san francisco take

True tags: ADV ADV AUX DET NOUN ADP PROPN ADP PROPN PROPN VERB Predicted tags: ADV PROPN AUX DET NOUN ADP PROPN ADP PROPN PROPN

**PROPN** 

Classification Report:

1	0.60	1.00	0.75	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
11	1.00	0.50	0.67	2	
accuracy	/		0.82	11	
moore ou	·~ Λ (	04 0	70 07	77	11

macro avg 0.82 11 weighted avg 0.89 0.82 0.78 11

Sentence: what airport in new york is closest to downtown

True tags: DET NOUN ADP PROPN PROPN AUX ADJ ADP NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN AUX PROPN ADP NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
accura	асу		0.78	9	
macro	avg 0	.81 0	.71 0.5	54	9
weighted	lavg (	0.93	0.78 0.	73	9

Sentence: houston airports True tags: PROPN NOUN Predicted tags: NOUN NOUN

Classification Report:

precision recall f1-score support 1 1.00 0.00 0.00 1 3 0.50 1.00 0.67 1 accuracy 0.50 0.33 2 macro avg 0.75 0.50 0.50 2 weighted avg 0.75 0.33

Sentence: give me a list of airports in baltimore

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN

Classification Report:

1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
accurac	y		1.00	8	
macro av	/g 1	.00 1	.00	1.00	8
weighted a	ıvg ´	1.00 ′	1.00	1.00	8

Sentence: where does delta fly to that american does not

True tags: ADV AUX PROPN VERB PART ADP PROPN AUX ADV

Predicted tags: DET AUX PROPN VERB ADP ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore s	suppo	ort
1	0.	50	1.00	0.6	7	2	
2	0.	50	1.00	0.6	7	1	
4	1.	.00	1.00	1.00	C	1	
5	0.	.00	1.00	0.0	0	0	
8	1.	.00	0.50	0.6	7	2	
11	1	.00	0.00	0.0	0	2	
12	2 1	.00	0.00	0.0	0	1	
accur	асу			0.56	6	9	
macro	avg	0.7	71 0	.64	0.43		9
weighted	d avg	0	.83	0.56	0.48	8	9

Sentence: which airline has the smallest plane leaving pittsburgh and arriving in baltimore on july fourth

True tags: DET NOUN VERB DET ADJ NOUN VERB PROPN CCONJ VERB ADP PROPN ADP NOUN ADJ

Predicted tags: DET NOUN PROPN DET ADJ NOUN VERB PROPN CCONJ VERB ADP PROPN ADP NOUN PROPN

	precis	ion r	ecall	f1-sco	re sup	oort
1	0.5	50	1.00	0.67	2	
2	1.0	00 .	1.00	1.00	2	
3	1.0	00 .	1.00	1.00	3	
4	1.0	00 (	0.67	0.80	3	
5	1.0	00 .	1.00	1.00	2	
7	1.0	00 (	0.50	0.67	2	
10	) 1.	00	1.00	1.0	0 1	
accur	acy			0.87	15	
macro	avg	0.93	0	.88	0.88	15
weighted	d avg	0.9	3 (	0.87	0.87	15

Sentence: which flight from pittsburgh to baltimore carries the smallest number of passengers

True tags: DET NOUN ADP PROPN ADP PROPN VERB DET ADJ NOUN ADP

Predicted tags: DET NOUN ADP PROPN ADP PROPN DET ADJ ADJ ADP NOUN

Classification Report:

	precisi	on re	call	f1-sc	ore su	pport
1	0.6	7 1.	.00	0.8	0 2	2
2	1.0	0 1.	.00	1.0	0 3	3
3	1.0	0 0.	.67	0.8	0 3	3
4	1.0	0 0.	.00	0.0	0 ′	1
5	1.0	0 1.	.00	1.0	0 2	2
7	0.5	0 1.	.00	0.6	7 ′	1
accur	асу			0.83	3 12	2
macro	avg	0.86	0	.78	0.71	12
weighted	d avg	0.90	(	0.83	0.81	12

Sentence: what is the first flight from boston to stapleton airport for tomorrow True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	00 1.	.00	1.00	3	
2	1.0	00 1.	.00	1.00	3	
3	1.0	00 1.	.00	1.00	2	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.00	1.	00	1.00	12
weighte	d avg	1.00	1	.00	1.00	12

Sentence: list all the flights that arrive at general mitchell international True tags: VERB DET DET NOUN ADP VERB ADP PROPN PROPN PROPN Predicted tags: VERB DET DET NOUN ADP VERB ADP PROPN PROPN PROPN Classification Report:

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	2

5	1.00	1.00	1.00	)	2
accuracy			1.00	1	0
macro avg	1.0	00	1.00	1.00	10
weighted avo	ı 1.	.00	1.00	1.00	10

Sentence: how much does it cost to go from downtown to logan airport

True tags: ADV ADV AUX PRON VERB PART VERB ADP NOUN ADP PROPN

**PROPN** 

Predicted tags: ADV VERB AUX PROPN NOUN ADP VERB ADP NOUN ADP

PROPN PROPN Classification Report:

ecision	recall	f1-score	suppo	rt
0.67	1.00	0.80	2	
0.67	1.00	0.80	2	
0.50	1.00	0.67	1	
0.50	0.50	0.50	2	
1.00	0.00	0.00	1	
1.00	1.00	1.00	1	
1.00	0.50	0.67	2	
1.00	0.00	0.00	1	
/		0.67	12	
0				2 12
	0.67 0.50 0.50 1.00 1.00 1.00 1.00	0.67 1.00 0.67 1.00 0.50 1.00 0.50 0.50 1.00 0.00 1.00 1.00 1.00 0.50 1.00 0.00	0.67 1.00 0.80 0.67 1.00 0.80 0.50 1.00 0.67 0.50 0.50 0.50 1.00 0.00 0.00 1.00 1.00 1.00 1.00 0.50 0.67 1.00 0.00 0.00	0.67 1.00 0.80 2 0.67 1.00 0.80 2 0.50 1.00 0.67 1 0.50 0.50 0.50 2 1.00 0.00 0.00 1 1.00 1.00 1.00 1 1.00 0.50 0.67 2 1.00 0.00 0.00 1

Sentence: show me flights from all airports to love field

True tags: VERB PRON NOUN ADP DET NOUN ADP PROPN PROPN

Predicted tags: VERB PRON NOUN ADP DET PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	reca	all f	1-sc	ore	supp	ort
1	0.	.67	1.00	0	0.8	0	2	
2	1.	.00	1.00	0	1.0	0	2	
3	1.	.00	0.50	0	0.6	7	2	
4	1.	.00	1.00	0	1.0	0	1	
5	1.	.00	1.00	C	1.0	0	1	
6	1.	.00	1.00	0	1.0	0	1	
accur	acy				0.89	9	9	
macro	avg	0.9	94	0.9	92	0.9	1	9
weighte	d avg	0.	93	0.	89	0.8	38	9

Sentence: flights from cincinnati to <unk> departing after 718 am american True tags: NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN PROPN Predicted tags: NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

**PROPN** 

Classification Report:

Sentence: show me all flights to dallas that are less than 1500 dollars round trip True tags: VERB PRON DET NOUN ADP PROPN ADP AUX ADJ ADP NUM NOUN NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP VERB VERB NOUN NOUN NOUN NOUN

Classification Report:

	precis	sion	recal	l f1-so	core	supp	ort
1	1.	00	1.00	1.0	00	1	
2	1.	00	0.67	0.8	80	3	
3	0.	80	1.00	0.8	89	4	
4	0.	25	1.00	0.4	40	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
7	1.	00	0.00	0.0	00	1	
8	1.	00	0.00	0.0	00	1	
9	1.	00	0.00	0.0	00	1	
accur	асу			0.7	=	14	
macro weighted	_	0.0	89 .89	0.63 0.71	0.57 0.6		14 14

Sentence: round trip fares from pittsburgh to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN VERB PROPN NOUN

Ciassilic	auoni	zehoi	ι.				
	precis	ion	recal	l f1-so	core	supp	ort
1	0.0	67	1.00	0.8	30	2	
2	1.0	00	0.67	0.8	30	3	
3	1.0	00	1.00	1.0	00	4	
4	0.0	00	1.00	0.0	00	0	
9	1.0	00	0.00	0.0	00	1	
accur	асу			8.0	0	10	
macro	avg	0.7	<b>'</b> 3 (	0.73	0.52	2	10
weighte	d avg	0.	93	0.80	0.8	0	10

Sentence: round trip fares from baltimore to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN VERB PROPN NOUN

Classification Report:

I	precisio	n reca	ll f1-sco	re supp	ort
1	0.67	1.00	0.80	) 2	
2	1.00			3	
3	1.00	1.00	1.00	) 4	
4	0.00	1.00	0.00	0 (	
9	1.00	0.00	0.00	) 1	
accura	су		0.80	10	
macro a	avg	0.73	0.73	0.52	10
weighted	avg	0.93	0.80	0.80	10

Sentence: all flights from baltimore to philadelphia less than 1000 dollars True tags: DET NOUN ADP PROPN ADP PROPN ADJ ADP NUM NOUN Predicted tags: DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN NOUN Classification Report:

•						٠.	
1	0.50	) 1.	.00	0.6	7	2	
2	1.00	) 1.	.00	1.0	0	3	
3	1.00	) 1.	.00	1.0	0	2	
5	1.00	) 1.	.00	1.0	0	1	
7	1.00	0.	.00	0.0	0	1	
9	1.00	0.	.00	0.0	0	1	
accuracy	y			0.8	0	10	
macro av	⁄g	0.92	0.	67	0.61		10
weighted a	vg	0.90	0	.80	0.73	3	10

precision recall f1-score support

Sentence: how many seats in a 100

True tags: ADV ADJ NOUN ADP DET PROPN Predicted tags: ADV ADJ VERB ADP DET NOUN

11 64

	prec	ision	reca	ll f1-s	core	supp	ort
1	•	1.00	0.00	0.	.00	1	
2	•	1.00	1.00	1.	00	1	
3	(	0.00	0.00	0.	.00	1	
4	(	0.00	1.00	0.	.00	0	
5	•	1.00	1.00	1.	.00	1	
7	•	1.00	1.00	1.	.00	1	
11		1.00	1.00	) 1	.00	1	
accur	acy			0.	67	6	
macro	avg	0.	71	0.71	0.5	57	6

weighted avg 0.83 0.67 0.67 6

Sentence: how many passengers can a boeing 737 hold True tags: ADV ADJ NOUN AUX DET PROPN NUM VERB

Predicted tags: ADV ADJ NOUN VERB DET NOUN PROPN PROPN

Classification Report:

	precisio	n re	call	f1-scc	re su	pport	
1	0.00	0.	00	0.00	) .	1	
3	0.50		00	0.67		1	
4	0.00	0.	00	0.00	)	1	
5	1.00	) 1.	00	1.00	)	1	
7	1.00	) 1.	00	1.00	)	1	
8	1.00	0.	00	0.00	) .	1	
9	1.00	0.	00	0.00	) .	1	
11	1.0	0 1	.00	1.00	)	1	
accura	асу			0.50	8	}	
macro	avg	0.69	0.	50	0.46	8	
weighted	d avg	0.69	C	.50	0.46	8	

Sentence: what is the seating capacity of a <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP DET PROPN

Classification Report:

Classific	auon	Titopo	/I L.			
	prec	ision	recall	f1-sco	re suppo	ort
1	,	1.00	1.00	1.00	1	
2	•	1.00	1.00	1.00	1	
3		1.00	1.00	1.00	2	
5		1.00	1.00	1.00	2	
6	•	1.00	1.00	1.00	1	
8		1.00	1.00	1.00	1	
accur	acy			1.00	8	
macro	avg	1.0	00 1	.00	1.00	8
weighted	d avg	1	.00	1.00	1.00	8

Sentence: what is the seating capacity for delta be1

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 2 1 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 2 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1

accuracy		1.0	8 0	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: show me the flights from indianapolis to orlando with round trip fares less than <unk>

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN ADJ ADP NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN ADP AUX

Classification Report:

0.000								
	prec	isior	rec	call	f1-s	core	supp	ort
1		1.00	1.0	00	1.0	00	2	
2		1.00	1.0	00	1.0	00	4	
3	(	08.0	1.0	00	0.8	39	4	
4		1.00	1.0	00	1.0	00	1	
5	,	00.1	1.0	00	1.0	00	1	
6	•	1.00	1.0	00	1.0	00	1	
7	•	1.00	0.0	00	0.0	00	1	
8	(	0.00	1.0	00	0.0	00	0	
9	•	1.00	0.0	00	0.0	00	1	
					0.0	7	4.5	
accur	•			_	3.0		15	
macro	_		0.87	_	.78	0.6	_	15
weighte	d avg		0.95	(	0.87	0.	84	15

Sentence: show me what flights are available from baltimore to dallas with economy fares

True tags: VERB PRON DET NOUN AUX ADJ ADP PROPN ADP NOUN NOUN

Predicted tags: VERB PRON PRON NOUN AUX ADJ ADP PROPN ADP PROPN NOUN

	precis	ion r	ecall	f1-scc	re sup	port
1	0.0	67 <sup>^</sup>	1.00	0.80	) 2	
2	1.0	00 1	1.00	1.00	) 3	
3	1.0	00 (	0.67	0.80	) 3	
4	1.0	00 1	1.00	1.00	) 1	
5	1.0	00 (	0.00	0.00	) 1	
6	0.9	50 ′	1.00	0.67	' 1	
7	1.0	00 1	1.00	1.00	) 1	
8	1.0	00 ′	1.00	1.00	) 1	
accur	асу			0.85	13	}
macro	avg	0.90	0	.83	0.78	13
weighted	d avg	0.9	1 (	0.85	0.82	13

Sentence: baltimore to kansas city economy
True tags: PROPN ADP PROPN PROPN NOUN

Predicted tags: PROPN ADP PROPN PROPN

Classification Report:

	precision		recall f1-		score su		port
1	0.	75	1.00	) (	0.86	3	}
2	1.0	00	1.00	) '	1.00	1	
3	1.0	00	0.00	) (	0.00	1	
accur	acy			C	0.80	5	
macro weighted	_	0.9	92 85	0.67	_	.62 0.71	5 5

Sentence: economy fares new york to miami round trip

True tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN Predicted tags: PROPN NOUN NOUN PROPN ADP PROPN NOUN NOUN

Classification Report:

	precisi	on r	recall f1-score			support	
1	0.6	7 (	).67	0.6	7	3	
2	1.0	0 1	.00	1.0	0	1	
3	0.7	5 (	).75	0.7	5	4	
accura	асу			0.7	5	8	
macro	avg	0.81	0	.81	0.81	1	8
weighted	l avg	0.75	5	0.75	0.7	'5	8

Sentence: find me all the round trip flights from burbank to milwaukee stopping in <unk> louis

True tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN VERB ADP PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN NOUN ADP PROPN ADP PROPN NOUN ADP PROPN PROPN

Classification Report:

	prec	isior	n re	call	†1-s	core	supp	ort
1		1.00	1	00	1	00	4	
2		1.00		00		00	3	
3		0.75		00		86	3	
4		1.00	0.	50	0.	67	2	
5	,	1.00	1.	00	1.	00	2	
6	;	1.00	1.	00	1.	00	1	
accur	acy				0.9		15	
macro	_		0.96		.92	0.9		15
weighte	d avg	l	0.95	(	0.93	0.	93	15

Sentence: i <unk> like to find a flight from charlotte to las vegas and make a stop in <unk> louis

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN PROPN CCONJ PROPN DET NOUN ADP PROPN PROPN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	0.83	1.00	0.91	5	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	0.67	0.80	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accuracy	/		0.95	19	
macro av weighted a	•		.96 0.9 0.95 0.	)7 94	19 19

Sentence: can you tell me which flights go from memphis to tacoma and make a stop in los angeles

True tags: AUX PRON VERB PRON DET NOUN VERB ADP PROPN ADP PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: AUX PRON VERB PRON DET NOUN VERB ADP PROPN ADP PROPN CCONJ PROPN DET NOUN ADP PROPN PROPN

Classification Report:

	pre	cisio	n re	call	f1-sc	ore	supp	ort
1		0.80	1.	.00	0.8	39	4	
2	)	1.00	1.	.00	1.0	00	3	
3	}	1.00	1.	.00	1.0	00	2	
4		1.00	0.	.67	3.0	30	3	
5	· •	1.00	1.	.00	1.0	00	2	
6	;	1.00	1.	.00	1.0	00	2	
8	}	1.00	1.	.00	1.0	00	1	
10	)	1.00	0 1	.00	1.	00	1	
accur	асу				0.9	4	18	
macro weighte	_		0.97 0.96		.96 0.94	0.9 0.	6 94	18 18
_		_						

Sentence: is there a flight between oakland and boston with a stopover in dallas fort worth on twa

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET

NOUN ADP PROPN PROPN ADP PROPN

	precision		f1-score	suppo	rt
1	1.00	1.00	1.00	6	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	2	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	0.00	1.00	0.00	0	
10	1.00	1.00	1.00	1	
accura	асу		0.94	17	
macro	avg 0.	88 0	.88 0.7	<b>'</b> 5	17
weighted	avg 1	.00	0.94 0.	94	17

Sentence: show me all direct flights from san francisco to boston departing before noon

True tags: VERB PRON DET ADJ NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

		_				
1	0.7	5 1.	00	0.86	3 ;	3
2	1.00	) 1.	00	1.00	) ;	3
3	0.6	7 1.	00	0.80	) :	2
4	1.00	0.	50	0.6	7 :	2
5	1.00	) 1.	00	1.00	)	1
6	1.00	) 1.	00	1.00	)	1
7	1.00	0.	00	0.00	)	1
accura	асу			0.85	5 1	3
macro weighted	•	0.92 0.89		79 .85	0.76 0.81	13 13

precision recall f1-score support

Sentence: do you have an early morning direct flight from philadelphia to pittsburgh True tags: AUX PRON VERB DET ADJ NOUN ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 2 1 2 1.00 1.00 1.00 2 3 0.67 1.00 0.80 2 4 0.50 1.00 0.67 1 5 1.00 1.00 1.00 1 1.00 1.00 1 1.00

7 1.0	0.5	0.6	7 2	
8 1.0	0.0	0.0	0 1	
accuracy		0.8	3 12	
macro avg	0.90	0.81	0.77	12
weighted avg	0.90	0.83	0.80	12

Sentence: which united flights from boston to san francisco make connections True tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN VERB NOUN Predicted tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN PROPN

NOUN

Classification Report:

	precision		recall	f1-sc	ore s	uppo	ort
1	0.8	80	1.00	0.8	9	4	
2	1.0	0	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	0.00	0.0	0	1	
5	1.0	0	1.00	1.0	0	1	
accura	acy			0.9	0	10	
macro	avg	0.9	6 0	.80	0.78		10
weighted	d avg	0.9	92	0.90	0.86	;	10

Sentence: nonstop or connecting flights from seattle to boston True tags: NOUN CCONJ VERB NOUN ADP PROPN ADP PROPN Predicted tags: NOUN VERB VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	pre	cisio	n I	reca	ll f	1-sc	ore	supp	ort
1		1.00	ı	1.00	)	1.0	0	2	
2		1.00		1.00		1.0		2	
3		1.00		1.00	)	1.0	0	2	
4		0.50		1.00	)	0.6	7	1	
10	)	1.00	)	0.0	0	0.0	00	1	
accur	acy					8.0	8	8	
macro	avg		0.90	)	3.0	30	0.7	'3	8
weighte	d av	g	0.9	4	0.	88	0.	83	8

Sentence: please give me direct morning flights from pittsburgh to atlanta True tags: INTJ VERB PRON ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: INTJ VERB PRON NOUN NOUN NOUN ADP PROPN Classification Report:

	precision	recall	f1-score	support
1 2	1.00 1.00	1.00	1.00	2 2
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	1

6	1.00	1.0	0	1.00	1	
7	1.00	0.0	0	0.00	1	
13	1.00	1.0	00	1.00	1	
accuracy			(	0.90	10	
macro avo	, 0	.95	0.86	3 0	.83	10
weighted av	g (	0.93	0.9	0	0.86	10

Sentence: list the flights that leave from philadelphia to atlanta early thursday morning before 8 am

True tags: VERB DET NOUN ADP VERB ADP PROPN ADP PROPN ADJ NOUN NOUN ADP NUM NOUN

Predicted tags: VERB DET NOUN ADP VERB ADP PROPN ADP PROPN ADJ NOUN NOUN ADP NUM NOUN

Classification Report:

	precisio	n rec	all f1-s	core s	upport
1	1.00	1.0	00 1.	.00	2
2	1.00	1.0	0 1.	.00	4
3	1.00	1.0	0 1.	.00	4
4	1.00	1.0	0 1.	.00	2
5	1.00	1.0	0 1.	.00	1
7	1.00	1.0	0 1.	.00	1
9	1.00	1.0	00 1.	.00	1
0001180			4	00	15
accura	acy				15
macro	avg	1.00	1.00	1.00	15
weighted	lavg	1.00	1.00	1.00	15

Sentence: give me the flights from boston to san francisco leaving early today True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADJ ADJ

Classification Report:

	precis	ion	recal	I f1-s	core	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.	00	2	
3	1.	00	0.50	0.	67	2	
4	1.	00	1.00	1.	00	2	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
7	0.	50	1.00	0.	67	1	
accur	асу			0.9	92	12	
macro weighte	_	0.9 0.	93 .96	0.93 0.92	0.90 0.9		12 12

Sentence: show me the continental flights leaving chicago early saturday morning

True tags: VERB PRON DET PROPN NOUN VERB PROPN ADJ NOUN NOUN Predicted tags: VERB PRON DET NOUN NOUN VERB PROPN ADJ NOUN NOUN Classification Report:

	precisi	on r	ecall	f1-sc	ore s	uppo	rt
1	1.0	00 (	0.50	0.6	7	2	
3	0.7	<b>7</b> 5 <i>^</i>	1.00	0.8	6	3	
4	1.0	00 1	1.00	1.0	0	2	
5	1.0	00 1	1.00	1.0	0	1	
6	1.0	00 1	1.00	1.0	0	1	
7	1.0	00 ′	1.00	1.0	0	1	
accur	acy			0.9	0	10	
macro	avg	0.96	0	.92	0.92	1	0
weighted	d avg	0.93	3 (	0.90	0.89	1	10

Sentence: which flights are leaving from kansas city to atlanta early monday morning True tags: DET NOUN AUX VERB ADP PROPN PROPN ADP PROPN ADJ NOUN NOUN

Predicted tags: DET NOUN AUX VERB ADP PROPN PROPN ADP PROPN ADJ NOUN NOUN

Classification Report:

	precis	ion ı	ecall	f1-sc	ore s	upport
1	1.0	00	1.00	1.0	0	3
2	1.0	00	1.00	1.0	0	2
3	1.0	00	1.00	1.0	0	3
4	1.0	00	1.00	1.0	0	1
5	1.0	00	1.00	1.0	0	1
7	1.0	00	1.00	1.0	0	1
8	1.0	00	1.00	1.0	0	1
accur	acy			1.0	0 1	12
macro	avg	1.00	) 1	.00	1.00	12
weighted	d avg	1.0	0	1.00	1.00	12

Sentence: i would like to find flights from columbus to minneapolis on monday june fourteenth early in the morning or in the evening sunday june thirteenth thank you True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP NOUN NOUN ADJ ADJ ADJ ADP DET NOUN CCONJ ADP DET NOUN NOUN ADJ VERB PRON

Predicted tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP NOUN NOUN PROPN ADJ ADP DET NOUN ADJ ADP DET NOUN NOUN NOUN VERB PRON

	precision		f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	5
3	0.88	1.00	0.93	7

4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
7	0.50	0.33	0.40	3	
8	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
12	1.00	1.00	1.00	1	
accuracy			0.89	27	
	^ /	20 0	00 01	<b>1</b>	$\sim$

accuracy 0.89 27 macro avg 0.90 0.83 0.81 27 weighted avg 0.89 0.89 0.86 27

Sentence: and from milwaukee to atlanta before 10 am daily

True tags: CCONJ ADP PROPN ADP PROPN ADP NUM NOUN ADJ

Predicted tags: CCONJ ADP PROPN ADP PROPN NOUN NOUN

Classification Report:

pr	ecision	recall	f1-score	suppo	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	0.50	1.00	0.67	1	
7	1.00	0.00	0.00	1	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
accurac	y		0.78	9	
macro av	/g 0.8	36 0	.67 0.	58	9
weighted a	ivg 0	.87	0.78	).70	9

Sentence: list daily flights from denver to boston

True tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	reca	ıll f1	-scc	re s	uppo	ort
1	1.	.00	1.00	)	1.00	)	2	
2	1.	.00	1.00	)	1.00	)	2	
3	1.	.00	1.00	)	1.00	)	1	
4	0.	50	1.00	)	0.67	7	1	
7	1.	.00	0.00	)	0.00	)	1	
accur	acy				0.86		7	
macro	avg	0.9	90	0.80	0	0.73		7
weighte	d avg	0.	.93	3.0	36	0.81		7

Sentence: list flights from boston to pittsburgh daily True tags: VERB NOUN ADP PROPN ADP PROPN ADJ

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

Sentence: show me all daily flights between milwaukee and orlando True tags: VERB PRON DET ADJ NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN CCONJ PROPN Classification Report:

	precision	recall	f1-score	suppor	t
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	0.50	1.00	0.67	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
accura	су		0.89	9	
macro a	avg 0.	94 0	3.0 88.	3 9	9
weighted	avg 0	).94	0.89 0.	85	9

Sentence: list daily flights from boston to oakland using continental airlines True tags: VERB ADJ NOUN ADP PROPN ADP PROPN VERB PROPN PROPN Predicted tags: VERB VERB NOUN ADP PROPN ADP PROPN PROPN PROPN

Classification Report:

	precis	ion	recall	†1-s	core	supp	ort
1	0.8	30	1.00	0.8	39	4	
2	1.0	00	1.00	1.0	00	2	
3	1.0	00	1.00	1.0	00	1	
4	0.9	50	0.50	0.	50	2	
7	1.0	00	0.00	0.0	00	1	
accur	acy			3.0	30	10	
macro	avg	0.8	6 (	0.70	0.6	8	10
weighte	d avg	0.8	82	0.80	0.	76	10

Sentence: show me the flights arriving in baltimore on june fifteenth leaving either from denver or dallas

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ VERB

CCONJ ADP PROPN CCONJ PROPN

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN PROPN

VERB VERB ADP PROPN PROPN PROPN

Classification Report:

	precis	ion	recall	t1-scc	re supp	ort
1	0.6	30	1.00	0.75	5 3	
2	1.0	00	1.00	1.00	) 3	
3	1.0	00	1.00	1.00	) 2	
4	0.7	75	1.00	0.86	3	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
7	1.0	00	0.00	0.00	) 1	
10	) 1.	00	0.00	0.0	0 2	
accura	асу			0.81	16	
macro	avg	0.9	2 0	.75	0.70	16
weighted	d avg	0.8	88	0.81	0.74	16

Sentence: list the flights from pittsburgh to baltimore arriving on july first

True tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN

ADJ

Classification Report:

	precisi	on re	call	f1-score	e supp	ort
1	1.0	<b>Λ</b> 1	.00	1.00	2	
-						
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00 1	.00	11
weighted	d avg	1.00	•	1.00	1.00	11

Sentence: show me the flights arriving on baltimore on june fourteenth True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN PROPN

	precision	recall	f1-score	support
1	0.50	1.00	0.67	1
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

7 1.00 0.00 0.00 1

accuracy 0.90 10 macro avg 0.93 0.86 0.81 10 weighted avg 0.95 0.90 0.87 10

Sentence: show me the cheapest flight arriving in baltimore on june fourteenth starting from dallas

True tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN ADJ VERB ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN PROPN NOUN ADP PROPN

Classification Report:

precision recall f1-score support 2 0.67 1.00 0.80 2 1.00 1.00 1.00 3 3 2 0.67 1.00 0.80 4 3 1.00 0.67 0.80 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 1.00 2 0.50 0.67 0.86 14 accuracy 0.90 88.0 0.87 14 macro avg weighted avg 0.90 0.86 0.85 14

Sentence: how many airlines fly from new york to los angeles by way of milwaukee True tags: ADV ADJ NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP NOUN ADP PROPN

Predicted tags: ADV ADJ NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP NOUN ADP PROPN

Classification Report:

o la com c		•		all	f1-sco	ore	supp	ort
1	1.	.00	1.00	)	1.00	)	5	
2	1.	.00	1.00	)	1.00	)	4	
3	1.	.00	1.00	)	1.00	)	2	
4	1.	.00	1.00	)	1.00	)	1	
7	1.	.00	1.00	)	1.00	)	1	
11	1 1	.00	1.0	0	1.0	0	1	
accur	•	4	20		1.00		14	4.4
macro weighte	•	1.0 1	.00		00 .00	1.0 1.0		14 14

Sentence: how many flights does twa have in business class

True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN

Predicted tags: ADV ADJ NOUN AUX PROPN VERB ADP PROPN NOUN

	precisi	on re	call	f1-scc	re su	pport
1	0.5	50 1	.00	0.67	7	1
2	1.0	0 1	.00	1.00	) 1	1
3	1.0	0 0	.67	0.80	) 3	3
4	1.0	0 1	.00	1.00	) 1	1
7	1.0	0 1	.00	1.00	) 1	1
8	1.0	0 1	.00	1.00	) 1	
11	1.0	00 1	.00	1.0	0	1
accura	асу			0.89	9	)
macro	avg	0.93	0	.95	0.92	9
weighted	d avg	0.94	(	0.89	0.90	9

Sentence: how many first class flights does delta have today

True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB NOUN Predicted tags: ADV ADJ ADJ NOUN NOUN AUX PROPN VERB VERB

Classification Report:

		- p				
	precisi	on re	call	f1-sco	re sup	port
1	1.0	n 1	.00	1.00	1	
3	1.0		.67	0.80		
4	0.5		.00	0.67		
7	0.5	-	.00	0.67		
8	1.0	_	.00	1.00		
11	1.0	0 0	.50	0.67	7 2	
accur	асу			0.78	9	
macro	•	0.83			0.80	9
weighted	d avg	0.89	(	0.78	0.79	9

Sentence: how many flights does twa have with business class True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN Predicted tags: ADV ADJ NOUN AUX PROPN VERB ADP ADP NOUN

Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	0.50	1.00	0.67	1
3	1.00	0.67	0.80	3
4	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
11	1.00	1.00	1.00	1
accura	_		0.89	9
macro weighted	0		.95 0.9 0.89 0.	90 9 90 9

Sentence: how many first class flights does united have leaving from all cities today

True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB VERB ADP DET NOUN NOUN

Predicted tags: ADV ADJ ADJ NOUN NOUN AUX PROPN VERB VERB ADP DET NOUN NOUN

Classification Report:

	precisi	on re	call	f1-sc	ore	suppo	ort
1	1.0	0 1	.00	1.0	0	1	
2	1.0	0 1	.00	1.0	0	1	
3	1.0	0 1	.00	1.0	0	4	
4	1.0	0 1	.00	1.0	0	2	
5	1.0	0 1	.00	1.0	0	1	
7	0.5	0 1	.00	0.6	7	1	
8	1.0	0 1	.00	1.0	0	1	
11	1.0	0 0	.50	0.6	67	2	
accur	асу			0.92	2	13	
macro	avg	0.94	0	.94	0.92	<u>)</u>	13
weighted	d avg	0.96	(	0.92	0.9	2	13

Sentence: what time does the tuesday morning 755 flight leaving washington arrive in san francisco

True tags: DET NOUN AUX DET NOUN NOUN NUM NOUN VERB PROPN VERB ADP PROPN PROPN

Predicted tags: PRON NOUN AUX DET NOUN NOUN NOUN VERB PROPN VERB ADP PROPN PROPN

Classification Report:

	precis	sion re	ecall	f1-scc	re sup	oort
1	1.	00 1	.00	1.00	) 3	
2	1.	00 1	.00	1.00	) 1	
3	0.	80 1	.00	0.89	) 4	
4	1.	00 1	.00	1.00	2	
5	1.	00 C	.50	0.67	2	
6	0.	00 1	.00	0.00	0	
8	1.	00 1	.00	1.00	) 1	
9	1.	00 0	0.00	0.00	) 1	
accur	асу			0.86	14	
macro	avg	0.85	0	.81	0.69	14
weighte	d avg	0.94	ļ (	0.86	0.85	14

Sentence: i would like the time of your earliest flight in the morning from philadelphia to washington on american airlines

True tags: PRON AUX VERB DET NOUN ADP DET ADJ NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1	0.67	1.0	0 0	.80	4	
2	1.00	1.0	0 1	.00	5	
3	1.00	1.0	0 1	.00	3	
4	1.00	1.0	0 1	.00	1	
5	1.00	0.6	7 0	.80	3	
6	1.00	1.0	0 1	.00	1	
7	1.00	0.0	0 0	.00	1	
8	1.00	1.0	0 1	.00	1	
accuracy			0.	.89	19	
macro av	g C	).96	0.83	0.	82	19
weighted av	/g	0.93	0.89	0	.87	19

Sentence: when does continental fly from philadelphia to denver on sundays True tags: ADV AUX PROPN VERB ADP PROPN ADP PROPN ADP PROPN PROPN ADP PROPN ADP PROPN ADP PROPN Classification Report:

	precis	sion	reca	all	f1-sc	ore	supp	ort
1	1.	00	1.0	0	1.0	0	4	
2	1.	00	1.0	0	1.0	0	3	
4	0.	50	1.0	0	0.6	57	1	
8	1.	00	1.0	0	1.0	0	1	
11	1	.00	0.0	0	0.0	00	1	
accur	•				0.9	_	10	
macro weighted	_	0.9 0.	90 .95	_	.80 ).90	0.7 0.	'3 87	10 10

Sentence: i would like a schedule of flights from san francisco to boston on wednesday

True tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN ADP NOUN

	precisio	n recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accur	acy		1.00	14	
macro	avg	1.00 1	.00 1.	00	14
weighted	d avg	1.00	1.00 1	.00	14

Sentence: in pittsburgh i <unk> like to rent a car

True tags: ADP PROPN PRON AUX VERB PART VERB DET NOUN

Predicted tags: ADP PROPN PRON AUX VERB PART PROPN DET NOUN

Classification Report:

precision		recall	f1-sc	ore s	uppo	rt
0.	50	1.00	0.6	7	1	
1.	00	1.00	1.0	0	1	
1.	00	1.00	1.0	0	1	
1.	00	0.50	0.6	7	2	
1.	00	1.00	1.0	0	1	
1.	00	1.00	1.0	0	1	
1.	00	1.00	1.0	0	1	
2 1	.00	1.00	1.0	00	1	
асу			0.89	)	9	
avg	0.9	4 0	.94	0.92		9
d avg	0.9	94 (	0.89	0.89	)	9
	0. 1. 1. 1. 1. 1. 2 1 acy avg	1.00 1.00 1.00 1.00 1.00 2 1.00 acy avg 0.9	0.50 1.00 1.00 1.00 1.00 1.00 1.00 0.50 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 1.00	0.50 1.00 0.6 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.50 0.6 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 3 0.89 avg 0.94 0.94	0.50 1.00 0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.50 0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00	0.50 1.00 0.67 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 0.50 0.67 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 2 1.00 1.00 1.00 1 2 1.00 1.00 1.00 1 2 1.00 1.00 1.00 1

Sentence: is there limousine service available at baltimore airport True tags: AUX PRON NOUN NOUN ADJ ADP PROPN PROPN Predicted tags: AUX PRON NOUN NOUN ADJ ADP PROPN PROPN Classification Paperti.

Classification Report:

	precision	on re	call	f1-scc	ore su	ipport
1	1.0	0 1.	00	1.00	)	2
2	1.0	0 1.	00	1.00	)	1
3	1.0	0 1.	00	1.00	)	2
6	1.0	0 1.	00	1.00	)	1
7	1.0	0 1.	00	1.00	)	1
8	1.0	0 1.	00	1.00	)	1
accur	acy			1.00	) (	3
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00	•	1.00	1.00	8

Sentence: may i have a listing of flights from long beach california to columbus ohio on wednesday

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN PROPN ADP NOUN

Predicted tags: VERB PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN NOUN ADP NOUN

Classification Report:

precision recall f1-score support 0.89 5 1 1.00 0.80 2 1.00 1.00 1.00 4 3 3 0.75 1.00 0.86 0.50 1.00 0.67 1

	5	1.0	00	1.0	00	1.0	0	1	
	6	1.0	00	1.0	00	1.0	0	1	
	8	1.0	00	0.0	00	0.0	0	1	
							_		
acc	urac	;y				0.8	8	16	
mad	ro a	vg	3.0	39	3.0	33	0.77	7	16
weigh	ted a	avg	0.	.92	0.	.88	0.8	86	16

Sentence: i need a ticket from nashville tennessee to seattle

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	1	.00	1.00	1.00	) 3	3
2	1	.00	1.00	1.00	) 2	2
3	1	.00	1.00	1.00	) 1	1
4	1	.00	1.00	1.00	) 1	
5	1	.00	1.00	1.00	) 1	1
6	1	.00	1.00	1.00	) 1	1
accur	acy			1.00	) 9	)
macro	avg	1.0	0 1	.00	1.00	9
weighte	d avg	1.0	00	1.00	1.00	9

Sentence: i <unk> need information please on a flight from washington dc san francisco california

True tags: PRON AUX VERB NOUN INTJ ADP DET NOUN ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX VERB NOUN INTJ ADP DET NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

			-			
	precisi	ion r	ecall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 5	
2	1.0	00	1.00	1.00	) 2	
3	1.0	00	1.00	1.00	) 2	
4	1.0	00	1.00	1.00	) 1	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
8	1.0	00	1.00	1.00	) 1	
13	3 1.	00	1.00	1.0	0 1	1
accura	acy			1.00	14	
macro weighted	avg	1.00 1.0		.00 1.00	1.00 1.00	14 14
-	_					

Sentence: please list any flights from oakland california to philadelphia on tuesday True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN** 

Classification Report:

	precision		reca	recall f1-sc		ore sup		ort
1	1	.00	1.0	0	1.0	0	3	
2	1	.00	1.0	0	1.0	0	3	
3	1	.00	1.0	0	1.0	0	2	
4	1	.00	1.0	0	1.0	0	1	
5	1	.00	1.0	0	1.0	0	1	
13	3 1	00.1	1.0	00	1.0	00	1	
accur	acy				1.00	)	11	
macro	avg	1.	00	1	.00	1.0	0	11
weighte	d avg	1	.00	•	1.00	1.0	00	11

Sentence: can you tell me which flight from dallas to baltimore has the least

expensive fare

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN VERB

**DET ADJ ADJ NOUN** 

Predicted tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN

PROPN DET ADJ NOUN NOUN

Classification Report:

	precisio	n re	call	f1-sc	ore su	ıpport
1	0.6	7 1.	00	0.8	0	2
2	1.00	0 1.	00	1.0	0	2
3	0.6	7 1.	00	0.8	0	2
4	1.00	0.	50	0.6	7	2
5	1.00	0 1.	00	1.0	0	2
6	1.00	0 1.	00	1.0	0	2
7	1.00	0.	50	0.6	7	2
8	1.00	0 1.	00	1.0	0	1
accura	асу			0.87	7 1	5
macro	avg	0.92	0	.88	0.87	15
weighted	l avg	0.91	(	0.87	0.86	15

Sentence: of the flights available from dallas to baltimore on august third which

airline has the least expensive flight

True tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ DET

NOUN VERB DET ADJ ADJ NOUN

Predicted tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ

DET NOUN PROPN DET ADJ NOUN NOUN

pr	ecision	recall	recall 11-score		
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	4	
3	0 8 N	1 00	0 g 0	1	

	4	1.00	)	0.00	)	0.00	)	1		
	5	1.00	)	1.00	)	1.00	)	3		
	7	1.00	)	0.75	5	0.86	3	4		
accı	uracy					0.89	)	18		
macı	o av	9	0.9	1	0.7	9	0.76		18	
weight	ed av	⁄g	0.9	92	0.8	39	0.8	7	18	

Sentence: what are the most expensive first class tickets between boston and san francisco

True tags: PRON AUX DET ADJ ADJ ADV NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET NOUN NOUN ADJ NOUN ADP ADP PROPN CCONJ PROPN PROPN

Classification Report:

precision		f1-score	supp	ort
1.00	1.00	1.00	3	
0.50	1.00	0.67	1	
0.33	0.50	0.40	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
0.00	0.00	0.00	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	0.00	0.00	1	
/		0.69	13	
9				13 13
	1.00 0.50 0.33 1.00 1.00 0.00 1.00 1.00	1.00 1.00 0.50 1.00 0.33 0.50 1.00 1.00 1.00 1.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 0.00	1.00 1.00 1.00 0.50 1.00 0.67 0.33 0.50 0.40 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00	1.00 1.00 1.00 3 0.50 1.00 0.67 1 0.33 0.50 0.40 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 0.00 0.00 0.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 0.00 0.00 1

Sentence: what are the least expensive flights from denver to atlanta True tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN Classification Report:

0.0000		.оро. с	•				
	precis	ion r	ecall	f1-sc	ore su	ıpport	
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	1.00	1.0	0	2	
8	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	) 1	0	
macro	avg	1.00	) 1	.00	1.00	10	
weighte	d avg	1.0	0	1.00	1.00	10	

Sentence: what <unk> the price of the least expensive first class round trip ticket on us air from cleveland to miami

True tags: PRON AUX DET NOUN ADP DET ADJ ADV NOUN NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP DET ADJ NOUN ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN Classification Report:

	preci	sion	recall	f1-sc	ore su	upport
1	1	.00	1.00	1.0	0	4
2	1	.00	1.00	1.0	0	4
3	0	.83	1.00	0.9	1	5
5	1	.00	1.00	1.0	0	2
6	1	.00	1.00	1.0	0	1
7	0	.50	0.50	0.5	0	2
8	1	.00	1.00	1.0	0	1
11	l 1	.00	0.00	0.0	0	1
accur	acy			0.90	) 2	20
macro	avg	0.9	92 (	).81	0.80	20
weighte	d avg	0	.91	0.90	0.88	20

Sentence: great now what i want to find out is on april twentieth from washington to denver do you have a flight least expensive fare around 5 <unk> in the morning True tags: ADJ ADV PRON PRON VERB PART VERB ADV AUX ADP NOUN ADJ ADP PROPN ADP PROPN AUX PRON VERB DET NOUN ADJ NOUN ADP NUM ADV ADP DET NOUN

Predicted tags: VERB NOUN DET PRON VERB PART VERB VERB AUX ADP PROPN NOUN ADP PROPN ADP PROPN VERB PRON VERB DET NOUN NOUN NOUN ADP NOUN AUX ADP DET NOUN Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	5	
3	0.38	0.75	0.50	4	
4	0.50	1.00	0.67	3	
5	0.67	1.00	0.80	2	
6	1.00	0.67	0.80	3	
7	1.00	0.00	0.00	4	
8	0.50	0.50	0.50	2	
9	1.00	0.00	0.00	1	
11	1.00	0.00	0.00	3	
12	1.00	1.00	1.00	1	
accuracy	,		0.63	30	
macro av weighted a	•		.63 0.5 0.63 0.	55 55	30 30

Sentence: what ground transportation is available between milwaukee airport and downtown milwaukee

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN CCONJ NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN CCONJ NOUN PROPN

Classification Report:

0.0000	auoni	opoit.				
	precisi	on re	ecall	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	3	
2	1.0	00 1	.00	1.00	1	
3	1.0	00 1	.00	1.00	3	
5	1.0	0 0	.00	0.00	1	
6	0.0	00 1	.00	0.00	0	
7	1.0	0 1	.00	1.00	1	
8	1.0	00 1	.00	1.00	1	
10	) 1.	00 ′	1.00	1.00	) 1	I
accur	асу			0.91	11	
macro	avg	0.88	0	.88	0.75	11
weighted	d avg	1.00	) (	0.91	0.91	11

Sentence: please list all the takeoffs and landings for general mitchell international True tags: INTJ VERB DET DET NOUN CCONJ NOUN ADP PROPN PROPN PROPN

Predicted tags: INTJ VERB DET DET ADJ CCONJ PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	0.	75	1.00	0.86	3	3
2	1.	00	1.00	1.00	) ′	1
3	1.	00	0.00	0.00	) 2	2
4	1.	00	1.00	1.00	) ′	1
5	1.	00	1.00	1.00	) 2	2
7	0.	00	1.00	0.00	) (	)
10	) 1	.00	1.00	1.0	0	1
13	3 1	.00	1.00	1.0	0	1
accura	асу			0.82	? 1 <sup>-</sup>	1
macro	avg	0.8	4 0	.88.	0.73	11
weighted	d avg	0.	93	0.82	0.78	11

Sentence: what ground transportation is available from la guardia airport into new york city

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN PROPN PROPN

p	recision	recall	f1-score	e supp	ort
1	0.86	1.00	0.92	6	
2	1.00	0.50	0.67	2	
3	1.00	1.00	1.00	2	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	су		0.85	13	
macro a	avg 0.8	84 0	.79 0	.66	13
weighted	avg 0	.93 (	0.85 (	0.84	13

Sentence: what ground transportation is available from dallas fort worth airport to downtown dallas

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN ADP NOUN PROPN

Classification Report:

	precis	1011	reca	11 11-	30010	Supp	Ort
1	1.0	00	1.00	) 1	.00	5	
2	1.0	00	1.00	) 1	.00	2	
3	1.0	00	1.00	) 1	.00	3	
5	1.0	00	0.00	) 0	.00	1	
6	0.0	00	1.00	) 0	.00	0	
7	1.0	00	1.00	) 1	.00	1	
8	1.0	00	1.00	) 1	.00	1	
accur	acy			0	.92	13	
macro	avg	3.0	36	0.86	0.7	71	13
weighted	d avg	1.	.00	0.92	2 0.	.92	13

precision recall f1-score support

Sentence: ground transportation please in the city of boston between airport and downtown

True tags: NOUN NOUN INTJ ADP DET PROPN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: NOUN NOUN INTJ ADP DET NOUN ADP PROPN ADP PROPN CCONJ NOUN

Classification Report:

precision recall f1-score support 2 1 0.50 0.50 0.50 2 1.00 1.00 1.00 3 3 0.75 0.75 4 0.75 5 1.00 1.00 1.00 1 10 1.00 1.00 1.00 1 13 1.00 1.00 1.00

accuracy		0.8	3 12	2
macro avg	0.88	0.88	0.88	12
weighted avg	0.83	0.83	0.83	12

Sentence: ground san francisco True tags: NOUN PROPN PROPN Predicted tags: NOUN PROPN PROPN

Classification Report:

	precis	sion	reca	ıll f1-s	score	supp	ort
1	1.	00	1.00	) 1	.00	2	
3	1.	00	1.00	) 1	.00	1	
accur	acy			1.	00	3	
macro	•	1.0	00	1.00	1.0	0	3
weighte	d avg	1	.00	1.00	1.	00	3

Sentence: tell me about ground transportation at san francisco True tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore su	pport	
1	1.0	00	1.00	1.00	)	2	
2			1.00	1.00		2	
3	1.0	00	1.00	1.00	) :	2	
4	1.0	00	1.00	1.00	)	1	
6	1.0	00	1.00	1.00	)	1	
accura	acy			1.00	) (	3	
macro	avg	1.0	0 1	.00	1.00	8	
weighted	d avg	1.	00	1.00	1.00	8	,

Sentence: now show me all the flights from <unk> louis to burbank

True tags: ADV VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: NOUN VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

ŗ	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	0.50	1.00	0.67	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
11	1.00	0.00	0.00	1
accura	су		0.91	11

macro avg	0.93	0.86	0.81	11
weighted avg	0.95	0.91	0.88	11

Sentence: saturday or sunday flights between milwaukee and phoenix american airlines

True tags: NOUN CCONJ NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: NOUN VERB NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

pro	ecision	recall	f1-score	support	
1 2 3	1.00 1.00 1.00	1.00 1.00 1.00	1.00 1.00 1.00	4 1 3	
4	0.00	1.00	0.00	0	
10	1.00	0.50	0.67	2	
accuracy macro av weighted a	g 0.8		0.90 90 0.7 0.90 0.	10 73 10 93 10	

Sentence: show me all flights from denver or philadelphia or pittsburgh to baltimore True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN VERB PROPN ADP PROPN

Classification Report:

	prec	ision	recall	f1-scc	re supp	ort
1	(	0.80	1.00	0.89	9 4	
2		1.00	1.00	1.00	) 2	
3	•	1.00	1.00	1.00	) 1	
4	. (	0.50	1.00	0.67	7 1	
5	,	1.00	1.00	1.00	) 1	
6	•	1.00	1.00	1.00	) 1	
10	)	1.00	0.00	0.0	0 2	
accur	асу			0.83	12	
macro weighte	_	0.9 0.	90 ( 89	0.86 0.83	0.79 0.77	12 12
-	_					

Sentence: what are the flights from cleveland to indianapolis on wednesday may twelfth on either twa delta or continental

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ ADP CCONJ PROPN PROPN CCONJ PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADP PROPN PROPN PROPN VERB PROPN

Classification Report:

precision recall f1-score support

	1	3.0	33	1.0	0	0.9	1	5	
	2	3.0	30	1.0	0	8.0	9	4	
	3	1.0	00	1.0	0	1.0	0	3	
	4	0.0	00	1.0	0	0.0	0	0	
	5	1.0	00	1.0	0	1.0	0	1	
	6	1.0	00	1.0	0	1.0	0	1	
	7	1.0	00	0.0	0	0.0	0	1	
	8	1.0	00	1.0	0	1.0	0	1	
	10	1.	00	0.0	00	0.0	00	2	
acc	curac	y				0.8	3	18	
mad	cro av	/g	0.	85	0.	78	0.6	4	18
weigh	nted a	ıvg	0	.91	0	.83	0.7	78	18

Sentence: list all flights that leave from baltimore or denver or pittsburgh and arrive in philadelphia

True tags: VERB DET NOUN ADP VERB ADP PROPN CCONJ PROPN CCONJ

PROPN CCONJ VERB ADP PROPN

Predicted tags: VERB DET NOUN ADP VERB ADP PROPN PROPN

PROPN PROPN CCONJ VERB ADP PROPN

Classification Report:

	prec	ision	reca	all	f1-sc	ore	supp	ort
1	(	0.67	1.0	0	0.8	0	4	
2	•	1.00	1.0	0	1.0	0	3	
3		1.00	1.0	0	1.0	0	1	
4	•	1.00	1.0	0	1.0	0	3	
5	•	1.00	1.0	0	1.0	0	1	
10	)	1.00	0.3	3	0.5	50	3	
accur	acy				0.87	7	15	
macro	avg	0.9	94	0.	.89	8.0	8	15
weighted	d avg	0	.91	(	).87	0.	85	15

Sentence: what does the fare code y mean

True tags: PRON AUX DET NOUN NOUN VERB Predicted tags: PRON AUX DET NOUN NOUN NOUN VERB

Classification Report:

precision recall f1-score support 1.00 3 3 1.00 1.00 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 accuracy 1.00 7 1.00 macro avg 1.00 1.00 7 1.00 weighted avg 1.00 1.00

Sentence: what does fare code qw mean

True tags: PRON AUX NOUN NOUN PROPN VERB

Predicted tags: PRON AUX NOUN NOUN PROPN PROPN

Classification Report:

	preci	sion	reca	all	f1-sc	ore	suppo	ort
1	0	.50	1.0	0	0.6	57	1	
3	1	.00	1.0	0	1.0	0	2	
4	1	.00	0.0	0	0.0	0	1	
6	1	.00	1.0	0	1.0	0	1	
8	1	.00	1.0	0	1.0	0	1	
accur macro	•	0.5	90	0.	0.8 80	3 0.7	6 3	6
weighted	_		.92	-	.83	0.	_	6

Sentence: what is fare code qw

True tags: PRON AUX NOUN NOUN PROPN Predicted tags: PRON AUX NOUN NOUN PROPN

Classification Report:

			•				
	precisi	ion i	recall	f1-sc	ore si	upport	
1	1.0	00	1.00	1.0	0	1	
3	1.0		1.00	1.0		2	
6	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accur	асу			1.00	)	5	
macro	avg	1.00	) 1	.00	1.00	5	
weighted	d avg	1.0	0	1.00	1.00	5	,

Sentence: what does fare code <unk> mean

True tags: PRON AUX NOUN NOUN PROPN VERB Predicted tags: PRON AUX NOUN NOUN PROPN VERB

Classification Report:

	prec	ision	rec	all	†1-sc	core	supp	oort
1	,	1.00	1.0	0	1.0	00	1	
3	,	1.00	1.0	0	1.0	00	2	
4	. '	1.00	1.0	0	1.0	00	1	
6	;	1.00	1.0	0	1.0	00	1	
8	}	1.00	1.0	0	1.0	00	1	
accur	acy				1.0	0	6	
macro	avg	1	.00	1.	.00	1.0	0	6
weighte	d avg		1.00	•	1.00	1.	00	6

Sentence: what does the fare code yn mean

True tags: PRON AUX DET NOUN NOUN PROPN VERB

Predicted tags: PRON AUX DET NOUN NOUN PROPN VERB

Classification Report:

	precision	n recall	f1-score	suppo	rt
1	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accur	acy		1.00	7	
macro	avg ´	1.00 1	.00 1.0	00	7
weighted	d avg	1.00	1.00 1	.00	7

Sentence: list all flights on united from san francisco to boston with fare code qx

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP

NOUN NOUN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

ADP NOUN NOUN NOUN

Classification Report:

	precisio	on re	call	f1-scor	e supp	ort
1 2 3	_	0 1.	80 00 00	0.89 1.00 0.86	5 4 3	
4 5	1.0	0 1.	00 00	1.00 1.00	1 1	
accura macro weighted	avg	0.95 0.95	_	0.93 .96 ( ).93	14 ).95 0.93	14 14

Sentence: what is the latest flight from boston to denver that serves a meal

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP

PROPN DET NOUN Classification Report:

	precision	recall f1-score		support	
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	

accuracy		0.9	2 1	3
macro avg	0.96	0.88	0.85	13
weighted avg	0.95	0.92	0.89	13

Sentence: list all flights from chicago to seattle on continental which depart on saturday and serve meals

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PRON VERB ADP NOUN CCONJ VERB NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN DET

DET ADP NOUN CCONJ VERB PROPN

Classification Report:

	precis	ion	rec	all	f1-sc	core	supp	ort
1	0.	75	1.0	0	0.8	36	3	
2	1.	00	1.0	0	1.0	00	4	
3	1.	00	0.6	7	3.0	30	3	
4	1.	00	0.6	7	3.0	30	3	
5	0.	33	1.0	0	0.5	50	1	
6	1.	00	0.0	0	0.0	00	1	
10	) 1	.00	1.0	00	1.	00	1	
accur	acy				0.8	1	16	
macro	avg	0.8	87	0	.76	0.7	'1	16
weighted	d avg	0	.91	(	0.81	0.	80	16

Sentence: could you tell me what the earliest flight that goes between atlanta and denver is which serves a meal

True tags: AUX PRON VERB PRON PRON DET ADJ NOUN ADP VERB ADP PROPN CCONJ PROPN AUX PRON VERB DET NOUN

Predicted tags: AUX PRON VERB PRON PRON DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PROPN AUX DET PROPN DET NOUN

Classification Report:

	precis	ion	recall	f1-sco	re supp	oort
1	0.	50	1.00	0.67	2	
2	1.	00	1.00	1.00	2	
3	1.	00	1.00	1.00	2	
4	1.	00	0.33	0.50	3	
5	0.	67	1.00	0.80	2	
6	1.	00	0.75	0.86	4	
7	1.	00	1.00	1.00	1	
8	1.	00	1.00	1.00	2	
10	) 1	.00	1.00	1.00	) 1	
accur	асу			0.84	19	
macro	•	0.9			0.87	19
weighte	d avg	0.9	91 (	0.84	0.83	19

Sentence: give me the saturday morning flights with meals from chicago to minneapolis

True tags: VERB PRON DET NOUN NOUN NOUN ADP NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

ADP PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore su	pport
1	0.6	57 <b>1</b> .	.00	0.8	0 :	2
2	1.0	0 1.	.00	1.0	) ;	3
3	1.0	0 0	.75	0.8	6 4	4
4	1.0	0 1.	.00	1.0	) ·	1
5	1.0	0 1.	.00	1.00	) ·	1
6	1.0	0 1	.00	1.0	)	1
accur	асу			0.92	2 1	2
macro	avg	0.94	0	.96	0.94	12
weighted	d avg	0.94	(	0.92	0.92	12

Sentence: list flights from seattle to salt lake city on delta I10

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP

PROPN PROPN Classification Report:

	precisi	on re	recall f1-s		e suppo	ort
1	1.0		.00	1.00	6	
2	1.0	0 1	.00	1.00	3	
3	1.0	0 1	.00	1.00	1	
4	1.0	0 1	.00	1.00	1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00 ′	1.00	11
weighted	d avg	1.00	•	1.00	1.00	11

Sentence: show me all flights from san diego to phoenix on a boeing 737

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET PROPN NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

DET NOUN PROPN
Classification Report:
 precision recall f1-score support

1	0.75	0.75	0.75	4
2	1.00	1.00	1.00	3
3	0.50	1.00	0.67	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1

accuracy		0.8	5 13	3
macro avg	0.89	0.82	0.77	13
weighted avg	0.88	0.85	0.82	13

Sentence: what is a d9s

True tags: PRON AUX DET PROPN Predicted tags: PRON AUX DET NOUN

Classification Report:

	precisio	n recal	l f1-scor	e support
1	1.00	0.00	0.00	1
3	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accur	асу		0.75	4
macro weighted	_	0.80 1.00	0.80 ( 0.75	0.60 4 0.75 4

Sentence: what is the earliest flight between baltimore and oakland that serves

breakfast

True tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN ADP VERB

**NOUN** 

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN ADP

PROPN NOUN

Classification Report:

	pred	cisior	n red	call	f1-sc	ore	supp	ort
1		0.67	1.	00	0.8	0	2	
2	<u> </u>	1.00	1.	00	1.0	0	2	
3	3	1.00	1.	00	1.0	0	2	
4	ļ	1.00	0.	00	0.0	0	1	
5	5	1.00	1.	00	1.0	0	1	
6	6	1.00	1.	00	1.0	0	1	
7	7	1.00	1.	00	1.0	0	1	
8	3	1.00	1.	00	1.0	0	1	
10	0	1.00	) 1	.00	1.0	00	1	
accur	асу				0.9	2	12	
macro weighte	_		0.96 0.94	_	.89 ).92	0.8	87 88	12 12

Sentence: a breakfast flight from denver to san francisco please

True tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN INTJ
Predicted tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN INTJ

Classification Report:

precision recall f1-score support

	-		-		-		-	-	
	2	1.00	)	1.00	)	1.00	)	2	
	3	1.00	)	1.00	)	1.00	)	2	
	5	1.00	)	1.00	)	1.00	)	1	
	13	1.0	0	1.0	0	1.0	0	1	
acc	curacy					1.00		9	
mad	cro avo	)	1.0	0	1.0	0	1.00		9
weigh	ited av	g	1.0	00	1.0	00	1.00	)	9

1.00

1.00

Sentence: list flights between boston and san francisco that serve breakfast True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN ADP VERB NOUN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN ADP VERB

3

NOUN Classification Report:

1

1.00

precision recall f1-score support 1 3 1.00 1.00 1.00 2 1.00 1.00 1.00 2 3 2 1.00 1.00 1.00 4 1.00 1.00 1.00 2 10 1.00 1.00 1.00 1.00 10 accuracy macro avg 1.00 1.00 1.00 10 weighted avg 1.00 1.00 1.00 10

Sentence: give me all flights from boston to philadelphia next week arriving after lunch

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADJ NOUN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADJ ADJ VERB ADP VERB

Classification Report:

	precision	on re	call	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	2	
2			00	1.00		
3	1.0	0 0.	.33	0.50	3	
4	0.6	7 1.	.00	0.80	2	
5			.00	1.00		
6	1.0	0 1.	.00	1.00	1	
7	0.5	0 1.	.00	0.67	1	
accur	асу			0.85	13	
macro weighte	•	0.88 0.91		.90 ).85	0.85 0.83	13 13

Sentence: please show me flights from pittsburgh to atlanta on wednesday morning serving breakfast

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN NOUN

**VERB NOUN** 

Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

NOUN NOUN NOUN Classification Report:

	precis	sion	recall f1-score			supp	ort
1	1.	.00	1.00	1.0	0	2	
2	1.	.00	1.00	1.0	0	3	
3	0.	.80	1.00	3.0	89	4	
4	1.	.00	0.50	0.6	57	2	
6	1.	.00	1.00	1.0	0	1	
13	3 1	.00	1.00	1.0	00	1	
accur	acy			0.9	2	13	
macro	avg	0.9	97 (	).92	0.93	3	13
weighted	d avg	0.	94	0.92	0.9	91	13

Sentence: what is the first flight that goes from atlanta to baltimore that serves

breakfast

True tags: PRON AUX DET ADJ NOUN ADP VERB ADP PROPN ADP PROPN ADP

VERB NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP

PROPN ADP PROPN NOUN

Classification Report:

	precisi	on re	call 1	f1-sco	re supp	ort
1	0.5	0 1.	.00	0.67	2	
2	1.0	0 1.	.00	1.00	4	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 0.	.00	0.00	2	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	1	
8	1.0	0 1.	.00	1.00	1	
accur	асу		_	0.86	14	
macro weighted	_	0.94 0.93	3.0 0	38 .86	0.83 0.81	14 14

Sentence: which flights arrive in <unk> louis from <unk> paul on thursday morning True tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN

Predicted tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN

pı	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1 00	1 00	1 00	3

3	1.00	) 1.	00 ′	1.00	3	
4	1.00	) 1.	00 ′	1.00	1	
5	1.00	) 1.	00 ′	1.00	1	
accurac	У		1	.00	12	
macro a	vg	1.00	1.00	1.	00	12
weighted a	avg	1.00	1.00	) 1	.00	12

Sentence: i would like one flight from kansas city to <unk> paul arriving around dinnertime 6 pm

True tags: PRON AUX VERB NUM NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN NUM NOUN

Predicted tags: PRON AUX VERB NUM NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN NOUN NOUN

Classification Report:

	precisio	n red	call	f1-sc	ore su	pport
1	1.00	) 1.	00	1.0	0 4	1
2	1.00	) 1.	00	1.0	0 (	3
3	0.75	5 1.	00	0.8	6 3	3
4	1.00	) 1.	00	1.0	0 2	2
6	1.00	) 1.	00	1.0	0 '	1
8	1.00	) 1.	00	1.0	0 '	1
9	1.00	0.	50	0.6	7 2	2
accura	су			0.94	1 1	6
macro	avg	0.96	0	.93	0.93	16
weighted	avg	0.95	(	0.94	0.93	16

Sentence: list flights from dallas to houston arriving sunday afternoon True tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Classification Report:

	pred	isior	n red	call	f1-s	core	supp	ort
1		1.00 1.00		00 00		00 00	2	
3	,	1.00	1.	00	1.	00	3	
4		1.00	1.	00	1.	00	2	
accur	асу				1.0	00	9	
macro	avg	•	1.00	1	.00	1.0	00	9
weighte	d avg	l	1.00		1.00	1.	.00	9

Sentence: list nonstop flights from baltimore washington airport to oakland that depart in the afternoon

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN PROPN ADP ADP ADP DET NOUN

## Classification Report:

	precision		recall	f1-sc	ore s	suppo	ort
1	1.	00	1.00	1.0	00	4	
2	0.	80	1.00	3.0	39	4	
3	1.	00	1.00	1.0	00	3	
4	1.	00	0.50	0.6	67	2	
5	1.	00	1.00	1.0	00	1	
accur	acy			0.9	3	14	
macro	avg	0.9	6 0	.90	0.91		14
weighted	d avg	0.9	94	0.93	0.92	2	14

Sentence: i need flight information on thursday leaving pittsburgh and arriving in baltimore in the morning

True tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN CCONJ VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN CCONJ VERB ADP PROPN ADP DET NOUN

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	1.	00	2	
2	1.	00	1.00	1.	00	3	
3	1.	00	1.00	1.	00	4	
4	1.	00	1.00	1.	00	3	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
10	) 1	.00	1.00	) 1	.00	1	
accur	acy			1.0	00	15	
macro weighted	avg	1.0 1.	00 .00	1.00 1.00	1.0 1.0	-	15 15

Sentence: morning flights out of san francisco arriving boston afternoon True tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Predicted tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Classification Report:

	precisi	on re	call	f1-sco	e supp	ort
1	1.0	00 1	.00	1.00	3	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	3	
4	1.0	00 1	.00	1.00	1	
accur	acy			1.00	9	
macro	avg	1.00	1.0	00	1.00	9
weighted	d avg	1.00	1	.00	1.00	9

Sentence: i would like to <unk> my flight in washington dc stop in denver with the destination city of san francisco

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN VERB ADP PROPN ADP DET NOUN PROPN ADP PROPN

Predicted tags: PRON AUX VERB PART AUX PROPN NOUN ADP PROPN PROPN VERB ADP PROPN ADP DET NOUN NOUN ADP PROPN PROPN

Classification Report:

	precis	sion	recall	t1-sc	ore su	pport
4	0	00	0.00	0.0		
1	0.	83	0.83	0.8	3 6	)
2	1.	00	1.00	1.0	) 4	Ļ
3	0.	67	1.00	0.8	) 2	<u> </u>
4	1.	00	0.67	0.8	) 3	}
5	1.	00	0.50	0.6	7 2	2
6	1.	00	1.00	1.0	0 1	
8	0.	50	1.00	0.6	7 1	
12	2 1	.00	1.00	1.0	0	1
accur	acy			0.85	5 20	)
macro	avg	3.0	38 C	.88	0.85	20
weighte	d avg	0.	.89	0.85	0.85	20

Sentence: show me a list of flights on july twenty second leaving dc to dallas leaving dc after 6 pm

True tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB VERB ADP PROPN VERB PROPN ADP NUM NOUN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	1.0	00	0.67	0.8	80	3	
2	1.0	00	1.00	1.0	00	4	
3	1.0	00	1.00	1.0	00	4	
4	0.	75	1.00	0.8	86	3	
5	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
7	1.0	00	1.00	1.0	00	1	
9	1.0	00	1.00	1.0	00	2	
accur	acy			0.9	95	19	
macro weighte	_	0.9	7 ( 96	0.96 0.95	0.9	-	19 19
Worgi ito	a avg	0.		0.00	0.		.0

Sentence: what airlines from washington dc to columbus True tags: DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	) 3	
2	1.00	1.00	1.00	) 2	
3	1.00	1.00	1.00	) 1	
5	1.00	0.00	0.00	) 1	
6	0.00	1.00	0.00	0 0	
accuracy	/		0.86	7	
macro av	g C	08.0	08.0	0.60	7
weighted a	vg	1.00	0.86	0.86	7

Sentence: list flights from washington dc to boston

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

0.0000	auon i	oport.				
	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
accur	асу			1.00	7	
macro	avg	1.00	1.	.00	1.00	7
weighted	d avg	1.00	•	1.00	1.00	7

Sentence: could you please give me information <unk> american airlines a flight from washington dc to philadelphia the earliest one in the morning as possible True tags: AUX PRON INTJ VERB PRON NOUN VERB PROPN PROPN DET NOUN ADP PROPN ADP PROPN ADP PROPN DET ADJ PRON ADP DET NOUN ADP ADJ

Predicted tags: AUX PRON INTJ VERB PRON NOUN AUX PROPN PROPN DET NOUN ADP PROPN PROPN ADP PROPN DET ADJ NUM ADP DET NOUN ADP NOUN

	precisi	ion re	call	f1-scor	e supp	oort
1	1.0	00 1	.00	1.00	5	
2	1.0	00 1	.00	1.00	4	
3	0.7	75 1	.00	0.86	3	
4	1.0	0 0	.50	0.67	2	
5	1.0	00 1	.00	1.00	3	
6	1.0	0 0	.67	0.80	3	
7	1.0	0 0	.50	0.67	2	
8			.00	0.67	1	
9	0.0	00 1	.00	0.00	0	
13	3 1.	00 1	.00	1.00	1	
accur	acy			0.88	24	
macro	•	0.82	_		0.77	24
weighte	d avg	0.95	(	0.88	0.89	24

Sentence: list flights from washington dc to pittsburgh

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-sco	re su	pport
1	1.0	0 1.	00	1.00	) 3	3
2	1.0	0 1.	00	1.00	) 2	<u> </u>
3	1.0	0 1.	00	1.00	) 1	
4	1.0	0 1.	00	1.00	) 1	
accur	acy			1.00	7	
macro	avg	1.00	1	.00	1.00	7
weiahted	d ava	1.00	•	1.00	1.00	7

Sentence: i need a flight from washington dc to san diego

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

		- 1					
	precis	sion	recal	l f1-so	core	suppo	ort
1	1	.00	1.00	1.0	00	4	
2		.00	1.00		00	2	
3	1.	.00	1.00	1.0	00	1	
4	1.	.00	1.00	1.0	00	1	
5	1.	.00	1.00	1.0	00	1	
6	1.	.00	1.00	1.0	00	1	
accur	acy			1.0	00	10	
macro	•	1.0	00	1.00	1.00	)	10
weighte	d avg	1.	.00	1.00	1.0	0	10

Sentence: i would like to fly from boston to baltimore please tell me what are the times of the flights

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN INTJ VERB PRON PRON AUX DET NOUN ADP DET NOUN

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN INTJ VERB PRON PRON AUX DET ADJ ADP DET NOUN

precision		recall f1-score		support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	0.50	0.67	2
4	1.00	1.00	1.00	3
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	3
7	0.00	1.00	0.00	0

8	1.0	00	1.00	1.	00	2	
12	1.	00	1.00	1	.00	1	
13	1.	00	1.00	1	.00	1	
				0.0	\_	40	
accura	су			0.9	95	19	
macro	avg	0.90	) (	).95	0.87	7	19
weighted	avg	1.0	0	0.95	0.9	6	19

Sentence: does flight dl <unk> dl <unk> from boston to denver stop in philadelphia True tags: AUX NOUN PROPN NUM PROPN NUM ADP PROPN ADP PROPN VERB ADP PROPN

Predicted tags: AUX NOUN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

	precis	on	recall	f1-sco	ore sup	port
1	0.6	62	1.00	0.77	7 5	
2	1.0	00	1.00	1.00	3	
3	1.0	00	1.00	1.00	) 1	
4	1.0	00	0.00	0.00	) 1	
8	1.0	00	1.00	1.00	) 1	
9	1.0	00	0.00	0.00	) 2	
accur	acy			0.77	' 13	
macro weighted	_	0.9 <sup>2</sup> 0.8		.67 0.77	0.63 0.68	13 13

Sentence: what kind of airplane is flight ua 281 from boston to denver

True tags: DET NOUN ADP NOUN AUX NOUN PROPN NUM ADP PROPN ADP

PROPN

Predicted tags: PRON NOUN ADP NOUN AUX NOUN NOUN PROPN ADP PROPN

ADP PROPN

Classification Report:

	precisi	ion	recall	f1-so	core	supp	ort
1	0.6	67	0.67	0.6	67	3	
2	1.0	00	1.00	1.0	00	3	
3	0.7	75	1.00	3.0	36	3	
5	1.0	00	0.00	0.0	00	1	
6	0.0	00	1.00	0.0	00	0	
8	1.0	00	1.00	1.0	00	1	
9	1.0	00	0.00	0.0	00	1	
accur	acy			0.7	'5	12	
macro	avg	0.7	7 (	).67	0.5	0	12
weighted	d avg	3.0	35	0.75	0.	71	12

Sentence: what is the price of american airlines flight <unk> from new york to los angeles

True tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN NUM ADP PROPN

PROPN ADP PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN PROPN ADP PROPN PROPN PROPN PROPN

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	0.	86	1.00	0.	.92	6	
2		00	1.00		.00	3	
3	1.	00	1.00	1.	.00	2	
5	1.	00	1.00	) 1.	.00	1	
6	1.	00	1.00	1.	.00	1	
8		00	1.00	) 1.	.00	1	
9	1.	00	0.00	0.	.00	1	
				_			
accur	acy				93	15	
macro	avg	0.9	98	0.86	3.0	35	15
weighte	d avg	0.	94	0.93	0.	90	15

Sentence: what is the first class fare on united flight <unk> from denver to boston True tags: PRON AUX DET ADV NOUN NOUN ADP PROPN NOUN NUM ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN NOUN PROPN

ADP PROPN ADP PROPN

Classification Report:

	pred	cisio	n re	call	f1-sc	ore	supp	ort
1		0.75	1.	00	0.8	6	3	
2	2	1.00	1.	00	1.0	0	3	
3	3	1.00	1.	00	1.0	0	3	
5	5	1.00	1.	00	1.0	0	1	
6	6	1.00	1.	00	1.0	0	1	
7	7	0.00	1.	00	0.0	0	0	
8	3	1.00	1.	00	1.0	0	1	
g	)	1.00	0.	00	0.0	0	1	
1	1	1.00	0	.00	0.0	00	1	
accur	racy				0.86		14	
macro weighte	_		0.86 0.95	_	.78 ).86	0.69 3.0	_	14 14

Sentence: how much does flight ua 281 from boston to denver cost

True tags: ADV ADV AUX NOUN PROPN NUM ADP PROPN ADP PROPN VERB Predicted tags: ADV VERB AUX NOUN NOUN PROPN ADP PROPN ADP PROPN

NOUN

p	recision	recall	f1-score	support
1	0.67	0.67	0.67	3
2	1 00	1 00	1 00	2

3	0.33	1.00	0.50	) 1	
4	0.00	0.00	0.00	0 1	
8	1.00	1.00	1.00	0 1	
9	1.00	0.00	0.00	) 1	
11	1.00	0.50	0.6	7 2	
accuracy	/		0.64	11	
macro av	g 0.	71 C	0.60	0.55	11
weighted a	vg 0	.76	0.64	0.62	11

Sentence: does flight dl <unk> from philadelphia to denver fly on saturdays True tags: AUX NOUN PROPN PROPN ADP PROPN VERB ADP PROPN

Predicted tags: AUX NOUN PROPN PROPN ADP PROPN ADP PROPN VERB ADP NOUN

Classification Report:

precision recall f1-score support 1.00 0.80 5 1 0.89 2 1.00 1.00 1.00 3 3 0.50 1.00 0.67 1 4 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 0.91 11 accuracy macro avg 0.90 0.96 0.91 11 11 weighted avg 0.95 0.91 0.92

Sentence: what airline is dl <unk>

True tags: DET NOUN AUX PROPN NUM

Predicted tags: PRON NOUN AUX PROPN PROPN

Classification Report:

precision recall f1-score support 1 0.50 1.00 0.67 1 3 1.00 1.00 1.00 1 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 8 1.00 1.00 1.00 1 9 1.00 0.00 0.00 0.60 accuracy 0.44 5 0.75 0.67 macro avg 0.53 5 weighted avg 0.90 0.60

Sentence: what first class airplane goes from philadelphia to san francisco and stops

in dallas in the afternoon on monday

True tags: DET ADV NOUN NOUN VERB ADP PROPN ADP PROPN PROPN

CCONJ VERB ADP PROPN ADP DET NOUN ADP NOUN

Predicted tags: PRON AUX NOUN NOUN PROPN ADP PROPN ADP PROPN PROPN CONJ PROPN ADP PROPN ADP DET NOUN ADP NOUN Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1	(	0.67	1.0	00	3.0	30	4	
2	•	1.00	1.0	00	1.0	00	5	
3	•	1.00	1.0	00	1.0	00	4	
4	•	1.00	0.0	00	0.0	00	2	
5	•	1.00	0.5	50	0.6	67	2	
6	(	0.00	1.0	00	0.0	00	0	
8	(	0.00	1.0	00	0.0	00	0	
10	)	1.00	1.	00	1.	00	1	
11		1.00	0.	00	0.0	00	1	
accur	acy				0.7	9	19	
macro	avg	0	.74	0	.72	0.5	50	19
weighte	d avg	(	0.93	(	0.79	0.	76	19

Sentence: what planes are used by twa

True tags: DET NOUN AUX VERB ADP PROPN

Predicted tags: PRON NOUN AUX NOUN ADP PROPN

Classification Report:

	precision	recall	f1-score	suppo	rt
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	1	
3	0.50	1.00	0.67	1	
4	1.00	0.00	0.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
8	1.00	1.00	1.00	1	
accur	acy		0.67	6	
macro	avg C	0.79	.71 0.5	52	6
weighted	d avg	0.92	0.67 0.	61	6

Sentence: <unk> leaving denver to san francisco before 10 am what type of aircraft is used

True tags: VERB VERB PROPN ADP PROPN PROPN ADP NUM NOUN DET NOUN ADP NOUN AUX VERB

Predicted tags: AUX VERB PROPN ADP PROPN PROPN ADP NUM NOUN PRON NOUN ADP NOUN AUX NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	0.75	1.00	0.86	3
4	1 00	0.33	0.50	3

5	1.00	0.	.00	0.0	0	1	
6	0.00	) 1.	.00	0.0	0	0	
8	0.50	) 1.	.00	0.6	7	1	
9	1.00	) 1.	.00	1.0	0	1	
accuracy	/			0.80	)	15	
macro av	'g	0.78	0.	79	0.63		15
weighted a	vg	0.92	0	.80	0.78	}	15

Sentence: what kinds of planes are used by midway airlines

True tags: DET NOUN ADP NOUN AUX VERB ADP NOUN PROPN

Predicted tags: PRON AUX ADP NOUN AUX NOUN ADP PROPN PROPN

Classification Report:

	precisio	on re	call	f1-scc	ore sup	port
1	0.5	0 1.	00	0.67	7 1	
2	1.0	0 1.	00	1.00	) 2	
3	0.5	0 0.	33	0.40	) 3	
4	1.0	0 0.	00	0.00	) 1	
5	1.0	0 0.	00	0.00	) 1	
6	0.0	0 1.	00	0.00	0 (	
8	0.5	0 1.	00	0.67	7 1	
accur	acy			0.56	9	
macro	avg	0.64	0	.62	0.39	9
weighted	d avg	0.72	(	0.56	0.50	9

Sentence: what type of aircraft leaves from boston to washington dc at 9 am during a weekday

True tags: DET NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP DET NOUN

Predicted tags: PRON NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN PROPN DET NOUN

Classification Report:

	precisi	on	recall	f1-sc	ore su	ıpport
1	0.7	<b>7</b> 5	1.00	0.8	6	3
2	1.0	00	0.80	0.8	9	5
3	1.0	00	1.00	1.0	0	4
4	1.0	00	1.00	1.0	0	1
5	1.0	00	0.50	0.6	7	2
6	0.0	00	1.00	0.0	0	0
9	1.0	00	1.00	1.0	0	1
accur	асу			0.88	3 1	6
macro weighted	•	0.82		.90 0.88	0.77 0.90	16 16

Sentence: what type of aircraft are flying from cleveland to dallas before noon

True tags: DET NOUN ADP NOUN AUX VERB ADP PROPN ADP PROPN ADP

NOUN

Predicted tags: PRON NOUN ADP NOUN VERB ADP ADP PROPN ADP PROPN

ADP NOUN

Classification Report:

	precisi	on re	ecall	f1-scc	ore sup	port
1	1.0	00 1	.00	1.00	) 2	
2	0.8	30 1	.00	0.89	9 4	
3	1.0	00 1	.00	1.00	3	
4	0.0	00 0	00.0	0.00	) 1	
5	1.0	00 0	00.0	0.00	) 1	
6	0.0	00 1	.00	0.00	0 0	
8	1.0	00 0	00.0	0.00	) 1	
accura	acy			0.75	12	
macro	avg	0.69	0	.57	0.41	12
weighted	d avg	0.85	5 (	0.75	0.71	12

Sentence: what airplane types fly from pittsburgh to baltimore True tags: DET NOUN NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN PROPN VERB ADP PROPN ADP PROPN

Classification Report:

	precis	ion I	recall	f1-sc	ore su	ipport
1	0.0	67	1.00	0.8	0 :	2
2	1.0	00	1.00	1.0	0 :	2
3	1.0	00	0.50	0.6	7 :	2
4	1.0	00	1.00	1.0	0	1
5	1.0	00	0.00	0.0	0	1
6	0.	00	1.00	0.0	0	0
accur	acy			0.75	5 8	3
macro	avg	0.78	3 0	.75	0.58	8
weighted	d avg	0.9	2	0.75	0.74	8

Sentence: what is ground transportation between the san francisco airport and the city

True tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN CCONJ DET PROPN

Predicted tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN CCONJ DET NOUN

p	recision	recall	f1-score	support
1	1.00	0.75	0.86	4
2	1.00	1.00	1.00	1
3	0.67	1.00	0.80	2
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1

8 10	1.0 1.0		1.00 1.00	1.0 1.0	-	1 1	
accuracy				0.9	2	12	
macro avo	9	0.95	0	.96	0.95		12
weighted av	⁄g	0.94	4 (	0.92	0.92	2	12

Sentence: what flights on united leave la guardia for san jose and arrive around 10 pm

True tags: DET NOUN ADP PROPN VERB PROPN PROPN ADP PROPN PROPN CCONJ VERB ADP NUM NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN VERB ADP PROPN PROPN CCONJ VERB ADP ADJ NOUN

Classification Report:

рі	recision	recall	f1-score	suppo	ort
1	0.80	0.80	0.80	5	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	0.50	0.50	0.50	2	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
7	0.00	1.00	0.00	0	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
accurac	у		0.73	15	
macro av	vg 0.7	70 0	.70 0.4	-8	15
weighted a	avg 0	.87 (	0.73 0.	73	15

Sentence: what ground transportation is available from the denver airport to downtown denver

True tags: DET NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP NOUN PROPN

	precision	on re	call	f1-scc	re sup	port
1	1.0	0 1.	00	1.00	) 3	
2	1.0	0 1.	00	1.00	) 2	
3	1.0	0 1.	00	1.00	) 3	
5	1.0	0 0.	50	0.67	7 2	
6	0.0	0 1.	00	0.00	0	
7	1.0	0 1.	00	1.00	) 1	
8	1.0	0 1.	00	1.00	) 1	
accur	acy			0.92	12	
macro	avg	0.86	0.	.93	0.81	12
weighted	•	1.00	(	0.92	0.94	12

Sentence: list us air flights leaving saturday from charlotte airport around 1 pm True tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN ADP **NUM NOUN** 

Predicted tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN ADP PROPN NOUN

Classification Report:

Ciassilic	auoni	CPO	ι.					
	precisi	on	reca	all f	1-sc	core	supp	ort
1	0.8	0	1.00	0	0.8	39	4	
2	1.0	0	1.00	C	1.0	00	2	
3	1.0	0	1.00	C	1.0	00	3	
4	1.0	0	1.00	C	1.0	00	2	
9	1.0	0	0.0	C	0.0	00	1	
accura	асу				0.9	2	12	
macro	avg	0.9	96	3.0	30	0.7	'8	12
weighted	l avg	0.	93	0.	92	0.	88	12

Sentence: could you tell me about ground transportation arrangements from the dallas airport to downtown dallas

True tags: AUX PRON VERB PRON ADP NOUN NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: AUX PRON VERB PRON ADP NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN

Classification Report:

	precis	ion re	call	f1-sco	re supp	ort
1	1.0	00 1	.00	1.00	3	
2	1.0	00 1	.00	1.00	3	
3	1.0	00 1	.00	1.00	4	
4	1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	1	
6	1.0	00 1	.00	1.00	2	
8	1.0	00 1	.00	1.00	1	
accur	асу			1.00	15	
macro	avg	1.00	1	.00	1.00	15
weighte	d avg	1.00	•	1.00	1.00	15

Sentence: please list the flights taking off and landing on general mitchell international airport

True tags: INTJ VERB DET NOUN VERB ADV CCONJ NOUN ADP PROPN PROPN PROPN PROPN

Predicted tags: INTJ VERB DET NOUN NOUN PROPN CCONJ PROPN ADP

PROPN NOUN PROPN PROPN

Classification Report:

1

precision recall f1-score support 0.60 0.75 0.67 4

2	1.00	1.00	1.00	1	
3	0.33	0.50	0.40	2	
4	1.00	0.50	0.67	2	
5	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
13	1.00	1.00	1.00	1	
accuracy	,		0.69	13	
macro av	g 0.8	37 0	.72 0	.72	13
weighted av	/g 0	.77 (	0.69 (	0.68	13

Sentence: i <unk> like to fly from cleveland to indianapolis tomorrow morning as early as possible what <unk> available

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN ADP ADV ADD ADJ PRON AUX ADJ

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN ADP ADJ ADP NOUN PRON AUX ADJ

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	1	.00	2	
2	1.	00	1.00	1	.00	4	
3	0.	67	1.00	0	.80	2	
4	1.	00	1.00	1	.00	2	
6	1.	00	1.00	1	.00	2	
7	0.	50	0.50	0	.50	2	
8	1.	00	1.00	1	.00	2	
11	1	.00	0.00	) (	.00	1	
12	2 1	.00	1.0	0 1	.00	1	
accur	•	0.0	24		89	18	40
macro weighted	•	0.9	.91	0.83 0.89	0.8 0.	87 87	18 18

Sentence: i need a flight from logan to atlanta this afternoon

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN DET NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN

Classification Report:

precision recall f1-score support 1 2 0.67 1.00 0.80 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 2 4 1.00 1.00 1.00 1 5 1.00 0.50 2 0.67 6 1.00 1.00 1 1.00 0.90 10 accuracy macro avg 0.94 0.92 0.91 10 weighted avg 0.93 0.90 0.89 10

Sentence: give me the latest flight tomorrow on american airlines from milwaukee to tacoma

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP

PROPN ADP PROPN Classification Report:

	precis	ion r	ecall	f1-scc	re supp	oort
1	1.0	00 1	1.00	1.00	) 4	
2	1.0	00 1	1.00	1.00	) 3	
3	1.0	00 1	1.00	1.00	) 2	
4	1.0	00 1	1.00	1.00	) 1	
5	1.0	00 1	1.00	1.00	) 1	
6	1.0	00 1	1.00	1.00	) 1	
7	1.0	00 1	1.00	1.00	) 1	
accura	асу			1.00	13	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	13 13

Sentence: i <unk> like to fly from columbus to nashville tomorrow morning
True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN
Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN
NOUN

Classification Report:

	precis	ion re	ecall	f1-scor	e supp	ort
1	1.0	00 1	.00	1.00	2	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	2	
4	1.0	00 1	.00	1.00	2	
6	1.0	00 1	.00	1.00	1	
8	1.0	00 1	.00	1.00	1	
12	2 1.	.00	1.00	1.00	1	
accur	асу			1.00	11	
macro weighted	_	1.00 1.00			.00 1.00	11 11

Sentence: and what is the last flight from denver to boston for tomorrow evening True tags: CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP NOUN NOUN

Predicted tags: CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP NOUN NOUN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy	<i>(</i>		1.00	13	
macro av	g 1.0	00 1.0	00 1.0	00	13
weighted a	vg 1	.00 1	.00 1	.00	13

Sentence: list evening flights tomorrow from phoenix to detroit True tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	3	
4	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	8	
macro	avg	1.0	0 1	1.00	1.0	0	8
weighted	d avg	1.	00	1.00	1.0	00	8

Sentence: show me the flights on continental from indianapolis to san diego in the afternoon tomorrow

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN ADP DET NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP DET NOUN NOUN

Classification Report:

	preci	sion	rec	all	f1-s	core	supp	ort
1	1	.00	1.0	0	1.0	00	4	
2	1	.00	1.0	0	1.	00	4	
3	1	.00	1.0	0	1.	00	3	
4	1	.00	1.0	0	1.	00	1	
5	1	.00	1.0	0	1.	00	2	
6	1	.00	1.0	0	1.	00	1	
accur	acy				1.0	00	15	
macro	avg	1.	00	1	.00	1.0	00	15
weighte	d avg	1	.00	•	1.00	1.	.00	15

Sentence: how many flights does northwest have leaving dulles True tags: ADV ADJ NOUN AUX PROPN VERB VERB PROPN Predicted tags: ADV ADJ NOUN AUX PROPN VERB VERB VERB

Classification Report:

Ciaconic	auoni	topo				
	precis	sion	recall	f1-sc	ore su	ıpport
1	1.	00	0.50	0.6	7	2
3		00	1.00	1.00		1
4	0.	67	1.00	0.80	0	2
7	1.	00	1.00	1.00	<b>C</b>	1
8	1.	00	1.00	1.00	0	1
11	1	.00	1.00	1.0	0	1
accur	acy			0.88	3	3
macro	avg	0.9	94 0	.92	0.91	8
weighted	d avg	0.	.92	88.0	0.87	8

Sentence: nonstop flights from new york city to las vegas on sunday

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

**ADP NOUN** 

Classification Report:

	precisi	ion I	recall	f1-sc	ore s	uppo	ort
1	1.0	00	1.00	1.0	0	5	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	3	
accur	асу			1.0	0	11	
macro	avg	1.00	) 1	.00	1.00		11
weighted	d avg	1.0	0	1.00	1.00	)	11

Sentence: show me the flights from los angeles to pittsburgh which arrive at pittsburgh on monday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP PROPN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN DET VERB ADP PROPN ADP NOUN

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	00 1	.00	1.00	4	
2			.80	0.89		
3	1.0	0 1	.00	1.00	2	
4	1.0	0 1	.00	1.00	2	
5	0.5	50 1	.00	0.67	1	
6	1.0	00 1	.00	1.00	1	
accur	acy			0.93	15	
macro	avg	0.92	0.	.97	0.93	15
weighte	d avg	0.97	(	0.93	0.94	15

Sentence: show me all flights from philadelphia to dallas which arrive in dallas before 3 <unk> pm on saturday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN DET VERB ADP PROPN ADP NOUN PROPN NOUN ADP NOUN

Classification Report:

	preci	sion	recal	l f1-sc	ore	supp	ort
1	0	.75	1.00	0.8	36	3	
2	1	.00	0.83	0.9	91	6	
3	0	.75	1.00	0.8	36	3	
4	1	.00	1.00	1.0	00	2	
5	0	.50	1.00	0.6	67	1	
6	1	.00	1.00	1.0	00	1	
9	1	.00	0.00	0.0	00	1	
11	l 1	.00	0.00	0.0	00	1	
accur	acy			0.8	3	18	
macro	•	0.8	38 (	0.73	0.6	6	18
weighte	d avg	0.	89	0.83	0.7	<b>7</b> 9	18

Sentence: what flights leave pittsburgh and arrive in los angeles after 5 pm on thursday

True tags: DET NOUN VERB PROPN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

Predicted tags: PRON NOUN VERB PROPN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

Classification Report:

	pre	cisio	n ı	recall	f1-s	core	supp	ort
1		1.00	)	1.00	1.	00	3	
2	)	1.00	)	1.00	1.	00	3	
3	}	1.00	)	1.00	1.	00	3	
4		1.00	)	1.00	1.	00	2	
5	· •	1.00	)	0.00	0.	00	1	
6	;	0.00	)	1.00	0.	00	0	
9	)	1.00	)	1.00	1.	00	1	
10	)	1.0	0	1.00	1	.00	1	
accur	асу				0.9	93	14	
macro weighte	_	g	0.88		).88 0.93	0.7 0.	'5 93	14 14
-		-						

Sentence: what is the earliest flight arriving in charlotte from <unk> louis on friday True tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN

## Classification Report:

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accurac	СУ		1.00	13	
macro a	vg 1.0	00 1	.00 1.0	00	13
weighted	avg 1	.00	1.00 1.	.00	13

Sentence: what flights do you have from boston to pittsburgh on wednesday of next week after 6 pm

True tags: DET NOUN AUX PRON VERB ADP PROPN ADP PROPN ADP NOUN ADP ADJ NOUN ADP NUM NOUN

Predicted tags: PRON NOUN VERB PRON VERB ADP PROPN ADP NOUN ADP NOUN ADP NOUN ADP NUM NOUN

Classification Report:

ŗ	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	4	
4	0.50	1.00	0.67	1	
5	1.00	0.00	0.00	1	
6	0.50	1.00	0.67	1	
7	1.00	1.00	1.00	1	
8	1.00	0.00	0.00	1	
9	1.00	1.00	1.00	1	
accura	су		0.88	17	
macro a weighted	•		.78 0.7 0.88 0.	'0 84	17 17
•	•				

Sentence: i <unk> like a flight from <unk> petersburg to miami on that next thursday True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP DET ADJ NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP ADP ADJ NOUN

р	recision	recall	t1-score	support
1	1.00	1.00	1.00	3
2	0.75	1.00	0.86	3
3	1 00	1 00	1 00	2

	•		•					•	
	5	1.00	) C	).50	)	0.67	7	2	
	6	1.00	) 1	.00	)	1.00	)	1	
	7	1.00	) 1	.00	)	1.00	)	1	
	8	1.00	) 1	.00	)	1.00	)	1	
accu	ıracy					0.93	}	14	
macr	o avg		0.97		0.9	4	0.94		14
weighte	ed av	g	0.95	5	0.9	93	0.92	2	14
•		_							

1.00 1.00 1.00

Sentence: i <unk> like to travel from kansas city to chicago next wednesday

1

True tags: PRON AUX VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ

NOUN

Predicted tags: PRON AUX VERB PART VERB ADP PROPN PROPN ADP PROPN

PROPN NOUN

4

Classification Report:

0.0000		vopo.	••			
	precis	ion	recall	f1-sco	ore su	ıpport
1	0.7	75	1.00	0.86	3	3
2	1.0	00	1.00	1.00	)	2
3	1.0	00	1.00	1.00	)	1
4	1.0	00	1.00	1.00	)	2
6	1.0	00	1.00	1.00	)	1
7	1.0	00	0.00	0.00	)	1
8	1.0	00	1.00	1.00	)	1
12	2 1.	00	1.00	1.0	0	1
accur	асу			0.92	2 1	2
macro	avg	0.9	7 0	.88	0.86	12
weighted	d avg	0.9	94 (	0.92	0.88	12

Sentence: i would like to fly from boston to philadelphia next thursday

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADJ NOUN Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADJ NOUN

F	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	су		1.00	11	
macro a	avg 1.0	00 1	.00 1.0	00	11
weighted	avg 1	.00	1.00 1.	00	11

Sentence: tell me about flights from atlanta to charlotte next monday

True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN ADJ NOUN

Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN PROPN NOUN

Classification Report:

	precis	ion	recall	†1-s	core	supp	ort
1	0.6	67	1.00	0.	80	2	
2	1.0	00	1.00	1.	00	3	
3	1.0	00	1.00	1.	00	2	
4	1.0	00	1.00	1.	00	1	
6	1.0	00	1.00	1.	00	1	
7	1.0	00	0.00	0.	00	1	
accur	acy			0.9	90	10	
macro	avg	0.9	4 (	0.83	8.0	0	10
weighted	d avg	0.9	93	0.90	0.	86	10

Sentence: what flights go from pittsburgh to baltimore after 8 <unk> next wednesday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV ADJ NOUN Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NUM PROPN ADJ NOUN

Classification Report:

0.0.00	precision			f1-sco	re sup	oort
	•				• •	
1	0.	67	1.00	0.80	2	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	2	
4	1.	00	1.00	1.00	1	
5	1.	00	0.00	0.00	1	
6	0.	00	1.00	0.00	0	
7	1.	00	1.00	1.00	1	
9	1.	00	1.00	1.00	1	
11	l 1.	00	0.00	0.00	) 1	
accur	асу			0.83	12	
macro	avg	0.8	5 0	.78	0.64	12
weighte	d avg	0.9	94 (	0.83	0.80	12

Sentence: give me the fares for round trip flights from cleveland to miami next wednesday

True tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN PROPN NOUN

р	recision	recall	f1-score	support	
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	

```
3
          1.00
                 1.00
                        1.00
                                 5
     4
          1.00
                 1.00
                         1.00
                                 1
     5
                                 1
          1.00
                 1.00
                         1.00
                        1.00
     6
          1.00
                 1.00
                                 1
     7
          1.00
                 0.00
                        0.00
                                 1
                        0.93
                             14
  accuracy
              0.95
                            0.83
                                     14
 macro avg
                     0.86
weighted avg
               0.95
                      0.93
                             0.90
                                     14
```

Sentence: i want to leave chicago next tuesday and arrive in detroit around 6 pm True tags: PRON VERB PART VERB PROPN ADJ NOUN CCONJ VERB ADP PROPN ADP NUM NOUN

Predicted tags: PRON VERB PART VERB VERB ADJ NOUN CCONJ VERB ADP

PROPN ADP NUM NOUN

Classification Report:

	preci	sion	recal	ll f1-s	core	supp	ort
1	1	.00	0.50	0.	67	2	
2	1	.00	1.00	1.	00	2	
3	1	.00	1.00	1.	00	2	
4	0	.75	1.00	0.	86	3	
6	1	.00	1.00	1.	00	1	
7	1	.00	1.00	1.	00	1	
9	1	.00	1.00	1.	00	1	
10	) .	1.00	1.00	) 1	.00	1	
12	2	1.00	1.00	) 1	.00	1	
accur	асу			0.9	93	14	
macro	avg	0.9	97	0.94	0.9	5	14
weighte	d avg	0.	.95	0.93	0.9	92	14

Sentence: i want a flight from montreal to washington dc

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN VERB DET NOUN ADP PROPN ADP PROPN PROPN

	precis	sion	recall	f1-sc	ore s	uppor	rt
	p. 00.0		. o can	00	0.0 0	арро.	•
1	1.	00	1.00	1.0	0	3	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	9	
macro	avg	1.0	0 1	.00	1.00	Ć	9
weighte	d avg	1.0	00	1.00	1.00	1	9

Sentence: show me the flights leaving from atlanta for washington dc on thursday

morning

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

Classification Report:

	precis	ion r	ecall	t1-sc	ore su	pport
1	1.0	00	1.00	1.0	0 ;	3
2	1.0	00	1.00	1.0	0 ;	3
3	1.0	00	1.00	1.0	0 ;	3
4	1.0	00	1.00	1.0	0 2	2
5	1.0	00	1.00	1.0	0	1
6	1.0	00	1.00	1.0	0	1
accur	acy			1.00	) 1:	3
macro	avg	1.00	) 1	.00	1.00	13
weighted	d avg	1.0	0	1.00	1.00	13

Sentence: show me flights from denver to dc on wednesday

True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precision		recall f1-score			pport
1		00	1.00	1.00		2
2		00	1.00	1.00		3
3		00	1.00	1.00		2
4		00	1.00	1.00		1
6	1.	00	1.00	1.00	)	1
accur	acy			1.00	) (	)
macro	avg	1.00	0 1	.00	1.00	9
weighte	d avg	1.0	00	1.00	1.00	9

Sentence: please give me the flights from san francisco to washington dc True tags: INTJ VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: INTJ VERB PRON DET NOUN ADP PROPN PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

13 1.00 1.00 1.00 1

accuracy 1.00 11

macro avg 1.00 1.00 1.00 11

weighted avg 1.00 1.00 1.00 11

Sentence: show me the prices of all flights from atlanta to washington dc

True tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN Classification Report:

	precision	on rec	all f1-s	core su	ıpport
1	1.0	0 1.0	00 1.	00	3
2	1.0	0 1.0	00 1.	00	3
3	1.0	0 1.0	00 1.	00	2
4	1.0	0 1.0	00 1.	00	1
5	1.0	0 1.0	00 1.	00	2
6	1.0	0 1.0	00 1.	00	1
accur	асу		1.0	00 1	2
macro	avg	1.00	1.00	1.00	12
weighte	d avg	1.00	1.00	1.00	12

Sentence: what is the latest flight on wednesday going from atlanta to washington dc True tags: PRON AUX DET ADJ NOUN ADP NOUN VERB ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP NOUN NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precision	on re	call	f1-scc	re su	oport
1	1.0	0 1.	00	1.00	) 3	3
2	1.0	0 1.	00	1.00	) 3	3
3	0.6	7 1.	00	0.80	) 2	<u> </u>
4	1.0	0 0.	00	0.00	) 1	
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	
7	1.0	0 1.	00	1.00	) 1	
8	1.0	0 1.	00	1.00	) 1	
accura	асу			0.92	13	3
macro weighted	_	0.96 0.95	_	88 ).92	0.85 0.89	13 13
-	_					

Sentence: list flights from toronto to washington dc saturday am

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN

	precis	on re	call	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	) ;	3
2	1.0	00 1	.00	1.00	) ;	2
3	1.0	00 1	.00	1.00	) ;	3
4	1.0	00 1	.00	1.00	)	1
accur	acy			1.00	ç	)
macro	avg	1.00	1	.00	1.00	9
weighte	d avg	1.00		1.00	1.00	9

Sentence: i <unk> like to see the flights from atlanta to washington dc

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

PROPN

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	2	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
12	2 1.0	00 1	.00	1.00	1	
accur	асу			1.00	12	
macro	avg	1.00	1.	.00 1	.00	12
weighted	d avg	1.00	1	1.00	1.00	12

Sentence: i <unk> sorry i want to book a flight from atlanta to denver colorado

True tags: PRON AUX ADJ PRON VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX AUX PRON VERB PART VERB DET NOUN ADP

PROPN ADP PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	0.67	0.80	3
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	2
7	1.00	0.00	0.00	1
8	0.50	1.00	0.67	1
12	0.00	1.00	0.00	0

accuracy		0.8	6 1	4
macro avg	0.83	0.85	0.72	14
weighted avg	0.96	0.86	0.86	14

Sentence: i would like a list of round trip flights between indianapolis and orlando florida for the twenty seventh and the twenty eighth of december

True tags: PRON AUX VERB DET NOUN ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET NUM ADJ CCONJ DET NUM ADJ ADP NOUN Predicted tags: PRON AUX VERB DET VERB ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET ADJ NOUN CCONJ DET ADJ ADJ ADP NOUN

Classification Report:

	precisi	on re	call f	1-scor	e supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	4	
3	0.8	0 0.	80	0.80	5	
4	0.5	0 1.	00	0.67	1	
5	1.0	0 1.	00	1.00	3	
6	1.0	0 1.	00	1.00	1	
7	0.3	3 0.	50	0.40	2	
8	1.0	0 1.	00	1.00	1	
9	1.0	0 0.	00	0.00	2	
10	) 1.0	00 1	.00	1.00	2	
accur	асу			0.83	24	
macro	avg	0.86	0.8	3 0	).79	24
weighted	d avg	0.88	0.8	83	0.81	24

Sentence: may i have a listing of flights on monday from minneapolis to long beach california please

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP NOUN ADP PROPN ADP PROPN PROPN INTJ

Predicted tags: VERB PRON VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN PROPN INTJ

	pre	cisio	n r	ecal	l f1-:	scor	e sı	uppo	ort
1		1.00	,	1.00	1	.00		4	
2	)	1.00		1.00	1	.00		4	
3	}	1.00	•	1.00	1	.00		3	
4		0.50	)	1.00	0	.67		1	
5	•	1.00	)	1.00	1	.00		1	
6	;	1.00	)	1.00	1	.00		1	
8	}	1.00	) (	0.00	0	.00		1	
13	3	1.00	0	1.00	)	1.00		1	
accur	acy				0	.94	1	6	
macro weighte	avg		0.94		0.88 0.94	_	).83 0.92		16 16
3		•							

Sentence: please give all flights from dallas to oakland california monday True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN Predicted tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN Classification Report:

	precis	sion	reca	all i	t1-sco	ore	supp	ort
4			4.0	_	4.0	_	_	
1	1.	.00	1.00	J	1.00	U	3	
2	1.	.00	1.00	0	1.00	0	2	
3	1.	.00	1.00	0	1.00	0	2	
4	1.	.00	1.00	0	1.00	0	1	
5	1.	.00	1.00	С	1.00	0	1	
13	3 1	.00	1.0	0	1.0	0	1	
accur	acy				1.00	)	10	
macro	avg	1.0	00	1.0	00	1.00	)	10
weighted	d avg	1.	.00	1	.00	1.0	0	10

Sentence: on tuesday the twenty third flights from philadelphia to san francisco on american airlines

True tags: ADP NOUN DET NUM ADJ NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

Predicted tags: ADP NOUN DET ADJ ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN

Classification Report:

			••			
	precisi	on	recall	f1-sc	ore su	pport
1	1.0	10	1.00	1.0	n /	5
•						-
2		-	1.00	1.0		4
3	1.0	00	1.00	1.0	0 :	2
5	1.0	0	1.00	1.0	0	1
7	0.5	0	1.00	0.6	7	1
9	1.0	0	0.00	0.0	0	1
accur	acy			0.93	3 1	4
macro	avg	0.9	2 0	.83	0.78	14
weighted	d avg	0.9	96 (	0.93	0.90	14

Sentence: what is the cheapest first class fare from cleveland to miami on us air on february twenty fourth

True tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM PROPN

p	recision	recall	f1-score	support
1	0.80	1.00	0.89	4
2	1.00	1.00	1.00	4
3	1 00	1 00	1 00	3

5	1.0	0 1	.00	1.	00	1	
6	1.0	0 1	.00	1.	00	1	
7	1.0	0 0	.67	0.	80	3	
8	1.0	0 1	.00	1.	00	1	
9	1.0	0 1	.00	1.	00	1	
accuracy	/			0.9	94	18	
macro av	g	0.97	0	.96	0.	96	18
weighted a	vg	0.96	6	0.94	0	.94	18

Sentence: cheapest round trip fare from or indianapolis to orlando on december twenty fifth

True tags: ADJ NOUN NOUN NOUN ADP CCONJ PROPN ADP NOUN NUM ADJ

Predicted tags: ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM PROPN

Classification Report:

	precis	sion	recall	f1-scc	ore sup	port
1	0.	50	1.00	0.67	7 2	
2	1.	00	1.00	1.00	) 3	
3	1.	00	1.00	1.00	) 4	
7	1.	00	0.50	0.67	7 2	
9	1.	00	1.00	1.00	) 1	
10	) 1	.00	0.00	0.0	0 1	
accur	acy			0.85	13	
macro	avg	0.92	2 0	.75	0.72	13
weighted	d avg	0.9	92 (	0.85	0.82	13

Sentence: i would like to fly from dallas to denver on the morning of august twenty seventh leaving at <unk>

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN NUM ADJ VERB ADP NUM

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN ADP NOUN NUM NOUN VERB ADP PROPN

	recision		f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	5
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
9	1.00	0.50	0.67	2
12	1.00	1.00	1.00	1

accuracy		0.8	9 1	9
macro avg	0.93	0.85	0.83	19
weighted avg	0.93	0.89	0.87	19

Sentence: give me the flights from indianapolis to orlando on december twenty seventh and twenty eighth

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ CCONJ NUM ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NUM NOUN CCONJ CCONJ ADJ

Classification Report:

1	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	0.67	1.00	0.80	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.50	0.67	2	
9	1.00	0.50	0.67	2	
10	0.50	1.00	0.67	1	
accura	су		0.87	15	
macro a	avg 0.	91 0	.89 0.8	37	15
weighted	avg 0	.92 (	0.87	86	15

Sentence: i would like to book a flight going from tampa to seattle on may twenty sixth i would like to stop in milwaukee on the way

True tags: PRON AUX VERB PART VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN NUM ADJ PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB PART VERB DET NOUN NOUN ADP PROPN ADP PROPN NUM PROPN PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN

pre	ecision	recall	f1-score	support
1	0.60	1.00	0.75	3
2	1.00	1.00	1.00	5
3	0.67	0.67	0.67	3
4	1.00	0.80	0.89	5
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	2
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	2
9	1.00	1.00	1.00	1
12	1.00	1.00	1.00	2
accuracy	,		0.88	26

macro avg	0.93	0.85	0.83	26
weighted avg	0.92	0.88	0.87	26

Sentence: what is the cheapest one way fare from san francisco to boston on wednesday august twenty first

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM ADJ

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADD NOUN NOUN NUM ADJ

Classification Report:

		- P				
	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	4	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	0.6	7 1.	.00	0.80	2	
8	1.0	0 1.	.00	1.00	1	
9	1.0	0 0.	.50	0.67	2	
accura	асу			0.94	17	
macro	•	0.96	_	-	0.93	17
weighted	d avg	0.96	0	.94	0.94	17

Sentence: which flights are available from tacoma to san jose in the morning on april twenty second

True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP NOUN NUM ADJ

Predicted tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP NOUN NUM ADJ

Classification Report:

	precision	on red	call f1-	score	supp	ort
1	1.0	0 1.0	00 -	1.00	3	
2	1.0	0 1.0	00 ′	1.00	4	
3	1.0	0 1.0	00 1	1.00	3	
5	1.0	0 1.0	00 1	1.00	2	
7	1.0	0 1.0	00 1	1.00	2	
8	1.0	0 1.0	00 ′	1.00	1	
9	1.0	0 1.0	00 1	1.00	1	
accur	acy		1	.00	16	
macro	avg	1.00	1.00	1.0	0	16
weighte	d avg	1.00	1.00	0 1.	00	16

Sentence: list all round trip flights between indianapolis and orlando on the twenty seventh of december

True tags: VERB DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN ADP DET NUM ADJ ADP NOUN

Predicted tags: VERB DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN ADP

DET ADJ NOUN ADP NOUN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	0.80	1.00	0.89	4	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	2	
7	0.00	0.00	0.00	1	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
accurac	у		0.87	15	
macro a	•	35 0	.75 0.7	<b>7</b> 4	15
weighted a	avg 0	.88	0.87 0.	84	15

Sentence: what is hp

True tags: PRON AUX PROPN Predicted tags: PRON AUX PROPN

Classification Report:

pı	recision	recall	f1-score	supp	ort
1 6	1.00 1.00	1.00 1.00	1.00 1.00	1 1	
8	1.00	1.00	1.00	1	
accurac macro a	vg 1.0			3 00 .00	3
weighted a	avg i	.00	1.00 1	.00	3

Sentence: define airline us

True tags: VERB NOUN PROPN Predicted tags: VERB NOUN PROPN

Classification Report:

	pred	ision	red	call	f1-s	core	supp	ort
1		1.00	1.0	00	1.0	00	1	
3		1.00	1.0	00	1.0	00	1	
4		1.00	1.0	00	1.0	00	1	
accur	асу				1.0	00	3	
macro weighted	_		1.00 1.00		.00 1.00	1.0 1.0		3 3

Sentence: code ff

True tags: NOUN PROPN Predicted tags: NOUN PROPN

	preci	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	.00	1	
3	1	.00	1.00	1.	.00	1	
accur	acy			1.	00	2	
macro	avg	1.0	00	1.00	1.0	0	2
weighte	d avg	1	.00	1.00	1.0	00	2

Sentence: from las vegas to new york a nonstop twa and fare

True tags: ADP PROPN PROPN ADP PROPN PROPN DET NOUN PROPN CCONJ

NOUN

Predicted tags: ADP PROPN PROPN ADP PROPN PROPN DET NOUN NOUN

**CCONJ NOUN** 

Classification Report:

	pre	cisic	'n	reca	ll f	1-sco	ore	supp	ort
1	)	1.00		0.80		0.89		5 2	
3	}	0.67	7	1.00	)	0.80	C	2	
5	;	1.00	)	1.00	)	1.00	0	1	
10	0	1.0	0	1.0	0	1.0	0	1	
accur macro weighte	avç		0.93		0.9		0.9 <sup>4</sup> 0.9		11 11

Sentence: airline that stands for dl

True tags: NOUN ADP VERB ADP PROPN Predicted tags: NOUN ADP VERB ADP PROPN

Classification Report:

	precision		recall	t1-sc	ore	supp	ort
1 2	1.	00	1.00	1.0	0	1 2	
3 4		00 00	1.00 1.00	1.0 1.0		1 1	
accur macro	•	1.0	00 1	1.00 1.00	0 1.00	5 0	5
weighte	_	1.	00	1.00	1.0	00	5

Sentence: list round trip flights between boston and oakland using twa

True tags: VERB NOUN NOUN NOUN ADP PROPN CCONJ PROPN VERB

**PROPN** 

Predicted tags: VERB NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

**PROPN** 

Classification Report:

precision recall f1-score support

1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	3
4	1.00	0.50	0.67	2
10	1.00	1.00	1.00	1

accuracy		0.9	0 10	1
macro avg	0.95	0.90	0.90	10
weighted avg	0.93	0.90	0.89	10

Sentence: i <unk> like a twa flight from las vegas to new york nonstop

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN

Predicted tags: PRON AUX VERB DET NOUN NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN Classification Report:

	precisi	on re	call	f1-score	supp	ort
1	1.0	0 0	80	0.89	5	
2			00	1.00	2	
3	0.6	7 1.	00	0.80	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	acy			0.92	13	
macro	avg	0.95	0.9	97 0.	96	13
weighted	d avg	0.95	0	.92 0	).93	13

Sentence: what airline is <unk>
True tags: DET NOUN AUX PROPN
Predicted tags: PRON NOUN AUX AUX

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	0 0.	00	0.00	)	1
3	1.0	0 1.	00	1.00	)	1
5	1.0	0 0.	00	0.00	)	1
6	0.0	0 1.	00	0.00	)	0
8	0.5	0 1.	00	0.67	•	1
accur	acy			0.50	4	1
macro	avg	0.70	0.0	60	0.33	4
weighted	d avg	0.88	0	.50	0.42	4

Sentence: what airline is dl

True tags: DET NOUN AUX PROPN

Predicted tags: PRON NOUN AUX PROPN

	precisio	n rec	all f1-s	core	supp	ort
1	1.00	1.0	0 1	.00	1	
3	1.00	1.0	0 1	.00	1	
5	1.00	0.0	0 0	.00	1	
6	0.00	1.0	0 0	.00	0	
8	1.00	1.0	0 1	.00	1	
accura	асу		0.	75	4	
macro	avg	0.80	0.80	0.6	0	4
weighted	lavg	1.00	0.75	0.	75	4

Sentence: find a flight between denver and oakland the flight should leave in the afternoon and arrive near 5 pm the flight should also be nonstop

True tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN AUX VERB ADP DET NOUN CCONJ VERB ADP NUM NOUN DET NOUN AUX ADV AUX NOUN

Predicted tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN NOUN PROPN ADP DET NOUN CCONJ VERB PROPN NUM NOUN DET NOUN NOUN NOUN NOUN

Classification Report:

	pred	cision	red	call	f1-sc	ore	supp	ort
1		0.50	1.0	00	0.6	57	2	
2	1	1.00	0.	67	8.0	0	3	
3		0.60	1.	00	0.7	<b>'</b> 5	6	
4		1.00	0.	67	0.8	0	3	
5	•	1.00	1.	00	1.0	0	4	
8		1.00	0.	00	0.0	0	3	
9	)	1.00	1.	00	1.0	0	1	
10	)	1.00	1	.00	1.0	00	2	
11	1	1.00	0.	.00	0.0	00	1	
accur	acv				0.7	6	25	
macro weighte	avg		0.90 0.86		.70 0.76	0.6		25 25
v Signito	a ave	1	5.00	`	<i></i> 0	٥.		20

Sentence: i need a flight on american airlines from miami to chicago that arrives around 5 pm

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN ADP VERB ADP NOUN NOUN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	5
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	2

	5	1.0	00	1.0	00	1.0	00	1	
	6	1.0	00	1.0	0	1.0	0	1	
	9	1.0	00	0.0	0	0.0	0	1	
							_		
ac	curac	У				0.9	4	16	
ma	cro av	vg	0.9	95	0.8	36	0.8	3	16
weigl	hted a	avg	0	.96	0	.94	0.9	91	16

Sentence: flights from kansas city to cleveland on wednesday arriving before 5 pm True tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Predicted tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.	00	1.00	1.00	) 3	
2	1.	00	1.00	1.00	) 4	
3	1.	00	1.00	1.00	3	
4	1.	00	1.00	1.00	) 1	
9	1.	00	1.00	1.00	) 1	
accur	acy			1.00	12	
macro	avg	1.0	0 1	.00	1.00	12
weighted	d avg	1.0	00	1.00	1.00	12

Sentence: what flights depart baltimore on friday and arrive in san francisco by 8 pm True tags: DET NOUN VERB PROPN ADP NOUN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB PROPN ADP NOUN CCONJ VERB ADP PROPN PROPN ADP PROPN NOUN

Classification Report:

	precision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	2
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
9	1.00	0.00	0.00	1
10	1.00	1.00	1.00	1
accura	асу		0.86	14
macro weighted	9	_	.75 0.6 0.86 0.	81 14 83 14

Sentence: i <unk> like a nonstop flight from atlanta to baltimore that <unk> in around 7 pm

True tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP VERB ADP ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP PROPN NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	0.9	50	1.00	0.6	7	2	
2	1.0	00	1.00	1.0	0	5	
3	1.0	00	1.00	1.0	0	3	
4	1.0	00	0.50	0.6	7	2	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
9	1.0	00	0.00	0.0	0	1	
accur	acy			0.88	3	16	
macro	avg	0.9	4 0	.81	0.79		16
weighted	d avg	0.9	94	88.0	0.85	;	16

Sentence: what nonstop flights between boston and washington arrive after 5 < unk> pm

True tags: DET NOUN NOUN ADP PROPN CCONJ PROPN VERB ADP NUM ADV NOUN

Predicted tags: PRON NOUN NOUN ADP PROPN CCONJ PROPN VERB ADP NUM AUX NOUN

Classification Report:

	μ.σ.		• •						• • •
1		1.00	)	1.00	)	1.0	0	2	
2	)	1.00	)	1.00	)	1.0	0	2	
3	}	1.00	)	1.00	)	1.0	0	3	
4		1.00	)	1.00	)	1.0	0	1	
5	· •	1.00	)	0.00	)	0.0	0	1	
6	;	0.00	)	1.00	)	0.0	0	0	
8	}	0.00	)	1.00	)	0.0	0	0	
9	)	1.00	)	1.00	)	1.0	0	1	
10	0	1.0	0	1.0	0	1.0	00	1	
11	1	1.0	C	0.00	)	0.0	0	1	
accur	acy					0.83	3	12	
macro	avg		0.80		0.80	)	0.6	0	12
weighte	d av	g	1.0	00	3.0	33	3.0	33	12

precision recall f1-score support

Sentence: all flights pittsburgh to baltimore on thursday arrival by 10 am

True tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP NUM NOUN Predicted tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP PROPN

NOUN

Classification Report:

precision recall f1-score support

Sentence: show me all flights direct and connecting from boston to pittsburgh that arrive in pittsburgh before 10 am

True tags: VERB PRON DET NOUN ADJ CCONJ VERB ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN NOUN CCONJ PROPN ADP PROPN ADP PROPN ADP PROPN NOUN

Classification Report:

0.0.00	precision	recall	f1-score	suppo	rt
1	0.60	1.00	0.75	3	
2	1.00	1.00	1.00	5	
3	0.67	1.00	0.80	2	
4	1.00	0.67	0.80	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
accura	ісу		0.83	18	
macro	avg 0.	92 0	.74 0.7	'1 1	8
weighted	avg C	).90	0.83 0.	79	18

Sentence: cleveland to miami on wednesday arriving before 4 pm True tags: PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN Predicted tags: NOUN ADP PROPN ADP NOUN VERB ADP VERB NOUN Classification Report:

	precision		rec	all	†1-s	core	supp	ort
				_		_	_	
1	1	.00	0.5	0	0.6	ò7	2	
2	1	.00	1.0	0	1.0	00	3	
3	0	.67	1.0	0	3.0	30	2	
4	0	.50	1.0	0	0.6	37	1	
9	1	.00	0.0	0	0.0	00	1	
accur	acy				0.7	'8	9	
macro	avg	0.8	83	0	.70	0.6	33	9
weighte	d avg	0	.87	(	0.78	0.	.73	9

Sentence: show me airlines between boston and san francisco

True tags: VERB PRON NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB PRON NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accurac	СУ		1.00	8
macro a weighted	0		.00 1.0 1.00 1.	00 8 00 8
5.5.116 4				• •

Sentence: show me the airlines that fly from san francisco to boston

True tags: VERB PRON DET NOUN ADP VERB ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP VERB ADP PROPN PROPN ADP

**PROPN** 

Classification Report:

0.0000		vopo.	••			
	precis	ion	recall	f1-scc	re su	pport
1	1.0	00	1.00	1.00	) 3	3
2	1.0	00	1.00	1.00	) 3	3
3	1.0	00	1.00	1.00	) 1	
4	1.0	00	1.00	1.00	) 2	2
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
accur	acy			1.00	11	
macro	avg	1.0	0 1	.00	1.00	11
weighted	•	1.0	00	1.00	1.00	11

Sentence: what airlines fly from boston to denver

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

р	recision	recall	f1-score	suppo	rt
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
accurac	у		0.86	7	
macro a	vg 0.8	3 0	.83 0.6	57	7

weighted avg 1.00 0.86 0.86 7

Sentence: what airlines have flights from baltimore to seattle True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re su	ipport
1	1.0	00 1.	.00	1.00	)	2
2	1.0	00 1.	.00	1.00	)	2
3	1.0	00 1.	.00	1.00	)	2
4	1.0	00 1.	.00	1.00	)	1
5	1.0	0 0	.00	0.00	)	1
6	0.0	00 1.	.00	0.00	)	0
accur	acy			0.88	3	3
macro	avg	0.83	0	.83	0.67	8
weighted	d avg	1.00	(	38.0	0.88	8

Sentence: what airlines have flights from boston to philadelphia that leave before 630 am

True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP ADP NOUN

Classification Report:

	precisi	on re	call f	f1-scoı	e suppo	ort
1	1.0	0 1.	.00	1.00	2	
2	0.8	0 1.	.00	0.89	4	
3	1.0	0 1.	.00	1.00	3	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 0.	.00	0.00	1	
6	0.0	0 1.	.00	0.00	0	
9	1.0	0 0.	.00	0.00	1	
accur	acy			0.85	13	
macro weighted	•	0.83 0.94	0.7 0.	71 ( .85	0.56 0.81	13 13

Sentence: are there any airlines that have flights from boston to philadelphia that leave before 630 am

True tags: VERB PRON DET NOUN ADP VERB NOUN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: AUX PRON DET PROPN ADP VERB NOUN ADP PROPN ADP

PROPN ADP VERB ADP ADP NOUN

Classification Report:

precision recall f1-score support

1 0.67 1.00 0.80 2

2	0.83	1.0	00	0.9	1	5	
3	1.00	0.6	67	0.8	0	3	
4	1.00	0.6	57	0.8	0	3	
5	1.00	1.0	0	1.0	0	1	
6	1.00	1.0	0	1.0	0	1	
8	0.00	1.0	00	0.0	0	0	
9	1.00	0.0	00	0.0	0	1	
accuracy	/			0.81	1 1	16	
macro av	g C	).81	0.7	79	0.66		16
weighted a	vg	0.91	0	.81	0.81		16

Sentence: show me airlines that have flights between toronto and detroit between detroit and <unk> louis and between <unk> louis and toronto

True tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ PROPN CCONJ ADP PROPN PROPN CCONJ PROPN

Predicted tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ PROPN PROPN CCONJ ADP PROPN PROPN CCONJ PROPN

Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
						_	
1	1	.00	1.00	1.	.00	8	
2	1	.00	1.00	1.	.00	4	
3	1	.00	1.00	1.	.00	2	
4	1	.00	1.00	1.	.00	2	
6	1	.00	1.00	1.	.00	1	
10	) 1	1.00	1.0	0 1	.00	4	
accur	acy			1.	00	21	
macro	avg	1.0	00	1.00	1.0	0	21
weighte	d avg	1	.00	1.00	1.	00	21

Sentence: which airlines fly between boston and baltimore True tags: DET NOUN VERB ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB ADP PROPN CCONJ PROPN

	precision		ecall	f1-scc	re su	ıpport
1	1.	.00	1.00	1.00	)	2
2	1.	.00	1.00	1.00	)	1
3	3 1.	.00	1.00	1.00	)	1
4	. 1.	.00	1.00	1.00	)	1
5	5 1.	.00	1.00	1.00	)	1
10	0 1	.00	1.00	1.0	0	1
accur	acy			1.00	-	7
macro	avg	1.00	1	.00	1.00	7
weighte	d avg	1.0	0 ′	1.00	1.00	7

Sentence: does any airline have an early afternoon flight from boston to pittsburgh True tags: AUX DET NOUN VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: AUX DET NOUN VERB ADP ADJ NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-scc	re sup	port
1	1.00	) 1.	00	1.00	) 2	
2	0.67	<sup>7</sup> 1.	00	0.80	) 2	
3	1.00	) 1.	00	1.00	) 3	
4	1.00	) 1.	00	1.00	) 1	
5	1.00	0.	50	0.67	7 2	
7	1.00	) 1.	00	1.00	) 1	
8	1.00	) 1.	00	1.00	) 1	
accura	асу			0.92	12	
macro	avg	0.95	0	.93	0.92	12
weighted	l avg	0.94	(	0.92	0.91	12

Sentence: please show me airlines with flights from philadelphia to dallas True tags: INTJ VERB PRON NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: INTJ VERB PRON NOUN ADP NOUN ADP PROPN Classification Report:

Olassincation (Cport.								
	preci	sion	recall	f1-score	e suppo	ort		
1	1	.00	1.00	1.00	2			
2	1	.00	1.00	1.00	3			
3	1	.00	1.00	1.00	2			
4	1	.00	1.00	1.00	1			
6	1	.00	1.00	1.00	1			
13	3	1.00	1.00	1.00	1			
accur	acy			1.00	10			
macro	avg	1.0	00 1	1.00 1	.00	10		
weighted avg		1	.00	1.00	1.00	10		

Sentence: which airlines fly from boston to san francisco

True tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN Predicted tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

accuracy		1.0	8 0	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: which airlines have flights between charlotte and newark True tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN

Classification Report:

precis	sion	recall	f1-sco	re sup	oort
1	.00	1.00	1.00	2	
		1.00			
1	.00	1.00	1.00	2	
1	.00	1.00	1.00	1	
1	.00	1.00	1.00	1	
) 1	.00	1.00	1.00	1	
acy			1.00	8	
avg	1.0	00 1	.00	1.00	8
d avg	1	.00	1.00	1.00	8
	1 1 1 1 1 ) 1 acy avg	1.00 1.00 1.00 1.00 1.00 1.00 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.00 1.00 acy 1.00 avg 1.00 1.00	1.00 1.00 1.00 1 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 0 1.00 1.0

Sentence: show me all flights from san francisco to new york nonstop

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

PROPN NOUN

Classification Report:

	precis	ion re	call	f1-sco	re supp	ort
1	1.0	00 1	.00	1.00	4	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	2	
4	. 1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	1	
6	1.0	00 1	.00	1.00	1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00	1.00	11
weighte	d avg	1.00		1.00	1.00	11

Sentence: show me nonstop flights from toronto to <unk> petersburg
True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN
Classification Report:

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

	6	1.00	1.00	1.0	0	1	
accı	ıracy			1.0	0	9	
macr	o avg	1.	.00	1.00	1.00	ç	)
weight	ed av	g ´	1.00	1.00	1.00	)	9

Sentence: show me all round trip flights from miami to new york nonstop

True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Classification Report:

	precis	ion	recall	f1-sco	re supp	ort
1	1.	00	1.00	1.00	3	
2	1.	00	1.00	1.00	2	
3	1.	00	1.00	1.00	4	
4	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.0	0 1	.00	1.00	12
weighted	d avg	1.	00	1.00	1.00	12

Sentence: nonstop flights seattle to kansas city

True tags: NOUN NOUN PROPN ADP PROPN PROPN Predicted tags: NOUN NOUN NOUN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore s	supp	ort
1	1.0	0 0	.67	0.8	0	3	
2	1.0	00 1	.00	1.0	0	1	
3	0.6	§7 1	.00	0.8	0	2	
accur	асу			0.83	3	6	
macro weighte	_	0.89 0.89	_	.89 0.83	0.87		6 6

Sentence: i want to fly from atlanta to philadelphia nonstop

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN

precision	recall	f1-score	support
1.00	1.00	1.00	2
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	2
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

12 1.00 1.00 1.00 1

accuracy 1.00 9

macro avg 1.00 1.00 1.00 9

weighted avg 1.00 1.00 1.00 9

Sentence: what is the earliest nonstop flight from washington to san francisco True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore	supp	ort
1	1.	.00	1.00	1.0	0	3	
2	1.	.00	1.00	1.0	00	2	
3	1.	.00	1.00	1.0	00	2	
5	1.	.00	1.00	1.0	0	1	
6	1.	.00	1.00	1.0	0	1	
7	1.	.00	1.00	1.0	0	1	
8	1.	.00	1.00	1.0	00	1	
accur	acy			1.0	0	11	
macro weighted	•	1.0 1.	00 ´ .00	1.00 1.00	1.00 1.0		11 11

Sentence: please list nonstop flights from las vegas to new york on america west True tags: INTJ VERB NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP PROPN

Predicted tags: INTJ VERB NOUN NOUN ADP PROPN PROPN ADP PROPN NOUN

Classification Report:

	prec	ision	reca	II †1-:	score	supp	ort
1	1	.00	0.83	3 C	).91	6	
2		.00	1.00		.00	3	
3	(	).67	1.00	) C	08.0	2	
4	1	.00	1.00	) 1	.00	1	
13	3	1.00	1.0	0	1.00	1	
				_			
accur	acy			0	.92	13	
macro	_	0.9		0.97	_	94	13
weighted	d avg	0.	95	0.92	2 0	.93	13

Sentence: show me first class round trip flights from new york to miami i want the cheapest first class fare please

True tags: VERB PRON ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN INTJ

Predicted tags: VERB PRON ADJ NOUN NOUN NOUN ADP PROPN

PROPN ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN INTJ

рі	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	6	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	2	
7	1.00	1.00	1.00	3	
13	1.00	1.00	1.00	1	
accurac	У		1.00	20	
macro av	vg 1.0	00 1	.00 1.0	00	20
weighted a	avg 1	.00	1.00 1.	00	20

Sentence: show me which flights from san francisco to pittsburgh on a monday are first class

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN AUX ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

DET NOUN NOUN ADJ NOUN

Classification Report:

	precis	sion	recal	l f1-sc	ore s	support	
1	1.	00	1.00	1.0	00	3	
2	. 1.	00	1.00	1.0	00	3	
3	0.	75	1.00	0.8	36	3	
4	. 1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	2	
6	1.	00	1.00	1.0	00	1	
7	' 1.	00	1.00	1.0	00	1	
8	1.	00	0.00	0.0	00	1	
accur	acy			0.9	3	15	
macro	avg	0.9	97 (	88.0	0.86	15	
weighte	d avg	0.	.95	0.93	0.90	) 1	5

Sentence: give me flights from baltimore to denver on united that offer first class True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN ADJ NOUN

Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN ADJ NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2		1.00	1.00	4
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

7 1	.00	1.00	1.00	) 1	
accuracy			1.00	13	
macro avg	1.00	) 1	.00	1.00	13
weighted avg	1.0	00	1.00	1.00	13

Sentence: first class flights pittsburgh to newark monday morning True tags: ADJ NOUN NOUN PROPN ADP PROPN NOUN NOUN Predicted tags: ADJ NOUN NOUN PROPN ADP PROPN NOUN NOUN

Classification Report:

precision			recall f1-score			supp	ort
1	1.	.00	1.00	1.0	0	2	
2	1.	.00	1.00	1.0	0	1	
3	1.	.00	1.00	1.0	0	4	
7	1.	.00	1.00	1.0	0	1	
accur	асу			1.0	0	8	
macro	avg	1.0	00 ′	1.00	1.0	0	8
weighted	d avg	1.	.00	1.00	1.0	00	8

Sentence: first class fares from dallas to baltimore please True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN INTJ Predicted tags: ADJ NOUN NOUN ADP PROPN ADP PROPN INTJ

Classification Report:

pr	ecision	recall	f1-score	support
1 2 3 7 13	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	2 2 2 1
accuracy macro av weighted a	/ /g 1.0	00 1	1.00 .00 1.0	8 00 8 .00 8

Sentence: show me all united airlines first class flights

True tags: VERB PRON DET PROPN PROPN ADJ NOUN NOUN

Predicted tags: VERB PRON DET PROPN PROPN NOUN NOUN

Classification Report:

precision recall f1-score support 1 0.67 1.00 0.80 2 3 2 1.00 1.00 1.00 1.00 4 1.00 1.00 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 1.00 0.00 0.00 1

accuracy		0.8	8 8	}
macro avg	0.94	0.83	0.80	8
weighted avg	0.92	0.88	0.82	8

Sentence: first class price san francisco pittsburgh round trip

True tags: ADJ NOUN NOUN PROPN PROPN NOUN NOUN Predicted tags: ADJ NOUN NOUN PROPN PROPN PROPN NOUN NOUN

Classification Report:

precision			recall	f1-sc	ore	supp	ort
1	1	.00	1.00	1.0	0	3	
3	1	.00	1.00	1.0	0	4	
7	1	.00	1.00	1.0	0	1	
accur	асу			1.00	)	8	
macro	avg	1.0	00 1	.00	1.00	)	8
weighte	d avg	1.	.00	1.00	1.0	0	8

Sentence: how much is a first class ticket from baltimore to san francisco True tags: ADV ADV AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: ADV VERB AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

precision		recall f1-score		ort
1.00	1.00	1.00	3	
1.00	1.00	1.00	2	
1.00	1.00	1.00	2	
0.00	1.00	0.00	0	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	0.50	0.67	2	
у		0.92	12	
0			_	12 12
	1.00 1.00 1.00 0.00 1.00 1.00 1.00 y	1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.50	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 0.00 0 1.00 1.00 1.00 1 1.00 1.00

Sentence: first class american flight from philadelphia to dallas on wednesday True tags: ADJ NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: ADJ NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

precision	recall	f1-score	support
1.00	1.00	1.00	3
1.00	1.00	1.00	3
1.00	1.00	1.00	3
1.00	1.00	1.00	1
	1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00

accuracy		1.0	0 10	
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: show flights first class on american airlines between dallas and philadelphia

True tags: VERB NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN CCONJ

**PROPN** 

Predicted tags: VERB NOUN VERB NOUN ADP PROPN PROPN ADP PROPN

CCONJ PROPN

Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	1	
7	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
accuracy	,		0.91	11	
macro av weighted av	•		.83 0.7 0.91 0	78 .88	11 11
o.g. noa a	•9		J.J. 0	.00	

Sentence: what are the first class fares from dallas to baltimore

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Classification Report:

	precision	on re	call	f1-sco	re supp	oort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	2	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accura	-	4.00	4	1.00	10	40
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	10 10

Sentence: show me one way flights from tampa to <unk> louis departing before 10 am first class

True tags: VERB PRON NUM NOUN NOUN ADP PROPN ADP PROPN PROPN VERB ADP NUM NOUN ADJ NOUN

Predicted tags: VERB PRON NUM NOUN NOUN ADP PROPN ADP PROPN

PROPN PROPN ADP NUM NOUN ADJ NOUN

Classification Report:

precision recall f1-score support

1	0.75	5 1.	00	0.8	6	3	
2	1.00	) 1.	00	1.0	0	3	
3	1.00	) 1.	00	1.0	0	4	
4	1.00	0.	50	0.6	7	2	
6	1.00	) 1.	00	1.0	0	1	
7	1.00	) 1.	00	1.0	0	1	
9	1.00	) 1.	00	1.0	0	2	
accuracy	′			0.94	1 1	16	
macro av	g	0.96	0.	93	0.93		16
weighted av	vg	0.95	0	.94	0.93		16

Sentence: what flights leave san francisco on monday night and arrive at atlanta later in the evening

True tags: DET NOUN VERB PROPN PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN ADJ ADP DET NOUN

Predicted tags: PRON NOUN VERB PROPN PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN PROPN ADP DET NOUN

Classification Report:

	pred	cision	n red	call	f1-sc	ore	supp	ort
1		0.75	1.	00	8.0	86	3	
2		1.00	1.	00	1.0	0	3	
3	,	1.00	1.	00	1.0	0	4	
4	•	1.00	1.	00	1.0	0	2	
5	)	1.00	0.	50	0.6	57	2	
6		0.00	1.	00	0.0	0	0	
7	•	1.00	0.	00	0.0	0	1	
10	)	1.00	1	.00	1.0	00	1	
accur	асу				0.8	8	16	
macro weighte	_		0.84 0.95	_	.81 ).88	0.6 0.	9 87	16 16
•	•	-						

Sentence: please list all flights into denver before noon on united airlines and northwest airlines

True tags: INTJ VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN CCONJ PROPN PROPN

Predicted tags: INTJ VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

precision recall f1-score support 1.00 1 1.00 1.00 5 2 1.00 1.00 1.00 3 3 1.00 1.00 1.00 2 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 10 1.00 1.00 1.00

13 1.00 1.00 1.00 1

accuracy 1.00 14 macro avg 1.00 1.00 1.00 14 weighted avg 1.00 1.00 1.00 14

Sentence: what are the coach fares for flights from pittsburgh to denver

True tags: PRON AUX DET PROPN NOUN ADP NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN NOUN ADP NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	pre	cisio	n re	call	f1-sc	ore	supp	ort
	1	1.00	0	.67	0.8	0	3	
2	2	1.00	1	.00	1.0	0	3	
;	3	0.67	1	.00	0.8	0	2	
!	5	1.00	1	.00	1.0	0	1	
(	6	1.00	1	.00	1.0	0	1	
;	8	1.00	1	.00	1.0	0	1	
accu	racy				0.9	1	11	
macro	o avg		0.94	0	.94	0.93	}	11
weighte	ed av	g	0.94	(	0.91	0.9	1	11

Sentence: what are the flights on tuesday october first from atlanta to baltimore True tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP PROPN

Classification Report:

	precisi	on red	call f1	-score	supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	•			1.00	12	
macro weighted	•	1.00 1.00	1.00 1.0		00 .00	12 12

Sentence: what are the coach fares from la to charlotte monday morning True tags: PRON AUX DET PROPN NOUN ADP PROPN ADP PROPN NOUN NOUN

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN NOUN

NOUN

	precis	ion	recall	f1-sc	ore su	upport
1	1.0	00	0.67	0.8	0	3
2	1.0	00	1.00	1.0	0	2
3	0.7	75	1.00	0.8	6	3
5	1.0	00	1.00	1.0	0	1
6	1.0	00	1.00	1.0	0	1
8	1.0	00	1.00	1.0	0	1
accur	acy			0.9	1 1	1
macro	avg	0.9	6 0	.94	0.94	11
weighte	d avg	0.9	93	0.91	0.91	11

Sentence: show me dallas ground transport True tags: VERB PRON PROPN NOUN NOUN Predicted tags: VERB PRON PROPN NOUN NOUN

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	) .	1
3			.00	1.00		2
4	1.0	00 1	.00	1.00	) '	1
6	1.0	00 1	.00	1.00	) '	1
accur	201			1.00	5	;
	•	1.00	4	.00	1.00	, 5
macro	avy	1.00	ı	.00	1.00	5
weighted	d avg	1.00	•	1.00	1.00	5

Sentence: show me ground transportation in denver True tags: VERB PRON NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN

Classification Report:

ŗ	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
			4.00	0	
accura	•	00 4	1.00	6	_
macro a weighted	0		.00 1.0 1.00 1	.00	6 6
weignteu	avy	1.00	1.00 1	.00	U

Sentence: what ground transport is available in minneapolis

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

precision recall f1-score support

	1	1.0	0	1.0	00	1.0	00	1	
	2	1.0	0	1.0	00	1.0	00	1	
	3	1.0	0	1.0	0	1.0	00	2	
	5	1.0	0	0.0	0	0.0	00	1	
	6	0.0	0	1.0	0	0.0	00	0	
	7	1.0	0	1.0	0	1.0	00	1	
	8	1.0	0	1.0	0	1.0	00	1	
acc	curac	y				0.8	6	7	
mad	cro a	٧g	0.	86	0.	86	0.7	'1	7
weigh	ited a	avg	1	.00	(	0.86	0.	86	7

Sentence: please show me ground transportation in denver True tags: INTJ VERB PRON NOUN NOUN ADP PROPN Predicted tags: INTJ VERB PRON NOUN NOUN ADP PROPN

Classification Report:

	precision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accura	асу		1.00	7	
macro	avg 1	.00 1	.00 1.0	00	7
weighted	l avg	1.00	1.00 1.	.00	7

Sentence: what kind of ground transportation is there in dallas

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN Predicted tags: PRON NOUN ADP NOUN NOUN AUX PRON ADP PROPN

Classification Report:

	preci	sion	recal	l t1-sc	ore s	suppo	ort
4	4	00	4.00	4.0			
1	1	.00	1.00	1.0	10	1	
2	1	.00	1.00	1.0	00	2	
3	1	.00	1.00	1.0	00	3	
4	. 1	.00	0.00	0.0	0	1	
5	1	.00	0.00	0.0	0	1	
6	0	.50	1.00	0.6	<b>57</b>	1	
8	0	.00	1.00	0.0	0	0	
accur	acy			0.7	8	9	
macro	avq	0.7	79 (	0.71	0.52		9
weighte	•	0	.94	0.78	0.74	4	9
_	_						

Sentence: what ground transportation is available in charlotte

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

## Classification Report:

	precisio	on re	call	f1-sco	ore su	pport
1	1.00	0 1.	00	1.00	)	1
2	1.00	0 1.	00	1.00	)	1
3	1.00	0 1.	00	1.00	) :	2
5	1.00	0.	00	0.0	)	1
6	0.00	0 1.	00	0.0	) (	)
7	1.00	0 1.	00	1.00	)	1
8	1.00	0 1.	00	1.00	)	1
accur	acy			0.86	5 7	7
macro	avg	0.86	0	.86	0.71	7
weighted	d avg	1.00	(	0.86	0.86	7

Sentence: what <unk> the ground transportation like at pittsburgh True tags: PRON AUX DET NOUN NOUN VERB ADP PROPN Predicted tags: PRON AUX DET NOUN NOUN ADJ ADP PROPN Classification Report:

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	0.00	1.00	0.00	0	
8	1.00	1.00	1.00	1	
accurac	:y		0.88	8	
macro a	vg 0.8	88 0	.88 0.7	75	8
veighted a	avg 1	.00 (	0.88	.88	8

Sentence: ground transportation in baltimore

True tags: NOUN NOUN ADP PROPN

Predicted tags: NOUN NOUN ADP PROPN Classification Report:

	precisi	on I	recall	f1-s	core	supp	ort
1	1.0	0	1.00	1.	00	1	
2	1.0	0	1.00	1.	00	1	
3	1.0	0	1.00	1.	00	2	
accura	асу			1.0	00	4	
macro	avg	1.00	) 1	.00	1.0	0	4
weighted	l avg	1.0	0	1.00	1.0	00	4

Sentence: what ground transportation is there in dallas True tags: DET NOUN NOUN AUX PRON ADP PROPN Predicted tags: PRON NOUN NOUN AUX PRON ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore s	uppo	ort
1	1.	00	1.00	1.0	0	1	
2	1.	00	1.00	1.0	0	1	
3	1.	00	1.00	1.0	0	2	
5	1.	00	0.00	0.0	0	1	
6	0.	50	1.00	0.6	7	1	
8	1.	00	1.00	1.0	0	1	
					_	_	
accur	acy			0.8	6	7	
macro	avg	0.9	92 (	0.83	0.78		7
weighted	d avg	0.	.93	0.86	0.81		7

Sentence: what ground transportation is available in baltimore

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

precision recall f1-score support

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

	<b>P</b>						
1		1.00	1.0	0 1	.00	1	
2	· ·	1.00	1.0	0 1	.00	1	
3	} '	1.00	1.0	0 1	.00	2	
5	, ·	1.00	0.0	0 0	0.00	1	
6	6 (	0.00	1.0	0 0	0.00	0	
7	, ,	1.00	1.0	0 1	.00	1	
8	} '	1.00	1.0	0 1	.00	1	
accur	acy			0	.86	7	
macro	_		86	0.86	0.7	'1	7
weighte	d avg	1	.00	0.86	6 0.	86	7

Sentence: ground transport phoenix True tags: NOUN NOUN PROPN Predicted tags: NOUN NOUN NOUN

Classification Report:

	pre	CISIO	n	reca	ıll t'	1-sco	ore :	supp	ort
1		1.00	)	0.00	)	0.0	)	1	
3		0.67	7	1.00	)	0.80	)	2	
accur	acy					0.67	,	3	
macro weighted	avg		0.8	_	0.5	_	0.40		3 3

Sentence: show me information on ground transportation for dallas True tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN

	precision	on re	call	f1-scc	ore su	ıppor	t
1	1.0	0 1.	.00	1.00	)	1	
2	1.0	0 1.	.00	1.00	)	2	
3	1.0	0 1.	.00	1.00	)	3	
4	1.0	0 1.	.00	1.00	)	1	
6	1.0	0 1.	.00	1.00	)	1	
accur	асу			1.00	) {	3	
macro	avg	1.00	1	.00	1.00	8	3
weighted	d avg	1.00		1.00	1.00		8

Sentence: i would like an american flight from toronto to san diego with a stopover in denver please

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN INTJ

Predicted tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN INTJ

Classification Report:

	precis	sion r	ecall	f1-scc	re su	pport
1	1.	00	1.00	1.00	) !	5
2	1.	00	1.00	1.00	) 4	1
3	1.	00	1.00	1.00	) 2	2
4	1.	00	1.00	1.00	) 1	1
5	1.	00	1.00	1.00	) 2	2
6	1.	00	1.00	1.00	) 1	1
8	1.	00	1.00	1.00	) 1	1
13	3 1	.00	1.00	1.0	0	1
accur	асу			1.00	1	7
macro	avg	1.00	) 1.	.00	1.00	17
weighted	d avg	1.0	0 1	1.00	1.00	17

Sentence: can i go from boston to san francisco with a stopover in denver

True tags: AUX PRON VERB ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN

Predicted tags: AUX PRON VERB ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		1.0	0 13	
macro avg	1.00	1.00	1.00	13
weighted avg	1.00	1.00	1.00	13

Sentence: please show me flights from boston to denver with a stopover in philadelphia

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Classification Report:

o la com c	precis	•		f1-sc	ore supp	oort
1	1.	00	1.00	1.0	0 3	
2	1.	00	1.00	1.0	0 4	
3	1.	00	1.00	1.0	0 2	
4	1.	00	1.00	1.0	0 1	
5	1.	00	1.00	1.0	0 1	
6	1.	00	1.00	1.0	0 1	
13	3 1	.00	1.00	1.0	0 1	
accur	acy			1.00	) 13	
macro	avg	1.0	00 1	.00	1.00	13
weighte	d avg	1	.00	1.00	1.00	13

Sentence: show me the flights from new york to los angeles with stop in milwaukee True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP VERB ADP PROPN

Classification Report:

	precis	ion	reca	ıll f1	-scc	ore s	suppo	ort
1	1.0	00	1.00	)	1.00	)	5	
2	1.0	00	1.00	)	1.00	)	4	
3	1.0	00	0.50	)	0.67	7	2	
4	0.5	50	1.00	)	0.67	7	1	
5	1.0	00	1.00	)	1.00	)	1	
6	1.0	00	1.00	)	1.00	)	1	
accur	•	0.0	10		0.93		14	11
macro weighted	•	0.9 0.	96	0.92		0.89		14 14

Sentence: are there any flights from denver to pittsburgh with stops in atlanta True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP

**PROPN** 

pr	ecision	recall	f1-scc	re supp	ort
1	1.00	1.00	1.00	) 3	
2	1.00	1.00	1.00	) 4	
3	1.00	1.00	1.00	) 2	
4	1.00	0.00	0.00	) 1	
5	1.00	1.00	1.00	) 1	
6	1.00	1.00	1.00	) 1	
8	0.00	1.00	0.00	0	
accuracy	y		0.92	12	
macro av	g 0.8	36 0	.86	0.71	12
weighted a	vg 1	.00	0.92	0.92	12

Sentence: are there any flights from boston to san francisco which stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN PROPN DET VERB ADP PROPN

Classification Report:

1       1.00       1.00       1.00       4         2       1.00       1.00       1.00       3         3       1.00       1.00       1.00       1         4       1.00       0.50       0.67       2         5       0.50       1.00       0.67       1         6       1.00       0.50       0.67       2	
3 1.00 1.00 1.00 1 4 1.00 0.50 0.67 2 5 0.50 1.00 0.67 1	
4 1.00 0.50 0.67 2 5 0.50 1.00 0.67 1	
5 0.50 1.00 0.67 1	
6 1.00 0.50 0.67 2	
8 0.00 1.00 0.00 0	
accuracy 0.85 13	
macro avg 0.79 0.86 0.71 13 weighted avg 0.96 0.85 0.87 1	3

Sentence: all do you have a flight from washington to boston that stops in philadelphia

True tags: DET AUX PRON VERB DET NOUN ADP PROPN ADP VERB ADP PROPN

Predicted tags: DET DET PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 0.75 1.00 0.86 3 2 1.00 1.00 1.00 4 3 1.00 1.00 1.00 1 0.67 4 1.00 0.50 2 5 0.67 1.00 0.80 2 6 1.00 1.00 1.00 1 8 1.00 0.00 0.00

accuracy		8.0	6 14	
macro avg	0.92	0.79	0.76	14
weighted avg	0.90	0.86	0.82	14

Sentence: show me the flights from san diego to newark by way of houston True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP NOUN

Classification Report:

	precisio	n re	call 1	f1-sco	e supp	ort
1	1.00	0.	75	0.86	4	
2	1.00	) 1.	00	1.00	4	
3	0.6	7 1.	00	0.80	2	
4	1.00	) 1.	00	1.00	1	
5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
accur	acy			0.92	13	
macro weighted	•	0.94 0.95	0.0 0	96 ( .92	0.94 0.93	13 13

Sentence: find a flight on american airlines from boston to san francisco that makes a stopover in denver

True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN ADP NOUN DET NOUN ADP PROPN

Classification Report:

	prec	sion	rec	all	†1-s	core	supp	ort
1	1	.00	1.0	00	1.0	00	6	
2	. 1	.00	1.0	00	1.0	00	5	
3		.67	1.0	00	0.0	30	2	
4	. 1	.00	0.5	50	0.6	37	2	
5	5 1	.00	1.0	00	1.0	00	2	
accur	acy				0.9	94	17	
macro	_		.93	0	.90	8.0		17
weighte	d avg	(	0.96	(	0.94	0.	94	17

Sentence: i <unk> looking for a flight that goes from ontario to westchester and stops in chicago

True tags: PRON AUX VERB ADP DET NOUN ADP VERB ADP PROPN ADP PROPN CCONJ VERB ADP PROPN

Predicted tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

pre	ecision	recall	f1-score	supp	ort
1	0.60	1.00	0.75	3	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	1	
4	1.00	0.33	0.50	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy	,		0.88	16	
macro av	g 0.9	95 0	.92 0.9	91	16
weighted av	vg 0	.93 (	0 88.0	.86	16

Sentence: list the flights from philadelphia to san francisco via dallas

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN PROPN PROPN NOUN ADP PROPN ADP PROPN PROPN NOUN

**PROPN** 

Classification Report:

	precision		rec	all	f1-s	core	support	
1	1	.00	1.0	0	1.	00	4	
2	1	.00	0.6	7	0.	80	3	
3	0	.50	1.0	0	0.	67	1	
4	1	.00	1.0	0	1.	00	1	
5	1	.00	1.0	0	1.	00	1	
accur	acy				0.9	90	10	
macro	avg	0.	90	0	.93	3.0	39	10
weighted	d avg	C	.95	(	0.90	0	.91	10

Sentence: are there any flights from denver to atlanta with stops in pittsburgh True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 4 1.00 1.00 3 1.00 1.00 1.00 2 4 1.00 0.00 0.00 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 0.00 1.00 0.00 0 0.92 12 accuracy 0.86 0.71 macro avg 0.86 12 weighted avg 1.00 0.92 0.92 12

Sentence: i need a flight from baltimore to seattle that stops in minneapolis

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP

PROPN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN

ADP PROPN

Classification Report:

	precisio	on re	call	f1-sco	re supp	oort
1	0.7	5 1.	00	0.86	3	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 0.	50	0.67	2	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
accur	acy			0.92	12	
macro weighted	_	0.96 0.94	_	.92 ).92	0.92 0.91	12 12

Sentence: i would like a flight that leaves on friday from philadelphia to dallas that makes a stop in atlanta

True tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN ADP PROPN ADP NOUN DET NOUN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore su	pport
1	1.	00	1.00	1.0	0 3	3
2	1.	00	1.00	1.0	0 6	3
3	0.	75	1.00	0.8	6 3	3
4	1.	00	0.67	0.8	0 3	3
5	1.	00	1.00	1.0	0 2	2
6	1.	00	1.00	1.0	0 ′	1
8	1.	00	1.00	1.0	0 ′	1
accur	асу			0.9	5 19	9
macro weighted	•	0.9 0.9		0.95 0.95	0.95 0.95	19 19

Sentence: list flights from philadelphia to dallas that stop in atlanta

True tags: VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1 00	1 00	1 00	4

3 1.	.00	1.00	1.0	0	1	
4 1.	.00	1.00	1.0	0	2	
			4.04	_	40	
accuracy			1.00	J	10	
macro avg	1.00	) 1	.00	1.00		10
weighted avg	1.0	0	1.00	1.00	)	10

Sentence: what is the available ground transportation between san francisco and downtown

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN

Classification Report:

	preci	sion	recall	t1-score	supp	ort
1	1	.00	1.00	1.00	2	
2	1	.00	1.00	1.00	1	
3	1	.00	1.00	1.00	3	
5	1	.00	1.00	1.00	1	
6	1	.00	1.00	1.00	1	
7	1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
10	) .	1.00	1.00	1.00	1	
accur	acy			1.00	11	
macro	_	1.0			.00	11
weighted	d avg	1.	.00	1.00 1	.00	11

Sentence: what ground transportation is there from the airport in atlanta to downtown True tags: DET NOUN NOUN VERB PRON ADP DET NOUN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN NOUN AUX PRON ADP DET PROPN ADP PROPN ADP NOUN

Classification Report:

	preci	sion	reca	all i	f1-sc	ore	supp	ort
1	0	.50	1.0	0	0.6	7	1	
2	1	.00	1.0	0	1.0	0	3	
3	1	.00	0.7	5	0.8	6	4	
4	1	.00	0.0	0	0.0	0	1	
5	1	.00	0.5	0	0.6	7	2	
6	0	.50	1.0	0	0.6	7	1	
8	0	.00	1.0	0	0.0	0	0	
accur	асу				0.7		12	
macro weighte	•		71 .92		75 .75	0.5		12 12

Sentence: what flights go from dallas to denver leaving after 3 pm

True tags: DET NOUN VERB ADP PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN

NOUN

Classification Report:

	precisi	on	recall	f1-sc	ore s	suppo	ort
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	00	3	
3	0.6	67	1.00	3.0	30	2	
4	1.0	00	1.00	1.0	00	2	
5	1.0	00	0.00	0.0	00	1	
6	0.0	00	1.00	0.0	00	0	
9	1.0	00	0.00	0.0	00	1	
accura	асу			0.8	2	11	
macro	avg	0.8	1 0	.71	0.54		11
weighted	d avg	0.9	94 (	0.82	0.7	8	11

Sentence: can you list all flights from chicago to <unk> louis that depart after 12

True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB ADP NUM NOUN

Predicted tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP DET ADP NOUN NOUN

Classification Report:

	precis	ion r	ecall	f1-sc	ore su	ıpport
1	1.0	00	1.00	1.0	0	3
2	1.0	00	1.00	1.0	0	4
3	0.6	67	1.00	0.8	0	2
4	. 1.0	00 (	0.50	0.6	7	2
5	0.5	50	1.00	0.6	7	1
6	1.0	00	1.00	1.0	0	1
8	1.0	00	1.00	1.0	0	1
9	1.0	00 (	0.00	0.0	0	1
accur	acy			0.87	7 1	5
macro weighte	_	0.90 0.9	_	.81 0.87	0.77 0.84	15 15

Sentence: is there a flight between philadelphia and denver that leaves philadelphia around 2 <unk> in the afternoon

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP VERB PROPN ADP NUM ADV ADP DET NOUN

Predicted tags: AUX PRON DET NOUN ADP PROPN CCONJ PROPN ADP VERB

VERB ADP NOUN AUX ADP DET NOUN

рі	recision	recall	f1-score	support
1	1.00	0.67	0.80	3
2	1.00	1.00	1.00	4

3	0.67	1.00	0.80	2
4	0.50	0.50	0.50	2
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
8	0.00	1.00	0.00	0
9	1.00	0.00	0.00	1
10	1.00	1.00	1.00	1
11	1.00	0.00	0.00	1

accuracy		0.7	6 17	
macro avg	0.82	0.72	0.61	17
weighted avg	0.90	0.76	0.76	17

Sentence: what flights leaving pittsburgh arrive in denver and leave after say 6

<unk> at night

True tags: DET NOUN VERB PROPN VERB ADP PROPN CCONJ VERB ADP

VERB NUM ADV ADP NOUN

Predicted tags: PRON NOUN VERB VERB VERB ADP PROPN CCONJ VERB ADP

NOUN NOUN PROPN ADP PROPN

Classification Report:

рі	ecision	recall	f1-score	supp	ort
1	0.33	0.50	0.40	2	
2	1.00	1.00	1.00	3	
3	0.33	0.50	0.40	2	
4	0.75	0.75	0.75	4	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accurac	у		0.60	15	
macro a	vg 0.	71 (	0.53 0.5	39	15
weighted a	avg 0	.76	0.60 0	.57	15

Sentence: dallas to houston after <unk> am

True tags: PROPN ADP PROPN ADP NUM NOUN

Predicted tags: PROPN ADP PROPN ADP PROPN NOUN

Classification Report:

precision recall f1-score support 1 0.67 1.00 0.80 2 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 9 1.00 0.00 0.00 1 accuracy 0.83 6 0.70 macro avg 0.92 0.75 6 weighted avg 0.83 0.77 0.89

Sentence: is there a flight around 3 pm from charlotte to minneapolis

True tags: VERB PRON DET NOUN ADP NUM NOUN ADP PROPN ADP PROPN Predicted tags: AUX PRON DET NOUN NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precisio	n re	call	f1-sc	ore sup	port
1	1.00	) 1.	.00	1.0	0 2	
2	1.00	0.	.67	0.8	3 3	
3	0.50	) 1.	.00	0.6	7 2	
4	1.00	0.	.00	0.0	0 1	
5	1.00	) 1.	.00	1.0	0 1	
6	1.00	) 1.	.00	1.0	0 1	
8	0.00	) 1.	.00	0.0	O C	
9	1.00	0.	.00	0.0	0 1	
accura	acy			0.73	3 11	
macro	avg	0.81	0.	.71	0.56	11
weighted	d avg	0.91	(	0.73	0.70	11

Sentence: i like to see the information for flights from pittsburgh to san francisco leaving pittsburgh after 12 pm

True tags: PRON VERB PART VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: PRON VERB PART VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Classification Report:

	pred	cisio	n re	call	f1-sc	ore	supp	ort
1		1.00	1.	00	1.0	0	4	
2		1.00	1.	00	1.0	0	4	
3		1.00	1.	00	1.0	0	3	
4		1.00	1.	00	1.0	0	3	
5	)	1.00	1.	00	1.0	0	1	
6		1.00	1.	00	1.0	0	1	
9	)	1.00	1.	00	1.0	0	1	
12	2	1.00	) 1	.00	1.0	00	1	
accur	асу				1.00	)	18	
macro	avg		1.00	1	.00	1.0	0	18
weighte	d av	9	1.00	•	1.00	1.0	00	18

Sentence: a listing of all flights from boston to baltimore before 10 am on thursday True tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Predicted tags: DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN NOUN ADP NOUN

Classification Report:

precision recall f1-score support

1	0.67	' 1.0	00	8.0	0	2	
2	1.00	1.0	00	1.0	0	5	
3	1.00	1.0	00	1.0	0	4	
5	1.00	1.0	00	1.0	0	2	
9	1.00	0.0	00	0.0	0	1	
accuracy	′			0.93	3	14	
macro av	g	0.93	3.0	30	0.76		14
weighted av	vg	0.95	0.	93	0.9	C	14

Sentence: i <unk> like a flight from san diego to toronto on alaska airlines leaving around 1 pm

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP PROPN NOUN

Classification Report:

precisi	on re	call	f1-sco	re supp	oort
0.8	3 1.	.00	0.91	5	
1.0	0 1.	.00	1.00	4	
1.0	0 1.	.00	1.00	2	
1.0	0 1.	.00	1.00	2	
1.0	0 1.	.00	1.00	1	
1.0	0 1.	.00	1.00	1	
1.0	0 1.	.00	1.00	1	
1.0	0 0.	.00	0.00	1	
асу			0.94	17	
avg d avg	0.98 0.95	_		0.86 0.91	17 17
	0.8 1.0 1.0 1.0 1.0 1.0 1.0	0.83 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 0. acy	0.83 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00	0.83 1.00 0.91 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00	0.83 1.00 0.91 5 1.00 1.00 1.00 4 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: i want a flight from atlanta to washington that leaves after 3 pm

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1
accura	асу		0.92	13

macro avg	0.95	0.86	0.83	13
weighted avg	0.95	0.92	0.89	13

Sentence: list all flights going from boston to atlanta on wednesday after 6 <unk> pm on wednesday

True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM PROPN NOUN ADP NOUN

Classification Report:

	precis	ion re	ecall	f1-sco	ore sup	port
1	0.6	67 1	.00	0.80	2	
2	1.0	00 1	.00	1.00	5	
3	1.0	00 1	.00	1.00	) 4	
4	1.0	00 1	.00	1.00	2	
5	1.0	00 1	.00	1.00	) 1	
9	1.0	00 1	.00	1.00	) 1	
11	l 1.	00 (	0.00	0.0	0 1	
accur	асу			0.94	16	
macro	avg	0.95	0	.86	0.83	16
weighte	d avg	0.96	6 (	0.94	0.91	16

Sentence: i need flight information for a flight departing from cleveland to milwaukee wednesday after 6 pm

True tags: PRON VERB NOUN NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP DET NOUN NOUN ADP PROPN ADP PROPN NOUN ADP NUM NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1	1.0	00	1.00	1.0	0 2	2
2	1.0	00	1.00	1.0	0 4	1
3	0.8	83	1.00	0.9	1 5	5
4	1.0	00	0.50	0.6	7 2	2
5	1.0	00	1.00	1.0	0 ′	1
6	1.0	00	1.00	1.0	0 ′	1
9	1.0	00	1.00	1.0	0 ′	1
accur	acv			0.94	1 10	6
macro	•	0.9	8 0	.93	0.94	16
weighte	•	0.9		0.94	0.93	16
	9	0.0	-		5.00	. •

Sentence: what flights go from boston to denver before 10 am

True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP PROPN NOUN

Classification Report:

precision recall f1-score support

```
0.67
                   1.00
                                    2
      1
                           0.80
      2
                                    3
           1.00
                   1.00
                           1.00
      3
                                    2
           1.00
                   1.00
                           1.00
      4
                                    1
           1.00
                   1.00
                           1.00
      5
                                    1
           1.00
                   0.00
                           0.00
      6
           0.00
                   1.00
                           0.00
                                    0
      9
           1.00
                   0.00
                           0.00
                                    1
  accuracy
                          0.80
                                   10
 macro avg
               0.81
                       0.71
                               0.54
                                        10
weighted avg
                0.93
                        0.80
                                0.76
                                        10
```

Sentence: list all flights from boston to atlanta after 6 <unk> pm on wednesday True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM PROPN NOUN ADP NOUN

Classification Report:

	precisi	on re	call	f1-scor	e suppo	rt
1	0.6	57 <b>1</b> .	.00	0.80	2	
2	1.0	0 1.	.00	1.00	4	
3	1.0	0 1.	.00	1.00	3	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	1	
9	1.0	0 1.	.00	1.00	1	
11	1.0	0 00	.00	0.00	1	
accur	acy			0.92	13	
macro weighted	•	0.95 0.95			).83 0.89	13 13

Sentence: i <unk> looking for flights from pittsburgh to philadelphia leaving before 9 am

True tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

þ	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
9	1.00	1.00	1.00	1

accuracy		1.0	0 13	}
macro avg	1.00	1.00	1.00	13
weighted avg	1.00	1.00	1.00	13

Sentence: list all flights going from boston to atlanta before 7 am on thursday True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP PROPN

NOUN ADP NOUN Classification Report:

	precis	ion	recall	f1-sco	ore sup	port
1	0.0	67	1.00	0.80	) 2	
2	1.0	00	1.00	1.00	) 4	
3	1.0	00	1.00	1.00	) 3	
4	1.0	00	1.00	1.00	) 2	
5	1.0	00	1.00	1.00	) 1	
9	1.0	00	0.00	0.00	) 1	
accur	acy			0.92	2 13	}
macro	avg	0.9	4 0	.83	0.80	13
weighted	d avg	0.9	95 (	0.92	0.89	13

Sentence: i need flight information for flights departing from cleveland to milwaukee on wednesday after 5 pm

True tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NOUN NOUN

Classification Report:

	precis	ion	reca	all	f1-sc	ore	supp	ort
4	4	00	1.0	^	1 (	00	2	
1	1.1	00	1.0	U	1.0	JU	2	
2	2 1.	00	1.0	0	1.0	00	5	
3	0.	83	1.0	0	0.9	91	5	
4	. 1.	00	1.0	0	1.0	00	2	
6	1.	00	1.0	0	1.0	00	1	
9	1.	00	0.0	0	0.0	00	1	
accur	acy				0.9	4	16	
macro	avg	0.9	97	0.	83	0.8	2	16
weighte	d avg	0	.95	0	.94	0.9	91	16

Sentence: can you find me another flight from cincinnati to new york on saturday before 6 pm

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADP NUM NOUN

Predicted tags: AUX PRON VERB PRON PRON NOUN ADP PROPN ADP PROPN ADP NUM NOUN

	preci	sion	recall	f1-sco	ore supp	port
1	1	.00	1.00	1.00	3	
2	1	.00	1.00	1.00	) 4	
3	1	.00	1.00	1.00	3	
4	. 1	.00	1.00	1.00	) 1	
5	1	.00	0.00	0.00	) 1	
6	0	.67	1.00	0.80	2	
8	1	.00	1.00	1.00	) 1	
9	1	.00	1.00	1.00	0 1	
accur	acv			0.94	16	
macro	•	0.9	96 (	).88	0.85	16
weighte	_		.96	0.94	0.91	16
	9	•		•		. •

Sentence: i would like a flight from san francisco to pittsburgh on friday morning after 10 <unk>

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADP NUM ADV

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP NOUN NOUN ADP NUM AUX

Classification Report:

	preci	sion	recal	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	4	
3	1	.00	1.00	1.0	00	3	
4	1	.00	1.00	1.0	00	1	
5	1	.00	1.00	1.0	00	1	
6	1	.00	1.00	1.0	00	1	
8	0	.50	1.00	0.0	67	1	
9	1	.00	1.00	1.0	00	1	
11	1	.00	0.00	0.	00	1	
accur macro weighted	avg	0.0	94 .97	0.9 0.89 0.94	8.0	16 35 92	16 16

Sentence: list all flights going from boston to atlanta before 5 <unk> am on thursday True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM AUX NOUN ADP NOUN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	2

5	1.00	1.0	00 '	1.00	1	
8	0.00	1.0	0 (	0.00	0	
9	1.00	1.0	00	1.00	1	
11	1.00	0.0	00	0.00	1	
accuracy	<b>'</b>		C	).93	14	
macro av	g 0.	88	0.88	0.	75	14
weighted av	va 1	.00	0.9	3 0	).93	14

Sentence: what is the last flight from baltimore to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion i	recall	f1-sc	ore sup	oport
1	1.	00	1.00	1.00	) 2	<u> </u>
2	1.	00	1.00	1.0	) 2	) -
3	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.0	0 1	
6	1.	00	1.00	1.0	) 1	
7	1.	00	1.00	1.0	) 1	
8	1.	00	1.00	1.0	) 1	
accur	acy			1.00	) 9	
macro	avg	1.00	) 1	.00	1.00	9
weighte	d avg	1.0	0	1.00	1.00	9

Sentence: what <unk> the latest flight from san jose to houston

True tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore sup	port
1	1.	00	1.00	1.00	) 3	
2	1.	00	1.00	1.0	) 2	
3	1.	00	1.00	1.0	) 1	
5	1.	00	1.00	1.0	) 1	
6	1.	00	1.00	1.00	0 1	
7	1.	00	1.00	1.00	0 1	
8	1.	00	1.00	1.0	0 1	
accur	асу			1.00	) 10	)
macro weighted	_	1.0 1.0		.00 1.00	1.00 1.00	10 10

Sentence: what is the earliest flight from pittsburgh to san francisco

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.00	) 1.	00	3
2	1.00	1.00	) 1.	00	2
3	1.00	1.00	) 1.	00	1
5	1.00	1.00	) 1.	00	1
6	1.00	1.00	) 1.	00	1
7	1.00	1.00	) 1.	00	1
8	1.00	1.00	) 1.	00	1
accura	асу		1.0	00 1	10
macro	avg '	1.00	1.00	1.00	10
weighted	l avg	1.00	1.00	1.00	10

Sentence: show first flight from philadelphia to dallas True tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on r	ecall	f1-sc	ore si	upport	
1	1.0	)O -	1.00	1.0	0	2	
-							
2	1.0	00 '	1.00	1.0	0	2	
3	1.0	00 '	1.00	1.0	0	1	
4	0.5	50 ′	1.00	0.6	7	1	
7	1.0	0 (	0.00	0.0	0	1	
accur	acy			0.86	3	7	
macro	avg	0.90	0	.80	0.73	7	
weighted	d avg	0.93	3 (	0.86	0.81	7	7

Sentence: what <unk> the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recal	f1-sc	core	suppo	ort
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	00	2	
3	1.0	00	1.00	1.0	00	1	
5	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
7	1.0	00	1.00	1.0	00	1	
8	1.0	00	1.00	1.0	00	1	
accura	асу			1.0	0	9	
macro weighted	_	1.0 1.	00 ´	1.00 1.00	1.0 1.0	-	9 9

Sentence: what is the shortest flight from milwaukee to <unk> petersburg
True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

## Classification Report:

	precisio	n re	call	f1-sco	re sup	port
1	1.00	) 1.	00	1.00	3	
2	1.00	) 1.	00	1.00	2	
3	1.00	) 1.	00	1.00	1	
5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
7	1.00	) 1.	00	1.00	1	
8	1.00	) 1.	00	1.00	) 1	
				1 00	10	
accura	•			1.00	10	
macro	avg	1.00	1	.00	1.00	10
weighted	l avg	1.00	•	1.00	1.00	10

Sentence: shortest evening flight from tampa to cincinnati True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

0.00000	о				
F	orecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	0.00	1.00	0.00	0	
7	1.00	0.00	0.00	1	
accura	су		0.86	7	
macro a	avg 0.	80 0	.80 0.	60	7
weighted	avg 1	.00	0.86 0	.86	7

Sentence: what is the earliest flight you have leaving boston heading to philadelphia True tags: PRON AUX DET ADJ NOUN PRON VERB VERB PROPN VERB ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN VERB VERB PROPN NOUN ADP PROPN

	preci	sion	reca	ıll f1-	score	supp	ort
1	1	.00	1.00	) 1	.00	2	
2	1	.00	1.00	) 1	.00	1	
3	0	.33	1.00	0 (	.50	1	
4	1	.00	0.67	7 0	.80	3	
5	1	.00	1.00	) 1	.00	1	
6	1	.00	0.50	0 0	.67	2	
7	1	.00	1.00	) 1	.00	1	
8	1	.00	1.00	) 1	.00	1	
accur	асу			0	.83	12	
macro	avg	0.	92	0.90	0.0	37	12

weighted avg 0.94 0.83 0.85 12

Sentence: what is the earliest flight from boston to san francisco

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1	1.0	00	1.00	1.0	) 3	3
2	1.0	00	1.00	1.00	) 2	2
3	1.0	00	1.00	1.0	0 1	l
5	1.0	00	1.00	1.0	0 1	1
6	1.0	00	1.00	1.0	0 1	1
7	1.0	00	1.00	1.0	) 1	l
8	1.0	00	1.00	1.0	0 1	1
accur	acy			1.00	) 10	)
macro	avg	1.00	0 1	.00	1.00	10
weighted	d avg	1.0	00	1.00	1.00	10

Sentence: flights from denver to westchester county new york weekdays
True tags: NOUN ADP PROPN ADP PROPN PROPN PROPN NOUN
Predicted tags: NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN

Classification Report:

	precisi	on re	ecall	†1-sc	ore	supp	ort
1	0.8	3 1	.00	0.9	91	5	
2	1.0	0 1	.00	1.0	00	2	
3	1.0	0 0	.50	0.6	67	2	
COOLIFC	201			0.8	0	9	
accura	iCy				_	•	
macro	avg	0.94	0	.83	0.86	3	9
weighted	avg	0.91	(	0.89	9.0	88	9

Sentence: what is the last flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

	pred	isior	n re	call	f1-sc	ore	supp	ort
1		1.00	1.	00	1.0	0	2	
2		1.00	1.	00	1.0	0	2	
3		1.00	1.	00	1.0	0	1	
5		1.00	1.	00	1.0	0	1	
6		1.00	1.	00	1.0	0	1	
7		1.00	1.	00	1.0	0	1	
8		1.00	1.	00	1.0	0	1	
accur	асу				1.0		9	
macro	avg		1.00	1.	.00	1.0	0	9

weighted avg 1.00 1.00 9

Sentence: what is the earliest flight leaving denver going to boston

True tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN

Classification Report:

0.0000	ao				
	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	асу		1.00	10	
macro	avg 1	1.00 1	.00 1.	00	10
weighted	l avg	1.00	1.00 1	.00	10

Sentence: what is the earliest flight from ontario to memphis

precision recall f1-score support

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	prooic	51011	1000		00010	барр	011
1	1.	00	1.00	) 1	.00	2	
2	1.	00	1.00	) 1	.00	2	
3	1.	00	1.00	) 1	.00	1	
5	1.	00	1.00	) 1	.00	1	
6	1.	00	1.00	) 1	.00	1	
7	1.	00	1.00	) 1	.00	1	
8	1.	00	1.00	) 1	.00	1	
accur	acy			1.	00	9	
macro	avg	1.0	00	1.00	1.0	00	9
weighted	d avg	1	.00	1.00	1.	00	9
_	•						

Sentence: what is the earliest flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

Sentence: what is the last flight leaving san francisco going to washington on friday True tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP

PROPN ADP NOUN Classification Report:

	precis	ion re	call	f1-scor	e supp	ort
1	1.0	00 1.	.00	1.00	3	
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	2	
4	1.0	00 1.	.00	1.00	2	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
accur	acy			1.00	13	
macro	avg	1.00	1.	.00	1.00	13
weighte	d avg	1.00	•	1.00	1.00	13

Sentence: what is the earliest morning flight from san francisco to boston

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP PROPN PROPN ADP PROPN

Classification Report:

	precision		f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accur	асу		1.00	11
macro weighte	_		.00 1.0 1.00 1.	00 11 00 11

Sentence: what <unk> the earliest flight from dallas to houston True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

## Classification Report:

	precisi	on re	call	f1-sc	ore s	uppor	t
1	1.0	0 1	.00	1.0	0	2	
2	1.0	0 1	.00	1.0	0	2	
3	1.0	0 1	.00	1.0	0	1	
5	1.0	0 1	.00	1.0	0	1	
6	1.0	0 1	.00	1.0	0	1	
7	1.0	0 1	.00	1.0	0	1	
8	1.0	0 1	.00	1.0	0	1	
accura	acy			1.00	)	9	
macro	avg	1.00	1	.00	1.00	9	)
weighted	d avg	1.00	•	1.00	1.00		9

Sentence: i <unk> like to find the earliest flight possible from san francisco to atlanta True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADJ ADP PROPN PROPN

Predicted tags: PRON AUX VERB PART VERB DET ADJ NOUN NOUN ADP

PROPN PROPN ADP PROPN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	0.50	1.00	0.67	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.50	0.67	2	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accurac	у		0.93	14	
macro av	/g 0.9	94 0	.94 0.9	3	14
weighted a	ıvg 0	.96 (	0.93 0.	93	14

Sentence: what is the latest evening flight leaving san francisco for washington True tags: PRON AUX DET ADJ NOUN NOUN VERB PROPN PROPN ADP PROPN PROPN AUX DET ADJ NOUN NOUN VERB PROPN PROPN PROPN PROPN

precision		recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

Sentence: what is the first flight from boston to atlanta and what is the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Classification Report:

G. C. O	.op 0				
precisi	ion r	ecall	f1-scor	e supp	ort
1.0	00	1.00	1.00	4	
1.0	00 .	1.00	1.00	4	
1.0	00 .	1.00	1.00	2	
1.0	00 .	1.00	1.00	2	
1.0	00	1.00	1.00	2	
1.0	00	1.00	1.00	2	
1.0	00	1.00	1.00	2	
) 1.	00	1.00	1.00	1	
асу			1.00	19	
avg	1.00	1	.00 ′	1.00	19
d avg	1.0	0	1.00	1.00	19
	precisi 1.0 1.0 1.0 1.0 1.0 1.0 1.0 acy avg	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 4 1.00 1.00 1.00 4 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1.00 2 1.00 1.00 1.00 1.00 2 1.00 1.00 1.00 1.00 1 acy 1.00 1.00 1.00

Sentence: what <unk> the cheapest one way ticket from baltimore to atlanta
True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN
Classification Report:

	precisi	on re	ecali	TT-SC	ore su	pport
1	1.0	0 1	.00	1.00	) 2	2
2	1.0	0 1	.00	1.00	) 2	2
3	1.0	0 1	.00	1.00	) 2	2
5	1.0	0 1	.00	1.00	) ′	1
6	1.0	0 1	.00	1.00	) ′	1
7	0.5	50 1	.00	0.6	7 ′	1
8	1.0	0 1	.00	1.00	) ′	1
9	1.0	0 0	.00	0.0	) ′	1
accura	асу			0.91	1	1
macro	avg	0.94	0	.88	0.83	11
weighted	l avg	0.95	(	0.91	0.88	11

Sentence: what <unk> the cheapest round trip fare between boston and washington True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ

PROPN

Classification Report:

precis	sion	recall	f1-sco	ore su	pport
1.	00	1.00	1.00	) :	2
1.	00	1.00	1.00	)	1
1.	00	1.00	1.00	) ;	3
1.	00	1.00	1.00	)	1
1.	00	1.00	1.00	)	1
1.	00	1.00	1.00	)	1
1.	00	1.00	1.00	)	1
) 1	.00	1.00	1.0	0	1
			4.00	. 4	4
•					
•				1.00	11
d avg	1.	00	1.00	1.00	11
	1. 1. 1. 1. 1. 1.	acy avg 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: what is the cheapest round trip fare between boston and san francisco True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ

PROPN PROPN

Classification Report:

	precision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	асу		1.00	12	
macro	0		.00 1.0		12
weighted	avg 1	.00	1.00 1.	00	12

Sentence: what is the cheapest round trip fare from atlanta to pittsburgh

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3
5	1.00	1.00	1.00	1

6	1.00	) 1.	00	1.00	1	
7	1.00	) 1.	00	1.00	1	
8	1.00	1.	00	1.00	1	
accuracy	,			1.00	11	
macro av	g	1.00	1.0	0	1.00	11
weighted av	vg	1.00	1.	00	1.00	11

Sentence: what is the cheapest fare from baltimore to dallas in any class

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP

PROPN NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore	suppo	ort
1	0.6	67	1.00	0.8	80	2	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	2	
5	1.0	00	0.50	0.6	57	2	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accur	асу			0.9	2	12	
macro	avg	0.9	5 C	).93	0.92	<u>'</u>	12
weighted	d avg	0.9	94	0.92	0.9	1	12

Sentence: what is the cheapest one way fare from boston to washington True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN Classification Report:

	pred	cisior	n red	call	f1-so	core	supp	ort
1		1.00	1.0	00	1.0	00	2	
2		1.00		00	1.0		2	
3		1.00	1.	00	1.0	00	2	
5		1.00	1.	00	1.0	00	1	
6	,	1.00	1.	00	1.0	00	1	
7	. (	0.50	1.	00	0.6	37	1	
8	}	1.00	1.	00	1.0	00	1	
9		1.00	0.	00	0.0	00	1	
accur	acy				0.9	1	11	
macro	avg	(	0.94	0	.88	8.0	3	11
veighte	d avç	)	0.95	(	0.91	0.	88	11

Sentence: i <unk> interested in the cheapest fare from washington to fort worth True tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN PROPN PROPN

Predicted tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precisi	on re	call	f1-sco	ore sup	oport
1	1.0	0 1.	00	1.00	) 3	}
2	1.0	0 1.	00	1.00	) 3	3
3	1.0	0 1.	00	1.00	) 1	
4	1.0	0 1.	00	1.00	) 1	
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	
7	1.0	0 1.	00	1.00	) 1	
8	1.0	0 1.	00	1.00	) 1	
accur	201			1.00	) 12	)
accur	•	4.00	4			
macro	_	1.00	1	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: i would like to book a flight from denver to pittsburgh on july fifteenth i <unk> like it to be the cheapest flight

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN ADJ PRON AUX VERB PRON PART AUX DET ADJ NOUN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN PRON AUX VERB VERB ADP VERB DET ADJ NOUN Classification Report:

Ciacomic	auoni	topo.	••			
	precis	ion	recall	f1-sco	re supp	ort
1	1.0	00	1.00	1.00	2	
2	0.	75	1.00	0.86	3	
3	0.	75	1.00	0.86	3	
4	0.0	60	1.00	0.75	3	
5	1.0	00	1.00	1.00	2	
6	1.0	00	0.67	0.80	3	
7	1.0	00	0.50	0.67	2	
8	1.0	00	0.67	0.80	3	
12	2 1.	.00	0.50	0.67	7 2	
accur	acy			0.83	23	
macro weighted	•	0.90 0.8	-	.81 0.83	0.82 0.82	23 23

Sentence: what is the cheapest fare from dallas to denver on delta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP

**PROPN** 

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1 00	1 00	1 00	3

3	1.00	) 1.	00	1.00	)	1
5	1.00	) 1.	00	1.00	)	1
6	1.00	) 1.	00	1.00	)	1
7	1.00	) 1.	00	1.00	)	1
8	1.00	) 1.	00	1.00	)	1
accura	су			1.00	) 1	1
macro a	avg	1.00	1.	00	1.00	11
weighted	avg	1.00	1	.00	1.00	11

Sentence: can you show me the cheapest round trip flights between denver and pittsburgh

True tags: AUX PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

Predicted tags: AUX PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

Classification Report:

	pred	ision	rec	all	f1-scc	re s	supp	ort
1		1.00	1.0	0	1.00	)	2	
2		1.00	1.0	0	1.00	)	1	
3		1.00	1.0	0	1.00	)	3	
4		1.00	1.0	0	1.00	)	1	
5	,	1.00	1.0	0	1.00	)	1	
6	,	1.00	1.0	0	1.00	)	2	
7	•	1.00	1.0	0	1.00	)	1	
8	,	1.00	1.0	0	1.00	)	1	
10	)	1.00	1.0	00	1.0	0	1	
accur	асу				1.00		13	
macro weighte	_		.00 1.00		.00 1.00	1.00 1.00	)	13 13
-	_							

Sentence: what <unk> the lowest round trip fare from denver to atlanta

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 2 1.00 2 1.00 2 1.00 1.00 3 0.75 1.00 0.86 3 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 1.00 0.00 0.00 1 8 1.00 1.00 1.00 1 0.91 11 accuracy macro avg 0.96 0.86 0.84 11 weighted avg 0.93 0.91 0.87 11

Sentence: what is the cheapest flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	ecall	f1-sc	ore s	suppo	rt
1	1.0	00 1	.00	1.0	00	2	
2	1.0	00 1	.00	1.0	00	2	
3	1.0	0 1	.00	1.0	0	1	
5	1.0	00 1	.00	1.0	0	1	
6	1.0	00 1	.00	1.0	0	1	
7	1.0	00 1	.00	1.0	0	1	
8	1.0	00 1	.00	1.0	00	1	
accura	acy			1.0	0	9	
macro	avg	1.00	1	.00	1.00		9
weighted	d avg	1.00	, ,	1.00	1.00	)	9

Sentence: i <unk> like to find the cheapest fare from atlanta to dallas

True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

0.0.00	precis	ion re	call	f1-scor	e supr	oort
	prodio	1011 10	oan	11 3001	c supp	0011
1	1.0	00 1.	.00	1.00	2	
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	1	
4	1.0	00 1.	.00	1.00	2	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
12	2 1.	00 1	.00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.00	1.	.00 1	.00	12
weighte	d avg	1.00	1	1.00	1.00	12

Sentence: lowest fare from san francisco to los angeles

True tags: ADJ NOUN ADP PROPN PROPN ADP PROPN PROPN

Predicted tags: NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 4
2 1.00 1.00 1.00 2

Sentence: i <unk> like the lowest fare from denver to pittsburgh

True tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n rec	all f1	-score	suppo	ort
1	1.00	1.0	00	1.00	2	
2	1.00	1.0	00	1.00	2	
3	1.00	1.0	00	1.00	1	
4	1.00	1.0	00	1.00	1	
5	1.00	1.0	00	1.00	1	
6	1.00	1.0	00	1.00	1	
7	1.00	1.0	00	1.00	1	
8	1.00	1.0	00	1.00	1	
accura	асу			1.00	10	
macro	avg	1.00	1.00	0 1.	.00	10
weighted	d avg	1.00	1.0	00 1	1.00	10

Sentence: okay i <unk> want to know the cheapest fare from atlanta to boston True tags: INTJ PRON ADV VERB PART VERB DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PROPN PRON AUX VERB PART VERB DET ADJ NOUN ADP

PROPN ADP PROPN Classification Report:

	precision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	0.00	1.00	0.00	0	
11	1.00	0.00	0.00	1	
12	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accura	acy		0.85	13	
macro	•	.88 0	.82 0.7	71	13
weighted	l avg	0.95	0.85 0	.82	13

Sentence: what are the lowest one way fares from atlanta to denver

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN NUM NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precisio	on re	call	f1-scc	re sup	port
1	1.0	0 1.	00	1.00	) 2	
2	1.0	0 1.	00	1.00	) 2	
3	0.6	7 1.	00	0.80	) 2	
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	
7	1.0	0 0.	00	0.00	) 1	
8	1.0	0 1.	00	1.00	) 1	
9	1.0	0 1.	00	1.00	) 1	
accura	асу			0.91	11	
macro	avg	0.96	0.	88	0.85	11
weighted	d avg	0.94	0	.91	0.87	11

Sentence: what is the cheapest one way fare from any city to another

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP DET PROPN ADP DET Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN PROPN ADP

**PROPN** 

Classification Report:

	precis	on re	call	f1-sco	re supp	ort
1	0.3	33 1	.00	0.50	1	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	2	
5	1.0	0 0	.33	0.50	3	
6	1.0	00 1	.00	1.00	1	
7	0.5	50 1	.00	0.67	1	
8	1.0	00 1	.00	1.00	1	
9	1.0	0 0	.00	0.00	1	
accur	•	0.05	0	0.75	12	40
macro weighted	•	0.85 0.90	_	79 .75	0.71 0.72	12 12

Sentence: i <unk> like the cheapest cost fare to fort worth from boston

True tags: PRON AUX VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB DET ADJ NOUN NOUN ADP PROPN PROPN

ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2

	3	1.00	1.	00	1.0	00	2	
	4	1.00	1.	00	1.0	00	1	
	5	1.00	1.	00	1.0	00	1	
	6	1.00	1.	00	1.0	00	1	
	7	1.00	1.	00	1.0	00	1	
	8	1.00	1.	00	1.0	00	1	
accu	ıracy				1.0	00	12	
macr	o avg		1.00	1	.00	1.0	00	12
weighte	ed av	q	1.00	•	1.00	1.	00	12

Sentence: show me the cheapest one way fares from san diego to miami

True tags: VERB PRON DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP

PROPN

Predicted tags: VERB PRON DET ADJ ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisi	on re	ecall	f1-scc	re sup	port
1	1.0	0 1	.00	1.00	) 3	
2	1.0	0 1	.00	1.00	) 2	
3	1.0	0 1	.00	1.00	) 2	
4	1.0	0 1	.00	1.00	) 1	
5	1.0	0 1	.00	1.00	) 1	
6	1.0	0 1	.00	1.00	) 1	
7	0.5	0 1	.00	0.67	7 1	
9	1.0	0 0	.00	0.00	) 1	
accura	асу			0.92	12	
macro	avg	0.94	0	.88	0.83	12
weighted	d avg	0.96	; (	0.92	0.89	12

Sentence: what flights leave philadelphia for dallas and depart before noon on american airlines

True tags: DET NOUN VERB PROPN ADP PROPN CCONJ VERB ADP NOUN ADP PROPN PROPN

Predicted tags: PRON NOUN VERB PROPN ADP PROPN CCONJ DET ADP NOUN ADP PROPN PROPN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	0.50	0.67	2
5	0.00	0.00	0.00	1
6	0.00	1.00	0.00	0
10	1.00	1.00	1.00	1
accurac	у		0.85	13

macro avg	0.71	0.79	0.67	13
weighted avg	0.92	0.85	0.87	13

Sentence: i need a flight from cleveland to dallas that leaves before noon see if too much information

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN VERB ADP ADV ADV NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN NOUN VERB VERB VERB NOUN

Classification Report:

	precisi	on re	ecall	f1-scc	ore supp	oort
1	1.0	00 1	.00	1.00	) 2	
2	1.0	00 0	08.0	0.89	5	
3	0.7	<b>7</b> 5 1	.00	0.86	3	
4	0.4	10 C	0.67	0.50	3	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
11	1.0	00	0.00	0.0	0 2	
accur	асу			0.76	5 17	
macro weighted	_	0.88 0.85	_	.78 0.76	0.75 0.74	17 17

Sentence: list all flights leaving denver on continental on sunday after 2134 True tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP NUM Predicted tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP NOUN

Classification Report:

Ciacoinio	auon i	opoit.				
	precisi	on re	call	f1-scc	ore sup	port
4	4.0	0 1	00	4.00		
1	1.0	υ 1.	.00	1.00	) 2	•
2	1.0	0 1.	.00	1.00	) 3	}
3	0.6	7 1.	.00	0.80	) 2	) -
4	1.0	0 1.	.00	1.00	) 2	)
5	1.0	0 1.	.00	1.00	) 1	
9	1.0	0 0.	.00	0.00	) 1	
accur	acy			0.91	11	
macro	avg	0.94	0	.83	0.80	11
weighted	d avg	0.94	(	0.91	0.87	11

Sentence: all flights from san francisco to boston leaving before noon True tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN Predicted tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN Classification Report:

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1 00	1 00	1 00	3

	3	1.00	) 1	.00	1.	00	2	
	4	1.00	) 1	.00	1.	00	1	
	5	1.00	) 1	.00	1.	00	1	
accı	ıracy				1.0	00	10	
macr	o avg	l	1.00	1	.00	1.0	00	10
weight	ed av	g	1.00	)	1.00	1.	00	10

Sentence: i need a flight from cincinnati to san jose leaving after 6 in the evening True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP

NUM ADP DET NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADP NUM ADP DET NOUN

Classification Report:

	precis	sion	recall	f1-scor	e suppo	ort
1	1	.00	1.00	1.00	3	
2	1	.00	1.00	1.00	4	
3	1	.00	1.00	1.00	2	
4	1	.00	1.00	1.00	2	
5	1	.00	1.00	1.00	2	
6	1	.00	1.00	1.00	1	
9	1	.00	1.00	1.00	1	
accur	acy			1.00	15	
macro weighte	•	1.0 1.		.00 ′ 1.00	1.00 1.00	15 15

Sentence: flights from milwaukee to orlando one way True tags: NOUN ADP PROPN ADP PROPN NUM NOUN Predicted tags: NOUN ADP PROPN ADP PROPN NUM NOUN

Classification Report:

p	orecisio	n re	call	f1-scc	ore su	ippoi	rt
1	1.00	1.	00	1.00	) :	2	
2	1.00	1.	00	1.00	) :	2	
3	1.00	1.	00	1.00	) ;	2	
9	1.00	1.	00	1.00	)	1	
accura	СУ			1.00	7	7	
macro a weighted	avg	1.00 1.00		.00 I.00	1.00 1.00	•	7 7

Sentence: i want to fly from baltimore to dallas round trip

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 2

2	1.00	1.00	1.0	00	2	
3	1.00	1.00	1.0	00	2	
4	1.00	1.00	1.0	00	2	
6	1.00	1.00	1.0	00	1	
12	1.00	1.00	) 1.	.00	1	
accuracy	<i>'</i>		1.0	00	10	
macro av	g 1.	00	1.00	1.0	0	10
weighted av	vg 1	.00	1.00	1.0	00	10

Sentence: hi i want a round trip ticket to dallas

True tags: INTJ PRON VERB DET NOUN NOUN NOUN ADP PROPN

Predicted tags: NOUN PRON VERB DET NOUN NOUN NOUN ADP PROPN

Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	00	1	
2		1.00	1.0		1.0		1	
3	(	0.75	1.0	00	3.0	36	3	
4		1.00	1.0	00	1.0	00	1	
5	•	1.00	1.0	00	1.0	00	1	
6	•	1.00	1.0	00	1.0	00	1	
13	3	1.00	0.	00	0.	00	1	
accur	acy				8.0	9	9	
macro	avg	0	.96	0	.86	8.0	84	9
weighte	d avg	(	0.92	(	0.89	0.	84	9

Sentence: what would be cost of a round trip from pittsburgh to san francisco True tags: PRON AUX AUX NOUN ADP DET NOUN NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON AUX AUX NOUN ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN Classification Report:

	precis	ion r	ecall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 3	
2	1.0	00	1.00	1.00	) 3	
3	1.0	00	1.00	1.00	) 3	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
8	1.0	00	1.00	1.00	2	
accur	acv			1.00	13	
macro weighted	avg	1.00 1.00		.00 1.00	1.00 1.00	13 13

Sentence: show me round trip fares from toronto to detroit on delta northwest us air and united airlines

True tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP PROPN ADP

PROPN PROPN PROPN CCONJ PROPN PROPN

Predicted tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP PROPN ADP

PROPN PROPN PROPN CCONJ PROPN PROPN

Classification Report:

	precision		recall f1-score		re supp	oort
1	1.	00	1.00	1.00	8	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	3	
4	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
10	) 1	.00	1.00	1.0	0 1	
accura	асу			1.00	17	
macro	avg	1.0	00 1	.00	1.00	17
weighted	d avg	1.	00	1.00	1.00	17

Sentence: give me all the flights from new york to miami round trip

True tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

NOUN NOUN

Classification Report:

	precisio	on re	call	f1-sco	ore su	pport
1	1.0	0 1.	00	1.00	) ;	3
2	1.0	0 1.	00	1.00	) ;	2
3	1.0	0 1.	00	1.00	) ;	3
4	1.0	0 1.	00	1.00	) .	1
5	1.0	0 1.	00	1.00	) ;	2
6	1.0	0 1.	00	1.00	) .	1
accur	acy			1.00	) 1:	2
macro	avg	1.00	1.	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: how much is a round trip fare from nashville to seattle

True tags: ADV ADV AUX DET NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: ADV VERB AUX DET NOUN NOUN NOUN ADP PROPN ADP

PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3
4	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

11 1.00 0.50 0.67 2

accuracy 0.91 11 macro avg 0.86 0.93 0.81 11 weighted avg 1.00 0.91 0.94 11

Sentence: what is the fare going from baltimore to boston one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN NUM NOUN ADP ADP NOUN

Classification Report:

- 10.00 m out of 1 m							
	precision	recall	f1-score	supp	ort		
1	1.00	1.00	1.00	2			
2	0.75	1.00	0.86	3			
3	0.50	0.67	0.57	3			
4	1.00	0.00	0.00	1			
5	1.00	1.00	1.00	1			
6	1.00	1.00	1.00	1			
7	1.00	0.00	0.00	1			
8	1.00	1.00	1.00	1			
9	1.00	1.00	1.00	1			
accura	acv		0.79	14			
macro	_	).92 (		71	14		
weighted	9	0.84		.73	14		

Sentence: show me the round trip flights between phoenix and salt lake city

True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

	precision			recall f1-score			supp	ort
	<b>P</b>			Jan		010	очрр	011
1		1.00	1.	00	1.0	00	4	
2	<u> </u>	1.00	1.	00	1.0	00	1	
3	3	1.00	1.	00	1.0	00	3	
4	ļ	1.00	1.	00	1.0	00	1	
5	;	1.00	1.	00	1.0	00	1	
6	<b>)</b>	1.00	1.	00	1.0	00	1	
10	0	1.00	1	.00	1.	00	1	
accur	асу				1.0	0	12	
macro	avg	1	1.00	1	.00	1.0	0	12
weighte	d av	g	1.00	•	1.00	1.	00	12

Sentence: what is the fare going from baltimore to atlanta one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN PROPN NOUN ADP ADP NOUN

Classification Report:

	precis	ion	recall	f1-sco	re sup	port
1	0.	67	1.00	0.80	) 2	
2	0.	75	1.00	0.86	3	
3	0.	50	0.67	0.57	3	
4	1.	00	0.00	0.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
7	1.	00	0.00	0.00	) 1	
8	1.	00	1.00	1.00	) 1	
9	1.	00	0.00	0.00	) 1	
accur	асу			0.71	14	
macro	avg	0.8	8 0	.63	0.58	14
weighted	d avg	0.	79 (	0.71	0.63	14

Sentence: now i want to see return flights from miami to new york

True tags: ADV PRON VERB PART VERB NOUN NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: NOUN PRON VERB PART VERB NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

Olacollic	, a ti O i	up	O. C.					
	pred	cision	rec	all	f1-sc	core	supp	ort
1		1.00	1.0	00	1.0	00	3	
2		1.00	1.0	00	1.0	00	2	
3		0.67	1.0	00	3.0	30	2	
4		1.00	1.0	00	1.0	00	2	
6		1.00	1.0	00	1.0	00	1	
11		1.00	0.0	00	0.	00	1	
12	2	1.00	1.	00	1.	00	1	
accur	acy				0.9	2	12	
macro weighte	_		.95 ).94	-	.86 0.92	8.0 0	3 88	12 12
· · ciginto	u uv	,	J.U-T	`	J.UZ	0.		12

Sentence: do you have an <unk> flight from denver to san francisco

True tags: AUX PRON VERB DET NUM NOUN ADP PROPN ADP PROPN PROPN Predicted tags: VERB PRON VERB DET AUX NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

```
3
      1
            1.00
                   1.00
                           1.00
      2
            1.00
                   1.00
                           1.00
                                     2
      3
                   1.00
                                     1
            1.00
                           1.00
      4
            0.50
                   1.00
                           0.67
                                     1
      5
            1.00
                   1.00
                           1.00
                                     1
                                     1
      6
            1.00
                   1.00
                           1.00
      8
            0.00
                   0.00
                           0.00
                                     1
      9
            1.00
                   0.00
                           0.00
                                     1
  accuracy
                           0.82
                                    11
 macro avg
                0.81
                               0.71
                                        11
                       0.75
weighted avg
                0.86
                        0.82
                                0.79
                                         11
```

Sentence: i would like to book a flight from chicago to seattle on june fourth

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

ADP NOUN ADJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN ADP NOUN PROPN

Classification Report:

р	precision		f1-score	suppo	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accurac	су		0.93	14	
macro a weighted	•		.89 0.8 0.93 0.	37 90	14 14
weignted	uvg 0	.00 (	J.00 0.	00	17

Sentence: are there any flights from long beach to columbus on wednesday april sixth

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADJ

Predicted tags: AUX PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN PROPN

Classification Report:

precision recall f1-score support 1.00 1 0.75 0.86 3 2 1.00 1.00 1.00 3 3 1.00 1.00 1.00 3 4 1.00 0.00 0.00 1 5 1.00 1.00 1.00 1 6 1.00 1 1.00 1.00

Sentence: i <unk> like flights going from boston to atlanta leaving on august sixth in the afternoon

True tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN ADJ ADP DET NOUN

Predicted tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN NOUN ADP DET NOUN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	4	
3	0.7	5 1.	.00	0.86	3	
4	1.0	0 1.	.00	1.00	3	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 0.	.00	0.00	1	
8	1.0	0 1.	.00	1.00	1	
accura	асу			0.94	16	
macro weighted	_	0.97 0.95	_	.88 ).94	0.86 0.91	16 16
•	•					

Sentence: i would like to find out what flights there are on friday june eleventh from <unk> petersburg to milwaukee and then from milwaukee to tacoma thank you True tags: PRON AUX VERB PART VERB ADV DET NOUN PRON VERB ADP NOUN NOUN ADJ ADP PROPN PROPN ADP PROPN CCONJ ADV ADP PROPN ADP PROPN VERB PRON

Predicted tags: PRON AUX VERB PART VERB VERB PRON NOUN PRON AUX ADP NOUN NOUN PROPN ADP PROPN PROPN ADP PROPN CCONJ VERB ADP PROPN ADP PROPN PROPN PRON

	precision	recall	f1-score	support
1	0.71	1.00	0.83	5
2	1.00	1.00	1.00	5
3	1.00	1.00	1.00	3
4	0.50	0.50	0.50	4
5	1.00	0.00	0.00	1
6	0.75	1.00	0.86	3
7	1.00	0.00	0.00	1
8	0.50	1.00	0.67	1
10	1.00	1.00	1.00	1
11	1.00	0.00	0.00	2

12 1.00 1.00 1.00 1

accuracy 0.78 27 macro avg 0.86 0.68 0.62 27 weighted avg 0.83 0.78 0.72 27

Sentence: i need a flight from chicago to dallas on continental on june fifth

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP

NOUN ADJ

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN

ADP NOUN PROPN Classification Report:

	precis	ion re	call	f1-sco	re sup	port
1	0.7	75 1	.00	0.86	3	
2	1.0	00 1	.00	1.00	) 4	
3	1.0	00 1	.00	1.00	2	
4	1.0	00 1	.00	1.00	) 1	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
7	1.0	0 00	.00	0.00	) 1	
accur	асу			0.92	! 13	
macro	avg	0.96	0	.86	0.84	13
weighte	d avg	0.94	(	0.92	0.89	13

Sentence: i <unk> like a flight on july ninth from orlando to kansas city in the afternoon

True tags: PRON AUX VERB DET NOUN ADP NOUN ADJ ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

0.000		r						
	prec	ision	red	call	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	3	
2		1.00	1.0	00	1.0	0	4	
3	(	0.75	1.0	00	3.0	36	3	
4	. •	1.00	1.0	00	1.0	00	1	
5	,	1.00	1.0	00	1.0	00	2	
6	;	1.00	1.0	00	1.0	0	1	
7	•	1.00	0.0	00	0.0	00	1	
8	,	1.00	1.0	00	1.0	00	1	
accur	acy				0.9	4	16	
macro	avg	C	).97	0	.88	0.8	6	16
weighte	d avg	l	0.95	(	0.94	0.	91	16

Sentence: i <unk> like to arrange a trip to baltimore on january first

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN

ADJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

**NOUN ADJ** 

Classification Report:

1	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	су		1.00	12	
macro a	•		.00 1.0 1.00 1.	)0 00	12 12
weignted	avy i	.00	1.00 1.	00	12

Sentence: okay and then from pittsburgh i <unk> like to travel to atlanta on

september fourth

True tags: INTJ CCONJ ADV ADP PROPN PRON AUX VERB PART VERB ADP

PROPN ADP NOUN ADJ

Predicted tags: PROPN CCONJ VERB ADP PROPN PRON AUX VERB PART VERB

ADP PROPN ADP NOUN PROPN

Classification Report:

pro	ecision	recall	f1-score	supp	ort
1	0.50	1.00	0.67	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	1	
4	0.67	1.00	0.80	2	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
12	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accuracy	1		0.80	15	
macro av	g 0.9	-	.73 0.6 0.80 0.	8 73	15 15
-	-				

Sentence: list the flights from westchester county to denver on june seventh True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN

## Classification Report:

	precision		call	f1-sco	ore sup	port
1	1.0	0 1	.00	1.00	) 3	
2	1.0	0 1	.00	1.00	3	
3	0.6	7 1	.00	0.80	) 2	
4	1.0	0 1	.00	1.00	) 1	
5	1.0	0 1	.00	1.00	) 1	
7	1.0	0 0	.00	0.00	) 1	
accura	асу			0.91	11	
macro weighted	•	0.94 0.94		.83 ).91	0.80 0.87	11 11

Sentence: flights from atlanta august second True tags: NOUN ADP PROPN NOUN ADJ

Predicted tags: NOUN ADP PROPN PROPN ADJ

Classification Report:

	precisi	on re	call	f1-sco	ore su	pport
1	0.5	50 1	.00	0.67	7	1
2	1.0	0 1	.00	1.00	)	1
3	1.0	0 0	.50	0.6	7	2
7	1.0	0 1	.00	1.00	)	1
accur	acy			0.80	) 5	5
macro	avg	0.88	0.	.88	0.83	5
weighted	d avg	0.90	(	08.0	0.80	5

Sentence: what are the flights between pittsburgh and baltimore on august tenth True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN ADJ Predicted tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN ADJ

Classification Report:

	precision		recall	f1-scc	re sup	port
1	1.	.00	1.00	1.00	) 2	
2	1.	.00	1.00	1.00	) 2	
3	1.	.00	1.00	1.00	) 2	
5	1.	.00	1.00	1.00	) 1	
6	1.	.00	1.00	1.00	) 1	
7	1.	.00	1.00	1.00	) 1	
8	1.	.00	1.00	1.00	) 1	
10	) 1	.00	1.00	1.0	0 1	
accur	асу			1.00	11	
macro weighte	_	1.0 1.0		.00 1.00	1.00 1.00	11 11

Sentence: on april first i need a flight going from phoenix to san diego

True tags: ADP NOUN ADJ PRON VERB DET NOUN VERB ADP PROPN ADP

PROPN PROPN

Predicted tags: ADP NOUN ADJ PRON VERB DET NOUN NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	1.	00	3	
2		00	1.00		00	3	
3	0.	67	1.00	0.	80	2	
4	1.	00	0.50	0.	67	2	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
7	1.	00	1.00	1.	00	1	
accur	acy			0.9	92	13	
macro	avg	0.9	95	0.93	0.9	2	13
weighte	d avg	0	.95	0.92	0.	92	13

Sentence: show me a list of flights from denver to baltimore on united for august third True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP PROPN ADD PROPN

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP NOUN ADJ

Classification Report:

	prooic	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	1000		00010	очрр	011
1	1.	00	1.00	) 1	.00	3	
2	1.	00	1.00	) 1	.00	5	
3	1.	00	1.00	) 1	.00	3	
4	1.	00	1.00	) 1	.00	1	
5	1.	00	1.00	) 1	.00	1	
6	1.	00	1.00	) 1	.00	1	
7	1.	00	1.00	) 1	.00	1	
accur	acy			1	.00	15	
macro	avg	1.0	00	1.00	1.0	00	15
weighted	d avg	1.	.00	1.00	) 1	.00	15
-	_						

precision recall f1-score support

Sentence: what are the flights from san jose to nashville on thursday the twentieth True tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	0.67	1 00	0 8 N	2

5	1.00	) 1.0	00	1.0	0	2	
6	1.00	) 1.0	00	1.0	0	1	
7	1.00	0.0	00	0.0	0	1	
8	1.00	) 1.0	00	1.0	0	1	
accuracy	/			0.92	2	13	
macro av	g	0.95	3.0	36	0.83		13
weighted a	vg	0.95	0.	92	0.8	9	13

Sentence: i need a ticket from nashville to seattle

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	ecall	f1-sc	ore su	ıpport	
1	1.0	00 1	.00	1.0	0	2	
2	1.0	00 1	.00	1.0	0	2	
3	1.0	00 1	.00	1.0	0	1	
4	1.0	00 1	.00	1.0	0	1	
5	1.0	00 1	.00	1.0	0	1	
6	1.0	00 1	.00	1.0	0	1	
accur	acy			1.00	) ;	8	
macro	avg	1.00	1	.00	1.00	8	
weighted	d avg	1.00		1.00	1.00	8	3

Sentence: how much does it cost to fly on delta from dallas to baltimore

True tags: ADV ADV AUX PRON VERB PART VERB ADP PROPN ADP PROPN ADP PROPN

Predicted tags: ADV VERB AUX PROPN NOUN ADP VERB ADP PROPN ADP

PROPN ADP PROPN
Classification Report:
precision recall f1-score support

	prooic	,,,,,,	rcoa		0010	очрр	011
1	0.	75	1.00	0.	.86	3	
2	0.	75	1.00	0.	.86	3	
3	0.	00	1.00	0.	.00	0	
4	0.	50	0.50	0.	.50	2	
6	1.	00	0.00	0.	.00	1	
8	1.	00	1.00	1.	.00	1	
11	1	.00	0.50	0 (	.67	2	
12	2 1	.00	0.00	0 0	.00	1	
accur	acy			0.	69	13	
macro weighted	_	0.7 0	'5 81	0.62 0.69	0.4	19 65	13 13
woigine	auvg	0.	<b>O</b> 1	0.00	0.		.0

Sentence: what are the fares for flights from charlotte to newark on tuesday and wednesday

True tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP

NOUN CCONJ NOUN

Predicted tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP

NOUN CCONJ NOUN Classification Report:

	precis	ion	recal	f1-sc	core	supp	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	00	4	
3	1.	00	1.00	1.0	00	4	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
10	) 1	.00	1.00	1.	00	1	
accur	acy			1.0	0	14	
macro	_	1.0		1.00	1.0	0	14
weighted	d avg	1.	00	1.00	1.0	00	14

Sentence: show fares and flights from denver to oakland

True tags: VERB NOUN CCONJ NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN CCONJ NOUN ADP PROPN ADP PROPN

Classification Report:

ŗ	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	су		1.00	8	
macro a	avg 1	.00 1	.00 1.0	00	8
weighted	avg	1.00	1.00 1.	.00	8

Sentence: what is the airfare between denver and pittsburgh True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN

	pre	cision	rec	call	†1-	score	S	uppo	or
1		1.00	1.0	00		1.00		2	
2		1.00	1.0	00	•	1.00		1	
3		1.00	1.0	00	•	1.00		1	
5		1.00	1.0	00	•	1.00		1	
6		1.00	1.0	00	•	1.00		1	
8		1.00	1.0	00	•	1.00		1	
10	)	1.00	1.	.00		1.00		1	
accur	асу				1	.00		8	

macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: what does it cost to fly from boston to oakland on united airlines

True tags: PRON AUX PRON VERB PART VERB ADP PROPN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX NOUN NOUN ADP VERB ADP PROPN ADP PROPN

ADP PROPN PROPN Classification Report:

	precision		recall	f1-sc	ore su	upport
1	1.	00	1.00	1.0	0	4
2	0.	75	1.00	0.8	6	3
3	0.	00	1.00	0.0	0	0
4	1.	00	0.50	0.6	7	2
6	1.	00	0.50	0.6	7	2
8	1.	00	1.00	1.0	0	1
12	2 1	.00	0.00	0.0	00	1
accura	acy			0.7	7 1	13
macro	•	0.8	32 (	).71	0.60	13
weighted	_			0.77	0.79	13
5	5	_			_	_

Sentence: get saturday fares from washington to montreal True tags: VERB NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precisi	on red	call f1-s	core s	upport
1.0	0 1.0	00 1.	.00	2
1.0	0 1.0	00 1.	.00	2
1.0	0 1.0	00 1.	.00	2
1.0	0 1.0	00 1.	.00	1
acy		1.	00	7
avg	1.00	1.00	1.00	7
d avg	1.00	1.00	1.00	7
	1.0 1.0 1.0 1.0 acy avg	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. acy 1. avg 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: give me fares from atlanta to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 2 1 1.00 1.00 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1

accuracy		1.0	0 7	
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: continental airlines on saturday from chicago to seattle True tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN Predicted tags: PROPN PROPN ADP NOUN ADP PROPN

Classification Report:

	precis	sion	recal	l t1-sc	core	supp	ort
1	1.	.00	1.00	1.0	00	4	
2	2 1.	.00	1.00	1.0	00	3	
3	1.	.00	1.00	1.0	00	1	
accur	acy			1.0	0	8	
macro	avg	1.	00	1.00	1.0	0	8
weighte	d avg	1	.00	1.00	1.0	00	8

Sentence: does eastern airlines fly between boston and washington True tags: AUX PROPN PROPN VERB ADP PROPN CCONJ PROPN Predicted tags: AUX PROPN PROPN VERB ADP PROPN CCONJ PROPN Classification Report:

	precisio	n re	call	f1-sco	re su	ppo	rt
1	1.00	) 1	00	1.00	) .	4	
2	1.00		00	1.00		1	
4	1.00	) 1.	00	1.00	)	1	
8	1.00	) 1.	00	1.00	)	1	
10	1.0	0 1	.00	1.0	0	1	
accura	су			1.00	3	3	
macro	avg	1.00	1	.00	1.00		8
weighted	avg	1.00	•	1.00	1.00		8

Sentence: i would like some information on a flight from denver to san francisco on united airlines

True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN

Predicted tags: PRON AUX VERB VERB NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	0.50	1.00	0.67	1
5	1.00	0.50	0.67	2
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		0.9	4 16	;
macro avg	0.93	0.93	0.90	16
weighted avg	0.97	0.94	0.94	16

Sentence: american airlines from denver to milwaukee True tags: PROPN PROPN ADP PROPN Predicted tags: PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 2 1.00 1.00 1.00 accuracy 1.00 6 macro avg 1.00 1.00 1.00 6 weighted avg 1.00 1.00 1.00 6

Sentence: i need a flight delta airlines kansas city to salt lake

True tags: PRON VERB DET NOUN PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: PRON VERB DET NOUN PROPN PROPN PROPN PROPN ADP

PROPN PROPN Classification Report:

	precisi	on re	call	f1-sc	ore si	upport	t
1	1.0	0 1.	.00	1.00	0	6	
2	1.0	0 1.	.00	1.0	0	1	
3	1.0	0 1.	.00	1.00	0	1	
4	1.0	0 1.	.00	1.0	0	1	
5	1.0	0 1.	.00	1.00	0	1	
6	1.0	0 1.	.00	1.0	0	1	
accur	acy			1.00	) 1	11	
macro	avg	1.00	1	.00	1.00	11	1
weighted	d avg	1.00	•	1.00	1.00	1	1

Sentence: list the alaska airlines flights a departing from burbank

True tags: VERB DET PROPN PROPN NOUN DET VERB ADP PROPN Predicted tags: VERB DET ADJ PROPN NOUN DET PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 0.67 0.67 0.67 3 2 1.00 1.00 1.00 1 3 1.00 1.00 1 1.00 4 0.50 2 1.00 0.67 5 1.00 1.00 1.00 2 7 0.00 1.00 0.00 0

accuracy		0.7	8 9	9
macro avg	0.78	0.86	0.72	9
weighted avg	0.89	0.78	0.81	9

Sentence: give me all the flights from miami to chicago on american airlines

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 1	.00	1.00	4	
2	1.0	0 1	.00	1.00	3	
3	1.0	0 1	.00	1.00	1	
4	1.0	0 1	.00	1.00	1	
5	1.0	0 1	.00	1.00	2	
6	1.0	0 1	.00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.00	1	.00 ′	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: i <unk> like united airlines flights from denver to baltimore

True tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP PROPN

Classification Report:

	pred	cisio	n re	call	f1-s	core	supp	ort
1		1.00	1.	.00	1.	00	4	
2	) -	1.00	1.	.00	1.	00	2	
3	}	1.00	1.	.00	1.	00	1	
4		1.00	1.	.00	1.	00	1	
6	;	1.00	1.	.00	1.	00	1	
8	}	1.00	1.	.00	1.	00	1	
accur	acy				1.0	00	10	
macro	_		1.00	1	.00	1.0	0	10
weighte	d av	9	1.00	•	1.00	1.	00	10

Sentence: i <unk> like a flight from new york to los angeles on saturday morning on us air

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN

PROPN ADP NOUN NOUN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

```
1
            1.00
                    1.00
                            1.00
                                     6
      2
            1.00
                    1.00
                            1.00
                                      4
      3
                                      3
            1.00
                    1.00
                            1.00
      4
            1.00
                    1.00
                            1.00
                                      1
      5
                                      1
            1.00
                    1.00
                            1.00
                                      1
      6
            1.00
                    1.00
                            1.00
      8
            1.00
                    1.00
                            1.00
                                      1
                            1.00
                                     17
  accuracy
 macro avg
                1.00
                        1.00
                                1.00
                                         17
weighted avg
                 1.00
                         1.00
                                 1.00
                                          17
```

Sentence: show me the southwest airlines flights from san diego to san francisco True tags: VERB PRON DET PROPN PROPN NOUN ADP PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB PRON DET ADJ PROPN NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 0.83 0.91 6 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 0.00 0.00 1.00 0 accuracy 0.92 12 0.86 0.84 12 0.98 macro avg 12 weighted avg 1.00 0.92 0.95

Sentence: what flights does american airlines have from boston to dallas True tags: DET NOUN AUX PROPN PROPN VERB ADP PROPN ADP PROPN PROPN VERB ADP PROPN ADP PROPN
PROPN

	precis	sion	recal	l f1-s	core	supp	ort
1	1.	00	1.00	1.0	00	4	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	1	
4	1.	00	1.00	1.0	00	1	
5	1.	00	0.00	0.0	00	1	
6	0.	00	1.00	0.0	00	0	
8	1.	00	1.00	1.0	00	1	
accur	acy			0.9	90	10	
	•	8.0	86	0.86	0.7	1	10
weighte	_	1.	00	0.90	0.9	90	10
accur macro	acy avg	0.8	36	0.9 0.86	90 0.7	10 1	-

Sentence: what flights go from chicago to seattle on continental airlines on saturday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

Ciassilic	Ciassification Neport.								
	precision	on re	ecall	f1-sc	ore su	upport			
1	1.0	0 1	.00	1.0	0	4			
2	1.0	0 1	.00	1.0	0	4			
3	1.0	0 1	.00	1.0	0	2			
4	1.0	0 1	.00	1.0	0	1			
5	1.0	0 0	.00	0.0	0	1			
6	0.0	0 1	.00	0.0	0	0			
accur	асу			0.92	2 1	12			
macro	avg	0.83	0	.83	0.67	12			
weighted	d avg	1.00	) (	0.92	0.92	12			

Sentence: list the flights from dallas to san francisco on american airlines

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN

Classification Report:

	prec	isior	n red	call	†1-s	core	supp	ort
1		1.00	1.0	าก	1	00	5	
2		1.00	1.0			00	3	
3		1.00	1.0	00	1.	00	1	
4		1.00	1.0	00	1.	00	1	
5	•	1.00	1.0	00	1.	00	1	
accur	асу				1.0	00	11	
macro	avg	•	1.00	1	.00	1.0	00	11
weighte	d avg	l	1.00	•	1.00	1.	00	11

Sentence: what flights go from chicago to seattle on saturday on continental airlines True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP PROPN PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 4 1 2 1.00 1.00 1.00 4 3 2 1.00 1.00 1.00 4 1.00 1.00 1 1.00

5 1.0	0.0	0.0	)O '	1
6 0.0	00 1.0	0.0	00 (	)
accuracy		0.9	2 1:	2
macro avg	0.83	0.83	0.67	_ 12
weighted avg	1.00	0.92	0.92	12

Sentence: show me the flight classes for delta airlines

True tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore s	upport
1	1.0	00 1.	00	1.0	0	2
2	1.0	00 1.	00	1.0	0	1
3	1.0	00 1.	00	1.0	0	2
4	1.0	0 1.	00	1.0	0	1
5	1.0	0 1.	00	1.0	0	1
6	1.0	00 1.	00	1.0	0	1
accur	acy			1.00	)	8
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00	•	1.00	1.00	8

Sentence: please list the flights from cincinnati to burbank on american airlines True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

	prec	ision	recall	f1-score	suppo	ort
1		1.00	1.00	1.00	4	
2	•	1.00	1.00	1.00	3	
3	•	1.00	1.00	1.00	1	
4	•	1.00	1.00	1.00	1	
5	•	1.00	1.00	1.00	1	
13	3	1.00	1.00	1.00	1	
accur macro weighted	avg	1.0 1.		1.00 .00 1.0 1.00 1.	11 00 00	11 11

Sentence: show me all the flights from indianapolis to san diego on us air

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN ADP

PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN

ADP PROPN PROPN Classification Report:

precision recall f1-score support

1	1.00	1.00	) 1.0	00	5	
2	1.00	1.00	1.0	00	3	
3	1.00	1.00	1.0	00	1	
4	1.00	1.00	) 1.0	00	1	
5	1.00	1.00	) 1.0	00	2	
6	1.00	1.00	) 1.0	00	1	
accurac	y		1.0	00	13	
macro av	/g 1	.00	1.00	1.0	0	13
weighted a	ıvg	1.00	1.00	1.	00	13

Sentence: i would like to fly delta airlines from atlanta to pittsburgh

True tags: PRON AUX VERB PART VERB PROPN PROPN ADP PROPN ADP

PROPN

Predicted tags: PRON AUX VERB PART VERB PROPN PROPN ADP PROPN ADP

**PROPN** 

Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accuracy	,		1.00	11	
macro av	g 1.0	00 1	.00 1.0	00	11
weighted a	vg 1	.00	1.00 1	.00	11

Sentence: what flights are available wednesday afternoon from denver to san francisco

True tags: DET NOUN AUX ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON NOUN AUX ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

	precisi	on re	call f1	-score	suppo	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	3	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	acy			0.91	11	
macro	•	0.86	0.86	3 O.T	71	11
weighted	•	1.00	0.9	91 0	.91	11

Sentence: show me all flights to philadelphia in the evening

True tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN

Classification Report:

	precision	on rec	all f1-s	score s	upport
1	1.0	0 1.0	00 1	.00	1
2	1.0	0 1.0	00 1	.00	2
3	1.0	0 1.0	00 1	.00	2
4	1.0	0 1.0	00 1	.00	1
5	1.0	0 1.0	00 1	.00	2
6	1.0	0 1.0	00 1	.00	1
accur	acy		1.	.00	9
macro	avg	1.00	1.00	1.00	9
weighte	d avg	1.00	1.00	1.00	9

Sentence: flights from chicago to denver on continental on saturday morning True tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precis	ion	reca	all f	1-sc	ore	supp	ort
1	1.	00	1.0	0	1.0	00	3	
2	1.	00	1.0	0	1.0	0	4	
3	1.	00	1.0	0	1.0	0	3	
accur	acy				1.0	0	10	
macro		1.0	00	1.0	00	1.0	0	10
weighte	d avg	1.	.00	1.	.00	1.0	00	10

Sentence: what flights from san jose to dallas on friday afternoon

True tags: DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

NOUN

Classification Report:

prec	isior	n re	call	f1-s	core	supp	oort
	1.00	1.	00	1.	00	3	
	1.00	1.	00	1.	00	3	
	1.00	1.	00	1.	00	3	
	1.00	0.	00	0.	00	1	
	0.00	1.	00	0.	00	0	
асу				0.9	90	10	
_		0.80 1.00					10 10
	acy avg	1.00 1.00 1.00 1.00 0.00	1.00 1. 1.00 1. 1.00 1. 1.00 0. 0.00 1. acy avg 0.80	1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 1.00 acy avg 0.80 0	1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 0.00 0. 0.00 1.00 0. acy 0.90 0.80	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 3 1.00 1.00 1.00 3 1.00 0.00 0.00 1 0.00 1.00 0.00 0 acy 0.90 10 avg 0.80 0.80 0.60

Sentence: what are the flights and prices from la to charlotte for monday morning

True tags: PRON AUX DET NOUN CCONJ NOUN ADP PROPN ADP PROPN ADP

**NOUN NOUN** 

Predicted tags: PRON AUX DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

ADP NOUN NOUN Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	1.	00	2	
2	1.	00	1.00	1.	00	3	
3	1.	00	1.00	1.	00	4	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
8	1.	00	1.00	1.	00	1	
10	) 1	.00	1.00	0 1	.00	1	
accur	acy			1.0	00	13	
macro	avg	1.0	00	1.00	1.0	0	13
weighted	d avg	1	.00	1.00	1.	00	13

Sentence: on friday night i would like a flight from newark to los angeles

True tags: ADP NOUN NOUN PRON AUX VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: ADP NOUN NOUN PRON AUX VERB DET NOUN ADP PROPN

ADP PROPN PROPN Classification Report:

	precis	ion	recall	f1-sc	ore sup	port
1	1.	00	1.00	1.0	0 3	
2	1.	00	1.00	1.0	0 3	
3	1.	00	1.00	1.0	0 3	
4	1.	00	1.00	1.0	0 1	
5	1.	00	1.00	1.0	0 1	
6	1.	00	1.00	1.0	0 1	
8	1.	00	1.00	1.0	0 1	
accur	•			1.00		4.0
macro weighte	_	1.0 1.0		.00 1.00	1.00 1.00	13 13

Sentence: <unk> paul to kansas city friday night

True tags: PROPN PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: AUX PROPN ADP PROPN PROPN NOUN NOUN

	precision	recall	f1-score	support
1	1.00	0.75	0.86	4
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
8	0.00	1.00	0.00	0

accuracy		0.8	6 7	
macro avg	0.75	0.94	0.71	7
weighted avg	1.00	0.86	0.92	7

Sentence: show me the flights from philadelphia to baltimore in the morning True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precisi	ion i	ecall	f1-sc	ore si	upport	Ĺ
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	2	
6	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	) 1	11	
macro	avg	1.00	) 1	.00	1.00	11	1
weighted	d avg	1.0	0 .	1.00	1.00	1	1

Sentence: what flights from chicago to denver in the morning

True tags: DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	prec	isior	ı re	call	†1-s	core	supp	ort
1		1.00	1	00	1	00	2	
2		1.00		00		00	3	
3		1.00		00		00	2	
5		1.00	0.	50	0.	67	2	
6	(	0.00	1.	00	0.	00	0	
accur	acv				0.8	RQ	9	
macro	•	(	08.0	0	.90	0.7	•	9
weighte	d avg	J	1.00	(	0.89	0.	93	9

Sentence: now i need a flight from detroit to san diego leaving tuesday evening True tags: ADV PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

NOUN NOUN

Predicted tags: NOUN PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN

VERB VERB NOUN Classification Report:

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	0.67	0.67	0.67	3
4	0.67	1.00	0.80	2

5	1.00	) 1	.00	1.00	) 1	
6	1.00	) 1	.00	1.00	) 1	
11	1.0	0 0	00.0	0.00	) 1	l
accuracy	,			0.85	13	}
macro av	g	0.90	0.8	81	0.78	13
weighted av	vg .	0.87	0	.85	0.82	13

Sentence: how about flights from dallas to atlanta on wednesday morning True tags: ADV ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: ADV ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precisio	n re	call f	1-score	e supp	ort
1	1.00	0 1.	00	1.00	2	
2	1.00	0 1.	00	1.00	4	
3	1.00	) 1.	00	1.00	3	
11	1.0	0 1	.00	1.00	1	
accura	асу			1.00	10	
macro	avg	1.00	1.0	0 1	.00	10
weighted	l avg	1.00	1.	00	1.00	10

Sentence: show me the evening flights from baltimore to atlanta True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Classification Report:

	precis	ion	recall	t1-sco	ore su	oport
1	1.0	00	1.00	1.00	) 2	) -
2	1.0	00	1.00	1.00	) 2	<u> </u>
3	1.0	00	1.00	1.00	) 2	<u> </u>
4	1.0	00	1.00	1.00	) 1	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
accur	acy			1.00	) 9	
macro	avg	1.0	0 1	.00	1.00	9
weighted	d avg	1.	00	1.00	1.00	9

Sentence: which flights go from pittsburgh to atlanta in the evening True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN Classification Report:

1     1.00     1.00     1.00     2       2     1.00     1.00     1.00     3       3     1.00     1.00     1.00     2       4     1.00     1.00     1.00     1	p	recision	recall	f1-score	support
4 1.00 1.00 1.00 I	2	1.00	1.00	1.00	3

5 1.00 1.00 1.00 2 1.00 10 accuracy macro avg 1.00 1.00 1.00 10 1.00 1.00 10 weighted avg 1.00

Sentence: from toronto to atlanta in the afternoon

True tags: ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

precision recall f1-score support 2 1 1.00 1.00 1.00 2 1.00 1.00 1.00 3 3 1.00 1.00 1.00 1 5 1 1.00 1.00 1.00 1.00 7 accuracy 1.00 1.00 1.00 7 macro avg 7 weighted avg 1.00 1.00 1.00

Sentence: i need to fly from pittsburgh to oakland and depart in the afternoon True tags: PRON VERB PART VERB ADP PROPN ADP PROPN CCONJ VERB ADP DET NOUN

Predicted tags: PRON VERB ADP VERB ADP PROPN ADP PROPN CCONJ ADP

ADP DET NOUN Classification Report:

	P						-  -	
1		1.00	1	.00	1.0	00	2	
2	<u>)</u>	0.60	1	.00	0.7	75	3	
3	3	1.00	1	.00	1.0	00	1	
4	Ļ	1.00	C	).67	0.8	30	3	
5	<u>,                                     </u>	1.00	1	.00	1.0	00	1	
6	6	1.00	1	.00	1.0	00	1	
10	0	1.00	)	1.00	1.	00	1	
1:	2	1.00	) (	0.00	0.	00	1	
accur	acy				8.0	35	13	
macro	avg		0.95	_	.83	3.0	32	13
weighte	d av	9	0.91		0.85	0.	82	13

precision recall f1-score support

Sentence: i need a flight from los angeles to pittsburgh on monday afternoon True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN NOUN** 

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN NOUN** 

Classification Report:

precision recall f1-score support

1	1.00	1.0	01.	.00	3	
2	1.00	1.0	0 1.	00	3	
3	1.00	1.0	0 1.	.00	3	
4	1.00	1.0	0 1.	.00	1	
5	1.00	1.0	0 1.	.00	1	
6	1.00	1.0	0 1.	.00	1	
accurac	y		1.	00	12	
macro av	/g	1.00	1.00	1.	00	12
weighted a	ıvg	1.00	1.00	1	.00	12

Sentence: show me the evening flights from atlanta to boston

True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score s	upport
1 1.00 1.00 1.00	2
2 1.00 1.00 1.00	2
3 1.00 1.00 1.00	2
4 1.00 1.00 1.00	1
5 1.00 1.00 1.00	1
6 1.00 1.00 1.00	1
accuracy 1.00	9
macro avg 1.00 1.00 1.00	9
weighted avg 1.00 1.00 1.00	9

Sentence: i need to know what flights leave atlanta on sunday evening and arrive in baltimore

True tags: PRON VERB PART VERB DET NOUN VERB PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN

Predicted tags: PRON VERB ADP VERB PRON NOUN VERB PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN

I	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	0.67	1.00	0.80	2	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	4	
5	1.00	0.00	0.00	1	
6	0.50	1.00	0.67	1	
10	1.00	1.00	1.00	1	
12	1.00	0.00	0.00	1	
accura	су		0.87	15	
macro a	avg 0.	90 0	.75 0.6	88	15
weighted	avg C	).92 (	0.87 0.	82	15

Sentence: what flights are there from boston to denver on monday morning

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN ADP NOUN

NOUN

Classification Report:

	preci	sion	recal	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	00	2	
2	1	.00	1.00	1.	00	3	
3	1	.00	1.00	1.	00	3	
4	1	.00	0.00	0.	00	1	
5	1	.00	0.00	0.	00	1	
6	0	.50	1.00	0.	67	1	
8	0	.00	1.00	0.	00	0	
accur	acy			0.0	32	11	
macro	avg	0.	79	0.71	0.5	2	11
weighted	d avg	0	.95	0.82	0.	79	11

Sentence: give me morning flights from atlanta to baltimore

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	t1-scc	re su	pport
1	1.00	) 1.	00	1.00	) ;	2
2	1.00	) 1.	00	1.00	) :	2
3	1.00	) 1.	00	1.00	) ;	2
4	1.00	) 1.	00	1.00	)	1
6	1.00	) 1.	00	1.00	)	1
accura	асу			1.00	3	3
macro	avg	1.00	1	.00	1.00	8
weighted	l avg	1.00		1.00	1.00	8

Sentence: flights from atlanta to dallas in the afternoon

True tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN

precision recall f1-score su	pport
	_
1 1.00 1.00 1.00 2	2
2 1.00 1.00 1.00 3	3
3 1.00 1.00 1.00 2	2
5 1.00 1.00 1.00 1	1
accuracy 1.00 8	3
macro avg 1.00 1.00 1.00	8
weighted avg 1.00 1.00 1.00	8

Sentence: morning flights from pittsburgh to atlanta on wednesday True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precision	on re	call f1	-score	supp	ort
1	1.0		.00	1.00	2	
2	_		00	1.00 1.00	3 3	
accur	acy			1.00	8	
macro weighted	avg	1.00 1.00	1.00 1.0		.00  .00	8 8

Sentence: what are the flights dallas to boston on monday morning

True tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precis	sion	reca	III	t1-sc	ore	supp	ort
4		00	4.00	`	4.0	^	_	
1	1	.00	1.00	J	1.0	U	2	
2	1	.00	1.00	)	1.0	0	2	
3	1	.00	1.00	)	1.0	0	3	
5	1	.00	1.00	)	1.0	0	1	
6	1	.00	1.00	)	1.0	0	1	
8	1	.00	1.00	)	1.0	0	1	
accur	acy				1.0	0	10	
macro	avg	1.0	00	1.	00	1.0	0	10
weighte	d avg	1	.00	1	.00	1.0	00	10
	_							

Sentence: am flights from atlanta to philadelphia True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

0.0000		. <b>.</b>	••				
	preci	sion	recall	f1-sco	ore su	ıppo	rt
1	1	.00	1.00	1.00	0	2	
2	1	.00	1.00	1.00	)	2	
3	1	.00	1.00	1.00	)	2	
accur	асу			1.00	) (	3	
macro weighted	_	1.0 1.0		1.00 1.00	1.00 1.00		6 6

Sentence: tampa to charlotte sunday morning
True tags: PROPN ADP PROPN NOUN NOUN
Predicted tags: VERB ADP PROPN NOUN NOUN

Classification Report:

Sentence: show flights saturday evening from <unk> louis to burbank
True tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Classification Report:

F	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
accura	су		1.00	9	
macro a	avg 1.	00 1	.00 1.0	00	9
weighted	avg 1	.00	1.00 1.	.00	9

Sentence: what pm flights are available from philadelphia to pittsburgh True tags: DET NOUN NOUN AUX ADJ ADP PROPN ADP PROPN Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN ADP PROPN Classification Report:

	preci	sion	reca	ll f1-s	score	suppo	ort
1	1	.00	1.00	) 1	.00	2	
2	. 1	.00	1.00	) 1	.00	2	
3	1	.00	1.00	) 1	.00	2	
5	5 1	.00	0.00	0 (	.00	1	
6	0	.00	1.00	0	.00	0	
7	' 1	.00	1.00	) 1	.00	1	
8	1	.00	1.00	) 1	.00	1	
accur	acy			0.	89	9	
macro	avg	0.8	6	0.86	0.7	71	9
weighte	d avg	1.	00	0.89	0.	.89	9

Sentence: what are the flights from milwaukee to orlando on wednesday night True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN

Classification Report:

1	1.00	) 1.(	00	1.0	0	2	
2	1.00	1.0	00	1.0	0	3	
3	1.00	1.0	00	1.0	0	3	
5	1.00	1.0	00	1.0	0	1	
6	1.00	1.0	00	1.0	0	1	
8	1.00	1.0	00	1.0	0	1	
accurac	У			1.00	0	11	
macro av	/g	1.00	1.	00	1.00	)	11
weighted a	ıvg	1.00	1	.00	1.0	0	11

Sentence: show me the flights from san francisco to dallas

precision recall f1-score support

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

							1- 1-	
	1	1.00	) 1.	.00	1.0	00	3	
	2	1.00	) 1.	.00	1.0	00	2	
	3	1.00	1.	.00	1.0	00	1	
	4	1.00	1.	.00	1.0	00	1	
	5	1.00	1.	.00	1.0	00	1	
	6	1.00	1.	.00	1.0	00	1	
accu	ıracy				1.0	00	9	
macr	o avg		1.00	1	.00	1.0	0	9
weighte	ed av	g	1.00		1.00	1.	00	9

Sentence: show flights from san francisco to denver on a thursday

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN

Classification Report:

	prec	ision	rec	call	f1-s	core	supp	ort
1		1.00	1.0	00	1.	00	3	
2	•	1.00	1.0	00	1.	00	3	
3		1.00	1.0	00	1.	00	2	
4	•	1.00	1.0	00	1.	00	1	
5		1.00	1.0	00	1.	00	1	
accur	acy				1.0	00	10	
macro	avg	1	1.00	1	.00	1.0	00	10
weighte	d avg		1.00	•	1.00	1.	.00	10

Sentence: from las vegas to phoenix

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

Classification Report:

1	1.0	00 1.	.00 1	1.00	3	
2	1.0	00 1	.00 1	1.00	2	
accur	acy		1	.00	5	
macro	avg	1.00	1.00	1.00	)	5
weighte	d avg	1.00	1.00	1.0	0	5

Sentence: show me all flights from san diego to los angeles

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precisio	n red	call	f1-scc	ore su	pport
1	1.00	) 1.0	00	1.00	) 4	ļ
2	1.00	) 1.	00	1.00	) 2	2
3	1.00	1.0	00	1.00	) 1	
4	1.00	1.0	00	1.00	) 1	
5	1.00	1.0	00	1.00	) 1	
6	1.00	) 1.	00	1.00	) 1	
accur	acy			1.00	) 10	)
macro	avg	1.00	1.	.00	1.00	10
weighted	d avg	1.00	1	1.00	1.00	10

Sentence: show flights from kansas city to minneapolis True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	sion	reca	ll f1-sc	ore	supp	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	2	
3	1	.00	1.00	1.0	00	1	
4	. 1	.00	1.00	1.0	00	1	
accur	acy			1.0	0	7	
macro	avg	1.0	00	1.00	1.0	0	7
weighte	d avg	1	.00	1.00	1.0	00	7

Sentence: list flights from las vegas to phoenix

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1

accuracy	1.0	0 7		
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: flights from las vegas to montreal

True tags: NOUN ADP PROPN PROPN ADP PROPN Predicted tags: NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
accurac	;y		1.00	6	
macro a	vg 1.	00 1	.00 1	.00	6
weighted a	avg 1	.00	1.00 ′	1.00	6

Sentence: i am also interested in a flight that <unk> from <unk> louis to las vegas True tags: PRON AUX ADV VERB ADP DET NOUN ADP VERB ADP PROPN PROPN ADP PROPN

Predicted tags: PRON NOUN VERB VERB ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	reca	II f1-	score	supp	ort
1	0	.80	1.00	) (	).89	4	
2	1.	.00	1.00	) 1	.00	4	
3	0.	.50	1.00		).67	1	
4	0	.50	0.50	(	0.50	2	
5	1.	.00	1.00	) 1	.00	1	
6	1.	.00	1.00	) 1	.00	1	
8	1.	.00	0.00	(	00.0	1	
11	1 1	.00	0.00	) (	0.00	1	
accur	асу			0	.80	15	
macro	avg	0.8	35	0.69	0.	63	15
weighte	d avg	0.	85	0.80	0	.75	15

Sentence: <unk> petersburg to detroit True tags: PROPN PROPN ADP PROPN Predicted tags: AUX PROPN ADP PROPN

рі	recision	recall	f1-score	support
1	1.00	0.67	0.80	3
2	1.00	1.00	1.00	1
8	0.00	1.00	0.00	0

accuracy		0.7	5 4	
macro avg	0.67	0.89	0.60	4
weighted avg	1.00	0.75	0.85	4

Sentence: show me flights from san francisco to minneapolis

True tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisio	n rec	all f1-s	score	suppo	ort
1	1.00	) 1.0	00 1	.00	3	
2	1.00	) 1.0	00 1	.00	2	
3	1.00	1.0	00 1	.00	1	
4	1.00	) 1.0	00 1	.00	1	
6	1.00	1.0	00 1	.00	1	
accur	acy		1.	.00	8	
macro	avg	1.00	1.00	1.00	)	8
weighted	d avg	1.00	1.00	1.0	0	8

Sentence: what flights from salt lake city to las vegas

True tags: DET NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

	precisio	on re	call	f1-scc	re su	pport
1	1.0	0 1.	.00	1.00	) 5	5
2	1.0	0 1.	.00	1.00	) 2	2
3	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 0.	.00	0.00	) 1	
6	0.0	0 1.	.00	0.00	) (	)
accur	асу			0.89		)
macro weighted	_	0.80 1.00		.80 ).89	0.60 0.89	9 9

Sentence: show me all flights from san francisco to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

.accinica	uon nope	,, ,,		
р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
accurac	су		1.00	9

macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: do you have flights from <unk> petersburg to toronto on monday True tags: AUX PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: VERB PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Classification Report:

	preci	sion	recall	f1-sc	ore su	ipport
1	1	.00	1.00	1.0	0	3
2	1	.00	1.00	1.0	0	3
3	1	.00	1.00	1.0	0	2
4	0	.50	1.00	0.6	7	1
6	1	.00	1.00	1.0	0	1
8	1	.00	0.00	0.0	0	1
accur	асу			0.91	1 1	1
macro	avg	0.9	2 0	.83	0.78	11
weighte	d avg	0.9	95	0.91	0.88	11

Sentence: what are all the flights on delta in and out of fort worth

True tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ ADP ADP

PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ ADP ADP

PROPN PROPN Classification Report:

	prec	ision	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	00	3	
2	2 1	.00	1.00	1.	00	4	
3	3 1	.00	1.00	1.	00	1	
5	5 1	.00	1.00	1.	00	2	
6	6 1	.00	1.00	1.	00	1	
8	3 1	.00	1.00	1.	00	1	
10	0	1.00	1.0	0 1	.00	1	
accur	•	4 (	20		00	13	10
macro weighte	_	1.( 1	.00	1.00 1.00	1.0 1.	00	13 13

Sentence: show flights from <unk> petersburg to charlotte
True tags: VERB NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2

3	1.00	) 1.0	00 1	.00	1	
4	1.00	) 1.0	00 1	.00	1	
accuracy			1	.00	7	
macro avo	7	1.00	1.00	1.0	0	7
weighted av	-	1.00	1.00	1.	00	7

Sentence: i <unk> like flight information from dallas fort worth to boston on tuesday True tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP

PROPN ADP NOUN Classification Report:

	precis	on r	ecall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 4	
2	1.0	00	1.00	1.00	) 3	
3	1.0	00	1.00	1.00	) 3	
4	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
8	1.0	00	1.00	1.00	) 1	
accur	acy			1.00	13	
macro	avg	1.00	1	.00	1.00	13
weighted	d avg	1.0	Ο.	1.00	1.00	13

Sentence: show me all flights from san francisco to pittsburgh on friday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Classification Report:

	preci	sion	recall	f1-sc	ore sup	port
1	1	.00	1.00	1.0	0 3	
2	1	.00	1.00	1.0	0 3	
3	1	.00	1.00	1.0	0 2	
4	1	.00	1.00	1.0	0 1	
5	1	.00	1.00	1.0	0 1	
6	1	.00	1.00	1.0	0 1	
				4.00	11	
accur	•			1.00		
macro weighted	_	1.0 1.	00 1 .00	1.00 1.00	1.00 1.00	11 11

Sentence: from las vegas to montreal

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

Classification Report:

1 1.	00 1.	00 1.0	00 3	
2 1.	00 1.	00 1.0	00 2	
accuracy		1.0	0 5	
macro avg	1.00	1.00	1.00	5
weighted avg	1.00	1.00	1.00	5

Sentence: sunday flights from new york city to las vegas

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN P

Classification Report:

	preci	sion	recall	f1-sc	ore su	pport
1	1	.00	1.00	1.00	) !	5
2	1	.00	1.00	1.00	) 2	2
3	1	.00	1.00	1.00	) 2	2
accur	асу			1.00	) 9	)
macro	avg	1.0	00 1	.00	1.00	9
weighte	d avg	1.	00	1.00	1.00	9

Sentence: please find a flight from kansas city to newark

True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore su	ıpport
1	1.	.00	1.00	1.00	)	3
2	1.	.00	1.00	1.00	)	2
3	1.	.00	1.00	1.00	)	1
4	1.	.00	1.00	1.00	)	1
5	1.	.00	1.00	1.00	)	1
13	3 1	.00	1.00	1.0	0	1
accur	acy			1.00	) (	9
macro	avg	1.0	0 1	.00	1.00	9
weighted	d avg	1.	00	1.00	1.00	9

Sentence: i want to go from san francisco to denver

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN Classification Paraette

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
12	1.00	1.00	1.00	1

accuracy		1.0	0 9	
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: list all flights on continental leaving denver on monday

True tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN

Classification Report:

	precisi	on red	call	f1-sco	re su	pport
1 2	1.0 1.0		00 00	1.00 1.00		2
3	1.0	0 1.	00	1.00	2	2
4 5	1.0 1.0		00 00	1.00 1.00		
accur	асу			1.00	9	)
macro weighted	_	1.00 1.00		00 .00	1.00 1.00	9 9

Sentence: only show continental flights True tags: ADV VERB PROPN NOUN

Predicted tags: NOUN VERB PROPN NOUN

Classification Report:

Ciaconiic	auon	. topo					
	preci	sion	recal	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	00	1	
3	0	.50	1.00	0.	67	1	
4	1	.00	1.00	1.	00	1	
11	1	.00	0.00	0	.00	1	
accur	acy			0.	75	4	
macro weighted	_	0.8 0.	88 88	0.75 0.75	0.6 0.0		4 4

Sentence: find a flight on delta from philadelphia to san francisco

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP P

	pred	ision	recall	f1-score	supp	ort
1		1.00	1.00	1.00	4	
2	•	1.00	1.00	1.00	3	
3	•	1.00	1.00	1.00	1	
4	•	1.00	1.00	1.00	1	
5	•	1.00	1.00	1.00	1	
accur macro	•	1.	.00 1	1.00 .00 1.0	10 00	10
	U					

weighted avg 1.00 1.00 1.00 10

Sentence: all delta flights to <unk> if you can

True tags: DET PROPN NOUN ADP NOUN ADP PRON AUX

Predicted tags: DET PROPN NOUN ADP PROPN VERB PRON VERB

Classification Report:

	precisio	n re	call	f1-sco	ore su	pport
1	0.50	) 1.	00	0.67	7	1
2	1.00	0.	50	0.67	7 :	2
3	1.00	0.	50	0.67	7 :	2
4	0.00	) 1.	00	0.00	) (	0
5	1.00	) 1.	00	1.00	)	1
6	1.00	) 1.	00	1.00	)	1
8	1.00	0.	00	0.00	)	1
accur	acy			0.62	2 8	3
macro	avg	0.79	0	.71	0.57	8
weighted	d avg	0.94	(	0.62	0.67	8

Sentence: show me all the flights from toronto on nationair

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	1.	.00	2	
2	1.	00	1.00	1.	.00	2	
3	1.	00	1.00	1.	.00	1	
4	1.	00	1.00	1.	.00	1	
5	1.	00	1.00	1.	.00	2	
6	1.	00	1.00	1.	.00	1	
accur	асу			1.	00	9	
macro	avg	1.0	00	1.00	1.0	0	9
weighted	d avg	1.	.00	1.00	1.	00	9

Sentence: show me all the united flights from boston to denver

True tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1

accuracy		1.0	0 10	
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: show me all the flights on united leaving from boston

True tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN

Classification Report:

	precis	ion re	ecall	f1-sco	ore sup	port
1	1.0	00 1	.00	1.00	) 2	
2	1.0	00 1	.00	1.00	) 2	
3	1.0	00 1	.00	1.00	1	
4	1.0	00 1	.00	1.00	2	
5	1.0	00 1	.00	1.00	) 2	
6	1.0	00 1	.00	1.00	) 1	
accur	acy			1.00	10	
macro	avg	1.00	1	.00	1.00	10
weighted	d avg	1.00		1.00	1.00	10

Sentence: when are the american flights from phoenix to milwaukee True tags: ADV AUX DET PROPN NOUN ADP PROPN ADP PROPN Predicted tags: VERB VERB DET PROPN NOUN ADP PROPN ADP PROPN

Classification Report:

	proc	101011	10001		0010	очрр	011
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	2	
3	1	.00	1.00	1.0	00	1	
4	(	00.0	1.00	0.0	00	0	
5	1	.00	1.00	1.0	00	1	
8	. 1	.00	0.00	0.0	00	1	
11		1.00	0.00	0.	00	1	
accur	acy			0.7	'8	9	
macro	avg	0.	86	0.71	0.5	7	9
weighted	d avg	1	.00	0.78	0.7	78	9

precision recall f1-score support

Sentence: please list all united flights between pittsburgh and baltimore True tags: INTJ VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Predicted tags: INTJ VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

10	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accuracy			1.00	9	
macro avg	1.00	) 1.	00 ′	1.00	9
weighted avo	1.0	0 1	.00	1.00	9

Sentence: please list all flights between boston and philadelphia <unk> on sundays True tags: INTJ VERB DET NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN

Predicted tags: INTJ VERB DET NOUN ADP PROPN CCONJ PROPN PROPN ADP PROPN

Classification Report:

ķ	precision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	0.50	0.67	2
5	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
13	1.00	1.00	1.00	1
accura	су		0.91	11
macro a	avg 0.	.96 (	0.93	93 11
weighted	avg (	0.93	0.91 0.	.90 11

Sentence: list all flights from baltimore to san francisco on friday

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN Classification Report:

	precisio	n rec	all f1-s	core s	upport
1	1.00	1.0	00 1.	00	3
2	1.00	1.0	0 1.	00	3
3	1.00	1.0	0 1.	00	2
4	1.00	1.0	0 1.	00	1
5	1.00	1.0	00 1.	00	1
accur	acy		1.0	00 ′	10
macro	avg	1.00	1.00	1.00	10
weighted	d avg	1.00	1.00	1.00	10

Sentence: show me flights from philadelphia to denver on a monday True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 2

-	_			.00	•	.00		_	
(	3	1.00	) 1	.00	1	.00		2	
4	4	1.00	) 1	.00	1	.00		1	
į.	5	1.00	) 1	.00	1	.00		1	
6	6	1.00	) 1	.00	1	.00		1	
accu	racy				1	.00	•	10	
macro	o avg		1.00		1.00	•	1.00		10
weighte	ed av	g	1.00	)	1.00	)	1.00		10

1.00 1.00

Sentence: show me the flights from denver to atlanta on friday

1.00

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN

3

Classification Report:

2

	precis	ion	recall	f1-sco	re supp	ort
1	1.	00	1.00	1.00	2	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	2	
4	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
accur	acy			1.00	10	
macro	avg	1.0	0 1	.00	1.00	10
weighted	d avg	1.0	00	1.00	1.00	10

Sentence: flights that go from oakland to philadelphia on friday

True tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN Predicted tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN

Classification Report:

1	precisio	on re	call	f1-scc	re supp	ort
1	1.0	0 1.	.00	1.00	) 2	
2	1.0	0 1.	.00	1.00	) 4	
3	1.0	0 1.	.00	1.00	) 2	
4	1.0	0 1.	.00	1.00	) 1	
accura macro weighted	avg	1.00 1.00		1.00 00 .00	9 1.00 1.00	9

Sentence: baltimore to philadelphia wednesday

True tags: PROPN ADP PROPN NOUN

Predicted tags: PROPN ADP PROPN NOUN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 2
2 1.00 1.00 1.00 1

3 1.00 1.00 1.00 1

accuracy 1.00 4

macro avg 1.00 1.00 1.00 4

weighted avg 1.00 1.00 1.00 4

Sentence: i <unk> like a flight from montreal to san diego for sunday

True tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP

**NOUN** 

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN

ADP NOUN

Classification Report:

	precis	sion	recal	f1-s	core	suppo	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.	00	3	
3	1.	00	1.00	1.	00	2	
4	1.	00	1.00	1.	00	1	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
8	1.	00	1.00	1.	00	1	
accur	acy			1.0	00	12	
macro	avg	1.0	0 ′	1.00	1.00	)	12
weighted	d avg	1.0	00	1.00	1.0	0	12

Sentence: what flights are available friday from philadelphia to oakland True tags: DET NOUN AUX ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX ADJ ADJ ADP PROPN ADP PROPN Classification Report:

		- 1						
	pre	cisior	n re	call	f1-sc	ore	supp	ort
1		1.00	1.	00	1.0	0	2	
2	<u> </u>	1.00	1.	00	1.0	0	2	
3	3	1.00	0.	50	0.6	7	2	
5	5	1.00	0.	00	0.0	0	1	
6	<b>)</b>	0.00	1.	00	0.0	0	0	
7	•	0.50	1.	00	0.6	7	1	
8	}	1.00	1.	00	1.0	0	1	
accur	асу				0.78	8	9	
macro	avg	(	0.79	0	.79	0.6	2	9
weighte	d av	g	0.94	(	0.78	0.7	78	9

Sentence: i would like to see the flights available from pittsburgh to san francisco for monday

True tags: PRON AUX VERB PART VERB DET NOUN ADJ ADP PROPN ADP

PROPN PROPN ADP NOUN

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN

## Classification Report:

	precisio	n reca	ll f1-sco	re supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	) 1	
accura	асу		1.00	15	
macro	avg	1.00	1.00	1.00	15
weighted	l avg	1.00	1.00	1.00	15

Sentence: show me the flights on sunday from tampa to charlotte
True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN
Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN
Classification Report:

	precis	ion re	call	f1-scc	re sup	port
1	1.0	00 1	.00	1.00	) 2	
2	1.0	00 1	.00	1.00	) 3	
3	1.0	00 1	.00	1.00	) 2	
4	1.0	00 1	.00	1.00	) 1	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
accur	асу			1.00	10	
macro	avg	1.00	1	.00	1.00	10
weighte	d avg	1.00	•	1.00	1.00	10

Sentence: what are all flights from denver to philadelphia on saturday
True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN
Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN
Classification Report:

	precis	sion	reca	III 11	-SCO	re s	uppc	Σľ
1	1.	.00	1.00	)	1.00	)	2	
2	1.	.00	1.00	)	1.00	)	3	
3	1.	.00	1.00	)	1.00	)	2	
5	1.	.00	1.00	)	1.00	)	1	
6	1.	.00	1.00	)	1.00	)	1	
8	1.	.00	1.00	)	1.00	)	1	
accur	acy				1.00	•	10	
macro	•	1.0		1.00		1.00		10
weighted	d avg	1.	00	1.0	00	1.00		10

Sentence: what flights are available from denver to philadelphia on wednesday True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN Predicted tags: PRON NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precis	sion	reca	all	f1-sc	core	supp	ort
1	1.	.00	1.0	0	1.0	00	2	
2	1.	.00	1.0	0	1.0	00	3	
3	1.	.00	1.0	0	1.0	00	2	
5	1.	.00	0.0	0	0.0	00	1	
6	0.	.00	1.0	0	0.0	00	0	
7	1.	.00	1.0	0	1.0	00	1	
8	1.	.00	1.0	0	1.0	00	1	
accur	acy				0.9	0	10	
macro	avg	0.	86	0.	86	0.7	'1	10
weighte	d avg	1	.00	0	.90	0.	90	10

Sentence: i want to go from boston to washington on a saturday

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	prec	ision	reca	ll f1-s	core	supp	ort
1	•	1.00	1.00	1.	00	2	
2	•	1.00	1.00	1.	00	3	
3		1.00	1.00	1.	00	1	
4		1.00	1.00	1.	00	2	
5	,	1.00	1.00	1.	00	1	
6	,	1.00	1.00	1.	00	1	
12	2	1.00	1.00	0 1	.00	1	
accur	acy			1.0	00	11	
macro	•	1.	00	1.00	1.0	0	11
weighte	_	ı 1	.00	1.00	1.0	00	11
9		•					

Sentence: show flights from burbank to <unk> louis on monday
True tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

pre	ecision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
accuracy	<i>'</i>		1.00	9

macro avg	1.00	1.00	1.00	9
weighted ava	1.00	1.00	1.00	9

Sentence: please show me flights from dallas to atlanta on monday

True tags: INTJ VERB PRON NOUN ADP PROPN ADP NOUN Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precision		recall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 2	
2	1.0	00	1.00	1.00	3	
3	1.0	00	1.00	1.00	2	
4	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
13	3 1.	00	1.00	1.0	0 1	
accur	acy			1.00	10	
macro	avg	1.00	0 1	.00	1.00	10
weighted	d avg	1.0	00	1.00	1.00	10

Sentence: show me the flights from pittsburgh to los angeles on thursday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	precisi	on re	ecall	t1-sc	ore s	uppo	ort
1	1.0	0 1	.00	1.0	0	3	
2	1.0	0 1	.00	1.0	0	3	
3	1.0	0 1	.00	1.0	0	2	
4	1.0	0 1	.00	1.0	0	1	
5	1.0	0 1	.00	1.0	0	1	
6	1.0	0 1	.00	1.0	0	1	
accur	acy			1.0	0	11	
macro	avg	1.00	1	.00	1.00		11
weighted	d avg	1.00		1.00	1.00	)	11

Sentence: i <unk> like a list of the flights from oakland to dallas fort worth on sunday True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

рі	recision	recall	support	
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	1.00	0.67	0.80	3

4	0.5	0	1.0	0	0.6	7	1	
5	1.0	0	1.0	0	1.0	0	2	
6	1.0	0	1.0	0	1.0	0	1	
8	1.0	0	1.0	0	1.0	0	1	
accurac	у				$0.9^{-1}$	4	16	
macro a	vg	0.9	93	0.9	95	0.9	2	16
weighted a	avg	0.	97	0	.94	0.9	94	16

Sentence: show me the flights from boston to pittsburgh on wednesday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 2	
2	1.0	00	1.00	1.00	) 3	
3	1.0	00	1.00	1.00	) 2	
4	1.0	00	1.00	1.00	) 1	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
accur	acy			1.00	10	
macro	avg	1.00	0 1	.00	1.00	10
weighted	d avg	1.0	00	1.00	1.00	10

Sentence: list all flights from nashville to cleveland on sunday True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precision	on re	call	f1-sco	re su	pport
1	1.0	0 1.	00	1.00	2	2
2	1.0	0 1.	00	1.00	•	3
3	1.0	0 1.	00	1.00		2
4	1.0	0 1.	00	1.00		1
5	1.0	0 1.	00	1.00		1
accura	асу			1.00	ç	)
macro	avg	1.00	1.	.00	1.00	9
weighted	d avg	1.00	1	1.00	1.00	9

Sentence: give me a flight from tampa to charlotte on sunday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3

3	1.00	1.	00	1.0	0	2	
4	1.00	1.	00	1.0	0	1	
5	1.00	1.	00	1.0	0	1	
6	1.00	1.	00	1.0	0	1	
accuracy	′			1.00	)	10	
macro av	g	1.00	1.	00	1.00		10
weighted av	vq	1.00	1	.00	1.0	0	10

Sentence: show flights from denver to san francisco

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 3 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 4 1.00 1.00 1 1.00 1.00 7 accuracy 1.00 1.00 7 macro avg 1.00 weighted avg 1.00 1.00 1.00 7

Sentence: what are all the flights available between pittsburgh and dallas fort worth True tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN

PROPN PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 1 5 1.00 1.00 1.00 2 6 1.00 1.00 1.00 1 7 1.00 1.00 1.00 1 1.00 8 1.00 1.00 1 10 1.00 1.00 1.00 1.00 12 accuracy 1.00 1.00 12 1.00 macro avg 1.00 12 weighted avg 1.00 1.00

Sentence: what flights from seattle to salt lake city

True tags: DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

1	1.00	) 1.	00	1.00	0	4	
2	1.00	) 1.	00	1.0	0	2	
3	1.00	) 1.	00	1.0	0	1	
5	1.00	0.	00	0.0	0	1	
6	0.00	) 1.	00	0.0	0	0	
accuracy	y			0.88	3	8	
macro av	⁄g	0.80	0.	80	0.60		8
weighted a	vg	1.00	C	.88	0.88		8

Sentence: what are the flights from memphis to las vegas

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore su	uppo	rt
1	1.	.00	1.00	1.0	0	3	
2	1.	.00	1.00	1.0	0	2	
3	1.	.00	1.00	1.0	0	1	
5	1.	.00	1.00	1.0	0	1	
6	1.	.00	1.00	1.0	0	1	
8	1.	.00	1.00	1.0	0	1	
accur	acy			1.00	)	9	
macro	avg	1.0	00 1	.00	1.00		9
weighte	d avg	1	.00	1.00	1.00		9

Sentence: what flights are there from pittsburgh to los angeles

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP

Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	uppo	rt
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	0.00	0.0	0	1	
5	1.0	00	0.00	0.0	0	1	
6	0.5	50	1.00	0.6	7	1	
8	0.0	00	1.00	0.0	0	0	
accur	асу			0.78	3 !	9	
macro weighted	_	0.79		.71 0.78	0.52 0.74		9 9

Sentence: i <unk> looking for a flight from pittsburgh to san francisco

True tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN

**PROPN** 

## Classification Report:

	precisi	on re	call	f1-sc	ore su	pport
1	1.0	0 1	.00	1.0	0 :	3
2	1.0	0 1	.00	1.0	0 :	3
3	1.0	0 1	.00	1.0	0	1
4	1.0	0 1	.00	1.0	0	1
5	1.0	0 1	.00	1.0	0	1
6	1.0	0 1	.00	1.0	0	1
8	1.0	0 1	.00	1.0	0	1
accura	acy			1.00	) 1	1
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00		1.00	1.00	11

Sentence: show me the flights from dallas to san francisco

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion re	ecall	f1-sc	ore s	upport	
1	1.0	00 1	.00	1.0	0	3	
2	1.0	00 1	.00	1.0	0	2	
3	1.0	00 1	.00	1.0	0	1	
4	1.0	00 1	.00	1.0	0	1	
5	1.0	00 1	.00	1.0	0	1	
6	1.0	00 1	.00	1.0	0	1	
accur	acy			1.00	)	9	
macro	avg	1.00	1	.00	1.00	9	
weighted	d avg	1.00	,	1.00	1.00	9	

Sentence: what are the flights from boston to san francisco

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN Classification Report:

	precision	on re	call	f1-scc	re su	pport	
1	1.0	0 1.	00	1.00	) ;	3	
2	1.0	0 1.	00	1.00	) :	2	
3	1.0	0 1.	00	1.00	)	1	
5	1.0	0 1.	00	1.00	)	1	
6	1.0	0 1.	00	1.00	)	1	
8	1.0	0 1.	00	1.00	)	1	
accur	acy			1.00	(	}	
macro	avg	1.00	1.	.00	1.00	9	
weighte	d avg	1.00	1	1.00	1.00	9	

Sentence: what flights do you have leaving boston going to san francisco

True tags: DET NOUN AUX PRON VERB VERB PROPN VERB ADP PROPN

**PROPN** 

Predicted tags: PRON NOUN VERB PRON VERB PROPN VERB ADP

PROPN PROPN

Classification Report:

	precis	sion	recal	l f1-so	core	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	1	
3	1.	00	1.00	1.0	00	1	
4	0.	75	1.00	0.8	36	3	
5	1.	00	0.00	0.0	00	1	
6	0.	50	1.00	0.0	67	1	
8	1.	00	0.00	0.0	00	1	
accur	acy			3.0	32	11	
macro	avg	0.8	39 (	0.71	0.6	5	11
weighted	d avg	0.	89	0.82	0.7	75	11

Sentence: list all flights please from washington to san francisco

True tags: VERB DET NOUN INTJ ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN

Classification Report:

	prec	ision	recall	f1-scc	re su	pport
1		1.00	1.00	1.00	) ;	3
2		1.00	1.00	1.00	) :	2
3	,	1.00	1.00	1.00	)	1
4	. 1	1.00	1.00	1.00	)	1
5	,	1.00	1.00	1.00	)	1
13	3	1.00	1.00	1.0	0	1
accur	асу			1.00	ç	)
macro	avg	1.0	0 1	.00	1.00	9
weighte	d avg	1.	00 ′	1.00	1.00	9

Sentence: list flights between oakland and san francisco

True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN

	pred	ision	recall	f1-score	supp	ort
1		1.00	1.00	1.00	3	
2		1.00	1.00	1.00	1	
3		1.00	1.00	1.00	1	
4		1.00	1.00	1.00	1	
10	)	1.00	1.00	1.00	1	
accur	асу			1.00	7	
macro	avg	1.	00 1	.00 1.0	00	7

weighted avg 1.00 1.00 1.00 7

Sentence: interested in a flight from washington to fort worth

True tags: VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN PROPN

Classification Report:

	precisi	on re	ecall	f1-sco	ore su	ıpport
1	1.0	00 1	.00	1.00	)	3
2	1.0	00 1	.00	1.00	)	3
3	1.0	00 1	.00	1.0	)	1
4	1.0	00 1	.00	1.0	)	1
5	1.0	00 1	.00	1.0	C	1
accur	acy			1.00	) !	9
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00		1.00	1.00	9

Sentence: what flights are <unk> available between boston and dallas fort worth True tags: DET NOUN AUX ADV ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: PRON NOUN AUX AUX ADJ ADP PROPN CCONJ PROPN PROPN

PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 1 1.00 1.00 1.00 3 1.00 1.00 1.00 1 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 7 1.00 1.00 1 1.00 8 0.50 1.00 0.67 1 10 1 1.00 1.00 1.00 11 1.00 0.00 0.00 1 0.82 11 accuracy 0.63 macro avg 0.83 0.78 11 weighted avg 0.95 0.82 0.79 11

Sentence: what about flights from boston to san diego

True tags: PRON ADP NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 1 3 2 1.00 0.67 0.80 3 3 0.50 1.00 0.67 1 1.00 6 1.00 1.00 1

accuracy		0.8	8 8	
macro avg	0.88	0.92	0.87	8
weighted avg	0.94	0.88	0.88	8

Sentence: flights from baltimore to san francisco True tags: NOUN ADP PROPN ADP PROPN PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on red	call f1-	score s	suppo	ort
1	1.0	0 1.0	00 1	.00	3	
2	1.0	0 1.0	00 1	.00	2	
3	1.0	0 1.0	00 1	.00	1	
accura	асу		1	.00	6	
macro	avg	1.00	1.00	1.00		6
weighted	d avg	1.00	1.00	1.00	C	6

Sentence: i live in washington and i would like to make a trip to san francisco can you tell me which airlines connect with those two cities

True tags: PRON VERB ADP PROPN CCONJ PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN AUX PRON VERB PRON DET NOUN VERB ADP DET NUM NOUN

Predicted tags: PRON NOUN ADP PROPN CCONJ PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN PROPN PRON VERB PRON DET NOUN PROPN ADP NOUN NOUN NOUN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	0.60	1.00	0.75	3	
2	1.00	1.00	1.00	3	
3	0.50	1.00	0.67	3	
4	1.00	0.60	0.75	5	
5	1.00	0.67	0.80	3	
6	1.00	1.00	1.00	4	
8	1.00	0.50	0.67	2	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accuracy macro av	g 0.9		0.81 .78 0.7	-	26
weighted a	vy U	.90 (	0.81 0.	80	26

Sentence: show me the flights from detroit to las vegas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

1	1.00	1.0	0 1.	.00	3	
2	1.00	1.0	0 1.	.00	2	
3	1.00	1.0	0 1.	.00	1	
4	1.00	1.0	0 1.	.00	1	
5	1.00	1.0	0 1.	.00	1	
6	1.00	1.0	0 1.	.00	1	
accura	су		1.	00	9	
macro	avg	1.00	1.00	1.00	9	
weighted	avg	1.00	1.00	1.00	9	
	•				-	

Sentence: what flights go from denver to atlanta

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

Classification Report:

ķ	orecision	recall	f1-score	suppo	rt
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
accura	су		0.86	7	
macro a	avg 0.	83 0	.83 0.6	67	7
weighted	avg 1	.00	0.86	.86	7

Sentence: show me the flights from montreal to philly

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore	supp	ort
1	1	.00	1.00	1.0	0	2	
2	1	.00	1.00	1.0	0	2	
3	1	.00	1.00	1.0	0	1	
4	1	.00	1.00	1.0	0	1	
5	1	.00	1.00	1.0	0	1	
6	1	.00	1.00	1.0	0	1	
accur	acy			1.0	0	8	
macro	_	1.0		1.00	1.0	0	8
weighte	d avg	1	.00	1.00	1.0	00	8

Sentence: flight from denver to philadelphia True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

	precision	on re	call f1	-score	supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
accura	асу			1.00	5	
macro	avg	1.00	1.00	1.0	00	5
weighted	avg	1.00	1.0	0 1.	00	5

Sentence: give me the flights from baltimore to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore su	pport
1	1.	00	1.00	1.00	) ;	2
2	1.	00	1.00	1.00	) ;	2
3	1.	00	1.00	1.00	) .	1
4	1.	00	1.00	1.00	) .	1
5	1.	00	1.00	1.00	) .	1
6	1.	00	1.00	1.00	) .	1
accur	acy			1.00	) 8	3
macro	avg	1.0	00 1	.00	1.00	8
weighted	d avg	1.	.00	1.00	1.00	8

Sentence: i would like to fly from boston to baltimore

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

	prec	ision	reca	all	f1-sco	ore	supp	ort
1		1.00	1.0	0	1.00	)	2	
2		1.00	1.0	0	1.00	)	2	
4	•	1.00	1.0	0	1.00	)	2	
6	•	1.00	1.0	0	1.00	)	1	
8		1.00	1.0	0	1.00	)	1	
12	2	1.00	1.0	00	1.0	0	1	
accur	acy				1.00	)	9	
macro	avg	1.	00	1.	.00	1.0	0	9
weighte	d avg	, 1	.00	•	1.00	1.0	00	9

Sentence: tell me the flights that leave philadelphia and go to dallas

True tags: VERB PRON DET NOUN ADP VERB PROPN CCONJ VERB ADP

**PROPN** 

Predicted tags: VERB PRON DET NOUN ADP VERB PROPN CCONJ VERB ADP

**PROPN** 

pre	cision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy			1.00	11	
macro avo	g 1.0	00 1	.00 1.0	00	11
weighted av	g 1	.00	1.00 1	.00	11

Sentence: flight information from oakland to denver True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 2 1.00 accuracy macro avg 1.00 1.00 1.00 6 weighted avg 1.00 1.00 1.00 6

Sentence: the flight will <unk> from boston

True tags: DET NOUN AUX VERB ADP PROPN

Predicted tags: DET NOUN NOUN PROPN ADP PROPN

Classification Report:

	prec	ision	n re	call	f1-so	core	supp	ort
1		0.50		00	0.6		1	
2	<u> </u>	1.00	1.	00	1.0	00	1	
3	} (	0.50	1.	00	0.6	37	1	
4	ļ '	1.00	0.	00	0.0	00	1	
5	5	1.00	1.	00	1.0	00	1	
8	3	1.00	0.	00	0.0	00	1	
accur	асу				0.6	67	6	
macro weighte	•		0.83 0.83		.67 ).67	0.5 0.	56 56	6 6

Sentence: what are the flights from pittsburgh to oakland True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

1	1.00	1.0	00	1.00	)	2	
2	1.00	1.0	00	1.00	)	2	
3	1.00	1.0	00	1.00	)	1	
5	1.00	1.0	00	1.00	)	1	
6	1.00	1.0	00	1.00	)	1	
8	1.00	1.0	00	1.00	)	1	
accuracy	/			1.00		8	
macro av	g ·	1.00	1.0	0	1.00		8
weighted a	va	1.00	1.	00	1.00		8

Sentence: what flights are there from baltimore to newark

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore si	uppo	rt
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	0.00	0.0	0	1	
5	1.0	00	0.00	0.0	0	1	
6	0.9	50	1.00	0.6	7	1	
8	0.0	00	1.00	0.0	0	0	
accur	асу			0.75	5	8	
macro	avg	0.79	9 0	.71	0.52		8
weighted	d avg	0.9	)4 (	0.75	0.71		8

Sentence: flights from columbus to milwaukee True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
accuracy			1.00	5	
macro av	g 1.0	00 1	.00 1	.00	5
weighted av	/g 1	.00	1.00 1	1.00	5

Sentence: i <unk> like information on boston to washington True tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN

Classification Report:

1	1.00	) 1.	00	1.0	0	2	
2	1.00	) 1.	00	1.0	0	2	
3	1.00	) 1.	00	1.0	0	1	
4	1.00	) 1.	00	1.0	0	1	
6	1.00	) 1.	00	1.0	0	1	
8	1.00	) 1.	00	1.0	0	1	
accurac	;y			1.0	0	8	
macro a	vg	1.00	1.	.00	1.00	)	8
weighted a	avg	1.00	•	1.00	1.0	0	8

Sentence: list flights from houston to phoenix

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 accuracy 1.00 6 macro avg 1.00 1.00 6 1.00 weighted avg 1.00 1.00 1.00 6

Sentence: information of a flight from atlanta to pittsburgh
True tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN
Predicted tags: NOUN ADP DET NOUN ADP PROPN

Classification Report:

	upu.	• • •				
preci	sion	recal	l f1-s	core	supp	ort
1	.00	1.00	1.	00	2	
1	.00	1.00	1.	.00	3	
1	.00	1.00	1.	.00	2	
1	.00	1.00	1.	.00	1	
acy			1.	00	8	
_			1.00 1.00			8 8
	precis	1.00 1.00 1.00 1.00 1.00 acy avg 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy avg 1.00	1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	precision recall f1-score supplements of the supple

Sentence: i need to go to pittsburgh and denver

True tags: PRON VERB PART VERB ADP PROPN CCONJ PROPN Predicted tags: PRON VERB ADP VERB PART PROPN CCONJ PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.00	0.00	0.00	1
4	1.00	1.00	1.00	2

6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
12	0.00	0.00	0.00	1	
accuracy			0.75	8	
macro avg	0.6	7 0.6	67 O	.67	8

0.75

Sentence: what flights from philadelphia to atlanta True tags: DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN

precision recall f1-score support

0.75

0.75

8

Classification Report:

weighted avg

1	1.00	0 1.	00	1.00	)	2	
2	1.00	0 1.	00	1.00	)	2	
3	1.00	0 1.	00	1.00	)	1	
5	1.00	0.	00	0.00	)	1	
6	0.0	0 1.	00	0.00	)	0	
accuracy	y			0.83	3	6	
macro av	⁄g	0.80	0.8	80	0.60		6
weighted a	vg	1.00	0	.83	0.83		6

Sentence: flight from milwaukee to denver True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call f	1-scor	e suppo	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
accura	су			1.00	5	
macro weighted	_	1.00 1.00	1.0 1.		.00 1.00	5 5

Sentence: tell me the flights from baltimore to dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

precision		recall f1-score		support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

accuracy		1.0	0 8	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: i <unk> like to book a flight from atlanta to denver

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	pred	isior	n re	call	f1-sc	ore	supp	ort
1		1.00	1.	00	1.0	0	2	
2		1.00	1.	00	1.0	0	2	
3		1.00	1.	00	1.0	0	1	
4		1.00	1.	00	1.0	0	2	
5		1.00	1.	00	1.0	0	1	
6		1.00	1.	00	1.0	0	1	
8		1.00	1.	00	1.0	0	1	
12	2	1.00	) 1	.00	1.0	00	1	
accur	асу				1.00	)	11	
macro	avg	•	1.00	1	.00	1.0	0	11
weighte	d avg	)	1.00	•	1.00	1.0	00	11

Sentence: now get me from pittsburgh to denver

True tags: ADV VERB PRON ADP PROPN ADP PROPN

Predicted tags: NOUN VERB PRON ADP PROPN ADP PROPN

Classification Report:

Ciassillo	ation i tope	JI (.			
	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	0.00	1.00	0.00	0	
4	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accura	асу		0.86	7	
macro	_	83 0	.83 0.6	37	7
weighted	l avg 1	.00	0.86 0.	86	7

Sentence: what flights are there from boston to dallas

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1 00	1 00	2

3	1.00	) 1.0	00	1.0	0	1	
4	1.00	0.0	00	0.0	0	1	
5	1.00	0.0	00	0.0	0	1	
6	0.50	) 1.0	00	0.6	7	1	
8	0.00	) 1.0	00	0.0	0	0	
accuracy	/			0.75	5	8	
macro av	'g	0.79	0.7	71	0.52		8
weighted a	vg	0.94	0	.75	0.7	l	8

Sentence: show me flights from pittsburgh to philadelphia True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score	support
1 1.00 1.00 1.00	2
2 1.00 1.00 1.00	2
3 1.00 1.00 1.00	1
4 1.00 1.00 1.00	1
6 1.00 1.00 1.00	1
accuracy 1.00	7
macro avg 1.00 1.00 1.00	7
weighted avg 1.00 1.00 1.0	0 7

Sentence: show flights from philadelphia to boston True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore	supp	ort
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
accur	асу			1.00	0	6	
macro	avg	1.0	0 1	.00	1.00	)	6
weighte	d avg	1.	00	1.00	1.0	0	6

Sentence: i <unk> like to see flights from pittsburgh to philadelphia

True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1 00	1 00	1 00	1

4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accurac	/		1.00	10	

accuracy 1.00 10 macro avg 1.00 1.00 1.00 10 weighted avg 1.00 1.00 1.00 10

Sentence: give me flights from pittsburgh to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 2 1.00 2 2 1.00 1.00 1.00 3 1 1.00 1.00 1.00 4 1 1.00 1.00 1.00 6 1.00 1.00 1.00 1 7 accuracy 1.00 macro avg 1.00 1.00 1.00 7 weighted avg 1.00 1.00 1.00 7

Sentence: i need to go from philadelphia to dallas

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB ADP VERB ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	II f1	-sco	re si	nbbo	rt
1	1	.00	1.00	)	1.00		2	
2	C	.67	1.00	)	0.80		2	
4	1	.00	1.00	)	1.00		2	
6	1	.00	1.00	)	1.00		1	
12	2	1.00	0.0	0	0.00	)	1	
accur	acy			(	0.88		8	
macro	avg	0.9	3	0.80	) (	0.76		8
weighte	d avg	0.	92	0.8	8	0.82		8

Sentence: show flights from pittsburgh to oakland True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 2 1.00 1.00 1.00 3 1.00 1.00 1.00 1

4	1.00	1.00	1.00	) 1	
accuracy			1.00	6	
macro avg	1.0	00 1	1.00	1.00	6
weighted avo	1 1	.00	1.00	1.00	6

Sentence: what are the flights from chicago to indianapolis
True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore su	pport
1	1.	00	1.00	1.00	) 2	<u>&gt;</u>
2	1.	00	1.00	1.00	) 2	2
3	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	0 1	
accur	acy			1.00	8 (	
macro	avg	1.0	00 1	.00	1.00	8
weighted	d avg	1.	.00	1.00	1.00	8

Sentence: get flights from toronto to milwaukee True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	ore su	oport
1	1.0		.00	1.00		-
2	1.0	0 1	.00	1.00	) 2	<u>.</u>
3	1.0	0 1	.00	1.00	) 1	
4	1.0	0 1	.00	1.00	) 1	
accur	acy			1.00	6	
macro	avg	1.00	1.	.00	1.00	6
weighted	d avg	1.00	•	1.00	1.00	6

Sentence: what are the different classes that an airline offers True tags: PRON AUX DET ADJ NOUN ADP DET NOUN VERB

Predicted tags: PRON AUX DET ADJ PROPN ADP ADP NOUN PROPN

···oat	on itopo			
precision		recall	f1-score	support
1	0.00	1.00	0.00	0
2	0.50	1.00	0.67	1
3	1.00	0.50	0.67	2
4	1.00	0.00	0.00	1
5	1.00	0.50	0.67	2
6	1.00	1.00	1.00	1

7 1.0	DO 1.0	00 1.0	0 1	
8 1.0	00 1.0	00 1.0	0 1	
accuracy		0.6	7 9	
macro avg	0.81	0.75	0.62	9
weighted ava	0.94	0.67	0.70	9

Sentence: show flights between boston and denver True tags: VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN

Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy			1.00	6	
macro av	g 1.0	00 1	.00 1.	00	6
weighted av	/g 1	.00	1.00 1	.00	6

Sentence: show flights from dallas to oakland

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

precisio	on re	recall f1-		e suppo	ort
1.00	0 1.	00	1.00	2	
1.00	) 1.	00	1.00	2	
1.00	) 1.	00	1.00	1	
1.00	) 1.	00	1.00	1	
acy			1.00	6	
avg	1.00	1.0	0 1	1.00	6
d avg	1.00	1.	00	1.00	6
	1.00 1.00 1.00 1.00 acy avg	1.00 1. 1.00 1. 1.00 1. 1.00 1. acy avg 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy avg 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 acy 1.00 6 avg 1.00 1.00

Sentence: show me flights from baltimore to dallas

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 2 1 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1

accuracy		1.0	0 7	
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: give me all the flights from memphis to charlotte

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-sc	core	supp	ort
1	1.00	) 1.	00	1.0	00	2	
2	1.00	) 1.	00	1.0	00	2	
3	1.00	) 1.	00	1.0	00	1	
4	1.00	) 1.	00	1.0	00	1	
5	1.00	) 1.	00	1.0	00	2	
6	1.00	) 1.	00	1.0	00	1	
accur	acy			1.0	0	9	
macro	avg	1.00	1	.00	1.0	0	9
weighted	d avg	1.00	•	1.00	1.0	00	9

Sentence: i would like to see the flights from baltimore to philadelphia please True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN INTJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN INTJ

Classification Report:

	precis	ion r	ecall	f1-scc	ore su	oqqı	rt
1	1.0	00	1.00	1.00	)	2	
2	1.0	00 ′	1.00	1.00	)	2	
3	1.0	00 1	1.00	1.00	)	1	
4	1.0	00 1	1.00	1.00	)	2	
5	1.0	00 1	1.00	1.00	)	1	
6	1.0	00 1	1.00	1.00	)	1	
8	1.0	00 1	1.00	1.00	)	1	
12	2 1.	.00	1.00	1.0	0	1	
13	3 1.	.00	1.00	1.0	0	1	
accur	асу			1.00	) 1	2	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	1	12 12

Sentence: what flights are there from indianapolis to orlando True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN

Classification Report:

1

precision recall f1-score support

1.00 1.00 1.00 2

2	1.00	1.0	0 1.	00	2	
3	1.00	1.0	0 1.	00	1	
4	1.00	0.0	0 0.	00	1	
5	1.00	0.0	0 0.	00	1	
6	0.50	1.0	0 0.	67	1	
8	0.00	1.0	0 0.	00	0	
accuracy	/		0.	75	8	
macro av	g 0	.79	0.71	0.5	2	8
weighted a	va	0.94	0.75	0.7	71	8

Sentence: no i want to go from denver to oakland

precision recall f1-score support

True tags: DET PRON VERB PART VERB ADP PROPN ADP PROPN

Predicted tags: NOUN PRON VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

	proon		.000				арро	
1	1.	00	1.00	)	1.00		2	
2	1.	00	1.00	)	1.00		2	
3	0.	00	1.00	)	0.00		0	
4	1.	00	1.00	)	1.00		2	
5	1.	00	0.00	)	0.00		1	
6	1.	00	1.00	)	1.00		1	
12	2 1	.00	1.0	0	1.00	)	1	
accur	асу				0.89		9	
macro	avg	3.0	36	8.0	6	0.71		9
weighted	d avg	1.	.00	0.8	39	0.89		9

Sentence: show me flights from milwaukee to orlando

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 3 1 1.00 1.00 1.00 4 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1.00 accuracy 1.00 1.00 1.00 7 macro avg 1.00 7 weighted avg 1.00 1.00

Sentence: give me a list of flights between denver and oakland

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy	/		1.00	10	
macro av	g 1.0	00 1.	00 1.	00	10
weighted a	vg 1.	.00 1	.00 1	.00	10

Sentence: show me all the flights from charlotte to cleveland

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion r	ecall	f1-sco	re su	pport
1	1.	00 1	1.00	1.00	2	2
2	1.	00 1	00.1	1.00	2	2
3	1.	00 1	00.1	1.00	•	1
4	1.	00 1	00.1	1.00	•	1
5	1.	00 1	00.1	1.00	2	2
6	1.	00 1	00.1	1.00	•	1
accur	acy			1.00	9	)
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00	)	1.00	1.00	9

Sentence: give me flights from denver to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-sco	re su	oport
1	1.0	0 1.	.00	1.00	2	2
2	1.0	0 1.	.00	1.00	2	) -
3	1.0	0 1.	.00	1.00	1	
4	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
00011	001			1.00	7	
accur	•		_			_
macro	avg	1.00	1.	.00	1.00	7
veighte	d avg	1.00	1	1.00	1.00	7

Sentence: tell me about flights from indianapolis to houston True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN

	precision		recall	f1-sc	ore s	support	
1	1	.00	1.00	1.0	0	2	
2	1	.00	1.00	1.0	0	3	
3	1	.00	1.00	1.0	0	1	
4	1	.00	1.00	1.0	0	1	
6	1	.00	1.00	1.0	0	1	
accur	acy			1.00	)	8	
macro	avg	1.0	00 1	1.00	1.00		8
weighte	d avg	1.	00	1.00	1.00	)	8

Sentence: oakland to philadelphia True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1 1.00 1.00 2 2 1.00 1.00 1.00 1 accuracy 1.00 3 1.00 macro avg 1.00 1.00 3 weighted avg 1.00 1.00 1.00 3

Sentence: what are your flights from denver to baltimore True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX PROPN NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 0.67 1.00 0.80 2 2 1.00 2 1.00 1.00 3 1 1.00 1.00 1.00 5 1.00 0.00 0.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 accuracy 88.0 macro avg 0.94 0.83 0.80 8 8 weighted avg 0.92 0.88 0.82

Sentence: list all flights from baltimore to philadelphia True tags: VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2

3	1.00	1.0	0C	1.00	1	
4	1.00	1.0	00	1.00	1	
5	1.00	1.0	00	1.00	1	
accuracy	•			1.00	7	
macro av	g	1.00	1.00	) 1	.00	7
weighted av	va .	1.00	1.0	0	1.00	7

Sentence: what flights are available from boston to dallas True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX ADJ ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	ecall	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	) :	2
2	1.0	00 1	.00	1.00	) ;	2
3	1.0	00 1	.00	1.00	) .	1
5	1.0	0 0	.00	0.00	) .	1
6	0.0	00 1	.00	0.00	) (	0
7	1.0	00 1	.00	1.00	) .	1
8	1.0	00 1	.00	1.00	)	1
accur	асу			0.88	8	3
macro	avg	0.86	0	.86	0.71	8
weighted	d avg	1.00	) (	0.88	0.88	8

Sentence: i would like to see all flights from denver to philadelphia

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	prec	ision	recall	f1-score	suppo	ort
1	1	.00	1.00	1.00	2	
2	! 1	.00	1.00	1.00	2	
3	, 1	.00	1.00	1.00	1	
4	. 1	.00	1.00	1.00	2	
5	5 1	.00	1.00	1.00	1	
6	5 1	.00	1.00	1.00	1	
8	; 1	.00	1.00	1.00	1	
12	2	1.00	1.00	1.00	1	
accur	acy			1.00	11	
macro weighte	_	1.0 1.			00 .00	11 11
	9	- '				

Sentence: atlanta to pittsburgh True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

	precisio	n re	call	f1-sc	core	supp	ort
1 2	1.00 1.00		00 00	1.0 1.0		2 1	
accura macro	•	1.00	1.	1.0 .00	0 1.0	3 0	3
weighted	_	1.00	•	1.00	1.0	00	3

Sentence: give me a flight from baltimore to newark that arrives as early as possible True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP ADV ADP ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP ADJ ADP NOUN

Classification Report:

	precisi	on re	ecall	f1-sco	ore su	pport
1	1.0	0 1	.00	1.00	) :	2
2	1.0	0 1	.00	1.00	)	5
3	0.5	0 1	.00	0.67	7	1
4	1.0	0 1	.00	1.00	) :	2
5	1.0	0 1	.00	1.00	)	1
6	1.0	0 1	.00	1.00	)	1
7	0.0	0 0	00.0	0.00	)	1
11	1.0	00 (	0.00	0.0	0	1
accur	асу			0.86	5 1	4
macro weighted	_	0.81	_	.75 0.86	0.71 0.83	14 14
_	•					

Sentence: what flights are there between atlanta and denver

True tags: DET NOUN VERB PRON ADP PROPN CCONJ PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN CCONJ PROPN

Classification Report:

	precision	on re	call	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	1	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 0.	00	0.00	1	
5	1.0	0 0.	00	0.00	1	
6	0.5	0 1.	00	0.67	1	
8	0.0	0 1.	00	0.00	0	
10	1.0	00 1	.00	1.00	) 1	
accura	асу			0.75	8	
macro weighted	_	0.81 0.94		75 .75	0.58 0.71	8 8

Sentence: i need a flight from phoenix to atlanta

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		recall f1-score		ore su	pport
1	1.	00	1.00	1.00	) 2	2
2	· 1.	00	1.00	1.00	) 2	2
3	1.	00	1.00	1.00	) ′	1
4	1.	00	1.00	1.00	) ′	1
5	5 1.	00	1.00	1.00	) ′	1
6	5 1.	00	1.00	1.00	) ′	1
accur	acy			1.00	8 (	}
macro	•	1.0	0 1	.00	1.00	8
weighte	d avg	1.	00	1.00	1.00	8
•	•					

Sentence: i want to fly from atlanta to philadelphia

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

ķ	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	су		1.00	8	
macro a	avg 1.	00 1	.00 1.0	00	8
weighted	avg 1	.00	1.00 1	.00	8

Sentence: also give me a list of flights between oakland and boston

True tags: ADV VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN

	pred	cision	recal	l f1-scor	e supp	ort
1		1.00	1.00	1.00	2	
2		1.00	1.00	1.00	2	
3		1.00	1.00	1.00	2	
4		0.50	1.00	0.67	1	
5		1.00	1.00	1.00	1	
6		1.00	1.00	1.00	1	
10	)	1.00	1.00	1.00	1	
11		1.00	0.00	0.00	1	
accur	асу			0.91	11	
macro	avg	0.	94 (	0.88 0	).83	11

weighted avg 0.95 0.91 0.88 11

Average Loss: 0.3354 Average Accuracy: 90.96 %

Sentence: what are the coach flights between dallas and baltimore leaving august

tenth and returning august <unk>

True tags: PRON AUX DET NOUN NOUN ADP PROPN CCONJ PROPN VERB

NOUN ADJ CCONJ VERB NOUN NUM

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN VERB

VERB NOUN NOUN ADP NOUN PROPN

Classification Report:

	precision		recall	f1-scor	e supp	ort
1	0	.50	1.00	0.67	2	
2	0	.50	1.00	0.67	1	
3	0.	.60	0.75	0.67	4	
4	0.	.50	0.50	0.50	2	
5	1.	.00	1.00	1.00	1	
6	1.	.00	1.00	1.00	1	
7	1.	.00	0.00	0.00	1	
8	1.	.00	1.00	1.00	1	
9	1.	.00	0.00	0.00	1	
10	) 1	.00	0.00	0.00	2	
accur	acy			0.62	16	
macro	avg	3.0	31 0	.62 (	0.55	16
weighte	d avg	0.	74	0.62	0.54	16

Sentence: i want a flight from nashville to seattle that arrives no later than 3 pm True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB DET ADJ ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP NOUN

NOUN NOUN NOUN NOUN

Olacomic		•	call	f1 co	oro (	SUDD	ort
	precision	ווכ ווכ	Call	11-50	ore :	supp	OIL
1	1.0	0 1.	00	1.0	0	2	
2	1.0	0 0.	75	0.8	6	4	
3	0.2	9 1.	00	0.4	4	2	
4	1.0	0 0.	50	0.6	7	2	
5	1.0	0 0.	50	0.6	7	2	
6	1.0	0 1.	00	1.0	0	1	
7	1.0	0 0.	00	0.0	0	1	
9	1.0	0 0.	00	0.0	0	1	
accur	acy			0.6	7	15	
macro	avg	0.91	0	.59	0.58	}	15
weighted	_	0.90	(	0.67	0.6	7	15

Sentence: i need a flight leaving kansas city to chicago leaving next wednesday and returning the following day

True tags: PRON VERB DET NOUN VERB PROPN PROPN ADP PROPN VERB ADJ NOUN CCONJ VERB DET VERB NOUN

Predicted tags: PRON VERB DET NOUN NOUN VERB PROPN ADP PROPN VERB VERB NOUN NOUN ADP DET NOUN NOUN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 0	.67	0.80	3	
2	0.5	0 1	.00	0.67	1	
3	0.5	0 1	.00	0.67	3	
4	0.5	0 0	.40	0.44	. 5	
5	1.0	0 1	.00	1.00	2	
6	1.0	0 1	.00	1.00	1	
7	1.0	0 0	.00	0.00	1	
10	) 1.0	00 0	0.00	0.0	0 1	
accur	асу			0.65	17	
macro	avg	0.81	0	.63	0.57	17
weighted	d avg	0.74	(	0.65	0.61	17

Sentence: explain meal codes <unk> <unk> True tags: VERB NOUN NOUN PROPN PROPN Predicted tags: VERB VERB NOUN PROPN PROPN

Classification Report:

	precis	ion r	ecall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	2	
3	1.0	00	0.50	0.6	7	2	
4	0.5	50	1.00	0.6	7	1	
accur	acy			0.80	0	5	
macro	avg	0.83	3 0	.83	0.78	:	5
weighted	d avg	0.9	0 (	08.0	0.80	)	5

Sentence: show me all flights from atlanta to san francisco which leave the day after tomorrow after 5 <unk> pm

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PRON VERB DET NOUN ADP NOUN ADP NUM ADV NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB VERB DET NOUN ADP PROPN ADP NOUN PROPN NOUN

precision		recall	support	
1	0.60	1.00	0.75	3
2	1.00	1.00	1.00	4
3	0.75	0.75	0.75	4
4	0.67	1.00	0.80	2
5	1.00	1.00	1.00	2

6	1.00	0.	.50	0.6	7	2	
9	1.00	0.	.00	0.0	0	1	
11	1.0	0 0	.00	0.0	00	1	
accuracy	/			0.7	9	19	
macro av	g	0.88	0.	66	0.62		19
weighted a	vg	0.85	0	.79	0.75	5	19

Sentence: i need a flight from toronto to montreal reaching montreal early on friday True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN VERB PROPN ADJ ADP NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN NOUN ADP PROPN ADP NOUN

Classification Report:

	precis	ion re	ecall	f1-sco	re supp	ort
1	0.6	67 O	.67	0.67	3	
2	0.	75 1	.00	0.86	3	
3	0.6	67 <b>1</b>	.00	0.80	2	
4	1.0	0 00	.50	0.67	2	
5	1.0	00 1	.00	1.00	1	
6	1.0	00 1	.00	1.00	1	
7	1.0	0 00	.00	0.00	1	
accur	acy			0.77	13	
macro	avg	0.87	0	.74	0.71	13
weighte	d avg	0.81	(	).77	0.73	13

Sentence: are there any flights from new york to montreal canada leaving on thursday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN

Predicted tags: AUX PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN ADP NOUN

Classification Report:

	precision	on rec	all f1	-score	supp	ort
1	0.8	0 1.0	00 (	0.89	4	
2				1.00	3	
3	1.0	0.1	00	1.00	2	
4	1.0	0.0	00 (	0.00	2	
5	1.0	0.1	00	1.00	1	
6	1.0	0.1	00	1.00	1	
8	0.0	0.1	00 (	0.00	0	
accur	acy		(	).85	13	
macro weighte	_	0.83 0.94	0.86 0.8		'0 81	13 13

Sentence: show me ground transportation in philadelphia on monday morning

True tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	1.	.00	1.00	1.00	)	1
2	1.	.00	1.00	1.00	) :	2
3	1.	.00	1.00	1.00	) ,	4
4	1.	.00	1.00	1.00	)	1
6	1.	.00	1.00	1.00	)	1
accur	acy			1.00	) (	)
macro	avg	1.0	0 1	.00	1.00	9
weighte	d avg	1.	00	1.00	1.00	9

Sentence: find a flight from toronto to san diego with a layover in dc on delta airlines True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP DET

NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	preci	sion	recall	f1-sco	ore sup	port
1	1	.00	1.00	1.00	6	
2	1	.00	1.00	1.00	5	
3	1	.00	1.00	1.00	2	
4	1	.00	1.00	1.00	) 1	
5	1	.00	1.00	1.00	2	
accur	асу			1.00	16	
macro		1.0	00 1	1.00	1.00	16
weighte	d avg	1.	.00	1.00	1.00	16

Sentence: what is restriction ap80
True tags: PRON AUX NOUN PROPN
Predicted tags: PRON AUX NOUN NOUN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	0.00	0.00	1	
3	0.50	1.00	0.67	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accurac	•		0.75	4	
macro a	vg 0.8	88 0	.75 0.6	67	4
weighted	avg 0	.88	0.75 0.	.67	4

Sentence: list the arizona airport

True tags: VERB DET PROPN PROPN

Predicted tags: VERB DET DET PROPN

Classification Report:

	precision	on re	call f1	-score	supp	ort
1	1.0	0 0.	50	0.67	2	
4	1.0	0 1.	00	1.00	1	
5	0.5	0 1.	00	0.67	1	
accur	acy		(	0.75	4	
macro	avg	0.83	0.83	3 0.7	'8	4
weighted	d avg	0.88	0.7	5 0.	75	4

Sentence: what are the nonstop flights on america west or southwest air from kansas city to burbank on saturday may twenty two

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN CCONJ PROPN PROPN ADP PROPN ADP PROPN ADP NOUN NOUN NUM NUM Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN NOUN VERB VERB ADP PROPN PROPN ADP PROPN ADP NOUN PROPN PROPN NOUN Classification Report:

pr	ecision	recall	f1-score	support
1	0.71	0.71	0.71	7
2	1.00	1.00	1.00	4
3	0.60	0.75	0.67	4
4	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
9	1.00	0.00	0.00	2
10	1.00	0.00	0.00	1
accuracy macro av weighted a	g 0.8		0.71 .72 0.6 0.71 0.	21 60 21 70 21
woignited a	•9	.00 (	<i></i> . 0.	

Sentence: what times does the late afternoon flight leave from washington for denver True tags: DET NOUN AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP

**PROPN** 

Predicted tags: PRON NOUN PROPN DET NOUN NOUN PROPN ADP

PROPN ADP PROPN Classification Report:

precision recall f1-score support 1 0.50 1.00 0.67 2 2 2 1.00 1.00 1.00 0.86 3 0.75 1.00 3 4 1.00 1 0.00 0.00 5 1.00 0.50 0.67 2 6 0.00 1.00 0.00 0 7 1.00 0.00 0.00

8 1.00 0.00 0.00 1 12 accuracy 0.67 macro avg 0.78 0.56 0.40 12 12 weighted avg 0.85 0.67 0.60

Sentence: what does the meal code s stand for

True tags: PRON AUX DET NOUN NOUN PROPN VERB ADP

Predicted tags: PRON AUX DET NOUN PROPN PROPN VERB ADP

Classification Report:

precision recall f1-score support 1 0.50 1.00 0.67 1 2 1.00 1.00 1.00 1 3 1.00 0.50 2 0.67 4 1 1.00 1.00 1.00 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 88.0 8 accuracy 0.93 0.93 0.90 8 macro avg weighted avg 0.94 0.88 0.88 8

Sentence: is there ground transportation from the memphis airport into town when if i arrive at <unk> in the morning

True tags: VERB PRON NOUN NOUN ADP DET PROPN PROPN ADP PROPN

ADV ADP PRON VERB ADP NUM ADP DET NOUN

Predicted tags: AUX PRON NOUN NOUN ADP DET NOUN PROPN PROPN

PROPN PROPN NOUN PRON VERB ADP PROPN ADP DET NOUN

Classification Report:

	precisi	•	call	f1-sco	re sup	port
1	0.4	10 0.	67	0.50	3	
2	1.0	0.00	60	0.75	5	
3	0.6	60 1.	00	0.75	3	
4	1.0	0.	50	0.67	2	
5	1.0	00 1.	00	1.00	2	
6	1.0	00 1.	00	1.00	2	
8	0.0	00 1.	00	0.00	0	
9	1.0	0.	00	0.00	1	
11	1.0	0 00	.00	0.00	) 1	
accur macro	•	0.78	0	0.68 64	19 0.52	19
weighte	_	0.84	_	0.68	0.68	19

Sentence: what flights between dfw and oakland arrive in oakland between <unk> am and <unk> pm

True tags: DET NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN ADP NUM

NOUN CCONJ NUM NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN VERB ADP PROPN

ADP PROPN NOUN CCONJ VERB NOUN

Classification Report:

	precisi	ion re	ecall	f1-sco	re sup	port
1	0.6	60 1	.00	0.75	3	
2	1.0	00 1	.00	1.00	3	
3	1.0	00 1	.00	1.00	3	
4	0.5	50 1	.00	0.67	1	
5	1.0	0 0	.00	0.00	1	
6	0.0	00 1	.00	0.00	0	
9	1.0	0 0	.00	0.00	2	
10	) 1.	00 (	0.50	0.67	7 2	
accur	асу			0.73	15	
macro	avg	0.76	0	.69	0.51	15
weighted	d avg	0.89	) (	).73	0.68	15

Sentence: what are the flights on mondays that travel from charlotte north carolina to phoenix arizona

True tags: PRON AUX DET NOUN ADP PROPN ADP VERB ADP PROPN ADV PROPN ADP PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN ADP PROPN PROPN

Classification Report:

		- 1						
	prec	isior	re	call	f1-sc	ore	supp	ort
1		0.83	1.	00	0.9	91	5	
2		1.00	1.	00	1.0	00	4	
3	. (	0.50	1.	00	0.6	67	1	
4		1.00	0.	00	0.0	00	1	
5	,	1.00	1.	00	1.0	00	1	
6	;	1.00	1.	00	1.0	00	1	
8	,	1.00	1.	00	1.0	00	1	
11	1	1.00	0	.00	0.0	00	1	
accur	асу				0.8	7	15	
macro	avg	(	0.92	0	.75	0.7	0	15
weighte	d avg	J	0.91	(	0.87	0.	81	15

Sentence: what kind of ground transportation is there in washington dc

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN PROPN Predicted tags: PRON AUX ADP NOUN NOUN PROPN DET ADP PROPN PROPN

р	recision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1 00	1 00	1 00	2

3	1.00	0.	67	0.80	) 3	
4	1.00	0.	00	0.00	) 1	
5	0.00	0.	00	0.00	) 1	
6	0.00	0.	00	0.00	) 1	
8	0.00	) 1.	00	0.00	0 (	
accurac	су			0.60	10	
macro a	vg	0.52	0.	52	0.37	10
weighted a	avg	0.73	0	.60	0.60	10

Sentence: in economy class from dallas to baltimore arriving july seventh i <unk> like to know what <unk> the cheapest ticket possible

True tags: ADP NOUN NOUN ADP PROPN ADP PROPN VERB NOUN ADJ PRON AUX VERB PART VERB PRON AUX DET ADJ NOUN ADJ

Predicted tags: ADP PROPN NOUN ADP PROPN ADP PROPN PROPN VERB NOUN PRON AUX VERB ADP VERB DET AUX DET NOUN PROPN PROPN Classification Report:

	precisio	n red	call f1	-score	supp	ort
1	0.33	3 1.	00	0.50	2	
2	0.75	5 1.	00	0.86	3	
3	0.33	3 0.	25	0.29	4	
4	0.67	7 0.	67	0.67	3	
5	0.50	) 1.	00	0.67	1	
6	1.00	0.	50	0.67	2	
7	1.00	0.0	00	0.00	3	
8	1.00	) 1.	00	1.00	2	
12	2 1.0	0 0	.00	0.00	1	
accura	асу			0.57	21	
macro	avg	0.73	0.60	0.	52	21
weighted	d avg	0.70	0.5	57 0	.51	21

Sentence: show flights from baltimore to san francisco between 6 pm and 8 pm on friday

True tags: VERB NOUN ADP PROPN ADP PROPN ADP NUM NOUN

CCONJ NUM NOUN ADP NOUN

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP PROPN NOUN NOUN NOUN ADP NOUN

pr	ecision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	4
3	0.67	1.00	0.80	4
4	1.00	1.00	1.00	1
9	1.00	0.00	0.00	2
10	1.00	0.00	0.00	1
accuracy	y		0.80	15

macro avg	0.90	0.67	0.61	15
weighted avg	0.86	0.80	0.72	15

Sentence: what meals are available on dl <unk> which <unk> arrives in san

francisco at <unk> am

True tags: DET NOUN AUX ADJ ADP PROPN NUM DET PROPN VERB ADP PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN AUX AUX ADP PROPN PROPN DET VERB PROPN

ADP PROPN PROPN ADP PROPN NOUN

Classification Report:

	precis	sion	recal	f1-sc	ore su	pport
1	0.	50	0.75	0.6	0 4	1
2	1.	00	1.00	1.0	0 3	3
3	1.	00	1.00	1.0	0 2	2
4	0.	00	0.00	0.0	0 1	
5	1.	00	0.50	0.6	7 2	2
6	0.	00	1.00	0.0	0 (	)
7	1.	00	0.00	0.0	0 1	
8	0.	50	1.00	0.6	7 1	
9	1.	00	0.00	0.0	0 2	2
accur	•	_		0.62		
macro weighted	_	0.6	67 ( .78	0.58 0.62	0.44 0.59	16 16

Sentence: i want to fly from kansas city to chicago next wednesday arriving in the evening and returning the next day

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ NOUN VERB ADP DET NOUN CCONJ VERB DET ADJ NOUN Predicted tags: PRON VERB ADP VERB ADP PROPN PROPN ADP PROPN PROPN NOUN ADP DET NOUN NOUN ADP DET NOUN NOUN

	precis	ion	recal	I f1-s	core	supp	ort
1	0.7	75	1.00	0.8	86	3	
2	0.6	60	1.00	0.	75	3	
3	0.5	50	1.00	0.0	67	3	
4	1.0	00	0.50	0.0	67	4	
5	1.0	00	1.00	1.0	00	2	
6	1.0	00	1.00	1.0	00	1	
7	1.0	00	0.00	0.0	00	2	
10	1.	00	0.00	0.	.00	1	
12	1.	00	0.00	0.	.00	1	
0001111	201			0.7	7 <b>0</b>	20	
accura macro	avg	3.0		0.61	0.5	55	20
weighted	avg	U.	.83	0.70	U.	62	20

Sentence: please book for me a flight on twa from washington dc to san francisco earliest possible time

True tags: INTJ VERB ADP PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN ADV ADJ NOUN

Predicted tags: VERB VERB ADP PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN NOUN

Classification Report:

Ciassilica	uon nepo	/I L.			
p	recision	recall	f1-score	supp	ort
1	0.71	1.00	0.83	5	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
11	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accura	су		0.82	17	
macro a weighted	•		.67 0.6 0.82 0.	61 75	17 17
weignieu	avy 0	.09 (	J.UZ U.	13	1 /

Sentence: is there a red eye flight from san jose to nashville on wednesday the nineteenth of may

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP NOUN DET ADJ ADP NOUN

Predicted tags: AUX PRON DET DET ADP NOUN ADP PROPN PROPN ADP

PROPN ADP NOUN DET NOUN ADP PROPN

Classification Report:

	prec	ision	recal	ll f1-s	core	supp	ort
1	(	).75	1.00	0.	86	3	
2	(	08.0	1.00	0.	89	4	
3	(	0.67	0.50	0.	57	4	
4	•	1.00	0.00	0.	00	1	
5	(	0.67	1.00	0.	80	2	
6	•	1.00	1.00	1.	00	1	
7	•	1.00	0.00	0.	00	2	
8	(	0.00	1.00	0.	00	0	
accur	асу			0.		17	
macro weighte	_	0.7	74 .79	0.69 0.71	0.5 0.	65 65	17 17

Sentence: i <unk> like to arrange for two friends to fly into los angeles next saturday evening one of the people is coming from kansas city and the other is coming from las vegas

True tags: PRON AUX VERB PART VERB ADP NUM NOUN PART VERB ADP PROPN PROPN ADJ NOUN NOUN NUM ADP DET NOUN AUX VERB ADP PROPN PROPN CCONJ DET ADJ AUX VERB ADP PROPN PROPN PROPN Predicted tags: PRON AUX VERB ADP VERB ADP NOUN NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN NOUN ADP DET NOUN PROPN PROPN ADP PROPN PROPN PROPN DET NOUN PROPN ADP PROPN P

	precisio	n rec	all f1-s	core su	ipport
1	0.46	3 1.0	0.0	63	6
2	0.7	1 1.0	0.0	83	5
3	0.57	7 1.0	0.0	73	4
4	1.00	0.4	0 0.	57	5
5	1.00	1.0	0 1.0	00	2
6	1.00	1.0	0 1.0	00	1
7	1.00	0.0	0.0	00	2
8	1.00	0.3	3 0.	50	3
9	1.00	0.0	0.0	00	2
10	1.0	0.0	00 0.	.00	1
12	2 1.0	0.0	00 0.	.00	2
accura	асу		0.6	34	3
macro	avg	0.89	0.52	0.48	33
weighted	d avg	0.81	0.64	0.55	33

Sentence: what is restriction ap <unk>

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

Classification Report:

	precis	sion	recal	l f1-sc	ore	supp	ort
1	0.	50	1.00	0.6	67	1	
3	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
8	1.	00	1.00	1.0	0	1	
9	1.	00	0.00	0.0	00	1	
accur	acy			0.8	0	5	
macro	avg	0.9	90 (	0.80	0.7	3	5
weighted	d avg	0	.90	0.80	0.	73	5

Sentence: what is restriction ap 80

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

Classification Report:

precision recall f1-score support 1 0.50 1.00 0.67 1 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1 6

8 1.0	0.0	00 1.0	00 1	
9 1.0	0.0	0.0	00 1	
accuracy		0.8	0 5	
macro avg	0.90	0.80	0.73	5
weighted avg	0.90	0.80	0.73	5

Sentence: show me all flights from philadelphia to san francisco with one stop in dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN

Classification Report:

0.0000	<b></b>	· • • • • · · ·				
	precisi	on r	ecall	f1-sc	ore su	pport
1	0.8	30 -	1.00	0.8	9 4	4
2	1.0	00 ′	1.00	1.0	) 4	4
3	1.0	00 ′	1.00	1.0	o :	2
4	1.0	00 1	1.00	1.0	) ·	1
5	1.0	00 ′	1.00	1.0	) ·	1
6	1.0	00 ′	1.00	1.0	) ·	1
9	1.0	00 (	0.00	0.0	) ·	1
accur	acy			0.93	3 1	4
macro	avg	0.97	0	.86	0.84	14
weighte	d avg	0.94	4 (	0.93	0.90	14

Sentence: show me the flights from miami to san diego with one stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN NOUN ADP PROPN

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	0.	.80	1.00	0.	89	4	
2	1.	.00	1.00		00	4	
3	1.	.00	1.00	1.	00	2	
4	. 1.	.00	1.00	1.	00	1	
5	1.	.00	1.00	1.	00	1	
6	1.	.00	1.00	1.	00	1	
9	1.	.00	0.00	0.	00	1	
accur	acy			0.9	93	14	
macro	avg	0.9	97	0.86	8.0	4	14
weighte	d avg	0.	94	0.93	0.	90	14

Sentence: do you have a flight from atlanta to charlotte north carolina next monday

True tags: AUX PRON VERB DET NOUN ADP PROPN ADV PROPN

**ADJ NOUN** 

Predicted tags: VERB PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN

PROPN NOUN NOUN Classification Report:

Ciaconic	alionit	oport.				
	precisio	on red	call f1	-score	suppo	rt
1	0.7	5 1.	00	0.86	3	
2	1.0	0 1.	00	1.00	2	
3	0.6	7 1.	00	0.80	2	
4	0.5	0 1.	00	0.67	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 0.	00	0.00	1	
8	1.0	0 0.	00	0.00	1	
11	1.0	0 0.	.00	0.00	1	
accur	асу		(	0.77	13	
macro weighted	_	0.88 0.85	0.67 0.7	_	59 .68	13 13
	· · 9	0.00	0.7	. 0		. •

Sentence: i would like to book an early morning flight from tampa florida to charlotte north carolina on april sixth

True tags: PRON AUX VERB PART VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ

Predicted tags: PRON AUX VERB ADP VERB DET NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

0.0.000	precis	sion	recall	f1-score	supp	ort
1	1.	00	1.00	1.00	4	
2	0.	60	1.00	0.75	3	
3	0.	60	1.00	0.75	3	
4	1.	00	1.00	1.00	2	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
7	1.	00	0.00	0.00	2	
8	1.	00	1.00	1.00	1	
11	1	.00	0.00	0.00	1	
12	2 1	.00	0.00	0.00	1	
accur	асу			0.79	19	
macro weighted	•	0.9 0			65 .71	19 19

Sentence: now i <unk> like flights from philadelphia to pittsburgh leaving between 430 and 530 pm

True tags: ADV PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB ADP NUM CCONJ NUM NOUN

Predicted tags: NOUN PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB

ADP PROPN CCONJ PROPN NOUN

Classification Report:

	precis	sion	reca	all	f1-sc	ore	supp	ort
1	0.	50	1.0	0	0.6	7	2	
2	1.	00	1.0	0	1.0	0	3	
3	0.	67	1.0	0	0.8	0	2	
4	1.	00	1.0	0	1.0	0	2	
6	1.	00	1.0	0	1.0	0	1	
8	1.	00	1.0	0	1.0	0	1	
9	1.	00	0.0	0	0.0	0	2	
10	) 1	.00	1.0	00	1.0	00	1	
11	1	.00	0.0	00	0.0	00	1	
						_		
accur	acy				0.8	0	15	
macro	avg	0.	91	0	.78	0.7	'2	15
weighted	d avg	0	.89	(	08.0	0.	73	15

Sentence: from sfo to denver

True tags: ADP PROPN ADP PROPN Predicted tags: ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 2 1.00 1.00 1.00 accuracy 1.00 4 1.00 1.00 1.00 4 macro avg weighted avg 1.00 1.00 1.00 4

Sentence: what is the lowest fare from bwi to salt lake city

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN PROPN

**PROPN** 

	precis	ion re	call	f1-scc	ore sup	port
1	1.0	00 1	.00	1.00	) 4	
2	1.0	00 1	.00	1.00	) 2	)
3	1.0	00 1	.00	1.00	) 1	
5	0.5	50 1	.00	0.67	<sup>7</sup> 1	
6	1.0	00 1	.00	1.00	) 1	
7	1.0	0 0	.00	0.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accur	acy			0.91	11	
macro weighte	•	0.93 0.95		.86 0.91	0.81 0.88	11 11
	79	3.00			5.50	

Sentence: flight numbers from minneapolis to long beach on june twenty six

True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM NUM

Predicted tags: NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN

**NOUN NOUN** 

Classification Report:

	prec	ision	rec	all	†1-sc	core	supp	ort
1	1	1.00	1.0	0	1.0	00	3	
2	1	.00	1.0	0	1.0	00	3	
3	(	).50	0.6	7	0.5	57	3	
4	(	0.00	1.0	0	0.0	00	0	
9	1	.00	0.0	0	0.0	00	2	
accur	acy				0.7	'3	11	
macro	avg	0.	70	0.	.73	0.5	51	11
weighte	d avg	0	.86	(	).73	0.	70	11

Sentence: which is the flight number for the us air flight from philadelphia to boston is it <unk> or is it <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP PROPN AUX PRON NUM CCONJ AUX PRON NUM

Predicted tags: DET AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP PROPN PROPN PROPN PROPN NOUN AUX AUX PROPN

Classification Report:

orecision	recall	f1-score	suppor	t
0.50	1.00	0.67	4	
1.00	1.00	1.00	3	
0.75	1.00	0.86	3	
0.67	1.00	0.80	2	
1.00	0.00	0.00	3	
0.67	0.67	0.67	3	
1.00	0.00	0.00	2	
1.00	0.00	0.00	1	
су		0.67	21	
9			_	1 21
	1.00 0.75 0.67 1.00 0.67 1.00 1.00	0.50 1.00 1.00 1.00 0.75 1.00 0.67 1.00 1.00 0.00 0.67 0.67 1.00 0.00 1.00 0.00	0.50 1.00 0.67 1.00 1.00 1.00 0.75 1.00 0.86 0.67 1.00 0.80 1.00 0.00 0.00 0.67 0.67 0.67 1.00 0.00 0.00 1.00 0.00 0.00 1.00 0.00 0.00	0.50

Sentence: how much would car rental cost in atlanta

True tags: ADV ADV AUX NOUN ADJ VERB ADP PROPN

Predicted tags: VERB VERB VERB NOUN NOUN ADP PROPN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	1.00	1.00	1.00	1
3	0.33	1.00	0.50	1
4	0.00	0.00	0.00	1

	7	1.0	00	0.0	00	0.0	0	1	
	8	1.0	0	0.0	0	0.0	0	1	
	11	1.0	00	0.0	00	0.0	0	2	
accı	urac	y				0.38	3	8	
macı	ro av	/g	0.	76	0.4	43	0.36	6	8
weight	ed a	ıvg	0	.79	0	.38	0.3	1	8

Sentence: please list the prices for a rental car in pittsburgh

True tags: INTJ VERB DET NOUN ADP DET ADJ NOUN ADP PROPN

Predicted tags: VERB VERB DET NOUN ADP DET NOUN NOUN ADP PROPN

Classification Report:

	precis	ion	reca	II f1	-scc	re s	suppo	ort
1	1.	00	1.00	)	1.00	)	1	
2	1.	00	1.00	)	1.00	)	2	
3	0.	67	1.00	)	0.80	)	2	
4	0.	50	1.00	)	0.67	•	1	
5	1.	00	1.00	)	1.00	)	2	
7	1.	00	0.00	)	0.00	)	1	
13	3 1	.00	0.0	0	0.0	0	1	
accur	acy				0.80		10	
macro weighted	avg	0.8	8 88	0.7		0.64	3	10 10

Sentence: what does the restriction <unk> mean True tags: PRON AUX DET NOUN PROPN VERB

Predicted tags: PRON AUX DET NOUN PROPN PROPN

Classification Report:

	precision	on re	call	f1-scc	re su	ıppoı	rt
1	0.5	0 1.	00	0.67	7	1	
3	1.0	0 1.	00	1.00	)	1	
4	1.0	0 0.	00	0.00	)	1	
5	1.0	0 1.	00	1.00	)	1	
6	1.0	0 1.	00	1.00	)	1	
8	1.0	0 1.	00	1.00	)	1	
accura	асу			0.83	. (	6	
macro weighted	_	0.92 0.92		.83 ).83	0.78 0.78	(	6
weignied	avy	0.92	(	J.03	0.76		O

Sentence: list nonstop flights from baltimore washington to oakland that arrive

between <unk> and <unk> pm

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP

NUM CCONJ NUM NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB

ADP PROPN CCONJ PROPN NOUN

	pred	cision	rec	all	f1-sc	ore	supp	ort
1		0.60	1.0	00	0.7	<b>'</b> 5	3	
2	) -	1.00	1.0	00	1.0	0	4	
3	}	1.00	1.0	00	1.0	0	3	
4		1.00	1.0	00	1.0	0	2	
9	)	1.00	0.0	00	0.0	0	2	
10	0	1.00	1.	00	1.0	00	1	
accur	acy				0.8	7	15	
macro	avg	0	.93	0	.83	0.7	'9	15
weighte	d avo	g (	0.92	(	0.87	0.	82	15

Sentence: list all of the daily flights arriving in denver from 8 to 9 pm

True tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP NUM ADP

NUM NOUN

Predicted tags: VERB DET ADP DET NOUN NOUN ADP PROPN ADP

PROPN ADP PROPN NOUN

Classification Report:

p						
0.3	33	1.00	0.5	50	1	
1.0	00	1.00	1.0	00	4	
0.5	50	1.00	0.6	67	2	
1.0	00 (	0.50	0.6	67	2	
1.0	00	1.00	1.0	00	2	
1.0	00 (	0.00	0.0	00	1	
1.0	00 (	0.00	0.0	00	2	
acy			0.7	1	14	
avg				0.55		14
d avg	0.8	8	0.71	0.65	5	14
	1.0 0.5 1.0 1.0 1.0 1.0	1.00 0.50 1.00 1.00 1.00 1.00 acy avg 0.83	1.00 1.00 0.50 1.00 1.00 0.50 1.00 1.00 1.00 0.00 1.00 0.00 acy avg 0.83 0	1.00 1.00 1.0 0.50 1.00 0.6 1.00 0.50 0.6 1.00 1.00 1.0 1.00 0.00 0.0 1.00 0.00 0.0 acy 0.7 avg 0.83 0.64	1.00 1.00 1.00 0.50 1.00 0.67 1.00 0.50 0.67 1.00 1.00 1.00 1.00 0.00 0.00 1.00 0.00 0.00 acy 0.71 avg 0.83 0.64 0.55	1.00 1.00 1.00 4 0.50 1.00 0.67 2 1.00 0.50 0.67 2 1.00 1.00 1.00 2 1.00 0.00 0.00 1 1.00 0.00 0.00 2 acy 0.71 14 avg 0.83 0.64 0.55

precision recall f1-score support

Sentence: get flights from milwaukee to <unk>

True tags: VERB NOUN ADP PROPN ADP PROPN

Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call t	1-sco	re sup	port
1 2 3 4	1.00 1.00 0.50 1.00	) 1. ) 1.	00 00 00 00	1.00 1.00 0.67 0.00	2	
accura macro weighted	avg	0.88 0.92	0.7	0.83	6 0.67 0.78	6 6

Sentence: what is the earliest flight from boston to bwi that serves a snack

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP NOUN

**DET NOUN** 

Classification Report:

	precisi	on re	call	f1-sco	ore su	pport
1	1.0	0 1	.00	1.00	)	2
2	1.0	0 1.	.00	1.00	)	3
3	0.6	7 1.	.00	0.80	) :	2
4	1.0	0 0	.00	0.0	)	1
5	1.0	0 1.	.00	1.00	)	2
6	1.0	0 1.	.00	1.00	)	1
7	1.0	0 1.	.00	1.00	)	1
8	1.0	0 1	.00	1.00	)	1
accura	асу			0.92	2 1	3
macro	avg	0.96	0	.88	0.85	13
weighted	d avg	0.95	(	0.92	0.89	13

Sentence: is bwi washington

True tags: VERB PROPN PROPN Predicted tags: AUX VERB PROPN

Classification Report:

	precision			-score	supp	ort
1	1.0	0 0.	50	0.67	2	
4	0.0	0 0.	00	0.00	1	
8	0.0	0 1.	00	0.00	0	
accura	асу		(	0.33	3	
macro	avg	0.33	0.50	0.2	22	3
weighted	d avg	0.67	0.3	3 0.	.44	3

Sentence: what are the cities that american airlines serves

True tags: PRON AUX DET NOUN ADP PROPN PROPN VERB

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN

	precisio	n reca	all f1-s	score	suppo	ort
1	0.67	7 1.00	0 0	.80	2	
2	1.00	1.0	0 1	.00	1	
3	1.00	1.0	0 1	.00	1	
4	1.00	0.0	0 0	.00	1	
5	1.00	1.0	0 1	.00	1	
6	1.00	1.0	0 1	.00	1	
8	1.00	1.00	0 1	.00	1	
accura	асу		0	.88	8	
macro	avg	0.95	0.86	0.83	3	8

weighted avg 0.92 0.88 0.82 8

Sentence: which cities are serviced by both american and delta airlines

True tags: DET NOUN AUX VERB ADP DET PROPN CCONJ PROPN PROPN Predicted tags: DET NOUN VERB NOUN ADP PROPN PROPN PROPN PROPN

**PROPN** 

Classification Report:

ŗ	recision	recall f1-score		support
1	0.60	1.00	0.75	3
2	1.00	1.00	1.00	1
3	0.50	1.00	0.67	1
4	0.00	0.00	0.00	1
5	1.00	0.50	0.67	2
8	1.00	0.00	0.00	1
10	1.00	0.00	0.00	1
accura	су		0.60	10
macro a	avg 0.	73 0	.50 0.4	14 10
weighted	avg 0	.73	0.60 0.	52 10

Sentence: show me all the us air flights to pittsburgh between 12 and 4 in the

afternoon

True tags: VERB PRON DET DET PROPN PROPN NOUN ADP PROPN ADP NUM

CCONJ NUM ADP DET NOUN

Predicted tags: VERB PRON DET DET NOUN PROPN NOUN ADP PROPN ADP

PROPN CCONJ CCONJ ADP DET NOUN

Classification Report:

	pre	cisio	n re	ecall	f1-s	core	supp	ort
1		0.67	C	.67	0.	67	3	
2		1.00	1	.00	1.	00	3	
3		0.67	1	.00	0.	80	2	
4		1.00	1	.00	1.	00	1	
5		1.00	1	.00	1.	00	3	
6		1.00	1	.00	1.	00	1	
9		1.00	C	00.0	0.	00	2	
10	)	0.50	)	1.00	0	.67	1	
accur	асу				0.8	31	16	
macro	avg		0.85	0	.83	0.7	77	16
weighte	d av	9	0.86	6 (	0.81	0.	77	16

Sentence: what is the cost of limousine service in philadelphia

True tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 1

1.00 1.00	1.00	) 1.0	00	2	
				1	
1.00	1.00	) 1.0	00	1	
1.00	1.00	) 1.0	00	1	
		1.0	00	9	
g 1	.00	1.00	1.00		9
/g	1.00	1.00	1.00	0	9
	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: how much does the limousine service cost within pittsburgh True tags: ADV ADV AUX DET NOUN NOUN VERB ADP PROPN

Predicted tags: VERB VERB DET DET NOUN NOUN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.00	)	1	
2	1.0	00	0.00	0.0	)	1	
3	0.3	33	0.50	0.40	0	2	
4	0.0	00	0.00	0.0	)	1	
5	0.5	50	1.00	0.6	7	1	
8	1.0	00	0.00	0.0	)	1	
11	1.	00	0.00	0.0	0	2	
accur	acy			0.33	3	9	
macro	avg	0.69	9 0	.36	0.30		9
weighted	d avg	0.6	69 (	0.33	0.27		9

Sentence: on november twenty third of this <unk> 1991 i <unk> like to fly from atlanta to denver and i <unk> like to fly on delta

True tags: ADP NOUN NUM PROPN ADP DET NOUN NUM PRON AUX VERB PART VERB ADP PROPN ADP PROPN CCONJ PRON AUX VERB PART VERB ADP PROPN

Predicted tags: ADP NOUN NOUN ADJ ADP NOUN PROPN VERB PRON AUX VERB ADP VERB ADP PROPN ADP PROPN PROPN PRON PRON VERB ADP VERB ADP PROPN

p	recision	recall	f1-score	support
1	0.60	0.75	0.67	4
2	0.71	1.00	0.83	5
3	0.33	0.50	0.40	2
4	0.80	1.00	0.89	4
5	1.00	0.00	0.00	1
6	0.67	1.00	0.80	2
7	0.00	1.00	0.00	0
8	1.00	0.50	0.67	2
9	1.00	0.00	0.00	2
10	1.00	0.00	0.00	1
12	1.00	0.00	0.00	2

accuracy		0.6	4 25	5
macro avg	0.74	0.52	0.39	25
weighted avg	0.77	0.64	0.56	25

Sentence: can you tell me the flights on october fifteenth 1991 from boston to oakland

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADJ NUM ADP PROPN ADP PROPN

Predicted tags: VERB PRON VERB PRON DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Classification Report:

	pre	cisio	n re	call	f1-s	core	supp	ort
1		0.60	1.	00	0.	75	3	
2		1.00		00		00	3	
3	}	1.00	1.	00	1.	00	1	
4		0.50	1.	00	0.	67	1	
5	,	1.00	1.	00	1.	00	1	
6	;	1.00	1.	00	1.	00	2	
7	•	1.00	0.	00	0.	00	1	
8	}	1.00	0.	00	0.	00	1	
9	)	1.00	0.	00	0.	00	1	
accur	acy				0.7	79	14	
macro	avg	l	0.90	0	.67	0.6	0	14
weighte	d av	g	0.88	(	0.79	0.	71	14

Sentence: show me all united flights from denver to san francisco for september first 1991

True tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADJ NUM

Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

o la comi	precisio	•	f1-score	support
1	1.00	0.75	0.86	4
2	1.00	1.00	1.00	3
3	0.40	1.00	0.57	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
9	1.00	0.00	0.00	1
accur	асу		0.79	14
macro	avg	0.93	0.72	8 14
weighted	d avg	0.91	0.79 0.	.76 14

Sentence: information on american airline flights from washington to philadelphia early morning times of flight

True tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADJ NOUN NOUN ADP NOUN

Predicted tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADP PROPN PROPN NOUN ADP NOUN

Classification Report:

rt
4
14

Sentence: please give me the flight times i would like to fly from boston to baltimore in the morning before 8

True tags: INTJ VERB PRON DET NOUN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NUM

Predicted tags: VERB VERB PRON DET NOUN NOUN PRON VERB VERB ADP VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN Classification Report:

Classilic	Ciassification (Neport.							
	precis	sion	recall	f1-score	e supp	ort		
1	1.	00	1.00	1.00	2			
2		80	1.00	0.89	4			
3	0.	75	1.00	0.86	3			
4	0.	60	1.00	0.75	3			
5	1.	00	1.00	1.00	2			
6		00	1.00	1.00	2			
8		00	0.00	0.00	1			
9		00	0.00	0.00	1			
12		.00	0.00	0.00	1			
13	3 1	.00	0.00	0.00	1			
accur	асу			0.80	20			
macro	•	0.9			.55	20		
weighted	d avg	0.	.86	0.80	0.72	20		

Sentence: please list the flight times for boston to pittsburgh

True tags: INTJ VERB DET NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB DET NOUN NOUN ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2

3	1.00	1.0	00	1.00	2	
4	0.50	1.0	0	0.67	1	
5	1.00	1.0	0	1.00	1	
13	1.00	0.	00	0.00	1	
accuracy	,		(	0.89	9	
macro av	g 0.	92	0.83	3 0	.78	9
weighted av	vg 0	.94	0.8	9 (	0.85	9

Sentence: show me all flights and fares from dallas to san francisco

True tags: VERB PRON DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precis	ion	recall	f1-sc	ore su	upport
1	1.	00	1.00	1.0	0	3
2	1.	00	1.00	1.00	0	2
3	0.	67	1.00	0.8	0	2
4	1.	00	1.00	1.0	0	1
5	1.	00	1.00	1.0	0	1
6	1.	00	1.00	1.0	0	1
10	) 1	.00	0.00	0.0	00	1
accura	асу			0.91	l 1	11
macro weighted	•	0.9		.86 0.91	0.83 0.87	11 11
weignie	auy	0.0	, T	0.01	0.07	

Sentence: please list me the flights and their cost of all airlines flying from denver to baltimore

True tags: INTJ VERB PRON DET NOUN CCONJ DET NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: VERB VERB PRON DET NOUN NOUN PROPN VERB ADP DET NOUN PROPN ADP PROPN ADP PROPN

	prec	ision	reca	all	f1-sc	ore	supp	ort
1	(	0.50	1.0	0	0.6	7	2	
2	•	1.00	1.0	0	1.0	0	3	
3	(	0.67	0.6	7	0.6	7	3	
4	(	0.33	0.5	0	0.4	0	2	
5	•	1.00	0.6	7	0.8	0	3	
6	•	1.00	1.0	0	1.0	0	1	
10	)	1.00	0.0	00	0.0	0	1	
13	3	1.00	0.0	00	0.0	0	1	
accura	acy				0.69	)	16	
macro	avg	0.	81	0.	60	0.5	7	16
weighted	d avg	0	.79	C	.69	0.	66	16

Sentence: give me the flights and fares on december twenty seventh from

indianapolis to orlando

True tags: VERB PRON DET NOUN CCONJ NOUN ADP NOUN NUM ADJ ADP

PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN PROPN

NOUN ADP PROPN ADP PROPN

Classification Report:

р	precision		f1-score	supp	ort
1	0.50	1.00	0.67	2	
2	1.00	1.00	1.00	3	
3	0.50	0.67	0.57	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
9	1.00	0.00	0.00	1	
10	1.00	0.00	0.00	1	
accurac	у		0.71	14	
macro a	vg 0.8	89 0	.63 0.5	8	14
weighted a	avg 0	.82 (	0.71 0.	65	14

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

1
1
1
3
3 3

Sentence: is there ground transportation from Iga into new york city

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN

**PROPN** 

	precision	recall	f1-score	support
1	0.80	1.00	0.89	4
2	1.00	0.50	0.67	2
3	1.00	1.00	1.00	2
4	1.00	0.00	0.00	1
6	1.00	1.00	1.00	1

8	0.00	1.00	0.00	0
U	0.00	1.00	0.00	U

accuracy		0.8	0 10	
macro avg	0.80	0.75	0.59	10
weighted avg	0.92	0.80	0.79	10

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

pre	ecision	rec	all f1-	score	supp	ort
1	1.00	0.0	0 0	.00	1	
6	1.00	1.0	0 1	.00	1	
8	0.50	1.0	0 0	.67	1	
accuracy	,		0	.67	3	
macro av	g 0.	83	0.67	0.5	6	3
weighted av	/g 0	.83	0.67	0.	56	3

Sentence: how far is toronto international from downtown True tags: ADV ADV AUX PROPN PROPN ADP NOUN

Predicted tags: VERB VERB AUX PROPN PROPN ADP PROPN

Classification Report:

	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	1
3	1.00	0.00	0.00	1
4	0.00	1.00	0.00	0
8	1.00	1.00	1.00	1
11	1.00	0.00	0.00	2
accura	асу		0.57	7
macro	avg 0.	78 0	.67 0.4	17 7
weighted	lavg (	).90	0.57 0.	51 7

Sentence: how far is los angeles international from downtown True tags: ADV ADV AUX PROPN PROPN PROPN ADP NOUN

Predicted tags: VERB VERB AUX PROPN PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 0.75 1.00 0.86 3 2 1.00 1.00 1.00 1 3 1.00 0.00 0.00 1 4 0.00 1.00 0.00 0 8 1.00 1.00 1.00 1 2 11 1.00 0.00 0.00

accuracy		0.6	2 8	
macro avg	0.79	0.67	0.48	8
weighted avg	0.91	0.62	0.57	8

Sentence: how long does a flight from baltimore to san francisco take

True tags: ADV ADV AUX DET NOUN ADP PROPN ADP PROPN PROPN VERB Predicted tags: VERB VERB PROPN DET NOUN ADP PROPN ADP PROPN

PROPN ADP

Classification Report:

	precis	ion	recall	f1-sco	ore sup	port
1	0.7	75	1.00	0.8	3	
2	0.6	67	1.00	0.80	) 2	1
3	1.0	00	1.00	1.00	0 1	
4	0.0	00	0.00	0.0	0 1	
5	1.0	00	1.00	1.00	0 1	
8	1.0	00	0.00	0.0	0 1	
11	1.	00	0.00	0.0	0 2	2
accur	acy			0.64	ļ 11	
macro	avg	0.7	7 0	.57	0.52	11
weighted	d avg	0.7	78 (	0.64	0.56	11

Sentence: what airport in new york is closest to downtown

True tags: DET NOUN ADP PROPN PROPN AUX ADJ ADP NOUN

Predicted tags: PRON AUX ADP PROPN PROPN PROPN ADP NOUN

Classification Report:

	precis	ion	recal	l f1-s	core	suppo	ort
1	0.	50	1.00	0.	67	2	
2	1.0	00	1.00	1.	00	2	
3	1.0	00	0.50	0.	67	2	
5	1.0	00	0.00	0.	00	1	
6	0.0	00	1.00	0.	00	0	
7	1.0	00	0.00	0.	00	1	
8	0.0	00	0.00	0.	00	1	
accur	acy			0.	56	9	
macro	avg	0.6	64	0.50	0.3	3	9
weighted	d avg	0.	78	0.56	0.	52	9

Sentence: houston airports True tags: PROPN NOUN Predicted tags: VERB NOUN

pı	recision	recall	f1-score	support
1	1.00	0.00	0.00	1
3	1.00	1.00	1.00	1
4	0.00	1.00	0.00	0

accuracy		0.5	0 2	
macro avg	0.67	0.67	0.33	2
weighted avg	1.00	0.50	0.50	2

Sentence: give me a list of airports in baltimore

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.	00	1.00	1.0	0	1	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	2	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	8	
macro weighted	avg	1.0 1.		.00 1.00	1.00 1.00	)	8 8
_	_						

Sentence: where does delta fly to that american does not

True tags: ADV AUX PROPN VERB PART ADP PROPN AUX ADV

Predicted tags: VERB PROPN PROPN PROPN ADP VERB PROPN PROPN

PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore s	suppo	ort
1	0.	33	1.00	0.5	0	2	
2	0.	00	0.00	0.0	0	1	
4	0.	00	0.00	0.0	0	1	
8	1.	00	0.00	0.0	0	2	
11	1	.00	0.00	0.0	00	2	
12	2 1	.00	0.00	0.0	00	1	
accur	•			0.2		9	
macro weighted	_	0.5 0.		).17 0.22	0.08 0.1		9

Sentence: which airline has the smallest plane leaving pittsburgh and arriving in baltimore on july fourth

True tags: DET NOUN VERB DET ADJ NOUN VERB PROPN CCONJ VERB ADP PROPN ADP NOUN ADJ

Predicted tags: DET NOUN NOUN DET NOUN PROPN PROPN PROPN VERB ADP PROPN ADP NOUN NOUN

Classification Report:

precision recall f1-score support

0.40 1.00 0.57 2

2	1.00	1.00	) 1.	00	2	
3	0.40	0.67	7 0.	50	3	
4	1.00	0.33	3 0.	50	3	
5	1.00	1.00	) 1.	00	2	
7	1.00	0.00	0.0	00	2	
10	1.00	0.0	0 0	.00	1	
accuracy	/		0.6	60	15	
macro av	g 0.	83	0.57	0.5	1	15
weighted a	vg 0	.80	0.60	0.5	54	15

Sentence: which flight from pittsburgh to baltimore carries the smallest number of passengers

True tags: DET NOUN ADP PROPN ADP PROPN VERB DET ADJ NOUN ADP

Predicted tags: DET NOUN ADP PROPN ADP PROPN DET NOUN NOUN ADP ADP

Classification Report:

	precisio	n re	call	f1-sc	ore su	pport
1	0.67	7 1	00	0.80	) 2	)
2			00	0.80		
3	0.6	7 0.	67	0.6	7 3	}
4	1.00	-	00	0.00		
5	_		00	1.00		
7	1.00	) ().	00	0.00	) 1	
accur	асу			0.75	5 12	2
macro weighted	_	0.85	_	.61 ).75	0.55 0.68	12 12
weignie	u avy	0.00	,	J.1 J	0.00	12

Sentence: what is the first flight from boston to stapleton airport for tomorrow True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX DET DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

	precisio	n red	call f1-s	score s	support
1	0.7	5 1.0	0 00	.86	3
2	1.00	) 1.0	00 1	.00	3
3	1.00	0.9	50 0	.67	2
5	0.50	) 1.0	0 00	.67	1
6	1.00	) 1.0	00 1	.00	1
7	1.00	0.0	0 00	.00	1
8	1.00	) 1.0	00 1	.00	1
accur	acy		0.	.83	12
macro	avg	0.89	0.79	0.74	12
weighted	d avg	0.90	0.83	0.80	0 12

Sentence: list all the flights that arrive at general mitchell international

True tags: VERB DET DET NOUN ADP VERB ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	2	
accura	асу		1.00	10	
macro	avg 1	.00 1	.00 1.0	00	10
weighted	lava	1.00	1.00 1	.00	10

Sentence: how much does it cost to go from downtown to logan airport

True tags: ADV ADV AUX PRON VERB PART VERB ADP NOUN ADP PROPN

**PROPN** 

Predicted tags: VERB VERB VERB VERB ADP VERB ADP PROPN ADP

PROPN PROPN

Classification Report:

k	precision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	0.67	1.00	0.80	2	
3	1.00	0.00	0.00	1	
4	0.33	1.00	0.50	2	
6	1.00	0.00	0.00	1	
8	1.00	0.00	0.00	1	
11	1.00	0.00	0.00	2	
12	1.00	0.00	0.00	1	
accura	-		0.50	12	
macro a	•		.38 0.2	-	12
weighted	avg 0	.78 (	0.50 0.	.35	12

Sentence: show me flights from all airports to love field

True tags: VERB PRON NOUN ADP DET NOUN ADP PROPN PROPN

Predicted tags: VERB PRON NOUN ADP PROPN NOUN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 2 1 0.67 1.00 0.80 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 2 4 1.00 1.00 1.00 1 5 1.00 0.00 0.00 1 6 1.00 1.00 1 1.00

accuracy		0.8	9 9	
macro avg	0.94	0.83	0.80	9
weighted avg	0.93	0.89	0.84	9

Sentence: flights from cincinnati to <unk> departing after 718 am american True tags: NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN PROPN

Predicted tags: NOUN ADP PROPN ADP PROPN ADP ADP NOUN PROPN

Classification Report:

precis	sion	reca	all	f1-s	core	supp	ort
0.	75	1.0	0	0.8	36	3	
0.	75	1.0	0	0.8	36	3	
1.	00	1.0	0	1.0	00	2	
1.	00	0.0	0	0.0	00	1	
1.	00	0.0	0	0.0	00	1	
201				Λ <b>8</b>	RΟ	10	
•	0.4	20	^		_	_	40
_							10
d avg	0	.85	(	08.0	0.	71	10
	0. 0. 1. 1.	0.75 0.75 1.00 1.00 1.00 acy	0.75 1.0 0.75 1.0 1.00 1.0 1.00 0.0 1.00 0.0 acy avg 0.90	0.75 1.00 0.75 1.00 1.00 1.00 1.00 0.00 1.00 0.00 acy	0.75 1.00 0.8 0.75 1.00 0.8 1.00 1.00 1.0 1.00 0.00 0.0 1.00 0.00 0.0 acy 0.8 avg 0.90 0.60	0.75 1.00 0.86 0.75 1.00 0.86 1.00 1.00 1.00 1.00 0.00 0.00 1.00 0.00 0	0.75 1.00 0.86 3 1.00 1.00 1.00 2 1.00 0.00 0.00 1 1.00 0.00 0.00 1 acy 0.80 10 avg 0.90 0.60 0.54

Sentence: show me all flights to dallas that are less than 1500 dollars round trip True tags: VERB PRON DET NOUN ADP PROPN ADP AUX ADJ ADP NUM NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP VERB VERB VERB

VERB VERB NOUN NOUN

Classification Report:

	pre	cisio	n I	reca	II 1	1-sc	ore	supp	ort
1		1.00	)	1.00	)	1.0	0	1	
2	)	1.00	)	0.67	7	8.0	80	3	
3	}	1.00	)	0.75	5	8.0	86	4	
4		0.17	7	1.00	)	0.2	29	1	
5	,	1.00	)	1.00	)	1.0	0	1	
6	;	1.00	)	1.00	)	1.0	0	1	
7	•	1.00	)	0.00	)	0.0	0	1	
8	}	1.00	)	0.00	)	0.0	0	1	
9	)	1.00	)	0.00	)	0.0	0	1	
accur macro	•	I	0.91	1	0.6	0.6 60	4 0.5	14 55	14
weighte	d av	g	0.9	94	0	.64	0.	65	14

Sentence: round trip fares from pittsburgh to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN

NOUN

Classification Report:

precision recall f1-score support

1	0.50	1.0	0	0.67	7	2	
2	1.00	0.6	7	0.80	)	3	
3	1.00	1.0	0	1.00	)	4	
9	1.00	0.0	0	0.00	)	1	
accuracy				0.80	)	10	
macro avg	0.	.88	0.6	7	0.62		10
weighted avo	g (	0.90	0.	80	0.77	•	10

Sentence: round trip fares from baltimore to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN

NOUN

Classification Report:

	precis	ion	reca	ll f1	-sco	ore s	suppo	ort
1	0.	50	1.00	)	0.67	7	2	
2	1.	00	0.67	7	0.80	)	3	
3	1.	00	1.00	)	1.00	)	4	
9	1.	00	0.00	)	0.00	)	1	
accur	асу				0.80	)	10	
macro	_	8.0	_	0.67	7	0.62		10
weighted	d avg	0.9	90	3.0	30	0.7	7	10

Sentence: all flights from baltimore to philadelphia less than 1000 dollars True tags: DET NOUN ADP PROPN ADP PROPN ADJ ADP NUM NOUN

Predicted tags: DET NOUN ADP PROPN ADP PROPN PROPN PROPN

**NOUN** 

Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	0.	40	1.00	0.5	7	2	
2	1.	00	0.67	0.8	0	3	
3	1.	00	1.00	1.0	0	2	
5	1.	00	1.00	1.0	0	1	
7	1.	00	0.00	0.0	0	1	
9	1.	00	0.00	0.0	0	1	
accur macro weighted	avg	0.9		0.70 0.61 0.70	0.56 0.6		10 10
		• • • • • • • • • • • • • • • • • • • •		• • • •		. •	. •

Sentence: how many seats in a 100

True tags: ADV ADJ NOUN ADP DET PROPN

Predicted tags: VERB NOUN VERB ADP DET PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 1

2	1.00	1.0	00	1.0	0	1	
3	0.00	0.0	00	0.0	0	1	
4	0.00	1.0	00	0.0	0	0	
5	1.00	1.0	00	1.0	0	1	
7	1.00	0.0	00	0.0	0	1	
11	1.00	0.	00	0.0	0	1	
accuracy	,			0.50	)	6	
macro av	g (	0.71	0.	57	0.43	}	6
weighted a	να	0.83	0	50	0.5	Ω	6

Sentence: how many passengers can a boeing 737 hold True tags: ADV ADJ NOUN AUX DET PROPN NUM VERB

Predicted tags: VERB NOUN NOUN VERB DET NOUN NOUN NOUN

Classification Report:

	precis	sion	recall	f1-sc	ore su	ıppoı	rt
1	1.	.00	0.00	0.0	)	1	
3	0.	.20	1.00	0.3	3	1	
4	0.	.00	0.00	0.0	)	1	
5	1.	.00	1.00	1.00	)	1	
7	1.	.00	0.00	0.0	)	1	
8	1.	.00	0.00	0.0	)	1	
9	1.	.00	0.00	0.0	)	1	
11	1	.00	0.00	0.0	0	1	
accur	асу			0.25	5 6	8	
macro	avg	0.7	8 0	.25	0.17	;	8
weighte	d avg	0.7	78 (	0.25	0.17		8

Sentence: what is the seating capacity of a <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP DET NOUN

Classification Report:

	precision	on rec	all f1-s	core su	ıpport
1	1.0	0.0	00 0.	00	1
2	1.0	0 1.0	00 1.	00	1
3	0.6	7 1.0	0.	80	2
5	1.0	0 1.0	00 1.	00	2
6	1.0	0 1.0	00 1.	00	1
8	1.0	0 1.0	00 1.	00	1
accur	асу		3.0	38 8	3
macro weighte	_	0.94 0.92	0.83 0.88	0.80 0.82	8 8

Sentence: what is the seating capacity for delta be1

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN

## Classification Report:

	precisi	on red	call f1-	score	suppo	ort
1	1.0	0 1.0	00	1.00	2	
2	1.0	0 1.	00	1.00	1	
3	1.0	0 1.	00 '	1.00	2	
5	1.0	0 1.	00 '	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	acy		1	.00	8	
macro	avg	1.00	1.00	1.0	0	8
weighted	d avg	1.00	1.0	0 1.	00	8

Sentence: show me the flights from indianapolis to orlando with round trip fares less than <unk>

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN ADJ ADP NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore sup	port
1	0.	50	1.00	0.67	7 2	
2	1.	00	0.75	0.86	6 4	
3	0.	80	1.00	0.89	9 4	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
7	1.	00	0.00	0.00	) 1	
9	1.	00	0.00	0.00	) 1	
accur	асу			0.80	15	1
macro	avg	0.9	1 0	.72	0.68	15
weighte	d avg	3.0	38	0.80	0.75	15

Sentence: show me what flights are available from baltimore to dallas with economy fares

True tags: VERB PRON DET NOUN AUX ADJ ADP PROPN ADP NOUN NOUN

Predicted tags: VERB PRON PRON NOUN VERB AUX ADP PROPN ADP NOUN NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	0.50	1.00	0.67	1
5	1.00	0.00	0.00	1

	6	0.5	0	1.0	0	0.6	7	1	
	7	1.0	0	0.0	0	0.0	0	1	
	8	0.0	0	0.0	0	0.0	0	1	
acc	urac	у				0.7	7	13	
mad	cro a	vg	0.7	75	0.6	2	0.54	1	13
weigh	ted a	avg	0	.85	0.	77	0.7	2	13

Sentence: baltimore to kansas city economy True tags: PROPN ADP PROPN PROPN NOUN

Predicted tags: PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 0.86 1 0.75 1.00 3 2 1.00 1.00 1.00 1 3 1.00 0.00 0.00 1 0.80 5 accuracy 0.62 macro avg 0.92 0.67 5 weighted avg 0.85 0.80 0.71 5

Sentence: economy fares new york to miami round trip

True tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN

Predicted tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN

Classification Report:

	precisi	on re	call	f1-sco	ore su	upport
1	1.0	0 1.	.00	1.00	)	3
2	1.0	0 1.	.00	1.00	C	1
3	1.0	0 1.	.00	1.00	0	4
accur	асу			1.00	) ;	8
macro	avg	1.00	1.	.00	1.00	8
weighted	d avg	1.00	1	1.00	1.00	8

Sentence: find me all the round trip flights from burbank to milwaukee stopping in <unk> louis

True tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN VERB ADP PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN

	precision	recall	f1-score	support
1	0.80	1.00	0.89	4
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	1.00	0.50	0.67	2
5	1.00	1.00	1.00	2

6 1.00 1.00 1.00 1 0.93 accuracy 15 macro avg 0.97 0.92 0.93 15 weighted avg 0.93 15 0.95 0.93

Sentence: i <unk> like to find a flight from charlotte to las vegas and make a stop in <unk> louis

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN DET NOUN ADP PROPN PROPN

Classification Report:

	preci	ision	recal	l f1-s	core	supp	ort
1	C	).71	1.00	0.	83	5	
2	C	).75	1.00	0.	86	3	
3	1	.00	1.00	1.	00	2	
4	1	.00	0.67	0.	80	3	
5	1	.00	1.00	1.	00	2	
6	1	.00	1.00	1.	00	1	
8	1	.00	1.00	1.	00	1	
10	)	1.00	0.00	0	.00	1	
12	2	1.00	0.00	0	.00	1	
accur	асу			0.8	34	19	
macro weighted	•	9.0 0	94 ( .89	0.74 0.84	0.72 0.8		19 19
-	_						

Sentence: can you tell me which flights go from memphis to tacoma and make a stop in los angeles

True tags: AUX PRON VERB PRON DET NOUN VERB ADP PROPN ADP PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: VERB PRON VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN PROPN DET NOUN ADP PROPN PROPN Classification Report:

	pred	cision	rec	all	f1-sc	ore	supp	ort
1		0.67	1.0	00	0.8	0	4	
2		1.00	1.0	00	1.0	0	3	
3	,	0.67	1.0	00	0.8	0	2	
4		0.50	0.3	33	0.4	0	3	
5	· )	1.00	1.0	00	1.0	0	2	
6	;	1.00	1.0	00	1.0	0	2	
8	}	1.00	0.0	00	0.0	0	1	
10		1.00		00	0.0	_	1	
	-		•		•		-	
accur	acv				0.7	8	18	
macro	•	0	.85	0	.67	0.6	_	18
weighte	_		).81		).78		- 72	18
worgine	u uvç	, `	0.01	,	J.1 O	٥.		.0

Sentence: is there a flight between oakland and boston with a stopover in dallas fort worth on twa

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Classification Report:

	precis	ion r	ecall	f1-sco	re sup	port
1	0.8	86	1.00	0.92	2 6	
2	1.0	00	1.00	1.00	4	
3	1.0	00	1.00	1.00	2	
4	1.0	00	0.00	0.00	1	
5	1.0	00	1.00	1.00	2	
6	1.0	00	1.00	1.00	1	
8	0.0	00	1.00	0.00	0	
10	) 1.	.00	0.00	0.0	0 1	
accur	асу			0.88	17	
macro	avg	0.86	0	.75	0.62	17
weighted	d avg	0.9	5 (	0.88	0.86	17

Sentence: show me all direct flights from san francisco to boston departing before noon

True tags: VERB PRON DET ADJ NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Predicted tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Classification Report:

		P				
	precisio	n red	call	f1-scor	e supp	ort
1	0.75	5 1.0	00	0.86	3	
2	1.00	1.0	00	1.00	3	
3	1.00	1.0	00	1.00	2	
4	1.00	0.	50	0.67	2	
5	0.50	1.0	00	0.67	1	
6	1.00	1.0	00	1.00	1	
7	1.00	0.0	00	0.00	1	
accura	асу			0.85	13	
macro	avg	0.89	0	.79 (	).74	13
weighted	d avg	0.90	(	0.85	0.81	13

Sentence: do you have an early morning direct flight from philadelphia to pittsburgh True tags: AUX PRON VERB DET ADJ NOUN ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON VERB VERB NOUN NOUN PROPN NOUN ADP

PROPN ADP PROPN Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	0.	67	1.00	0.8	30	2	
2	1.	00	1.00	1.0	00	2	
3	0.	67	1.00	0.8	30	2	
4	0.	33	1.00	0.	50	1	
5	1.	00	0.00	0.0	00	1	
6	1.	00	1.00	1.0	00	1	
7	1.	00	0.00	0.0	00	2	
8	1.	00	0.00	0.0	00	1	
accur	acy			0.6	67	12	
macro	avg	3.0	33 (	0.62	0.5	1	12
weighted	d avg	0.	83	0.67	0.	56	12

Sentence: which united flights from boston to san francisco make connections True tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN VERB NOUN Predicted tags: DET VERB NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN

Classification Report:

	pre	cisio	n r	ecall	f1-s	core	supp	ort
1		0.60	) (	0.75	0.0	67	4	
2		1.00	)	1.00	1.0	00	2	
3		1.00	) (	0.50	0.0	67	2	
4		0.00	) (	0.00	0.0	00	1	
5		1.00	)	1.00	1.0	00	1	
accur	асу				0.7	70	10	
macro	avg		0.72	2 0	.65	0.6	67	10
weighted	d av	g	0.7	4	0.70	0.	70	10

Sentence: nonstop or connecting flights from seattle to boston True tags: NOUN CCONJ VERB NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN NOUN NOUN ADP PROPN ADP PROPN Classification Report:

pre	cision	recall	f1-score	e suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	0.50	1.00	0.67	2	
4	1.00	0.00	0.00	1	
10	1.00	0.00	0.00	1	
accuracy			0.75	8	
macro avo				.53 0.67	8 8
weignted av	g 0.	.00	5.75	0.01	U

Sentence: please give me direct morning flights from pittsburgh to atlanta True tags: INTJ VERB PRON ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB PRON VERB NOUN NOUN ADP PROPN ADP PROPN Classification Report:

рі	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	0.33	1.00	0.50	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accurac	•		0.80	10	
macro av	vg 0.9	90 C	0.71 0.	.64	10
weighted a	avg 0	.93	0.80	).75	10

Sentence: list the flights that leave from philadelphia to atlanta early thursday morning before 8 am

True tags: VERB DET NOUN ADP VERB ADP PROPN ADP PROPN ADJ NOUN NOUN ADP NUM NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN NOUN NOUN ADP NOUN NOUN

Classification Report:

	precisio	n re	call	f1-sc	ore :	supp	ort
1	0.50	) 1.	00	0.6	7	2	
2	1.00	) 1.	00	1.0	0	4	
3	0.80	) 1.	00	0.8	9	4	
4	1.00	0.	50	0.6	7	2	
5	1.00	) 1.	00	1.0	0	1	
7	1.00	0.	00	0.0	0	1	
9	1.00	0.	00	0.0	0	1	
accura	acy			0.80	)	15	
macro	_	0.90	_	.64	0.60		15
weighted	d avg	0.88	(	08.0	0.7	5	15

Sentence: give me the flights from boston to san francisco leaving early today

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB VERB NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1

Sentence: show me the continental flights leaving chicago early saturday morning True tags: VERB PRON DET PROPN NOUN VERB PROPN ADJ NOUN NOUN Predicted tags: VERB PRON DET PROPN NOUN VERB PROPN PROPN NOUN NOUN

Classification Report:

	precis	ion	reca	f1-	score	supp	ort
1	0.6	37	1.00	) 0	.80	2	
3	1.0	00	1.00	) 1	.00	3	
4	1.0	00	1.00	) 1	.00	2	
5	1.0	00	1.00	) 1	.00	1	
6	1.0	00	1.00	) 1	.00	1	
7	1.0	00	0.00	0	.00	1	
accur	acy			0	.90	10	
macro	avg	0.9	)4	0.83	0.	80	10
weighte	d avg	0.	93	0.90	) 0	.86	10

Sentence: which flights are leaving from kansas city to atlanta early monday morning True tags: DET NOUN AUX VERB ADP PROPN PROPN ADP PROPN ADJ NOUN NOUN

Predicted tags: DET NOUN VERB VERB ADP PROPN PROPN ADP PROPN PROPN NOUN NOUN

Classification Report:

	precis	ion	recall	f1-so	core	supp	ort
1	0.	75	1.00	0.8	36	3	
2	1.0	00	1.00	1.0	00	2	
3	1.0	00	1.00	1.0	00	3	
4	0.	50	1.00	0.6	37	1	
5	1.0	00	1.00	1.0	00	1	
7	1.0	00	0.00	0.0	00	1	
8	1.0	00	0.00	0.0	00	1	
accur	acy			0.8	3	12	
macro weighted	•	0.8		).71 0.83	0.6 0.	55 77	12 12

Sentence: i would like to find flights from columbus to minneapolis on monday june fourteenth early in the morning or in the evening sunday june thirteenth thank you True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP NOUN NOUN ADJ ADJ ADJ ADP DET NOUN CCONJ ADP DET NOUN NOUN ADJ VERB PRON

Predicted tags: PRON AUX VERB ADP VERB NOUN ADP PROPN ADP NOUN NOUN PROPN PROPN ADP DET NOUN NOUN ADP DET NOUN NOUN ADP VERB

Classification Report:

pr	ecision	recall	f1-score	suppo	ort
1	0.50	1.00	0.67	2	
2	0.71	1.00	0.83	5	
3	0.78	1.00	0.88	7	
4	0.67	0.67	0.67	3	
5	1.00	1.00	1.00	2	
6	1.00	0.50	0.67	2	
7	1.00	0.00	0.00	3	
8	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
12	1.00	0.00	0.00	1	
accurac	y		0.74	27	
macro av weighted a	•		.62 0.5 0.74 0.	67 67	27 27

Sentence: and from milwaukee to atlanta before 10 am daily

True tags: CCONJ ADP PROPN ADP PROPN ADP NUM NOUN ADJ

Predicted tags: VERB ADP PROPN ADP PROPN ADP PROPN NOUN NOUN

Classification Report:

precision	recall	f1-score	support
0.67	1.00	0.80	2
1.00	1.00	1.00	3
0.50	1.00	0.67	1
0.00	1.00	0.00	0
1.00	0.00	0.00	1
1.00	0.00	0.00	1
1.00	0.00	0.00	1
асу		0.67	9
9			35 9 59 9
	0.67 1.00 0.50 0.00 1.00 1.00 1.00	0.67 1.00 1.00 1.00 0.50 1.00 0.00 1.00 1.00 0.00 1.00 0.00 1.00 0.00	0.67 1.00 0.80 1.00 1.00 1.00 0.50 1.00 0.67 0.00 1.00 0.00 1.00 0.00 0.00 1.00 0.00 0.00 0 1.00 0.00 0.00 0 0.00 0.00

Sentence: list daily flights from denver to boston

True tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	0.50	1.00	0.67	1
4	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1

accuracy		0.8	6 7	•
macro avg	0.90	0.80	0.73	7
weighted avg	0.93	0.86	0.81	7

Sentence: list flights from boston to pittsburgh daily True tags: VERB NOUN ADP PROPN ADP PROPN ADJ

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	0.	67	1.00	0.	80	2	
2	1.	00	1.00	1.	00	2	
3	1.	00	1.00	1.	00	1	
4	1.	00	1.00	1.	00	1	
7	1.	00	0.00	0.	00	1	
accur	acy			3.0	36	7	
macro	avg	0.9	3	0.80	0.7	6	7
weighted	d avg	0.	90	0.86	0.	80	7

Sentence: show me all daily flights between milwaukee and orlando True tags: VERB PRON DET ADJ NOUN ADP PROPN CCONJ PROPN

Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN CCONJ

Classification Report:

	preci	sion	recall	f1-sco	re su	pport
1	C	.50	0.50	0.50	) 2	2
2	1	.00	1.00	1.00	,	1
3	C	.50	1.00	0.67	, ,	1
4	1	.00	1.00	1.00	, .	1
5	1	.00	1.00	1.00	•	1
6	1	.00	1.00	1.00	•	1
7	1	.00	0.00	0.00	•	1
10	) (	0.00	0.00	0.00	)	1
accur	асу			0.67	9	)
macro	avg	0.7	5 0	.69	0.65	9
weighte	d avg	0.7	72 (	0.67	0.63	9

Sentence: list daily flights from boston to oakland using continental airlines True tags: VERB ADJ NOUN ADP PROPN ADP PROPN VERB PROPN PROPN Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN

р	recision	recall	f1-score	support
1	0.80	1.00	0.89	4
2	1.00	1.00	1.00	2
3	0.50	1.00	0.67	1

Sentence: show me the flights arriving in baltimore on june fifteenth leaving either from denver or dallas

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ VERB CCONJ ADP PROPN CCONJ PROPN

Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP NOUN NOUN VERB VERB ADP PROPN PROPN PROPN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	0.75	1.00	0.86	3	
2	1.00	1.00	1.00	3	
3	0.50	1.00	0.67	2	
4	0.67	0.67	0.67	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
10	1.00	0.00	0.00	2	
accurac	у		0.75	16	
macro a weighted	•		.71 0.6 0.75 0.	65 68	16 16
weignted	avy 0	.00 (	<i>J.10</i> 0.	00	10

Sentence: list the flights from pittsburgh to baltimore arriving on july first True tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

Classification Report:

	preci	ision	recal	l f1-sc	ore	suppo	ort
1	C	.67	1.00	0.8	0	2	
2	: 1	.00	1.00	1.0	0	3	
3	C	).67	1.00	0.8	0	2	
4	. 1	.00	0.50	0.6	7	2	
5	1	.00	1.00	1.0	0	1	
7	<sup>'</sup> 1	.00	0.00	0.0	0	1	
accur	асу			0.8	2	11	
macro	avg	0.0	39 (	0.75	0.71		11
weighte	d avg	0	.88	0.82	0.7	8	11

Sentence: show me the flights arriving on baltimore on june fourteenth True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ

Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP NOUN PROPN

## Classification Report:

	precisi	on re	call	f1-sc	ore sup	port
1	0.5	50 1	.00	0.6	7 1	
2	1.0	0 1	.00	1.00	) 2	
3	0.6	7 1	.00	0.80	) 2	
4	1.0	0 0	.50	0.6	7 2	
5	1.0	0 1	.00	1.00	) 1	
6	1.0	0 1	.00	1.00	) 1	
7	1.0	0 0	.00	0.0	) 1	
accur	acy			0.80	) 10	)
macro	avg	0.88	0	.79	0.73	10
weighted	d avg	0.88	(	08.0	0.76	10

Sentence: show me the cheapest flight arriving in baltimore on june fourteenth starting from dallas

True tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN ADJ VERB ADP PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP NOUN PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	0.5	0 1.	.00	0.67	7 2	
2	1.0	0 1.	.00	1.00	3	
3	0.5	0 1.	.00	0.67	7 2	
4	1.0	0 0.	.33	0.50	3	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
7	1.0	0 0.	.00	0.00	2	
accur	acy			0.71	14	
macro	avg	0.86	0	.76	0.69	14
weighted	d avg	0.86	(	0.71	0.65	14

Sentence: how many airlines fly from new york to los angeles by way of milwaukee True tags: ADV ADJ NOUN VERB ADP PROPN PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB NOUN NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	4
3	0.67	1.00	0.80	2
4	0.50	1.00	0.67	1
7	1.00	0.00	0.00	1
11	1.00	0.00	0.00	1

accuracy		0.8	6 14	
macro avg	0.86	0.67	0.58	14
weighted avg	0.92	0.86	0.80	14

Sentence: how many flights does twa have in business class

True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN

Predicted tags: VERB NOUN NOUN PROPN PROPN VERB ADP NOUN NOUN

Classification Report:

O 1010 O 1110						
	precis	sion	recall	f1-scc	ore su	pport
1	0.	50	1.00	0.67	7 1	
2	1.	00	1.00	1.00	) 1	
3	0.	75	1.00	0.86	3	}
4	0.	50	1.00	0.67	7 1	
7	1.	00	0.00	0.00	) 1	
8	1.	00	0.00	0.00	) 1	
11	1	.00	0.00	0.0	0	1
accur	acy			0.67	' 9	
macro	avg	3.0	32 0	.57	0.46	9
weighted	d avg	0.	81 (	0.67	0.54	9

Sentence: how many first class flights does delta have today

True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB NOUN

Predicted tags: VERB NOUN NOUN NOUN PROPN PROPN VERB

Classification Report:

	precision	ı recal	l f1-scor	e supp	ort
1	0.33	1.00	0.50	1	
3	0.50	0.67	0.57	3	
4	0.00	0.00	0.00	1	
7	1.00	0.00	0.00	1	
8	1.00	0.00	0.00	1	
11	1.00	0.00	0.00	2	
accura	асу		0.33	9	
macro	avg (	0.64	0.28 (	0.18	9
weighted	l avg	0.65	0.33	0.25	9

Sentence: how many flights does twa have with business class

True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN

Predicted tags: VERB NOUN NOUN PROPN PROPN VERB ADP NOUN NOUN

рі	recision	recall	f1-score	support
1	0.50	1.00	0.67	1
2	1.00	1.00	1.00	1
3	0.75	1.00	0.86	3
4	0.50	1.00	0.67	1

7 '	1.00	0.00	0.0	)()	1	
8 ′	1.00	0.00	0.0	00	1	
11	1.00	0.00	0.	00	1	
accuracy			0.6	5 <b>7</b>	9	
macro avg	0.8	32	0.57	0.46		9
weighted avg	0.	81	0.67	0.54	•	9

Sentence: how many first class flights does united have leaving from all cities today True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB VERB ADP DET NOUN NOUN

Predicted tags: VERB NOUN NOUN NOUN PROPN PROPN PROPN VERB ADP PROPN NOUN NOUN

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	0.2	5 1.	00	0.40	) 1	
2	1.0	0 1.	00	1.00	) 1	
3	0.6	7 1.	00	0.80	) 4	
4	0.5	0 0.	50	0.50	) 2	
5	1.0	0 0.	00	0.00	) 1	
7	1.0	0 0.	00	0.00	) 1	
8	1.0	0 0.	00	0.00	) 1	
11	1.0	0 0	.00	0.0	) 2	<u>-</u>
accura	асу			0.54	13	
macro weighted	•	0.80 0.76	_	.44 ).54	0.34 0.43	13 13

Sentence: what time does the tuesday morning 755 flight leaving washington arrive in san francisco

True tags: DET NOUN AUX DET NOUN NOUN NUM NOUN VERB PROPN VERB ADP PROPN

Predicted tags: PRON NOUN AUX DET NOUN NOUN PROPN NOUN VERB PROPN VERB ADP PROPN PROPN

	precisio	n reca	all f1-s	core su	ıpport
1	0.75	5 1.00	0.0	86	3
2	1.00	1.00	0 1.0	00	1
3	1.00	1.00	0 1.0	00	4
4	1.00	1.00	0 1.0	00	2
5	1.00	0.50	0.0	67	2
6	0.00	1.00	0.0	00	0
8	1.00	1.00	0 1.0	00	1
9	1.00	0.00	0.0	00	1
accur	асу		3.0	36 1	4
macro weighted	_	0.84 0.95	0.81 0.86	0.69 0.85	14 14

Sentence: i would like the time of your earliest flight in the morning from philadelphia to washington on american airlines

True tags: PRON AUX VERB DET NOUN ADP DET ADJ NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN NOUN NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN Classification Report:

pre	cision	recall	f1-score	supp	ort
1	0.80	1.00	0.89	4	
2	1.00	1.00	1.00	5	
3	0.75	1.00	0.86	3	
4	1.00	1.00	1.00	1	
5	1.00	0.67	0.80	3	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
accuracy			0.89	19	
macro av	g 0.9	94 0	.83 0.	82	19
weighted av	/g 0	.92	0.89	.87	19

Sentence: when does continental fly from philadelphia to denver on sundays True tags: ADV AUX PROPN VERB ADP PROPN ADP PROPN ADP PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	pred	cisio	1 I	recall	f1-s	core	supp	ort
1		0.75		0.75	0.	.75	4	
2		1.00		1.00	1.	.00	3	
3	}	0.00		1.00	0.	.00	0	
4		0.50		1.00	0.	.67	1	
8	}	1.00		0.00	0.	.00	1	
11	1	1.00	)	0.00	0	.00	1	
accur	acy				0.	70	10	
macro weighte	_		0.71 0.8		0.62 0.70	0.4 0.	10 .67	10 10

Sentence: i would like a schedule of flights from san francisco to boston on wednesday

True tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN

ADP PROPN ADP NOUN Classification Report:

precision recall f1-score support

1	1.00	1.00	) 1.0	00	3
2	1.00	1.00	) 1.0	00	4
3	1.00	1.00	) 1.0	00	3
4	1.00	1.00	) 1.0	00	1
5	1.00	1.00	) 1.0	00	1
6	1.00	1.00	) 1.0	00	1
8	1.00	1.00	) 1.0	00	1
accurac	СУ		1.0	0 1	4
macro a	vg	1.00	1.00	1.00	14
weighted	avg	1.00	1.00	1.00	14

Sentence: in pittsburgh i <unk> like to rent a car

True tags: ADP PROPN PRON AUX VERB PART VERB DET NOUN Predicted tags: ADP PROPN PRON AUX VERB ADP VERB DET NOUN

Classification Report:

	prec	ision	re	call	f1-sc	core	supp	ort
1	1	1.00	1.	00	1.0	00	1	
2	. (	0.50	1.	00	0.6	67	1	
3	1	1.00	1.	00	1.0	00	1	
4	. 1	1.00	1.	00	1.0	00	2	
5	1	1.00	1.	00	1.0	00	1	
6	1	1.00	1.	00	1.0	00	1	
8	1	1.00	1.	00	1.0	00	1	
12	2	1.00	0	.00	0.	00	1	
accur	acy				8.0	9	9	
macro	avg	C	).94	0	.88	0.8	3	9
weighte	d avg		0.94	(	0.89	0.	85	9

Sentence: is there limousine service available at baltimore airport True tags: AUX PRON NOUN NOUN ADJ ADP PROPN PROPN Predicted tags: AUX PRON DET NOUN NOUN ADP PROPN PROPN Classification Report:

	precision	on re	call	f1-sc	ore s	uppo	rt
1	1.0	0 1.	00	1.0	)	2	
2	1.0	0 1.	00	1.0	)	1	
3	0.5	0 0.	50	0.5	)	2	
5	0.0	0 1.	00	0.0	)	0	
6	1.0	0 1.	00	1.0	)	1	
7	1.0	0 0.	00	0.0	)	1	
8	1.0	0 1.	00	1.0	)	1	
accur	acy			0.75	5	8	
macro	avg	0.79	0	.79	0.64		8
weighte	d avg	0.88	(	).75	0.75	;	8

Sentence: may i have a listing of flights from long beach california to columbus ohio on wednesday

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN PROPN ADP NOUN

Predicted tags: PROPN PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN NOUN ADP NOUN

Classification Report:

	precision	on re	call	f1-sco	re sup	port
1	0.8	0 0.	80	0.80	5	
2	1.0	0 1.	00	1.00	4	
3	0.7	5 1.	00	0.86	3	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 0.	00	0.00	1	
accur	acy			0.88	16	
macro	avg	0.94	0	.83	0.81	16
weighted	d avg	0.89	(	0.88	0.85	16

Sentence: i need a ticket from nashville tennessee to seattle

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN Classification Report:

precision recall f1-score support

1 2 3 4	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	) 2 ) 1	
5	1.00	1.00	1.00	) 1	
6	1.00	1.00	1.00	) 1	
accuracy	•		1.00	9	
macro av	g 1	1.00	1.00	1.00	9
weighted av	vg	1.00	1.00	1.00	9

Sentence: i <unk> need information please on a flight from washington dc san francisco california

True tags: PRON AUX VERB NOUN INTJ ADP DET NOUN ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX VERB NOUN VERB ADP DET NOUN ADP PROPN PROPN PROPN PROPN

pı	ecision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2

```
4
                   1.00
                          0.67
      5
           1.00
                   1.00
                          1.00
                                    1
      6
           1.00
                   1.00
                          1.00
                                    1
      8
           1.00
                   1.00
                          1.00
                                   1
     13
                                    1
            1.00
                          0.00
                   0.00
                          0.93
                                 14
  accuracy
               0.94
                              0.83
                                       14
 macro avg
                       88.0
weighted avg
                0.96
                       0.93
                               0.90
                                       14
```

0.50

Sentence: please list any flights from oakland california to philadelphia on tuesday True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN Predicted tags: VERB VERB VERB NOUN ADP PROPN ADP PROPN ADP NOUN

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Classification Report:

рі	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	0.33	1.00	0.50	1	
5	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accurac	У		0.82	11	
macro a	vg 0.8	89 C	0.67 0.5	58	11
weighted a	avg 0	.94	0.82 0.	.77	11

Sentence: can you tell me which flight from dallas to baltimore has the least expensive fare

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN VERB DET ADJ ADJ NOUN

Predicted tags: VERB PRON VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN DET NOUN NOUN NOUN

	precis	ion	recall	f1-sco	re sup	port
1	0.	67	1.00	0.80	) 2	
2	1.	00	1.00	1.00	2	
3	0.	50	1.00	0.67	7 2	
4	0.	50	0.50	0.50	) 2	
5	1.	00	1.00	1.00	2	
6	1.	00	1.00	1.00	) 2	
7	1.	00	0.00	0.00	) 2	
8	1.	00	0.00	0.00	) 1	
accur	асу			0.73	15	
macro	avg	0.8	3 0	).69	0.62	15
weighted	d avg	0.	82	0.73	0.66	15

Sentence: of the flights available from dallas to baltimore on august third which airline has the least expensive flight

True tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ DET NOUN VERB DET ADJ ADJ NOUN

Predicted tags: ADP DET NOUN NOUN ADP PROPN ADP NOUN NOUN DET NOUN DET NOUN NOUN NOUN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	1.0	00	1.00	1.	00	2	
2	1.0	00	1.00	1.	00	4	
3	0.4	44	1.00	0.	62	4	
4	1.0	00	0.00	0.	00	1	
5	1.0	00	1.00	1.	00	3	
7	1.0	00	0.00	0.	00	4	
accur	acy			0.7	72	18	
macro	avg	0.9	91 (	0.67	0.6	0	18
weighted	d avg	0.	88	0.72	0.	64	18

Sentence: what are the most expensive first class tickets between boston and san francisco

True tags: PRON AUX DET ADJ ADJ ADV NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET NOUN NOUN ADJ NOUN NOUN ADP PROPN PROPN PROPN

Classification Report:

p	precision		f1-score	supp	ort
1	0.75	1.00	0.86	3	
2	1.00	1.00	1.00	1	
3	0.50	1.00	0.67	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	0.00	0.00	0.00	2	
8	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
11	1.00	0.00	0.00	1	
accura	су		0.69	13	
macro a weighted	•		.67 0.6 0.69 0.	61 61	13 13
weignted	avy 0	., ,	J.03 0.	O I	13

Sentence: what are the least expensive flights from denver to atlanta True tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN NOUN NOUN ADP PROPN ADP PROPN Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 2

2	1.00	1.0	00	1.0	0	2	
3	0.33	1.0	00	0.5	0	1	
5	1.00	1.0	00	1.0	0	1	
6	1.00	1.0	00	1.0	0	1	
7	1.00	0.0	00	0.0	0	2	
8	1.00	1.0	00	1.0	0	1	
accuracy	y			0.80	)	10	
macro av	/g	0.90	0.	86	0.79	)	10
weighted a	vg	0.93	0	.80	0.7	5	10

Sentence: what <unk> the price of the least expensive first class round trip ticket on us air from cleveland to miami

True tags: PRON AUX DET NOUN ADP DET ADJ ADV NOUN NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP DET NOUN NOUN NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	4	
3	0.6	2 1.	00	0.77	5	
5	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 0.	00	0.00	2	
8	1.0	0 1.	00	1.00	1	
11	1.0	0 0	.00	0.00	) 1	
accura	асу			0.85	20	
macro	avg	0.95	0	.75	0.72	20
weighted	d avg	0.91	(	0.85	0.79	20

Sentence: great now what i want to find out is on april twentieth from washington to denver do you have a flight least expensive fare around 5 <unk> in the morning True tags: ADJ ADV PRON PRON VERB PART VERB ADV AUX ADP NOUN ADJ ADP PROPN ADP PROPN AUX PRON VERB DET NOUN ADJ NOUN ADP NUM ADV ADP DET NOUN

Predicted tags: PROPN VERB PRON PRON AUX ADP VERB VERB ADP PROPN NOUN ADP PROPN ADP PROPN PROPN PRON VERB DET NOUN NOUN PROPN NOUN NOUN NOUN PROPN ADP DET NOUN Classification Report:

	precision	recall	f1-score	support
1	0.29	1.00	0.44	2
2	0.80	0.80	0.80	5
3	0.43	0.75	0.55	4
4	0.40	0.67	0.50	3
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	3

7	1.00	0.00	0.0	00	4	
8	0.00	0.00	0.0	00	2	
9	1.00	0.00	0.0	00	1	
11	1.00	0.0	0 0.	00	3	
12	1.00	0.0	0 0.	.00	1	
accuracy	•		0.5	53	30	
macro av	g 0.7	72	0.47	0.3	9	30
weighted av	/g 0	.72	0.53	0.	45	30

Sentence: what ground transportation is available between milwaukee airport and

downtown milwaukee

True tags: DET NOUN NOUN AUX ADJ ADP PROPN CCONJ NOUN PROPN

Predicted tags: PRON NOUN NOUN PROPN PROPN ADP PROPN PROPN PROPN NOUN PROPN

Classification Report:

	precisi	on re	ecall	f1-scc	re sup	port
4	0.5		00	0.0-		
1	0.5	0 1	.00	0.67	7 3	
2	1.0	0 1	.00	1.00	) 1	
3	1.0	0 1	.00	1.00	) 3	
5	1.0	0 0	.00	0.00	) 1	
6	0.0	0 1	.00	0.00	0	
7	1.0	0 0	.00	0.00	) 1	
8	1.0	0 0	.00	0.00	) 1	
10	) 1.0	00 (	0.00	0.0	0 1	
accura	acy			0.64	11	
macro	avg	0.81	0	.50	0.33	11
weighted	d avg	0.86	6 (	0.64	0.55	11

Sentence: please list all the takeoffs and landings for general mitchell international True tags: INTJ VERB DET DET NOUN CCONJ NOUN ADP PROPN PROPN PROPN

Predicted tags: VERB VERB DET DET NOUN PROPN PROPN ADP PROPN PROPN

р	recision	recall	f1-score	suppor	
1	0.60	1.00	0.75	3	
2	1.00	1.00	1.00	1	
3	1.00	0.50	0.67	2	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	2	
10	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accurac	;y		0.73	11	
macro a	vg 0.8	B7 0.	.64 0.5	58	11

weighted avg 0.85 0.73 0.66 11

Sentence: what ground transportation is available from la guardia airport into new york city

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN NOUN PROPN PROPN ADP PROPN PROPN PROPN PROPN PROPN

Classification Report:

	precision	on re	call f	1-scor	e suppo	ort
1	0.7	5 1.	00	0.86	6	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	2	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
7	1.0	0 0.	00	0.00	1	
8	1.0	0 0.	00	0.00	1	
accura	•			0.77	13	
macro weighted	•	0.82 0.88	0.5 0.		0.41 0.70	13 13

Sentence: what ground transportation is available from dallas fort worth airport to downtown dallas

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON NOUN NOUN PROPN PROPN ADP PROPN PROPN PROPN ADP NOUN PROPN

Classification Report:

	precision	on re	call f1	-score	suppo	ort
1	0.7	1 1.	00	0.83	5	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	3	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
7	1.0	0 0.	00	0.00	1	
8	1.0	0 0.	00	0.00	1	
accura macro	•	0.82	0.57	0.77 7 0.4	13 10	13
weighted	_	0.89	0.7		71	13

Sentence: ground transportation please in the city of boston between airport and downtown

True tags: NOUN NOUN INTJ ADP DET PROPN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: NOUN NOUN VERB ADP DET PROPN ADP PROPN CCONJ NOUN

## Classification Report:

pre	precision		f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	1.00	0.75	0.86	4	
4	0.00	1.00	0.00	0	
5	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accuracy	•		0.83	12	
macro av	g 0.8	31 0	.82 0.	67	12
weighted av	/g 0	.94	0.83 0	.84	12

Sentence: ground san francisco
True tags: NOUN PROPN PROPN
Predicted tags: NOUN PROPN PROPN

Classification Report:

	precision		recall f1-score			pport
1	1.0	0 1	.00	1.00	) :	2
3	1.0	0 1	.00	1.00	)	1
accura	асу			1.00	3	3
macro	avg	1.00	1	.00	1.00	3
weighted	d avg	1.00	•	1.00	1.00	3

Sentence: tell me about ground transportation at san francisco True tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN

Classification Report:

	precis	ion	recal	I f1-s	core	supp	ort
1	1.	00	1.00	1.	00	2	
2	1.	00	1.00	1.	00	2	
3	1.	00	1.00	1.	00	2	
4	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
accur	acy			1.0	00	8	
macro	avg	1.0	00	1.00	1.0	00	8
weighted	d avg	1.	00	1.00	1.	00	8

Sentence: now show me all the flights from <unk> louis to burbank

True tags: ADV VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: NOUN VERB PRON DET DET NOUN ADP PROPN PROPN ADP

**PROPN** 

Classification Report:

precision recall f1-score support

1	1.00	1.0	0	1.00	)	3	
2	1.00	1.0	0	1.00	)	2	
3	0.50	1.0	0	0.67	,	1	
4	1.00	1.0	0	1.00	)	1	
5	1.00	1.0	0	1.00	)	2	
6	1.00	1.0	0	1.00	)	1	
11	1.00	0.0	00	0.00	)	1	
accuracy				0.91	•	11	
macro av	g 0	.93	3.0	36	0.81		11
weighted av	/g (	0.95	0.	91	0.88		11

Sentence: saturday or sunday flights between milwaukee and phoenix american

True tags: NOUN CCONJ NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: NOUN NOUN NOUN NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

	preci	sion	rec	all	t1-sc	ore	supp	ort
1	0	.80	1.0	0	0.8	9	4	
2		.00	1.0		1.0		1	
3	0	.75	1.0	0	8.0	6	3	
10	) 1	1.00	0.0	00	0.0	00	2	
accur	acy				0.8	0	10	
macro	avg	9.0	39	0.	75	0.6	9	10
weighted	d avg	0	.84	0	.80	0.	71	10

Sentence: show me all flights from denver or philadelphia or pittsburgh to baltimore True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN PROPN PROPN PROPN

	preci	sion	reca	f1-	score	supp	ort
1	0	.67	1.00	) (	08.0	4	
2	1	.00	1.00	)	1.00	2	
3	1	.00	1.00	)	1.00	1	
4	. 1	.00	1.00	) .	1.00	1	
5	1	.00	1.00	) .	1.00	1	
6	1	.00	1.00	)	1.00	1	
10	) 1	00.1	0.0	0	0.00	2	
accur	acv			(	0.83	12	
	•	0.9	95			33	12
	•					.77	
	acy avg	0.9	0.0	0	0.00 0.83 0.8	12	12 12

Sentence: what are the flights from cleveland to indianapolis on wednesday may

twelfth on either twa delta or continental

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN

ADJ ADP CCONJ PROPN PROPN CCONJ PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN

PROPN PROPN ADP NOUN NOUN PROPN PROPN

Classification Report:

	preci	sion	recall	f1-sco	re sup	oort
1	0	.57	0.80	0.67	5	
2	1	.00	1.00	1.00	4	
3	0	.50	0.67	0.57	3	
5	1	.00	1.00	1.00	1	
6	1	.00	1.00	1.00	1	
7	1	.00	0.00	0.00	) 1	
8	1	.00	1.00	1.00	) 1	
10	) ′	1.00	0.00	0.00	0 2	
accur	асу			0.72	18	
macro	avg	0.8	8 C	).68	0.65	18
weighte	d avg	3.0	30	0.72	0.67	18

Sentence: list all flights that leave from baltimore or denver or pittsburgh and arrive in philadelphia

True tags: VERB DET NOUN ADP VERB ADP PROPN CCONJ PROPN CCONJ PROPN CCONJ VERB ADP PROPN

Predicted tags: VERB DET NOUN ADP VERB ADP PROPN PROPN

PROPN PROPN CCONJ VERB ADP PROPN

Classification Report:

	precis	ion	reca	all f	1-sc	ore	supp	ort
1	0.	67	1.00	)	0.8	0	4	
2	1.	00	1.00	)	1.0	0	3	
3	1.	00	1.00	)	1.0	0	1	
4	1.	00	1.00	)	1.0	0	3	
5	1.	00	1.00	)	1.0	0	1	
10	) 1	.00	0.3	3	0.5	0	3	
accur	acy				0.87	7	15	
macro	_	0.9		3.0		0.88		15
weighted	d avg	0.	91	0.	87	0.8	5	15

Sentence: what does the fare code y mean

True tags: PRON AUX DET NOUN NOUN VERB

Predicted tags: PRON AUX DET NOUN NOUN PROPN PROPN

Classification Report:

precision recall f1-score support

0.00 1.00 0.00 0

3	1.00	0.67	0.80	3
4	1.00	0.00	0.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		0.7	1 7	
macro avg	0.83	0.78	0.63	7
weighted avg	1.00	0.71	0.77	7

Sentence: what does fare code qw mean

True tags: PRON AUX NOUN NOUN PROPN VERB Predicted tags: PRON AUX NOUN NOUN PROPN VERB

Classification Report:

precision	on red	call f1-s	core s	upport
				_
1.0	0 1.0	00 1.	00	1
1.0	0 1.0	00 1.	00	2
1.0	0 1.0	00 1.	00	1
1.0	0 1.0	00 1.	00	1
1.0	0 1.0	00 1.	00	1
acy		1.0	00	6
avg	1.00	1.00	1.00	6
d avg	1.00	1.00	1.00	) 6
	1.0 1.0 1.0 1.0 1.0 acy	1.00 1.0 1.00 1.0 1.00 1.0 1.00 1.0 1.00 1.0 acy avg 1.00	1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. acy 1.00 avg 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: what is fare code qw

True tags: PRON AUX NOUN NOUN PROPN Predicted tags: PRON AUX NOUN NOUN PROPN

Classification Report:

	prec	cisior	n re	call	†1-s	core	supp	ort
1		1.00	1.	00	1.	00	1	
3	,	1.00	1.	00	1.	00	2	
6	;	1.00	1.	00	1.	00	1	
8	}	1.00	1.	00	1.	00	1	
accur	асу				1.0	00	5	
macro	_		1.00		.00	1.0		5_
weighte	d avg	)	1.00		1.00	1.	00	5

Sentence: what does fare code <unk> mean

True tags: PRON AUX NOUN NOUN PROPN VERB Predicted tags: PRON AUX NOUN NOUN PROPN VERB

precision	recall	f1-score	support
1.00	1.00	1.00	1
1.00	1.00	1.00	2
1.00	1.00	1.00	1
	1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00

6 1.0	0.0	0 1.0	0 1	
8 1.0	0.0	0 1.0	0 1	
accuracy		1.00	6	
macro avg	1.00	1.00	1.00	6
weighted avg	1.00	1.00	1.00	6

Sentence: what does the fare code yn mean

True tags: PRON AUX DET NOUN NOUN PROPN VERB Predicted tags: PRON AUX DET NOUN NOUN PROPN VERB

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	0 1.	00	1.00	)	1
3	1.0	0 1.	00	1.00	) :	2
4	1.0	0 1.	00	1.00	)	1
5	1.0	0 1.	00	1.00	)	1
6	1.0	0 1.	00	1.00	)	1
8	1.0	0 1.	00	1.00	)	1
accur	acy			1.00	7	7
macro	avg	1.00	1.	00	1.00	7
weighte	d avg	1.00	1	.00	1.00	7

Sentence: list all flights on united from san francisco to boston with fare code qx True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NOUN PROPN

Classification Report:

	precis	ion	recall	f1-sco	e suppo	ort
1	1.	00	1.00	1.00	5	
2	1.	00	1.00	1.00	4	
3	1.	00	1.00	1.00	3	
4	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	1	
accur	•			1.00	14	
macro weighted	_	1.00 1.0		.00 1.00	1.00 1.00	14 14

Sentence: what is the latest flight from boston to denver that serves a meal

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP ADP

**DET NOUN** 

Classification Report:

precision recall f1-score support

1	1.00	1.	00	1.00	) 2	2
2	0.75	1.	00	0.86	3	3
3	1.00	1.	00	1.00	) 2	2
4	1.00	0.	00	0.00	) ′	1
5	1.00	1.	00	1.00	) 2	2
6	1.00	1.	00	1.00	) ′	1
7	1.00	1.0	00	1.00	) ′	1
8	1.00	1.0	00	1.00	) ′	1
accura	су			0.92	1:	3
macro	avg	0.97	0.	.88	0.86	13
weighted	avg	0.94	(	).92	0.89	13

Sentence: list all flights from chicago to seattle on continental which depart on saturday and serve meals

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN PRON VERB ADP NOUN CCONJ VERB NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN DET VERB ADP NOUN NOUN VERB VERB

Classification Report:

	pred	cisior	n re	call	f1-so	core	supp	ort
1		1.00	1.	.00	1.0	00	3	
2		1.00	1.	.00	1.0	00	4	
3		0.67	0.	.67	0.6	67	3	
4		0.75	1.	.00	0.0	36	3	
5		0.50	1.	.00	0.6	37	1	
6		1.00	0.	.00	0.0	00	1	
10	)	1.00	) (	.00	0.	00	1	
accur	асу				8.0	31	16	
macro	avg	(	0.85	0	.67	0.6	0	16
weighte	d av	9	0.86	(	0.81	0.	76	16

Sentence: could you tell me what the earliest flight that goes between atlanta and denver is which serves a meal

True tags: AUX PRON VERB PRON PRON DET ADJ NOUN ADP VERB ADP PROPN CCONJ PROPN AUX PRON VERB DET NOUN

Predicted tags: VERB PRON VERB PRON PRON DET NOUN NOUN ADP PROPN ADP PROPN CCONJ PROPN PROPN DET NOUN DET NOUN Classification Report:

	precision	recall	f1-score	support
1	0.50	1.00	0.67	2
2	1.00	1.00	1.00	2
3	0.50	1.00	0.67	2
4	0.50	0.33	0.40	3
5	0.67	1.00	0.80	2
6	1.00	0.75	0.86	4
7	1.00	0.00	0.00	1

8	1.00	0.00	0.00	2	
10	1.00	1.00	1.00	) 1	
accuracy			0.68	19	
macro avg	8.0	0 0	.68	0.60	19
weighted avo	0.	78	0.68	0.63	19

Sentence: give me the saturday morning flights with meals from chicago to minneapolis

True tags: VERB PRON DET NOUN NOUN NOUN ADP NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	0.	67	1.00	0.80	) 2	2
2	1.	00	1.00	1.00	) 3	}
3	1.	00	0.75	0.86	3 4	ļ
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
accur	acy			0.92	2 12	2
macro	_	0.9	4 0	.96	0.94	12
weighted	d avg	0.9	94 (	0.92	0.92	12

Sentence: list flights from seattle to salt lake city on delta I10

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN ADP

PROPN PROPN Classification Report:

	precis	ion r	ecall	f1-sc	ore s	uppo	ort
1	1.0	00	1.00	1.0	0	6	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
accura	•	4.00		1.0	-	11	44
macro weighted	_	1.00 1.0		.00 1.00	1.00 1.00		11 11

Sentence: show me all flights from san diego to phoenix on a boeing 737

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET

PROPN NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

**DET NOUN NOUN** Classification Report:

	precis	sion	recall	f1-sc	ore su	upport	
1	1.	00	0.75	0.8	6	4	
2	1.	00	1.00	1.0	0	3	
3	0.	33	1.00	0.5	0	1	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	2	
6	1.	00	1.00	1.0	0	1	
9	1.	00	0.00	0.0	0	1	
accur	асу			0.85	5 1	13	
macro	avg	0.9	0 0	.82	0.77	13	
weighted	d avg	0.9	95	0.85	0.84	13	3

Sentence: what is a d9s

True tags: PRON AUX DET PROPN Predicted tags: PRON AUX DET ADJ

Classification Report:

Olacollic	auoni	vopo.						
	precis	ion	reca	all 1	f1-so	core	supp	ort
1	1.0	00	0.00	)	0.0	00	1	
5		00	1.00		1.0		1	
6	1.	00	1.00	)	1.0	00	1	
7	0.	00	1.00	)	0.0	00	0	
8	1.	00	1.00	)	1.0	00	1	
accur	acy				0.7	'5	4	
macro	avg	8.0	30	0.8	30	0.6	0	4
weighted	d avg	1.	00	0	.75	0.	75	4

Sentence: what is the earliest flight between baltimore and oakland that serves

breakfast

True tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN ADP VERB

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN PROPN ADP

**VERB VERB** 

pre	precision		f1-score	support
1 2	0.67 1.00	1.00 1.00	0.80 1.00	2 2
3	1.00	0.50	0.67	2
4	0.50	1.00	0.67	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
10	1.00	0.00	0.00	1
accuracy			0.83	12

macro avg	0.91	0.83	0.79	12
weighted ava	0.90	0.83	0.80	12

Sentence: a breakfast flight from denver to san francisco please

True tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN INTJ

Predicted tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

Ciaconic	auon	ı topoi	٠.			
	preci	sion	recall	f1-scc	re su	pport
1	0	.75	1.00	0.86	3	3
2	1	.00	1.00	1.00	) 2	2
3	1	.00	1.00	1.00	) 2	2
5	1	.00	1.00	1.00	) 1	l
13	3 1	.00	0.00	0.0	0	1
accur	асу			0.89	9	)
macro	_	0.9	5 0	.80	0.77	9
weighted	d avg	0.	92 (	0.89	0.84	9

Sentence: list flights between boston and san francisco that serve breakfast True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN ADP VERB NOUN Predicted tags: VERB NOUN ADP PROPN PROPN PROPN PROPN ADP VERB VERB

Classification Report:

	precision		n re	recall f1-so		core	supp	ort
1		0.75	1	.00	0.8	86	3	
2		1.00	1	.00	1.0	00	2	
3		1.00	0	.50	0.0	67	2	
4	(	0.67	1	.00	0.8	80	2	
10	)	1.00	) (	0.00	0.	.00	1	
accur	•			•	0.8	-	10	4.0
macro weighted	_		0.88 0.86		.70 0.80	0.6 0.7		10 10

Sentence: give me all flights from boston to philadelphia next week arriving after lunch

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADJ NOUN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN ADP NOUN

þ	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	3
3	0.75	1.00	0.86	3
4	1.00	0.50	0.67	2
5	1.00	1.00	1.00	1

Sentence: please show me flights from pittsburgh to atlanta on wednesday morning serving breakfast

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN NOUN VERB NOUN

Predicted tags: VERB VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN NOUN

Classification Report:

	precision		recal	f1-s	score	supp	ort
1	1.	00	1.00	1	.00	2	
2	1.	00	1.00	1	.00	3	
3	0.	80	1.00	0	.89	4	
4	0.	50	0.50	0	.50	2	
6	1.	00	1.00	1	.00	1	
13	3 1	.00	0.00	) C	0.00	1	
accur	acy			0.	85	13	
macro weighted	_	8.0 8.0		0.75 0.85	0.7 0.8		13 13

Sentence: what is the first flight that goes from atlanta to baltimore that serves

breakfast

True tags: PRON AUX DET ADJ NOUN ADP VERB ADP PROPN ADP PROPN ADP

VERB NOUN

Predicted tags: PRON AUX DET DET NOUN ADP NOUN ADP PROPN ADP PROPN

ADP VERB NOUN Classification Report:

	precisio	n reca	all f1-sco	e suppo	ort
1	1.00	) 1.00	0 1.00	2	
2	1.00	1.00	0 1.00	4	
3	0.6	7 1.00	0.80	2	
4	1.00	0.50	0.67	2	
5	0.50	1.00	0.67	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	0 1.00	1	
accur	асу		0.86	14	
macro weighted	_	0.90 0.92	0.81 0 0.86	0.77 0.83	14 14

Sentence: which flights arrive in <unk> louis from <unk> paul on thursday morning

True tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP

**NOUN NOUN** 

Predicted tags: DET NOUN NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN

Classification Report:

pr	ecision	recall	f1-scor	e supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	3	
3	0.75	1.00	0.86	3	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	1	
accurac	y		0.92	12	
macro av	/g 0.9	95 C	.80 (	).77	12
weighted a	vg 0	.94	0.92	0.88	12

Sentence: i would like one flight from kansas city to <unk> paul arriving around dinnertime 6 pm

True tags: PRON AUX VERB NUM NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN NUM NOUN

Predicted tags: PRON AUX VERB VERB NOUN ADP PROPN PROPN ADP PROPN PROPN VERB NOUN NOUN

Classification Report:

	pre	cisio	n re	call	f1-s	core	supp	ort
	1	0.80	) 1.	00	0.8	89	4	
	2	1.00	0.	67	0.8	80	3	
	3	0.75	5 1.	00	0.6	86	3	
	4	0.33	0.	50	0.4	40	2	
(	6	1.00	1.	00	1.0	00	1	
	8	1.00	1.	00	1.0	00	1	
!	9	1.00	0.	00	0.0	00	2	
accu	ıracy				0.7	<b>7</b> 5	16	
macr	o avç	3	0.84	0	.74	0.7	'1	16
weighte	ed av	'g	0.82	(	0.75	0.	71	16

Sentence: list flights from dallas to houston arriving sunday afternoon True tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN Classification Report:

pre	precision		f1-score	e support	
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	3	
4	1.00	0.50	0.67	2	
accuracy			0.89	9	

macro avg	0.92	0.88	0.87	9
weighted avg	0.93	0.89	0.88	9

Sentence: list nonstop flights from baltimore washington airport to oakland that depart in the afternoon

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

Classification Report:

	prec	isior	ı re	call	†1-s	core	supp	oort
1		1.00	1.	.00	1.	00	4	
2	•	1.00	1.	.00	1.	.00	4	
3	•	1.00	1.	.00	1.	.00	3	
4	•	1.00	1.	.00	1.	.00	2	
5	•	1.00	1.	.00	1.	.00	1	
accur	acy				1.	00	14	
macro	avg	•	1.00	1	.00	1.	00	14
weighted	d avg		1.00	•	1.00	1	.00	14

Sentence: i need flight information on thursday leaving pittsburgh and arriving in baltimore in the morning

True tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN CCONJ VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB VERB VERB ADP PROPN ADP DET NOUN

Classification Report:

	prec	ision	recall	f1-score	supp	ort
1	,	1.00	0.50	0.67	2	
2		1.00	1.00	1.00	3	
3	,	1.00	1.00	1.00	4	
4	. (	0.60	1.00	0.75	3	
5	;	1.00	1.00	1.00	1	
6	;	1.00	1.00	1.00	1	
10	)	1.00	0.00	0.00	1	
accur	асу			0.87	15	
macro	avg		-	0.79 0.° 0.87 0	77 .84	15 15
weighte	_					

Sentence: morning flights out of san francisco arriving boston afternoon True tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN PROPN PROPN PROPN PROPN NOUN Classification Report:

precision recall f1-score support

1 0.75 1.00 0.86 3

Sentence: i would like to <unk> my flight in washington dc stop in denver with the destination city of san francisco

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN VERB ADP PROPN ADP DET NOUN PROPN ADP PROPN

Predicted tags: PRON AUX VERB ADP VERB VERB NOUN ADP PROPN PROPN

PROPN ADP PROPN ADP DET NOUN PROPN ADP PROPN PROPN

Classification Report:

	precisio	n red	call f1-s	core s	upport
1	0.86	6 1.0	00 0.	.92	6
2	0.80	) 1.0	0.00	.89	4
3	1.00	) 1.0	00 1.	.00	2
4	0.67	7 0.0	67 O.	.67	3
5	1.00	0.9	50 0.	.67	2
6	1.00	) 1.0	00 1.	.00	1
8	1.00	) 1.0	00 1.	.00	1
12	1.0	0 0.	.00 0	.00	1
accura	асу		0.	85 2	20
macro	_	0.92	0.77	0.77	20
weighted	l avg	0.87	0.85	0.82	20

Sentence: show me a list of flights on july twenty second leaving dc to dallas leaving dc after 6 pm

True tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN PROPN NOUN VERB VERB ADP PROPN VERB PROPN ADP PROPN NOUN Classification Report:

	prec	ision	reca	all f1-	score	supp	ort
1	(	0.40	0.6	7 C	.50	3	
2		1.00	1.00	0 1	.00	4	
3	(	0.75	0.7	5 C	.75	4	
4	(	0.75	1.00	0 0	.86	3	
5		1.00	1.00	0 1	.00	1	
6		1.00	1.00	0 1	.00	1	
7		1.00	0.0	0 0	00.0	1	
9	,	1.00	0.0	O C	0.00	2	
accur	асу			0	.74	19	
macro	avg	0.	.86	0.68	0.	64	19

weighted avg 0.81 0.74 0.69 19

Sentence: what airlines from washington dc to columbus True tags: DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

pred	cision	recall	f1-scor	e suppo	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
accuracy			0.86	7	
macro avg	0.8	30 0	.80 0	0.60	7
weighted avo	<b>j</b> 1	.00 (	0.86	0.86	7

Sentence: list flights from washington dc to boston

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precision		recall	f1-scc	ore su	ipport
1 2 3 4	1.0	00 00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	) :	3 2 1
7	1.	50	1.00	1.00	,	1
accur	асу			1.00	7	7
macro	avg	1.00	) 1	.00	1.00	7
weighte	d avg	1.0	00	1.00	1.00	7

Sentence: could you please give me information <unk> american airlines a flight from washington dc to philadelphia the earliest one in the morning as possible True tags: AUX PRON INTJ VERB PRON NOUN VERB PROPN PROPN DET NOUN ADP PROPN ADP PROPN ADP PROPN DET ADJ PRON ADP DET NOUN ADP ADJ

Predicted tags: VERB PRON VERB VERB PRON NOUN PROPN PROPN DET NOUN ADP PROPN ADP PROPN DET NOUN NOUN ADP DET NOUN NOUN NOUN

	precision	recall	f1-score	support
1	0.83	1.00	0.91	5
2	1.00	0.75	0.86	4
3	0.43	1.00	0.60	3
4	0.33	0.50	0.40	2
5	1.00	1.00	1.00	3
6	1.00	0.67	0.80	3

1.00	0.0	0.	00	2	
1.00	0.0	0.	00	1	
1.00	0.0	0 0	.00	1	
		0.7	71	24	
<b>)</b> 0.	84	0.55	0.51	1	24
g 0	.84	0.71	0.6	7	24
	1.00 1.00	1.00 0.00 1.00 0.0	1.00 0.00 0. 1.00 0.00 0 0.7 0 0.84 0.55	1.00 0.00 0.00 1.00 0.00 0.00 0.71 0 0.84 0.55 0.57	1.00 0.00 0.00 1 1.00 0.00 0.00 1 0.71 24 0 0.84 0.55 0.51

Sentence: list flights from washington dc to pittsburgh

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	) 3	3
2	1.0	00 1.	.00	1.00	) 2	2
3	1.0	00 1.	.00	1.00	) 1	
4	1.0	00 1	.00	1.00	) 1	
accur	асу			1.00	7	
macro	avg	1.00	1	.00	1.00	7
weighted	d avg	1.00	•	1.00	1.00	7

Sentence: i need a flight from washington dc to san diego

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN

PROPN

Classification Report:

Ciaconic	auon i te	port.				
	precisio	n re	call	f1-scor	e supp	ort
1	1.00	\ 1	00	1.00	4	
-					4	
2	1.00	) 1.	00	1.00	2	
3	1.00	) 1.	00	1.00	1	
4	1.00	) 1.	00	1.00	1	
5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
accur	acy			1.00	10	
macro	avg	1.00	1	.00 ′	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: i would like to fly from boston to baltimore please tell me what are the times of the flights

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN INTJ VERB PRON PRON AUX DET NOUN ADP DET NOUN

Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN PROPN

VERB PRON PRON AUX DET NOUN ADP DET NOUN

Classification Report:

precision recall f1-score support

1	0.67	1.0	0	0.80	)	2	
2	0.75	1.0	0	0.86	6	3	
3	1.00	1.0	0	1.00	)	2	
4	1.00	1.0	0	1.00	)	3	
5	1.00	1.0	0	1.00	)	2	
6	1.00	1.0	0	1.00	)	3	
8	1.00	1.0	0	1.00	)	2	
12	1.00	0.0	00	0.0	0	1	
13	1.00	0.0	00	0.0	0	1	
accuracy				0.89		19	
macro av	g 0.	94	0.7	8	0.74		19
weighted av	/g 0	.93	0.	89	0.85	,	19

Sentence: does flight dl <unk> dl <unk> from boston to denver stop in philadelphia True tags: AUX NOUN PROPN NUM PROPN NUM ADP PROPN ADP PROPN VERB ADP PROPN

Predicted tags: PROPN NOUN NOUN PROPN VERB VERB ADP PROPN ADP PROPN ADP PROPN

Classification Report:

port
13 13

Sentence: what kind of airplane is flight ua 281 from boston to denver

True tags: DET NOUN ADP NOUN AUX NOUN PROPN NUM ADP PROPN ADP

PROPN

Predicted tags: PRON AUX ADP VERB PROPN NOUN PROPN PROPN ADP

PROPN ADP PROPN Classification Report:

precision recall f1-score support 1 0.60 1.00 0.75 3 2 1.00 1.00 1.00 3 3 1.00 0.33 0.50 3 4 0.00 1.00 0.00 0 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 8 0.00 0.00 0.00 1 9 1.00 0.00 0.00 1

accuracy		0.5	8 12	2
macro avg	0.57	0.54	0.28	12
weighted avg	0.82	0.58	0.56	12

Sentence: what is the price of american airlines flight <unk> from new york to los angeles

True tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN NUM ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recal	ll f1-s	core	supp	ort
1	0	.86	1.00	0.	92	6	
2	1	.00	1.00	1.	00	3	
3	1	.00	1.00	1.	00	2	
5	1	.00	1.00	1.	00	1	
6	1	.00	1.00	1.	00	1	
8	1	.00	1.00	1.	00	1	
9	1	.00	0.00	0.	00	1	
accur	acy			0.9	93	15	
macro	avg	0.9	98	0.86	8.0	55	15
weighte	d avg	0.	94	0.93	0.	90	15

Sentence: what is the first class fare on united flight <unk> from denver to boston True tags: PRON AUX DET ADV NOUN NOUN ADP PROPN NOUN NUM ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET DET NOUN NOUN ADP PROPN NOUN PROPN ADP PROPN ADP PROPN

Classification Report:

	pre	cisio	n ı	recall	f1-s	core	supp	ort
1		0.75	5	1.00	0.	86	3	
2	) -	1.00	)	1.00	1.	00	3	
3	}	1.00	)	1.00	1.	00	3	
5	,	0.50	)	1.00	0.	67	1	
6	;	1.00	)	1.00	1.	00	1	
8	}	1.00	)	1.00	1.	00	1	
9	)	1.00	)	0.00	0.	00	1	
11	1	1.00	)	0.00	0.	.00	1	
accur	асу				0.8	36	14	
macro veighte	_		0.91		).75 0.86	0.6 0.	89 80	14 14

Sentence: how much does flight ua 281 from boston to denver cost

True tags: ADV ADV AUX NOUN PROPN NUM ADP PROPN ADP PROPN VERB Predicted tags: VERB VERB NOUN PROPN PROPN ADP PROPN PROPN

## Classification Report:

	precisi	on	reca	ıll f	1-sc	ore	supp	ort
1	0.6	80	1.00	)	0.7	5	3	
2	1.0	00	1.00	)	1.0	0	2	
3	1.0	00	1.00	)	1.0	0	1	
4	0.0	00	0.00	)	0.0	0	1	
8	1.0	00	0.00	)	0.0	0	1	
9	1.0	00	0.00	)	0.0	0	1	
11	1.0	00	0.0	0	0.0	00	2	
accura	acy				0.5	5	11	
macro	avg	3.0	30	0.4	3	0.3	9	11
weighted	d avg	0.	.80	0.	55	0.4	48	11

Sentence: does flight dl <unk> from philadelphia to denver fly on saturdays
True tags: AUX NOUN PROPN PROPN ADP PROPN VERB ADP

PROPN

Predicted tags: PROPN NOUN NOUN PROPN ADP PROPN ADP PROPN PROPN

ADP NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1	0.	60	0.60	0.6	) 5	5
2	1.	00	1.00	1.0	) 3	3
3	0.	33	1.00	0.5	) 1	
4	1.	00	0.00	0.0	) 1	1
8	1.	00	0.00	0.0	0 1	1
accur	асу			0.64	ļ 1 <sup>2</sup>	1
macro weighted		0.7 0.7		.52 0.64	0.42 0.59	11 11

Sentence: what airline is dl <unk>

True tags: DET NOUN AUX PROPN NUM

Predicted tags: PRON NOUN PROPN PROPN

	precis	on	recall	t1-sc	ore s	support	t
1	0.3	33	1.00	0.5	0	1	
3	1.0	00	1.00	1.0	0	1	
5	1.0	00	0.00	0.0	0	1	
6	0.0	00	1.00	0.0	0	0	
8	1.0	00	0.00	0.0	0	1	
9	1.0	00	0.00	0.0	0	1	
accur	acy			0.40	)	5	
macro	•	0.72	2 0	.50	0.25	5	,
weighted	•	3.0	37 (	0.40	0.30	) :	5

Sentence: what first class airplane goes from philadelphia to san francisco and stops

in dallas in the afternoon on monday

True tags: DET ADV NOUN NOUN VERB ADP PROPN ADP PROPN PROPN CCONJ VERB ADP PROPN ADP DET NOUN ADP NOUN

Predicted tags: PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN PROPN CCONJ ADP PROPN ADP DET NOUN ADP NOUN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	0.80	1.00	0.89	4	
2	1.00	1.00	1.00	5	
3	0.80	1.00	0.89	4	
4	1.00	0.00	0.00	2	
5	0.50	0.50	0.50	2	
6	0.00	1.00	0.00	0	
10	0.00	0.00	0.00	1	
11	1.00	0.00	0.00	1	
accurac	CV		0.74	19	
macro a	-	64 0	.56 0.4	11	19
weighted	•	.81 (	0.74 0.	.69	19
_	_				

Sentence: what planes are used by twa

True tags: DET NOUN AUX VERB ADP PROPN Predicted tags: PRON AUX AUX AUX ADP PROPN

Classification Report:

	precis	sion	reca	II f1	-scor	e su	ppor	t
1	1.	00	1.00	)	1.00		1	
2	1.	00	1.00	)	1.00		1	
3	1.	00	0.00	) (	0.00		1	
4	1.	00	0.00	) (	0.00		1	
5	1.	00	0.00	) (	0.00		1	
6	0.	00	1.00	) (	0.00		C	
8	0.	33	1.00	) (	0.50		1	
accur	acy			(	0.50	6	6	
macro weighte	_	0.7 0.	76 89	0.57		).36 0.42	6	) 6

Sentence: <unk> leaving denver to san francisco before 10 am what type of aircraft is used

True tags: VERB VERB PROPN ADP PROPN PROPN ADP NUM NOUN DET NOUN ADP NOUN AUX VERB

Predicted tags: VERB VERB PROPN ADP PROPN PROPN ADP PROPN NOUN DET NOUN ADP NOUN AUX PROPN

Classification Report:

precision recall f1-score support 0.60 1.00 0.75 3

```
2
           1.00
                  1.00
                          1.00
                                   3
      3
           1.00
                   1.00
                          1.00
                                    3
      4
                                    3
           1.00
                   0.67
                          0.80
      5
           1.00
                  1.00
                          1.00
                                    1
      8
           1.00
                   1.00
                          1.00
                                    1
      9
           1.00
                   0.00
                          0.00
                                    1
                          0.87
                                15
  accuracy
                              0.79
 macro avg
               0.94
                      0.81
                                       15
weighted avg
                0.92
                       0.87
                               0.84
                                        15
```

Sentence: what kinds of planes are used by midway airlines

True tags: DET NOUN ADP NOUN AUX VERB ADP NOUN PROPN

Predicted tags: PRON AUX ADP PROPN AUX AUX ADP PROPN PROPN

Classification Report:

	precisio	n re	call	f1-scc	re su	pport
1	0.3	3 1.	00	0.50	) -	1
2	1.0	0 1.	00	1.00	) 2	2
3	1.0	0 0.	00	0.00	) (	3
4	1.0	0 0.	00	0.00	) ′	1
5	1.0	0 0.	00	0.00	) ′	1
6	0.0	0 1.	00	0.00	) (	)
8	0.3	3 1.	00	0.50	) ′	1
accur	асу			0.44	. 9	)
macro	avg	0.67	0	.57	0.29	9
weighted	d avg	0.85	(	0.44	0.33	9

Sentence: what type of aircraft leaves from boston to washington dc at 9 am during a weekday

True tags: DET NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP DET NOUN

Predicted tags: PRON NOUN ADP VERB VERB ADP PROPN ADP PROPN PROPN DET NOUN

	precis	ion	recal	l f1-s	score	supp	ort
1	0.	60	1.00	0	.75	3	
2		00	0.80		.89	5	
3	1.	00	0.75	0	.86	4	
4	0.	50	1.00	0	.67	1	
5	1.	00	0.50	0	.67	2	
6	0.	00	1.00	0	.00	0	
9	1.	00	0.00	0	.00	1	
accur	acy			0.	75	16	
macro	avg	0.7	<b>'</b> 3	0.72	0.5	55	16
weighte	d avg	0.	89	0.75	0.	76	16

Sentence: what type of aircraft are flying from cleveland to dallas before noon True tags: DET NOUN ADP NOUN AUX VERB ADP PROPN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN ADP VERB AUX VERB ADP PROPN ADP PROPN

**ADP NOUN** 

Classification Report:

	precis	ion	recall	f1-s	core	supp	ort
1	1.	00	1.00	1.	00	2	
2	1.	00	1.00	1.	00	4	
3	1.	00	0.67	0.	80	3	
4	0.	50	1.00	0.	67	1	
5	1.	00	0.00	0.	00	1	
6	0.	00	1.00	0.	00	0	
8	1.	00	1.00	1.	00	1	
accur	асу			0.0	33	12	
macro	avg	0.7	9 (	0.81	0.6	4	12
weighted	d avg	0.	96	0.83	0.8	34	12

Sentence: what airplane types fly from pittsburgh to baltimore True tags: DET NOUN NOUN VERB ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB VERB ADP PROPN ADP PROPN

Classification Report:

	precis	sion	reca	II f1-	-scor	e su	ppo	rt
1	1.	.00	1.00	)	1.00		2	
2	1.	.00	1.00	) .	1.00		2	
3	1.	.00	0.00	) (	00.0		2	
4	0.	.50	1.00	) (	0.67		1	
5	1.	.00	0.00	) (	00.0		1	
6	0.	.00	1.00	) (	00.0		0	
8	0.	.00	1.00	) (	0.00	(	0	
accur	acy			C	).62	8	3	
macro	avg	0.6	64	0.71	(	0.38		8
weighted	d avg	0.	94	0.6	2	0.58		8

Sentence: what is ground transportation between the san francisco airport and the city

True tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN CCONJ DET PROPN

Predicted tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN PROPN PROPN DET NOUN

	precision		f1-score	support
1	0.75	0.75	0.75	4
2	1.00	1.00	1.00	1
3	0.67	1.00	0.80	2

1.00	1.0	0 1	.00	2	
1.00	1.0	0 1	.00	1	
1.00	1.0	0 1	.00	1	
1.00	0.0	00 (	0.00	1	
		0.	.83	12	
0.	92	0.82	0.7	79	12
g 0	.86	0.83	0.	.80	12
	1.00 1.00 1.00	1.00 1.0 1.00 1.0 1.00 0.0	1.00 1.00 1 1.00 1.00 1 1.00 0.00 0 0.92 0.82	1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0	1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 0.00 0

Sentence: what flights on united leave la guardia for san jose and arrive around 10 pm

True tags: DET NOUN ADP PROPN VERB PROPN PROPN ADP PROPN PROPN CCONJ VERB ADP NUM NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN PROPN NOUN ADP PROPN PROPN VERB VERB NOUN NOUN

Classification Report:

	precision		n re	recall f1-sc		core	supp	ort
1		0.67	0	.80	0.	73	5	
2		1.00	0	.67	0.8	80	3	
3		0.50	) 1	.00	0.0	67	2	
4		0.50	0	.50	0.	50	2	
5		1.00	0	.00	0.0	00	1	
6		0.00	) 1	.00	0.0	00	0	
9		1.00	0	.00	0.0	00	1	
10	)	1.00	) (	0.00	0.	.00	1	
accur	acy				0.6	60	15	
macro	avg		0.71	0	.50	0.3	84	15
weighte	d av	g	0.76	; (	0.60	0.	56	15

Sentence: what ground transportation is available from the denver airport to downtown denver

True tags: DET NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON NOUN NOUN PROPN PROPN ADP DET PROPN PROPN ADP PROPN

	precision		recall	f1-scc	ore sup	port
1	0.	50	1.00	0.67	7 3	}
2	1.	00	1.00	1.00	) 2	
3	1.	00	0.67	0.80	) 3	)
5	1.	00	0.50	0.67	7 2	
6	0.	00	1.00	0.00	) 0	
7	1.	00	0.00	0.00	) 1	
8	1.	00	0.00	0.00	) 1	
accur	асу			0.67	12	2
macro	avg	0.79	9 0	.60	0.45	12

weighted avg 0.88 0.67 0.64 12

Sentence: list us air flights leaving saturday from charlotte airport around 1 pm True tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN ADP

NUM NOUN

Predicted tags: VERB PROPN PROPN NOUN VERB VERB ADP PROPN PROPN PROPN PROPN NOUN

Classification Report:

	precision		recall	f1-sc	ore su	ipport
1	(	0.67	1.00	0.8	0	4
2	•	1.00	0.50	0.6	7	2
3	•	1.00	0.67	0.8	0	3
4	(	0.67	1.00	8.0	0	2
9	•	1.00	0.00	0.0	0	1
accur	acy			0.75	5 1	2
macro	avg	0.8	7 (	).63	0.61	12
weighted	d avg	0.	83	0.75	0.71	12

Sentence: could you tell me about ground transportation arrangements from the dallas airport to downtown dallas

True tags: AUX PRON VERB PRON ADP NOUN NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: VERB PRON VERB PRON ADP NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	0.6	30	1.00	0.	.75	3	
2	1.0	00	1.00	1.	.00	3	
3	1.0	00	0.75	0.	.86	4	
4	0.5	50	1.00	0.	.67	1	
5	1.0	00	0.00	0.	.00	1	
6	1.0	00	1.00	1.	.00	2	
8	1.0	00	0.00	0.	.00	1	
accura	асу			0.	80	15	
macro weighted	•	0.8 0.8		0.68 0.80	0.6 0.		15 15

Sentence: please list the flights taking off and landing on general mitchell

international airport

True tags: INTJ VERB DET NOUN VERB ADV CCONJ NOUN ADP PROPN PROPN

PROPN PROPN

Predicted tags: VERB VERB DET NOUN NOUN PROPN VERB VERB ADP NOUN

PROPN PROPN Classification Report:

precision recall f1-score support

1	0.75	0.75	0.	75	4	
2	1.00	1.00	1.0	00	1	
3	0.33	0.50	0.4	40	2	
4	0.25	0.50	0.3	33	2	
5	1.00	1.00	1.0	00	1	
10	1.00	0.0	0 0	.00	1	
11	1.00	0.00	0.	.00	1	
13	1.00	0.0	0 0	.00	1	
accuracy	/		0.5	54	13	
macro av	g 0.	79	0.47	0.4	4	13
weighted av	vg 0	).71	0.54	0.	50	13

Sentence: i <unk> like to fly from cleveland to indianapolis tomorrow morning as early as possible what <unk> available

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN ADP ADV ADP ADJ PRON AUX ADJ

Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN PROPN NOUN NOUN NOUN NOUN DET AUX AUX

Classification Report:

	precision		recall	f1-sco	e supp	ort
1	0.	.67	1.00	0.80	2	
2	0	.67	0.50	0.57	4	
3	0	.20	0.50	0.29	2	
4	1.	.00	1.00	1.00	2	
5	0	.00	1.00	0.00	0	
6	1.	.00	0.50	0.67	2	
7	1.	.00	0.00	0.00	2	
8	0	.67	1.00	0.80	2	
11	1 1	.00	0.00	0.00	1	
12	2 1	.00	0.00	0.00	) 1	
accur	acy			0.56	18	
macro weighted	_	0.72 0.7		.55 ( ).56	0.41 0.52	18 18
	9	0	•			. •

Sentence: i need a flight from logan to atlanta this afternoon

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN DET NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN

Classification Report:

precision recall f1-score support 1 0.67 1.00 0.80 2 2 2 1.00 1.00 1.00 3 1.00 1.00 1.00 2 4 1.00 1.00 1.00 1 2 5 1.00 0.50 0.67 6 1.00 1.00 1.00 1

accuracy		0.9	0 10	
macro avg	0.94	0.92	0.91	10
weighted avg	0.93	0.90	0.89	10

Sentence: give me the latest flight tomorrow on american airlines from milwaukee to tacoma

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore sup	port
1	1.0	00	1.00	1.0	0 4	
2	1.0	00	1.00	1.0	0 3	
3	1.0	00	1.00	1.0	0 2	
4	1.0	00	1.00	1.0	0 1	
5	1.0	00	1.00	1.0	0 1	
6	1.0	00	1.00	1.0	0 1	
7	1.0	00	1.00	1.0	0 1	
accura	асу			1.00	) 13	}
macro weighted	_	1.0 1.	00 1 00	.00 1.00	1.00 1.00	13 13

Sentence: i <unk> like to fly from columbus to nashville tomorrow morning True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN PROPN NOUN

Classification Report:

	precision		recall f1-s		1-scc	re s	supp	ort
1	0.	67	1.00	)	0.80	)	2	
2	0.	67	1.00	)	0.80	)	2	
3	1.	00	0.50	)	0.67	7	2	
4	1.	00	1.00	)	1.00	)	2	
6	1.	00	1.00	)	1.00	)	1	
8	1.	00	1.00	)	1.00	)	1	
12	2 1	.00	0.0	0	0.0	0	1	
accur	асу				0.82		11	
macro weighted	•	0.9 0.8		0.7	_	0.75		11 11

Sentence: and what is the last flight from denver to boston for tomorrow evening True tags: CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP NOUN NOUN

Predicted tags: VERB PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP

PROPN NOUN

	precisio	n reca	ll f1-scor	e support
1	0.67	7 1.00	0.80	2
2	1.00	1.00	1.00	3
3	1.00	0.67	0.80	3
4	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
10	1.0	0.0	0.00	1
accur	асу		0.85	13
macro	avg	0.85	0.85 (	0.73 13
weighted	d avg	0.95	0.85	0.85 13

Sentence: list evening flights tomorrow from phoenix to detroit True tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB VERB NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

pre	cision	recal	l f1-sc	ore	supp	ort
1	1.00	1.00	1.0	00	2	
2	1.00	1.00	1.0	00	2	
3	1.00	0.67	0.8	30	3	
4	0.50	1.00	0.6	67	1	
accuracy			0.8	8	8	
macro avo	g 0.8	38	0.92	0.8	7	8
weighted av	g 0	.94	0.88	3.0	38	8

Sentence: show me the flights on continental from indianapolis to san diego in the afternoon tomorrow

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN ADP DET NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP DET NOUN NOUN

	preci	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	00	4	
2	1	.00	1.00	1.	00	4	
3	1	.00	1.00	1.	00	3	
4	. 1	.00	1.00	1.	00	1	
5	1	.00	1.00	1.	00	2	
6	1	.00	1.00	1.	00	1	
accur	acy			1.0	00	15	
macro	avg	1.0	00	1.00	1.0	0	15
weighte	_		.00	1.00	1.	00	15

Sentence: how many flights does northwest have leaving dulles True tags: ADV ADJ NOUN AUX PROPN VERB VERB PROPN

Predicted tags: VERB NOUN NOUN PROPN PROPN VERB VERB VERB

Classification Report:

	preci	sion	recall	f1-sco	ore su	ıpport
1	0	.50	0.50	0.50	)	2
3	0	.50	1.00	0.67	7	1
4	0	.50	1.00	0.67	7	2
7	1	.00	0.00	0.00	)	1
8	3 1	.00	0.00	0.00	)	1
1	1 1	.00	0.00	0.0	0	1
accur	acy			0.50	) (	3
macro	avg	0.7	'5 O	.42	0.31	8
weighte	d avg	0.	69 (	0.50	0.38	8

Sentence: nonstop flights from new york city to las vegas on sunday

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN ADP

**NOUN** 

Predicted tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

ADP NOUN

Classification Report:

	precisi	on re	ecall	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	5	
2	1.0	00 1	.00	1.00	) 3	
3	1.0	00 1	.00	1.00	) 3	
accur	асу			1.00	11	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	11 11

Sentence: show me the flights from los angeles to pittsburgh which arrive at

pittsburgh on monday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP PROPN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN DET NOUN ADP PROPN ADP NOUN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 1.00 0.80 0.89 5 3 0.67 0.80 2 1.00 4 1.00 0.50 2 0.67 5 0.50 1.00 0.67 1 6 1.00 1.00 1.00 1

accuracy		0.8	7 1	5
macro avg	0.86	0.88	0.84	15
weighted avg	0.92	0.87	0.87	15

Sentence: show me all flights from philadelphia to dallas which arrive in dallas before 3 <unk> pm on saturday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN NOUN ADP PROPN ADP VERB VERB NOUN ADP NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
1	0.75	1.00	0.86	3	
2	1.00	0.83	0.91	6	
3	0.75	1.00	0.86	3	
4	0.33	0.50	0.40	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
11	1.00	0.00	0.00	1	
accura	ісу		0.78	18	
macro	avg 0.	85 0	.67 0.6	3	18
weighted	avg 0	.84	0.78 0.	.74	18

Sentence: what flights leave pittsburgh and arrive in los angeles after 5 pm on thursday

True tags: DET NOUN VERB PROPN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

Predicted tags: PRON NOUN VERB PROPN PROPN VERB ADP PROPN PROPN ADP NOUN ADP NOUN

Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
1	0	.75	1.00	0	.86	3	
2	1	.00	1.00	1	.00	3	
3	0	.75	1.00	0	.86	3	
4	1	.00	1.00	1	.00	2	
5	1	.00	0.00	0	.00	1	
6	0	.00	1.00	0	.00	0	
9	1	.00	0.00	0	.00	1	
10	) 1	1.00	0.00	) (	00.0	1	
accur	acy			0.	79	14	
macro	avg	0.8	1	0.62	0.4	<del>∤</del> 6	14
weighted	d avg	0.8	89	0.79	0.	72	14

Sentence: what is the earliest flight arriving in charlotte from <unk> louis on friday

True tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN PROPN

ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	precisi	on re	call	f1-sc	ore su	ıpport
1	1.0	0 1	.00	1.00	0	3
2	1.0	0 1.	.00	1.0	0	3
3	0.6	7 1.	.00	0.8	0	2
4	1.0	0 0	.00	0.0	0	1
5	1.0	0 1.	.00	1.0	0	1
6	1.0	0 1.	.00	1.0	0	1
7	1.0	0 1.	.00	1.0	0	1
8	1.0	0 1	.00	1.00	0	1
accur	асу			0.92	2 1	3
macro	avg	0.96	0	.88	0.85	13
weighted	d avg	0.95	(	0.92	0.89	13

Sentence: what flights do you have from boston to pittsburgh on wednesday of next week after 6 pm

True tags: DET NOUN AUX PRON VERB ADP PROPN ADP PROPN ADP NOUN ADP ADJ NOUN ADP NUM NOUN

Predicted tags: PRON NOUN VERB VERB VERB ADP PROPN ADP NOUN ADP NOUN ADP NOUN NOUN NOUN

Classification Report:

	precision	on re	call f1-	score	support
1	1.0	0 1.	00 1	.00	2
2	1.0	0 1.	00 1	.00	5
3	0.6	7 1.	00 0	08.0	4
4	0.3	3 1.	00 0	).50	1
5	1.0	0 0.	00 0	0.00	1
6	0.0	0 0.	00 0	0.00	1
7	1.0	0 0.	00 0	0.00	1
8	1.0	0 0.	00 0	0.00	1
9	1.0	0 0.	00 0	0.00	1
accur	асу		0	.71	17
macro	avg	0.78	0.44	0.37	7 17
weighte	d avg	0.82	0.71	I 0.6	3 17

Sentence: i <unk> like a flight from <unk> petersburg to miami on that next thursday True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP DET ADJ NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP ADP NOUN NOUN

Classification Report:

precision recall f1-score support

1	1.00	) 1.	00	1.0	0	3	
2	0.75	5 1.	00	0.8	6	3	
3	0.67	7 1.	00	0.8	0	2	
4	1.00	) 1.	00	1.0	0	1	
5	1.00	0.	50	0.6	7	2	
6	1.00	) 1.	00	1.0	0	1	
7	1.00	0.	00	0.0	0	1	
8	1.00	) 1.	00	1.0	0	1	
accuracy	/			0.86	3 '	14	
macro av	'g	0.93	0	.81	0.79		14
weighted a	vg	0.90	(	0.86	0.82		14

Sentence: i <unk> like to travel from kansas city to chicago next wednesday

True tags: PRON AUX VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ

NOUN

Predicted tags: PRON AUX VERB ADP VERB ADP PROPN PROPN ADP PROPN

PROPN NOUN

Classification Report:

precisio	n red	call f1	-score	suppo	rt
0.7	5 1.0	00	0.86	3	
0.6	7 1.0	00	0.80	2	
1.00	) 1.0	00	1.00	1	
1.00	) 1.0	00	1.00	2	
1.00	) 1.0	00	1.00	1	
1.00	0.0	00	0.00	1	
1.00	) 1.0	00	1.00	1	
1.0	0 0	.00	0.00	1	
асу			0.83	12	
_	0.93 0.88		-		12 12
	0.75 0.65 1.00 1.00 1.00 1.00	0.75 1.0 0.67 1.0 1.00 1.0 1.00 1.0 1.00 0.0 1.00 1.0 1.00 0.0 1.00 0.0 2 1.00 0.0	0.75 1.00 0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00 2 1.00 0.00	0.75	0.75

Sentence: i would like to fly from boston to philadelphia next thursday

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADJ NOUN Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN PROPN NOUN

Classification Report:

precision recall f1-score support 1 0.67 1.00 0.80 2 2 0.67 1.00 0.80 2 3 1 1.00 1.00 1.00 4 1.00 1.00 1.00 2 6 1.00 1.00 1.00 1

7 1.00 0.00 0.00 1 8 1.00 1.00 1.00 1 12 1.00 0.00 0.00 1

accuracy		8.0	2 11	
macro avg	0.92	0.75	0.70	11
weighted avg	0.88	0.82	0.75	11

Sentence: tell me about flights from atlanta to charlotte next monday

True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN ADJ NOUN

Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN NOUN NOUN

Classification Report:

	precision		recall f1-score		re supp	oort
1	1.0	00 1	.00	1.00	2	
2	1.0	0 1.	.00	1.00	3	
3	0.6	<b>7</b> 1.	.00	0.80	2	
4	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 0	.00	0.00	1	
accur	acy			0.90	10	
macro weighte	•	0.94 0.93		.83 ).90	0.80 0.86	10 10

Sentence: what flights go from pittsburgh to baltimore after 8 <unk> next wednesday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV ADJ NOUN

Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN ADP NOUN

PROPN NOUN NOUN Classification Report:

precision recall f1-score support

	p. 00			Juii		0.0	очрр	0.0
1	(	0.67	1.	00	0.8	0	2	
2		1.00	1.	00	1.0	0	3	
3	, (	0.40	1.	00	0.5	7	2	
4		1.00	0.	00	0.0	0	1	
5		1.00	0.	00	0.0	0	1	
6	. (	0.00	1.	00	0.0	0	0	
7	•	1.00	0.	00	0.0	0	1	
9		1.00	0.	00	0.0	0	1	
11	1	1.00	0.	.00	0.0	0	1	
accur	acy				0.58	3	12	
macro	_		0.79	_	.44	0.2	-	12
weighte	d avg	)	0.84	(	0.58	0.4	48	12

Sentence: give me the fares for round trip flights from cleveland to miami next wednesday

True tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN

ADP PROPN PROPN NOUN

pr	ecision	recall	f1-sco	re supp	e support	
1	0.67	1.00	0.80	2		
2	1.00	1.00	1.00	3		
3	1.00	1.00	1.00	5		
4	1.00	1.00	1.00	1		
5	1.00	1.00	1.00	1		
6	1.00	1.00	1.00	1		
7	1.00	0.00	0.00	1		
accurac	y		0.93	14		
macro av	/g 0.9	95 0	.86	0.83	14	
weighted a	ivg 0	.95	0.93	0.90	14	

Sentence: i want to leave chicago next tuesday and arrive in detroit around 6 pm True tags: PRON VERB PART VERB PROPN ADJ NOUN CCONJ VERB ADP

PROPN ADP NUM NOUN

Predicted tags: PRON VERB ADP VERB PROPN PROPN NOUN NOUN VERB ADP

PROPN ADP PROPN NOUN

Classification Report:

	precis	ion	recall	f1-s	core	supp	ort
1	0.	50	1.00	0.0	67	2	
2	0.	67	1.00	0.8	30	2	
3	0.	67	1.00	0.8	30	2	
4	1.	00	1.00	1.0	00	3	
6	1.	00	1.00	1.0	00	1	
7	1.	00	0.00	0.0	00	1	
9	1.	00	0.00	0.0	00	1	
10	) 1	.00	0.00	0.	.00	1	
12	2 1	.00	0.00	0.	.00	1	
accur	асу			0.7	<b>'</b> 1	14	
macro	avg	0.8	7 (	).56	0.4	7	14
weighte	d avg	0.8	83	0.71	0.6	61	14

Sentence: i want a flight from montreal to washington dc

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN

pr	ecision	recall	f1-score	support
1 2	1.00 1.00	1.00 1.00	1.00 1.00	3 2
3	1.00	1.00	1.00	1
3 4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
accuracy	y		1.00	9

macro avg	1.00	1.00	1.00	9
weighted ava	1.00	1.00	1.00	9

Sentence: show me the flights leaving from atlanta for washington dc on thursday morning

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	3	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
accura	acv			1.00	13	
macro	•	1.00	1		1.00	13
weighted	•	1.00		1.00	1.00	13

Sentence: show me flights from denver to dc on wednesday

True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precision		recall f1-score		core	supp	ort
1		1.00	1.00	) 1.0	00	2	
2		1.00	1.00	1.0	00	3	
3	•	1.00	1.00	1.0	00	2	
4		1.00	1.00	) 1.	00	1	
6	•	1.00	1.00	) 1.	00	1	
accur	acy			1.0	00	9	
macro	avg	1.	00	1.00	1.0	0	9
weighte	d avg	1	.00	1.00	1.	00	9

Sentence: please give me the flights from san francisco to washington dc True tags: INTJ VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB VERB PRON DET NOUN ADP PROPN PROPN PROPN PROPN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	2
3	1 00	1 00	1 00	1

4	4	0.50	)	1.00	)	0.67	7	1	
į	5	1.00	)	1.00	)	1.00	)	1	
6	3	1.00	)	1.00	)	1.00	)	1	
1	3	1.0	0	0.0	0	0.0	0	1	
accu	racy					0.91		11	
macro	o avg		0.9	3	0.8	6	0.81		11
weighte	ed av	g	0.9	95	0.9	91	0.88	3	11

Sentence: show me the prices of all flights from atlanta to washington dc

True tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP PROPN

PROPN

Predicted tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	3	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	2	
6	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.00	1	.00	1.00	12
weighte	d avg	1.00	•	1.00	1.00	12

Sentence: what is the latest flight on wednesday going from atlanta to washington dc

True tags: PRON AUX DET ADJ NOUN ADP NOUN VERB ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP NOUN NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
4	4.0	00 4	00	4.00		
1	1.0	0 1	.00	1.00	) 3	
2	1.0	00 1	.00	1.00	3	
3	0.6	§7 1	.00	0.80	2	
4	1.0	0 0	.00	0.00	) 1	
5	1.0	00 1	.00	1.00	1	
6	1.0	00 1	.00	1.00	1	
7	1.0	00 1	.00	1.00	1	
8	1.0	00 1	.00	1.00	1	
accur	acy			0.92	13	
macro	avq	0.96	0	.88	0.85	13
weighte	_	0.95	(	0.92	0.89	13
5	9					

Sentence: list flights from toronto to washington dc saturday am

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN Classification Report:

	precisi	on re	call f	1-scor	e suppoi	rt
1 2 3	_	0 1	.00 .00 .00	1.00 1.00 1.00	3 2 3	
4	1.0		.00	1.00	1	
accur	асу			1.00	9	
macro weighted	_	1.00 1.00	1.0 1.	00 1 00	1.00 1.00	9 9

Sentence: i <unk> like to see the flights from atlanta to washington dc

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

PROPN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 0.67 1.00 0.80 2 3 1.00 1.00 1.00 1 2 4 1.00 1.00 1.00 5 1 1.00 1.00 1.00 1 6 1.00 1.00 1.00 8 1.00 1.00 1.00 1 12 0.00 1 1.00 0.00 12 accuracy 0.92 macro avg 0.96 88.0 0.85 12 weighted avg 0.94 0.92 0.88 12

Sentence: i <unk> sorry i want to book a flight from atlanta to denver colorado

True tags: PRON AUX ADJ PRON VERB ADP VERB DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON AUX VERB PRON VERB VERB DET NOUN ADP

PROPN ADP PROPN PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	0.67	0.80	3
3	1.00	1.00	1.00	1
4	0.50	1.00	0.67	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	2
7	1.00	0.00	0.00	1

8 1.00 1.00 1.00 1 0.86 14 accuracy macro avg 0.94 0.83 0.81 14 weighted avg 0.84 14 0.93 0.86

Sentence: i would like a list of round trip flights between indianapolis and orlando florida for the twenty seventh and the twenty eighth of december

True tags: PRON AUX VERB DET NOUN ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET NUM ADJ CCONJ DET NUM ADJ ADP NOUN Predicted tags: PRON AUX VERB DET VERB ADP NOUN NOUN NOUN ADP PROPN PROPN CCONJ ADP ADP DET ADJ ADJ ADJ DET ADJ ADJ ADP PROPN Classification Report:

р	recision	recall	f1-score	supp	ort
1	0.33	0.33	0.33	3	
2	0.80	1.00	0.89	4	
3	1.00	0.60	0.75	5	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	3	
6	1.00	1.00	1.00	1	
7	0.40	1.00	0.57	2	
8	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	2	
10	0.00	0.00	0.00	2	
accurac	СУ		0.67	24	
macro a weighted	•		.69 0.6 0.67 0.	63	24 24
woigilica	avg 0	., .	0.01	00	

Sentence: may i have a listing of flights on monday from minneapolis to long beach california please

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP NOUN ADP PROPN ADP PROPN PROPN INTJ

Predicted tags: PROPN PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN PROPN PROPN PROPN

	prec	ision	recal	l f1-score	e supp	ort
1		0.67	1.00	0.80	4	
2		1.00	1.00	1.00	4	
3		1.00	1.00	1.00	3	
4		1.00	1.00	1.00	1	
5		1.00	1.00	1.00	1	
6		1.00	1.00	1.00	1	
8		1.00	0.00	0.00	1	
13	3	1.00	0.00	0.00	1	
accur	асу			0.88	16	
macro	avg	0.	96	0.75 0	.72	16

weighted avg 0.92 0.88 0.82 16

Sentence: please give all flights from dallas to oakland california monday

True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN

Predicted tags: VERB VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN

Classification Report:

	pred	cisior	n re	call	f1-s	core	supp	ort
							_	
1		1.00	1	.00	1.0	00	3	
2		1.00	1	.00	1.0	00	2	
3		1.00	1	.00	1.0	00	2	
4		0.50	1	.00	0.0	67	1	
5		1.00	1	.00	1.0	00	1	
13	3	1.00	) (	0.00	0.	.00	1	
accur	асу				0.9	90	10	
macro	avg		0.92	0	.83	0.7	<b>7</b> 8	10
weighte	d av	g	0.95		0.90	0.	87	10
_		-						

Sentence: on tuesday the twenty third flights from philadelphia to san francisco on american airlines

True tags: ADP NOUN DET NUM ADJ NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

Predicted tags: ADP NOUN DET NOUN ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1		00	1.00	1.00		5
2	1.	00	1.00	1.00	0 .	4
3	0.	67	1.00	0.80	0 :	2
5	1.	00	1.00	1.00	0	1
7	1.	00	1.00	1.00	0	1
9	1.	00	0.00	0.00	0	1
accur	acy			0.93	3 1	4
macro weighted	•	0.9	-	0.83 0.93	0.80	14 14
3						

Sentence: what is the cheapest first class fare from cleveland to miami on us air on february twenty fourth

True tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ

Predicted tags: PRON AUX DET NOUN ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4

3	0.50	1.0	00	0.67	3	
5	1.00	1.0	0	1.00	1	
6	1.00	1.0	00	1.00	1	
7	1.00	0.3	3	0.50	3	
8	1.00	1.0	00	1.00	1	
9	1.00	0.0	00	0.00	1	
accurac	У			0.83	18	
macro a	vg (	0.94	0.79	9 (	).77	18
weighted a	avg	0.92	0.8	3	0.81	18

Sentence: cheapest round trip fare from or indianapolis to orlando on december twenty fifth

True tags: ADJ NOUN NOUN NOUN ADP CCONJ PROPN ADP PROPN ADP NOUN NUM ADJ

Predicted tags: NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN PROPN

Classification Report:

		- 1						
	pred	cisior	n re	call	f1-s	core	supp	ort
1		0.50	1.	00	0.0	67	2	
2		1.00		00		00	3	
3	}	0.67	1.	00	0.0	80	4	
7	•	1.00	0.	00	0.0	00	2	
9	)	1.00	0.	00	0.0	00	1	
10	)	1.00	0	.00	0.	.00	1	
accur	acy				0.6	89	13	
macro	avg	(	0.86	0	.50	0.4	1	13
weighte	d av	9	0.82	(	0.69	0.	58	13

Sentence: i would like to fly from dallas to denver on the morning of august twenty seventh leaving at <unk>

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN NUM ADJ VERB ADP NUM

Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN NOUN VERB ADP PROPN

	precision		f1-score	support
1	0.67	1.00	0.80	2
2	0.83	1.00	0.91	5
3	0.50	1.00	0.67	2
4	1.00	1.00	1.00	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
9	1.00	0.00	0.00	2
12	1.00	0.00	0.00	1

accuracy		0.7	9 1	9
macro avg	0.90	0.70	0.64	19
weighted avg	0.87	0.79	0.71	19

Sentence: give me the flights from indianapolis to orlando on december twenty seventh and twenty eighth

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ CCONJ NUM ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN CCONJ ADP

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	0.75	1.00	0.86	3	
3	0.40	1.00	0.57	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	2	
9	1.00	0.00	0.00	2	
10	0.00	0.00	0.00	1	
accura	асу		0.67	15	
macro weighted	9		.67 0.6 0.67 0.	60 58	15 15
	, u ' y '		0.0, 0.	00	. 0

Sentence: i would like to book a flight going from tampa to seattle on may twenty sixth i would like to stop in milwaukee on the way

True tags: PRON AUX VERB PART VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN NUM ADJ PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN AUX VERB ADP VERB ADP PROPN ADP DET NOUN

	precision	recall	f1-score	support
1	0.50	1.00	0.67	3
2	0.71	1.00	0.83	5
3	0.67	0.67	0.67	3
4	1.00	0.80	0.89	5
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	2
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	2
9	1.00	0.00	0.00	1
12	1.00	0.00	0.00	2

accuracy		0.7	7 2	6
macro avg	0.89	0.65	0.61	26
weighted avg	0.85	0.77	0.72	26

Sentence: what is the cheapest one way fare from san francisco to boston on wednesday august twenty first

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM ADJ

Predicted tags: PRON AUX DET NOUN PROPN NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NOUN

Classification Report:

	precis	sion	recall	f1-sco	re sup	port
1	0.	75	1.00	0.86	3	
2	1.	.00	1.00	1.00	3	
3	0.	.57	1.00	0.73	3 4	
5	1.	.00	1.00	1.00	) 1	
6	1.	.00	1.00	1.00	) 1	
7	1.	.00	0.00	0.00	2	
8	1.	.00	1.00	1.00	1	
9	1.	.00	0.00	0.00	2	
accur	асу			0.76	17	
macro	avg	0.9	2 0	.75	0.70	17
weighted	d avg	0.0	36	0.76	0.68	17

Sentence: which flights are available from tacoma to san jose in the morning on april twenty second

True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP NOUN NUM ADJ

Predicted tags: DET NOUN VERB VERB ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN PROPN NOUN

Classification Report:

Ciaconio	auoni	Jport.				
	precisio	n red	call f	1-sco	re supp	ort
1	0.60	0 1.	00	0.75	3	
2	1.00	) 1.	00	1.00	4	
3	0.67	7 0.	67	0.67	3	
4	0.00	0 1.	00	0.00	0	
5	1.00	0 1.	00	1.00	2	
7	1.00	0.	00	0.00	2	
8	1.00	0.	00	0.00	1	
9	1.00	0.	00	0.00	1	
accur	асу			0.69	16	
macro weighted	•	0.78 0.86	0.5 0.	58 69	0.43 0.64	16 16
9	U					

Sentence: list all round trip flights between indianapolis and orlando on the twenty seventh of december

True tags: VERB DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN ADP DET

NUM ADJ ADP NOUN

Predicted tags: VERB DET NOUN NOUN NOUN ADP PROPN PROPN CCONJ ADP

DET NOUN NOUN ADP NOUN

Classification Report:

Ciassillo	auoni	(CPOI)				
	precis	sion	recall	f1-sco	re supp	ort
1	0.	50	0.50	0.50	2	
2	1.	00	1.00	1.00	3	
3	0.	67	1.00	0.80	4	
4	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	2	
7	1.	00	0.00	0.00	1	
9	1.	00	0.00	0.00	1	
10	0	.00	0.00	0.00	) 1	
accur	асу			0.73	15	
macro	avg	0.77	7 0	.56	0.54	15
weighted	d avg	0.7	'8 (	0.73	0.68	15

Sentence: what is hp

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

ı	precision		recall f1-score			ipport	t
1	1.0	0 0.	00	0.00	)	1	
6	1.0	0 1.	00	1.00	)	1	
8	0.5	0 1.	00	0.67	7	1	
accura	су			0.67		3	
macro a	avg	0.83	0.6	67	0.56	3	,
weighted	avg	0.83	0.	67	0.56		3

Sentence: define airline us

True tags: VERB NOUN PROPN Predicted tags: DET NOUN PROPN

Classification Report:

	precision		call f1	l-scor	e suppo	rt
1	1.0	0 1.	00	1.00	1	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 0.	00	0.00	1	
5	0.0	0 1.	00	0.00	0	
accur	асу			0.67	3	
macro weighted	_	0.75 1.00	0.79 0.6		.50 0.67	3 3

Sentence: code ff

True tags: NOUN PROPN Predicted tags: NOUN NOUN

Classification Report:

pr	ecision	recall	f1-sco	re supp	ort
1	1.00	0.00	0.00	) 1	
3	0.50	1.00	0.67	1	
accurac	y		0.50	2	
macro av	/g 0.	75 C	).50	0.33	2
weighted a	ıvg 0	.75	0.50	0.33	2

Sentence: from las vegas to new york a nonstop twa and fare

True tags: ADP PROPN PROPN ADP PROPN PROPN DET NOUN PROPN CCONJ

NOUN

Predicted tags: ADP PROPN PROPN ADP PROPN PROPN DET NOUN NOUN

PROPN NOUN

Classification Report:

	precision		reca	all	f1-sc	ore	supp	ort
1	0	.80	0.8	0	0.8	0	5	
2	1	.00	1.0	0	1.0	0	2	
3	0	.67	1.0	0	0.8	0	2	
5	1	.00	1.0	0	1.0	0	1	
10	) '	1.00	0.0	00	0.0	0	1	
accur	acy				0.82	2	11	
macro	avg	3.0	39	0.	.76	0.7	2	11
weighte	d avg	0.	85	(	0.82	0.	78	11

Sentence: airline that stands for dl

True tags: NOUN ADP VERB ADP PROPN Predicted tags: NOUN ADP VERB ADP PROPN

Classification Report:

	precision		recall f1-sco		upport
1	1.00	1.0	0 1.	00	1
2	1.00	1.0	0 1.	00	2
3	1.00	1.0	0 1.	.00	1
4	1.00	1.0	0 1.	.00	1
accura	асу		1.0	00	5
macro	avg	1.00	1.00	1.00	5
weighted	d avg	1.00	1.00	1.00	5

Sentence: list round trip flights between boston and oakland using twa

True tags: VERB NOUN NOUN NOUN ADP PROPN CCONJ PROPN VERB

PROPN

Predicted tags: VERB NOUN NOUN NOUN ADP PROPN PROPN PROPN

**PROPN** 

## Classification Report:

	precision		recall	f1-so	core	supp	ort
1	0.0	60	1.00	0.7	75	3	
2	1.0	00	1.00	1.0	00	1	
3	1.0	00	1.00	1.0	00	3	
4	1.0	00	0.50	0.6	37	2	
10	) 1.	.00	0.00	0.	00	1	
accura	acy			8.0	0	10	
macro	avg	0.9	2 (	).70	0.6	8	10
weighted	d avg	0.	88	0.80	0.7	76	10

Sentence: i <unk> like a twa flight from las vegas to new york nonstop

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN

Predicted tags: PRON AUX VERB DET DET NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN Classification Report:

	p								
1	1.	00	0.8	0	0.8	9	5		
2	1.	00	1.0	0	1.0	0	2		
3	1.	00	1.0	0	1.0	0	2		
4	1.	00	1.0	0	1.0	0	1		
5	0.	50	1.0	0	0.6	7	1		
6	1.	00	1.0	0	1.0	0	1		
8	1.	00	1.0	0	1.0	0	1		
accur	acy				0.92	2	13		
macro	_	0.9		0.9		0.9		13	
weighte	d avg	0	.96	0.	92	0.9	93	13	

precision recall f1-score support

Sentence: what airline is <unk>
True tags: DET NOUN AUX PROPN

Predicted tags: PRON NOUN PROPN PROPN

Classification Report:

	prec	ision	recall	f1-sco	ore si	upport
1	C	).50	1.00	0.6	7	1
3	3 1	1.00	1.00	1.00	)	1
5	5 1	1.00	0.00	0.0	C	1
6	6 (	0.00	1.00	0.0	<b>C</b>	0
8	3 1	1.00	0.00	0.0	)	1
accur	•			0.50		4
macro weighte	_	0.7 0.		.60 0.50	0.33 0.42	4 4

Sentence: what airline is dl

True tags: DET NOUN AUX PROPN

Predicted tags: PRON NOUN PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore	supp	ort
1	0.	50	1.00	0.6	7	1	
3	1.	00	1.00	1.0	0	1	
5	1.	00	0.00	0.0	0	1	
6	0.	00	1.00	0.0	0	0	
8	1.	00	0.00	0.0	0	1	
accur	acy			0.5	0	4	
macro	avg	0.7	<b>7</b> 0 C	0.60	0.33	3	4
weighted	d avg	0.	88	0.50	0.4	2	4

Sentence: find a flight between denver and oakland the flight should leave in the

afternoon and arrive near 5 pm the flight should also be nonstop

True tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN AUX VERB ADP DET NOUN CCONJ VERB ADP NUM NOUN DET NOUN AUX ADV AUX NOUN

Predicted tags: VERB DET NOUN ADP PROPN PROPN DET NOUN NOUN PROPN ADP DET NOUN NOUN NOUN NOUN NOUN DET NOUN NOUN NOUN PROPN NOUN

Classification Report:

	precision		recall f1-score		re supp	ort
1	0.	40	1.00	0.57	2	
2	1.	00	0.67	0.80	3	
3	0.	46	1.00	0.63	6	
4	1.	00	0.33	0.50	3	
5	1.	00	1.00	1.00	4	
8	1.	00	0.00	0.00	3	
9	1.	00	0.00	0.00	1	
10	) 1	.00	0.00	0.00	) 2	
11	1	.00	0.00	0.00	) 1	
accura macro weighted	avg	8.0 3.0		0.60 .44 0.60	25 0.39 0.51	25 25
Worgine	auvg	0.0	<i></i>	0.00	0.01	20

Sentence: i need a flight on american airlines from miami to chicago that arrives around 5 pm

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

PROPN ADP VERB ADP NOUN NOUN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 4

2	1.00	1.0	0 1	.00	5	
3	0.67	1.0	0 0	08.0	2	
4	1.00	1.0	0 1	.00	2	
5	1.00	1.0	0 1	.00	1	
6	1.00	1.0	0 1	.00	1	
9	1.00	0.0	0 0	0.00	1	
accurac	у		0	.94	16	
macro a	vg (	0.95	0.86	0.	83	16
weighted a	avg	0.96	0.94	1 0	.91	16

Sentence: flights from kansas city to cleveland on wednesday arriving before 5 pm True tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Predicted tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADP NOUN NOUN

Classification Report:

1 1.00 1.00 1.00 3	
2 1.00 1.00 1.00 4	
3 0.60 1.00 0.75 3	
4 1.00 0.00 0.00 1	
9 1.00 0.00 0.00 1	
accuracy 0.83 12	
macro avg 0.92 0.60 0.55	12
weighted avg 0.90 0.83 0.77	12

Sentence: what flights depart baltimore on friday and arrive in san francisco by 8 pm True tags: DET NOUN VERB PROPN ADP NOUN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB VERB ADP NOUN NOUN VERB ADP PROPN PROPN ADP NOUN NOUN

	precisi	on red	call f1-s	score s	support	
1	1.0	0.0	67 0	.80	3	
2	1.0	0 1.0	00 1	.00	3	
3	0.6	0 1.0	00 0	.75	3	
4	0.6	7 1.0	00 0	.80	2	
5	1.0	0.0	00 0	.00	1	
6	0.0	0 1.0	00 0	.00	0	
9	1.0	0.0	00 0	.00	1	
10	) 1.0	00 0.	.00 (	0.00	1	
accur	асу		0.	71	14	
macro	avg	0.78	0.58	0.42	14	
weighted	d avg	0.87	0.71	0.6	6 14	4

Sentence: i <unk> like a nonstop flight from atlanta to baltimore that <unk> in around 7 pm

True tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP VERB ADP ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP PROPN PROPN NOUN

Classification Report:

precis	ion re	ecall	f1-sc	ore s	suppo	ort
0.	50 1	.00	0.6	7	2	
1.0	00 00	08.0	0.8	9	5	
1.0	00 1	.00	1.0	0	3	
1.0	00 1	.00	1.0	0	2	
1.0	00 1	.00	1.0	0	1	
1.0	00 1	.00	1.0	0	1	
1.0	00 1	.00	1.0	0	1	
1.0	00 0	00.0	0.0	0	1	
acy			0.88	3	16	
avg	0.94	0	.85	0.82		16
d avg	0.94	1 (	38.0	0.80	6	16
	0.9 1.0 1.0 1.0 1.0 1.0 acy avg	0.50 1 1.00 0 1.00 1 1.00 1 1.00 1 1.00 1 1.00 0	0.50 1.00 1.00 0.80 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00	0.50 1.00 0.6 1.00 0.80 0.8 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 0.00 0.0	0.50 1.00 0.67 1.00 0.80 0.89 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00	0.50 1.00 0.67 2 1.00 0.80 0.89 5 1.00 1.00 1.00 3 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: what nonstop flights between boston and washington arrive after 5 <unk>pm

True tags: DET NOUN NOUN ADP PROPN CCONJ PROPN VERB ADP NUM ADV NOUN

Predicted tags: PRON NOUN NOUN ADP PROPN PROPN VERB ADP NOUN PROPN NOUN

Classification Report:

	precision		recall f1-score		e supp	ort	
1	C	).50	1.00	) (	0.67	2	
2	1	.00	1.00	)	1.00	2	
3	C	).75	1.00	) (	0.86	3	
4	1	.00	1.00	)	1.00	1	
5	1	.00	0.00	) (	0.00	1	
6	C	0.00	1.00	) (	0.00	0	
9	1	.00	0.00	) (	0.00	1	
10	)	1.00	0.0	0	0.00	1	
11	l ,	1.00	0.0	)	0.00	1	
accur	•				0.67	12	
macro weighte	_	0.8 0	31 .85	0.56	_	.39 0.58	12 12

Sentence: all flights pittsburgh to baltimore on thursday arrival by 10 am

True tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP NUM NOUN Predicted tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN NOUN NOUN

NOUN

1	precisio	on re	call	f1-sc	ore su	pport
1	1.00	0 1.	00	1.00	o :	2
2	1.00	0.	67	0.8	o :	3
3	0.6	7 1.	00	0.8	) 4	4
5	1.00	0 1.	00	1.0	) .	1
9	1.00	0.	00	0.0	) ·	1
accura	су			0.82	2 1	1
macro a	avg	0.93	0	.73	0.72	11
weighted	avg	0.88	(	0.82	0.78	11

Sentence: show me all flights direct and connecting from boston to pittsburgh that arrive in pittsburgh before 10 am

True tags: VERB PRON DET NOUN ADJ CCONJ VERB ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN PROPN PROPN VERB ADP PROPN ADP PROPN ADP PROPN NOUN

Classification Report:

	preci	sion	reca	all	f1-sc	ore	supp	ort
1	0	.50	1.0	0	0.6	7	3	
2	1	.00	1.0	0	1.0	0	5	
3	1	.00	1.0	0	1.0	0	2	
4	1	.00	1.0	0	1.0	0	3	
5	1	.00	1.0	0	1.0	0	1	
6	1	.00	1.0	0	1.0	0	1	
7	1	.00	0.0	0	0.0	0	1	
9	1	.00	0.0	0	0.0	0	1	
10	) 1	1.00	0.0	0	0.0	00	1	
accur	acy				0.83	3	18	
macro	avg	0.	94	0	.67	0.6	3	18
weighted	d avg	0	.92	(	0.83	0.	78	18

Sentence: cleveland to miami on wednesday arriving before 4 pm True tags: PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN Predicted tags: ADP ADP PROPN ADP NOUN NOUN ADP VERB NOUN Classification Report:

	prec	ision	rec	all	f1-sc	core	supp	ort
1		1.00	0.5	50	0.6	67	2	
2	(	0.75	1.0	00	3.0	36	3	
3	(	0.67	1.0	00	3.0	30	2	
4	(	0.00	0.0	00	0.0	00	1	
9	•	1.00	0.0	00	0.0	00	1	
accur	acy				0.6	7	9	
macro	avg	0	.68	0	.50	0.4	6	9
weighte	d avg	(	0.73	(	0.67	0.	61	9

Sentence: show me airlines between boston and san francisco

True tags: VERB PRON NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB PRON VERB ADP PROPN PROPN PROPN PROPN

Classification Report:

	precisio	on re	call	f1-sco	re su	pport	
1	0.7	5 1.	00	0.86	;	3	
2	1.0	0 1.	00	1.00	) .	1	
3	1.0	0 0.	00	0.00	) '	1	
4	0.5	0 1.	00	0.67	,	1	
6	1.0	0 1.	00	1.00	) '	1	
10	1.0	0 0	.00	0.0	0	1	
accura	асу			0.75	8	3	
macro	avg	0.88	0.	67	0.59	8	
weighted	l avg	0.84	(	).75	0.65	8	,

Sentence: show me the airlines that fly from san francisco to boston

True tags: VERB PRON DET NOUN ÅDP VERB ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP VERB ADP PROPN PROPN ADP

**PROPN** 

Classification Report:

	precis	ion re	ecall	f1-sco	ore su	pport
1	1.0	00 1	.00	1.00	) ;	3
2	1.0	00 1	.00	1.00	) ;	3
3	1.0	00 1	.00	1.00	)	1
4	1.0	00 1	.00	1.00	) :	2
5	1.0	00 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
accur	acy			1.00	) 1	1
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	,	1.00	1.00	11

Sentence: what airlines fly from boston to denver

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
accuracy	/		0.86	7

macro avg	0.83	0.83	0.67	7
weighted avg	1.00	0.86	0.86	7

Sentence: what airlines have flights from baltimore to seattle True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call	t1-sco	re sup	port
1	1.0	0 1.	00	1.00	) 2	
2	1.0	0 1.	00	1.00	2	
3	0.6	7 1.	00	0.80	2	
4	1.0	0 0.	00	0.00	) 1	
5	1.0	0 0.	00	0.00	) 1	
6	0.0	0 1.	00	0.00	0	
accur	acy			0.75	8	
macro	avg	0.78	0.	.67	0.47	8
weighted	d avg	0.92	(	0.75	0.70	8

Sentence: what airlines have flights from boston to philadelphia that leave before 630 am

True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON NOUN NOUN NOUN ADP PROPN ADP PROPN ADP VERB ADP VERB NOUN

Classification Report:

	precisi	on re	call	f1-sco	ore sup	port
1	1.0	0 1	.00	1.00	) 2	
2	1.0	0 1.	.00	1.00	) 4	
3	0.7	5 1.	.00	0.80	3	
4	0.5	0 0	.50	0.50	2	
5	1.0	0 0	.00	0.0	) 1	
6	0.0	0 1.	.00	0.0	0 0	
9	1.0	0 0	.00	0.0	) 1	
accura	•	0.75	•	0.77	_	40
macro weighted	•	0.75 0.87	_	.64 ).77	0.48 0.74	13 13

Sentence: are there any airlines that have flights from boston to philadelphia that leave before 630 am

True tags: VERB PRON DET NOUN ADP VERB NOUN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: AUX PRON DET NOUN ADP VERB NOUN ADP PROPN ADP

PROPN ADP VERB ADP VERB NOUN

Classification Report:

precision recall f1-score support

1	1.00	1.0	00	1.0	0	2	
2	1.00	1.0	00	1.0	0	5	
3	1.00	1.0	00	1.0	0	3	
4	0.67	0.6	37	0.6	7	3	
5	1.00	1.0	00	1.0	0	1	
6	1.00	1.0	00	1.0	0	1	
8	0.00	1.0	00	0.0	0	0	
9	1.00	0.0	00	0.0	0	1	
accuracy	′			0.8	8	16	
macro av	g	0.83	0.	83	0.7	1	16
weighted a	vg	0.94	C	.88.	0.0	38	16

Sentence: show me airlines that have flights between toronto and detroit between detroit and <unk> louis and between <unk> louis and toronto

True tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ PROPN CCONJ ADP PROPN PROPN CCONJ PROPN

Predicted tags: VERB PRON VERB ADP VERB NOUN ADP PROPN PROPN CCONJ ADP PROPN CCONJ PROPN CCONJ PROPN CCONJ PROPN

Classification Report:

	preci	sion	reca	all	f1-sc	ore	supp	ort
1	0	.86	0.7	5	0.8	0	8	
2	1	.00	1.0	0	1.0	0	4	
3	1	.00	0.5	0	0.6	7	2	
4	0	.67	1.0	0	0.8	0	2	
6	1	.00	1.0	0	1.0	0	1	
10	) (	0.60	0.7	75	0.6	67	4	
accur	асу				0.8	1	21	
macro	avg	0.8	35	0	.83	8.0	32	21
weighted	d avg	0	.84	(	0.81	0.	81	21

Sentence: which airlines fly between boston and baltimore
True tags: DET NOUN VERB ADP PROPN CCONJ PROPN
Predicted tags: DET NOUN VERB ADP PROPN PROPN PROPN

	pred	ision	reca	ll f1-s	core	supp	ort
1	(	0.67	1.00	0.	80	2	
2		1.00	1.00	) 1.	.00	1	
3		1.00	1.00	) 1.	.00	1	
4		1.00	1.00	) 1.	.00	1	
5		1.00	1.00	) 1.	.00	1	
10	)	1.00	0.0	0 0	.00	1	
accur	асу			0.	86	7	
macro	avg	0.	94	0.83	3.0	30	7

weighted avg 0.90 0.86 0.80 7

Sentence: does any airline have an early afternoon flight from boston to pittsburgh True tags: AUX DET NOUN VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: PROPN VERB NOUN NOUN NOUN NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	on re	call	f1-sco	ore supp	oort
1	0.6	67 <b>1</b> .	.00	0.80	0 2	
2	1.0	00 1.	.00	1.00	2	
3	0.5	50 1.	.00	0.67	7 3	
4	0.0	0 0.	.00	0.00	) 1	
5	1.0	0 0.	.00	0.00	2	
7	1.0	0 0.	.00	0.00	) 1	
8	1.0	0 0.	.00	0.00	) 1	
accur	acy			0.58	3 12	
macro	avg	0.74	0.	.43	0.35	12
weighte	d avg	0.74	(	).58	0.47	12

Sentence: please show me airlines with flights from philadelphia to dallas True tags: INTJ VERB PRON NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB VERB PRON VERB ADP NOUN ADP PROPN Classification Report:

	prec	ision	rec	all	f1-s	core	supp	ort
1		1.00	1.0	00	1.0	00	2	
2		1.00	1.0	00	1.0	00	3	
3		1.00	0.5	50	0.0	67	2	
4		0.33	1.0	00	0.	50	1	
6		1.00	1.0	00	1.0	00	1	
13	3	1.00	0.	00	0.	.00	1	
accur	acy				3.0	30	10	
macro	avg	0.	89	0	.75	0.6	9	10
weighte	d avç	j C	0.93	(	08.0	0.	78	10

Sentence: which airlines fly from boston to san francisco

True tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

precision	recall	f1-score	support
1.00	1.00	1.00	3
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

accuracy		1.0	0 8	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: which airlines have flights between charlotte and newark True tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB NOUN ADP PROPN PROPN PROPN

Classification Report:

	precisio	n recal	l f1-scor	e support
1	0.67	7 1.00	0.80	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
10	1.0	0.00	0.00	1
				_
accura	асу		0.88	8
macro	avg	0.94	0.83	.80 8
weighted	d avg	0.92	0.88	0.82 8

Sentence: show me all flights from san francisco to new york nonstop

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN

**NOUN** 

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

PROPN NOUN

Classification Report:

	prec	ision	reca	f1-s	score	supp	ort
1	1	.00	1.00	) 1	.00	4	
2	1	.00	1.00	) 1	.00	2	
3	1	.00	1.00	) 1	.00	2	
4	1	.00	1.00	) 1	.00	1	
5	1	.00	1.00	) 1	.00	1	
6	1	.00	1.00	) 1	.00	1	
accur	acy			1.	.00	11	
macro	avg	1.0	00	1.00	1.0	00	11
weighte	d avg	1.	.00	1.00	1	.00	11

Sentence: show me nonstop flights from toronto to <unk> petersburg
True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN
Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 2 1.00 1.00 1.00 3 1.00 1.00 1.00 2

4 1	.00	1.00	1.00	)	1	
6 1	.00	1.00	1.00	)	1	
accuracy			1.00	)	9	
macro avg	1.0	0 1	.00	1.00		9
weighted avg	1.	00	1.00	1.00		9

Sentence: show me all round trip flights from miami to new york nonstop

True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Classification Report:

	precis	ion	recall	f1-sco	ore supp	oort
1	1.	00	1.00	1.00	3	
2	1.	00	1.00	1.00	2	
3	1.	00	1.00	1.00	) 4	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
accur	acy			1.00	12	
macro	avg	1.0	0 1	.00	1.00	12
weighted	d avg	1.	00	1.00	1.00	12

Sentence: nonstop flights seattle to kansas city

True tags: NOUN NOUN PROPN ADP PROPN PROPN Predicted tags: NOUN NOUN NOUN ADP PROPN PROPN

Classification Report:

preci	sion	recall	f1-sco	re sup	port
1 1	.00	0.67	0.80	) 3	
2 1	.00	1.00	1.00	) 1	
3 0	.67	1.00	0.80	) 2	
accuracy			0.83	6	
macro avg	0.89	9 0	.89	0.87	6
weighted avg	8.0	39 (	0.83	0.83	6

Sentence: i want to fly from atlanta to philadelphia nonstop

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN Predicted tags: PRON VERB ADP VERB ADP PROPN ADP PROPN NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.67	1.00	0.80	2
3	1.00	1.00	1.00	1
4	1 00	1 00	1 00	2

6	1.00	1.0	0	1.00	1	
12	1.00	0.0	00	0.00	1	
accuracy			(	0.89	9	
macro avg	0.	94	0.83	3 0	.80	9
weighted av	g 0	.93	0.8	9 (	0.84	9

Sentence: what is the earliest nonstop flight from washington to san francisco True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN

Classification Report:

	precis	ion re	ecall	f1-sc	ore sup	port
1	1.0	00 1	.00	1.0	0 3	}
2	1.0	00 1	.00	1.0	0 2	)
3	1.0	00 1	.00	1.0	0 2	)
5	1.0	00 1	.00	1.0	0 1	
6	1.0	00 1	.00	1.0	0 1	
7	1.0	00 1	.00	1.0	0 1	
8	1.0	00 1	.00	1.0	0 1	
accur	acy			1.00	) 11	
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	,	1.00	1.00	11

Sentence: please list nonstop flights from las vegas to new york on america west True tags: INTJ VERB NOUN NOUN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: VERB VERB VERB NOUN ADP PROPN PROPN ADP PROPN NOUN

Classification Report:

	pre	cisio	n	reca	all	f1-sc	ore	supp	ort
1		1.00	)	0.83	3	0.9	)1	6	
2	)	1.00	)	1.00	)	1.0	0	3	
3	,	0.50	)	0.50	)	0.5	0	2	
4	•	0.33	3	1.00	)	0.5	0	1	
13	3	1.0	0	0.0	0	0.0	00	1	
accur	асу					0.7	7	13	
macro	avg	l	0.7	7	0.	67	0.5	8	13
weighte	d av	g	3.0	37	0	.77	0.	77	13

Sentence: show me first class round trip flights from new york to miami i want the cheapest first class fare please

True tags: VERB PRON ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN INTJ

Predicted tags: VERB PRON PRON NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN PRON VERB DET NOUN NOUN NOUN NOUN NOUN

## Classification Report:

	precision	n recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	0.67	1.00	0.80	6	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	0.67	1.00	0.80	2	
7	1.00	0.00	0.00	3	
13	1.00	0.00	0.00	1	
accura	асу		0.80	20	
macro	avg (	0.92 (	).75 0.	70	20
weighted	l avg	0.87	0.80 0	.72	20

Sentence: show me which flights from san francisco to pittsburgh on a monday are first class

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN AUX ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN NOUN DET NOUN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	0.75	1.00	0.86	3	
4	1.00	1.00	1.00	1	
5	0.67	1.00	0.80	2	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	0.00	0.00	1	
accurac	:y		0.87	15	
macro a	vg 0.9	93 0	.75 0.7	<b>7</b> 1	15
weighted a	avg 0	.91 (	0.87 0.	81	15

Sentence: give me flights from baltimore to denver on united that offer first class True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN ADJ NOUN

Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP PROPN ADP ADP DET NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	0.80	1.00	0.89	4
3	1.00	0.67	0.80	3
4	1 00	1 00	1 00	1

	5	0.0	0	1.0	00	0.0	0	0	
	6	1.0	0	1.0	00	1.0	0	1	
	7	1.0	0	0.0	0	0.0	0	1	
ac	curac	y				0.8	5	13	
ma	cro av	/g	0.	83	0.8	31	0.67	•	13
weigh	nted a	ıvg	0	.94	0	.85	8.0	4	13

Sentence: first class flights pittsburgh to newark monday morning True tags: ADJ NOUN NOUN PROPN ADP PROPN NOUN NOUN Predicted tags: DET NOUN NOUN PROPN ADP PROPN NOUN NOUN

Classification Report:

	precision		recall f1-		ore s	upport
1	1.0	00 -	1.00	1.0	0	2
2	1.0	00 1	1.00	1.0	0	1
3	1.0	00 1	1.00	1.0	0	4
5	0.0	00 1	1.00	0.0	0	0
7	1.0	00 (	0.00	0.0	0	1
accur	acy			0.8	8	8
macro	avg	0.80	0	.80	0.60	8
weighted	d avg	1.00	) (	38.0	0.88	8

Sentence: first class fares from dallas to baltimore please True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN INTJ

Predicted tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sco	re sup	port
1 2	_	67 00	1.00 1.00	0.80 1.00		
3	1.	.00	1.00	1.00	2	
5 7	_	.00	1.00	0.00		
13		.00	0.00	0.00		
accur macro	•	0.78	8 0	0.75 .67	8 0.47	8
weighte	•	0.9		0.75	0.70	8

Sentence: show me all united airlines first class flights

True tags: VERB PRON DET PROPN PROPN ADJ NOUN NOUN

Predicted tags: VERB PRON DET NOUN PROPN PROPN NOUN NOUN

Classification Report:

precision recall f1-score support 1 0.50 0.50 0.50 2 3 2 0.67 1.00 0.80 1.00 1.00 1.00 1

5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
7	1.00	0.	00	0.00	1	
accurac	V		(	0.75	8	
macro av	•	0.86	0.75		.72	8
weighted a	_	0.79	0.7	'5 (	0.70	8

Sentence: first class price san francisco pittsburgh round trip

True tags: ADJ NOUN NOUN PROPN PROPN NOUN NOUN Predicted tags: DET NOUN NOUN PROPN PROPN PROPN NOUN NOUN

Classification Report:

precision recall f1-score support 1.00 1 1.00 1.00 3 3 1.00 1.00 1.00 4 5 0.00 1.00 0.00 0 7 1.00 1 0.00 0.00 88.0 8 accuracy 0.75 0.75 0.50 8 macro avg weighted avg 1.00 0.88 88.0 8

Sentence: how much is a first class ticket from baltimore to san francisco True tags: ADV ADV AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: VERB VERB AUX DET DET NOUN NOUN ADP PROPN ADP

PROPN PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 2 1.00 1.00 1.00 3 2 1.00 1.00 1.00 4 0.00 0 1.00 0.00 5 0.50 1.00 0.67 1 7 1.00 0.00 0.00 1 8 1.00 1.00 1.00 1 1.00 11 0.00 0.00 2 12 0.75 accuracy 0.58 12 macro avq 0.81 0.75 0.75 weighted avg 0.96 0.72 12

Sentence: first class american flight from philadelphia to dallas on wednesday True tags: ADJ NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: DET NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

precision recall f1-score support

1	1.00	) 1.	00	1.0	0	3	
2	1.00	) 1.	00	1.0	0	3	
3	1.00	) 1.	00	1.0	0	3	
5	0.00	) 1.	00	0.0	0	0	
7	1.00	0.	00	0.0	0	1	
accurac	У			0.90	)	10	
macro av	/g	0.80	3.0	30	0.60		10
weighted a	ıvg	1.00	0.	.90	0.90	)	10

Sentence: show flights first class on american airlines between dallas and

philadelphia

True tags: VERB NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN CCONJ PROPN

Predicted tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN

Classification Report:

	precision		recall f1-score		re supp	ort
1	0.	80	1.00	0.89	4	
2	1.	00	1.00	1.00	2	
3	0.	67	1.00	0.80	2	
4	1.	00	1.00	1.00	1	
7	1.	00	0.00	0.00	1	
10	) 1	.00	0.00	0.00	) 1	
accur	acy			0.82	11	
macro	avg	0.9	1 0	.67	0.61	11
weighted	d avg	0.0	87 (	0.82	0.74	11

Sentence: what are the first class fares from dallas to baltimore

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET DET NOUN NOUN ADP PROPN ADP PROPN Classification Report:

	precis	sion	reca	all f	1-sc	ore	supp	ort
1	1.	00	1.0	0	1.0	0	2	
2	1.	00	1.0	0	1.0	0	2	
3	1.	00	1.0	0	1.0	0	2	
5	0.	50	1.0	0	0.6	7	1	
6	1.	00	1.0	0	1.0	0	1	
7	1.	00	0.0	0	0.0	0	1	
8	1.	00	1.0	0	1.0	0	1	
accur	acy				0.90	)	10	
macro	•	0.9		3.0		0.8		10
weighte	d avg	0	.95	0.	90	3.0	37	10

Sentence: show me one way flights from tampa to <unk> louis departing before 10 am first class

True tags: VERB PRON NUM NOUN NOUN ADP PROPN ADP PROPN PROPN

VERB ADP NUM NOUN ADJ NOUN

Predicted tags: VERB PRON VERB NOUN NOUN ADP PROPN ADP PROPN PROPN VERB ADP NOUN NOUN NOUN NOUN

Classification Report:

	precis	sion	reca	all t	1-sc	ore	supp	ort
1	1.	00	1.00	0	1.0	0	3	
2		00	1.00		1.0		3	
3	0.	67	1.00	0	0.8	0	4	
4	0.	67	1.00	C	8.0	0	2	
6	1.	00	1.00	C	1.0	0	1	
7	1.	00	0.00	0	0.0	0	1	
9	1.	00	0.00	0	0.0	0	2	
accur	acy				0.8	1	16	
macro	avg	0.9	90	0.7	71	0.6	6	16
weighted	d avg	0	.88	0.	.81	0.7	74	16

Sentence: what flights leave san francisco on monday night and arrive at atlanta later in the evening

True tags: DET NOUN VERB PROPN PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN ADJ ADP DET NOUN

Predicted tags: PRON NOUN VERB PROPN PROPN ADP NOUN NOUN VERB VERB ADP PROPN PROPN ADP DET NOUN

Classification Report:

	prec	ision	rec	call	f1-sc	ore	supp	ort
1	(	).75	1.0	00	0.8	6	3	
2		1.00	1.0	00	1.0	0	3	
3	•	1.00	1.0	00	1.0	0	4	
4	. (	0.67	1.0	00	0.8	0	2	
5	•	1.00	0.	50	0.6	7	2	
6	(	0.00	1.0	00	0.0	0	0	
7	•	1.00	0.0	00	0.0	0	1	
10	)	1.00	0.	.00	0.0	00	1	
accur	acy				0.8	1	16	
macro	_		.80		.69	0.5		16
weighte	d avg	(	0.91	(	0.81	0.	78	16

Sentence: please list all flights into denver before noon on united airlines and northwest airlines

True tags: INTJ VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN CCONJ PROPN PROPN

Predicted tags: VERB VERB DET NOUN NOUN PROPN ADP VERB ADP PROPN PROPN PROPN PROPN

Classification Report:

precision recall f1-score support

1	0.83	1.00	0.91	5	
2	1.00	0.67	0.80	3	
3	0.50	0.50	0.50	2	
4	0.33	1.00	0.50	1	
5	1.00	1.00	1.00	1	
10	1.00	0.00	0.0	0 1	
13	1.00	0.00	0.0	0 1	
accuracy	/		0.71	14	
macro av	g 0.8	31 0	0.60	0.53	14
weighted a	vg 0	.82	0.71	0.67	14

Sentence: what are the coach fares for flights from pittsburgh to denver

True tags: PRON AUX DET PROPN NOUN ADP NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN NOUN ADP NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precisi	on r	ecall	f1-sco	ore su	pport
1	1.0	00	0.67	0.80	) 3	3
2	1.0	00	1.00	1.00	) 3	3
3	0.6	67	1.00	0.80	) 2	2
5	1.0	00	1.00	1.00	) 1	1
6	1.0	00	1.00	1.00	) 1	1
8	1.0	00	1.00	1.00	) 1	1
accur	acy			0.91	11	1
macro	avg	0.94	. 0	.94	0.93	11
weighted	d avg	0.9	4 (	0.91	0.91	11

Sentence: what are the flights on tuesday october first from atlanta to baltimore True tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 0.67 0.80 3 2 1.00 1.00 1.00 3 3 2 0.50 1.00 0.67 5 1.00 1 1.00 1.00 6 1.00 1 1.00 1.00 7 1.00 0.00 0.00 1 8 1.00 1.00 1.00 1 0.83 12 accuracy macro avg 0.93 0.81 0.78 12 weighted avg 0.92 0.83 0.81 12 Sentence: what are the coach fares from la to charlotte monday morning

True tags: PRON AUX DET PROPN NOUN ADP PROPN ADP PROPN NOUN

**NOUN** 

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN NOUN

NOUN

Classification Report:

	precisi	on i	recall	f1-sc	ore	suppo	ort
1	1.0	0	0.67	0.8	80	3	
2	1.0	0	1.00	1.0	0	2	
3	0.7	5	1.00	8.0	86	3	
5	1.0	0	1.00	1.0	0	1	
6	1.0	0	1.00	1.0	0	1	
8	1.0	0	1.00	1.0	0	1	
accur	acy			0.9	1	11	
macro	avg	0.96	6 0	.94	0.94	ļ	11
weighted	d avg	0.9	3 (	0.91	0.9	1	11

Sentence: show me dallas ground transport True tags: VERB PRON PROPN NOUN NOUN Predicted tags: VERB PRON VERB NOUN NOUN

Classification Report:

precis	sion	recall	f1-sco	re supp	ort
4 4	00	0.00	0.00		
1 1.	.00	0.00	0.00	) 1	
3 1	.00	1.00	1.00	2	
4 0	.50	1.00	0.67	' 1	
6 1	.00	1.00	1.00	1	
accuracy			0.80	5	
macro avg	0.8	8 0	.75	0.67	5
weighted avg	0.9	90 (	0.80	0.73	5

Sentence: show me ground transportation in denver True tags: VERB PRON NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN

	precis	ion r	ecall	f1-sco	re su	pport
1	1.0	00 1	00.1	1.00	) '	1
2	1.0	00 1	00.1	1.00	) '	1
3	1.0	00 1	00.1	1.00	) 2	2
4	1.0	00 1	1.00	1.00	) '	1
6	1.0	00 1	00.1	1.00	) .	1
accur	acy			1.00	6	6
macro	avg	1.00	1	.00	1.00	6
weighte	_	1.00	)	1.00	1.00	6

Sentence: what ground transport is available in minneapolis

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX AUX ADP PROPN

Classification Report:

	precision	recal	l f1-sco	ore sup	port
1	1.00	1.00	1.00	) 1	
2	1.00	1.00	1.00		
3	1.00	1.00	1.00	) 2	
5	1.00	0.00	0.00	) 1	
6	0.00	1.00	0.00	0 0	
7	1.00	0.00	0.00	) 1	
8	0.50	1.00	0.67	7 1	
accura	•		0.71		
macro	avg (	).79 (	0.71	0.52	7
weighted	l avg	0.93	0.71	0.67	7

Sentence: please show me ground transportation in denver True tags: INTJ VERB PRON NOUN NOUN ADP PROPN

Predicted tags: VERB VERB PRON NOUN NOUN ADP PROPN

Classification Report:

Ciacomic	auo	Opoi	٠.			
	precisi	on	recall	f1-sc	ore su	upport
1	1.0	ın	1.00	1.00	<b>1</b>	1
2	1.0		1.00	1.00		1
3	1.0		1.00	1.00		2
4	0.5		1.00	0.6		1
6	1.0	0	1.00	1.00	)	1
13	1.0	00	0.00	0.0	0	1
accura	асу			0.86	3	7
macro	avg	0.9	2 0	.83	0.78	7
weighted	lavg	0.9	93	0.86	0.81	7

Sentence: what kind of ground transportation is there in dallas

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN Predicted tags: PRON AUX ADP NOUN NOUN PROPN DET ADP PROPN

	auon nopo			
	precision	recall	f1-score	support
1	0.50	1.00	0.67	1
2	1.00	1.00	1.00	2
3	1.00	0.67	0.80	3
4	1.00	0.00	0.00	1
5	0.00	0.00	0.00	1
6	0.00	0.00	0.00	1
8	0.00	1.00	0.00	0
accura	асу		0.56	9

macro avg	0.50	0.52	0.35	9
weighted avg	0.72	0.56	0.56	9

Sentence: what ground transportation is available in charlotte

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN PROPN PROPN ADP PROPN

Classification Report:

	precision	recall	f1-score	suppo	ort
1	0.33	1.00	0.50	1	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
7	1.00	0.00	0.00	1	
8	1.00	0.00	0.00	1	
accura	асу		0.57	7	
macro	avg 0.	76 0	.57 0.3	36	7
weighted	lavg 0	.90 (	0.57 0.	50	7

Sentence: what <unk> the ground transportation like at pittsburgh True tags: PRON AUX DET NOUN NOUN VERB ADP PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP ADP PROPN Classification Report:

0.0000		···					
	precis	sion	recall	f1-sco	ore s	uppo	ort
1	1.	.00	1.00	1.00	)	1	
2	0.	50	1.00	0.6	7	1	
3	1.	.00	1.00	1.00	)	2	
4	. 1.	.00	0.00	0.0	)	1	
5	1.	.00	1.00	1.00	)	1	
6	1.	.00	1.00	1.00	)	1	
8	1.	.00	1.00	1.00	)	1	
accur	acy			0.88	}	8	
macro	avg	0.9	93 0	.86	0.81		8
weighte	d avg	0	.94	88.0	0.83	3	8

Sentence: ground transportation in baltimore

True tags: NOUN NOUN ADP PROPN

Predicted tags: NOUN NOUN ADP PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
accuracy	/		1.00	4

macro avg	1.00	1.00	1.00	4
weighted avg	1.00	1.00	1.00	4

Sentence: what ground transportation is there in dallas True tags: DET NOUN NOUN AUX PRON ADP PROPN

Predicted tags: PRON NOUN NOUN PROPN AUX ADP PROPN

Classification Report:

	precision	on re	call	f1-scc	re su	ıpport
1	0.5	0 1.	00	0.67	7	1
2	1.0	0 1.	00	1.00	)	1
3	1.0	0 1.	00	1.00	)	2
5	1.0	0 0.	00	0.00	)	1
6	0.0	0 0.	00	0.00	)	1
8	0.0	0 0.	00	0.00	)	1
accur	acy			0.57	7	7
macro	avg	0.58	0.	.50	0.44	7
weighted	d avg	0.64	(	).57	0.52	7

Sentence: what ground transportation is available in baltimore

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

precision recall f1-score support

Predicted tags: PRON NOUN NOUN PROPN PROPN ADP PROPN

Classification Report:

							- 1	
	1	0.33	3 1	.00	0	.50	1	
	2	1.00	) 1	.00	1	.00	1	
	3	1.00	) 1	.00	1	.00	2	
	5	1.00	) (	00.0	0	.00	1	
	6	0.00	) 1	.00	0	.00	0	
	7	1.00	) (	00.0	0	.00	1	
	8	1.00	) (	00.0	0	.00	1	
accu	ıracy				0.	57	7	
macr	o avg	J	0.76		0.57	0.	36	7
weight	ed av	g	0.90	)	0.57	C	).50	7

Sentence: ground transport phoenix True tags: NOUN NOUN PROPN Predicted tags: NOUN NOUN PROPN

	precision		ecall	f1-s	1-score		ort
1	1.0		1.00		00	1	
3	1.0	0 ′	1.00	1.0	00	2	
accura	асу			1.0	00	3	
macro	avg	1.00	1	.00	1.0	0	3
weighted	l avg	1.00	)	1.00	1.0	00	3

Sentence: show me information on ground transportation for dallas True tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN

Classification Report:

	precision	on re	call f1-s	score s	upport
1	1.0	0 1.	00 1	.00	1
2	1.0	0 1.	00 1	.00	2
3	1.0	0 1.	00 1	.00	3
4	1.0	0 1.	00 1	.00	1
6	1.0	0 1.	00 1	.00	1
accur	асу		1.	.00	8
macro weighted	_	1.00 1.00	1.00 1.00	1.00 1.00	8 ) 8

Sentence: i would like an american flight from toronto to san diego with a stopover in denver please

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN INTJ

Predicted tags: PRON AUX VERB VERB PROPN NOUN ADP PROPN ADP PROPN

PROPN ADP DET NOUN ADP PROPN PROPN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	0.83	1.00	0.91	5	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	1	
5	1.00	0.50	0.67	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accurac	;y		0.88	17	
macro a weighted a	•		.81 0.7 0.88 0.	'8 86	17 17
_	•				

Sentence: can i go from boston to san francisco with a stopover in denver

True tags: AUX PRON VERB ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN

Predicted tags: VERB PRON PRON ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 1.00 1.00 1.00 4 3 1.00 1.00 1.00 1

4	0.0	00	0.00	0.	.00	1	
5	1.0	00	1.00	1.	.00	1	
6	0.5	0	1.00	0.	67	1	
8	1.0	0	0.00	0.	.00	1	
accura	асу			0.	85	13	
macro	avg	0.79	) (	0.71	0.6	57	13
weighted	l avg	0.8	8	0.85	0.	82	13

Sentence: please show me flights from boston to denver with a stopover in philadelphia

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Predicted tags: VERB VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Classification Report:

	precis	sion	recal	l f1-s	score	supp	ort
1	1	.00	1.00	1	.00	3	
2	1	.00	1.00	1	.00	4	
3	1	.00	1.00	1	.00	2	
4	0	.50	1.00	0	.67	1	
5	1	.00	1.00	1	.00	1	
6	1	.00	1.00	1	.00	1	
13	3 1	.00	0.00	) (	0.00	1	
accur	асу			0.	.92	13	
macro	avg	0.9	3	0.86	3.0	31	13
weighted	d avg	0.	96	0.92	0.	90	13

Sentence: show me the flights from new york to los angeles with stop in milwaukee True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP ADP PROPN PROPN

Classification Report:

	prec	ision	reca	all	f1-sc	ore	supp	ort
1	1	.00	1.0	0	1.0	00	5	
2	2 (	08.0	1.0	0	8.0	89	4	
3	3 1	.00	0.5	0	0.6	67	2	
4	. 1	.00	1.0	0	1.0	0	1	
5	5 1	.00	1.0	0	1.0	0	1	
6	; 1	.00	1.0	0	1.0	0	1	
accur	асу				0.9	3	14	
macro weighte	_		.97 ).94		.92 ).93	0.9 0.	3 92	14 14

Sentence: are there any flights from denver to pittsburgh with stops in atlanta

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP

**PROPN** 

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

			•-			
	precis	ion	recall	f1-sco	ore sup	port
		_				
1	0.	75	1.00	0.86	3	
2	1	00	1.00	1.00	) 4	
3	1.	00	0.50	0.67	7 2	
4	1.	00	0.00	0.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
8	Λ	00	1.00	0.00	) ()	
O	0.	00	1.00	0.00	, ,	
accur	асу			0.83	3 12	<u>)</u> -
macro	avg	0.8	2 0	.79	0.65	12
	_	0.9	34 (	0.83	0.83	12
weighte	u avy	0.3	94 (	0.03	0.63	12

Sentence: are there any flights from boston to san francisco which stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB

NOUN ADP PROPN Classification Report:

	precisio	on re	call	f1-scc	re supp	ort
1	1.0	0 1.	00	1.00	) 4	
2	1.0	0 1.	00	1.00	3	
3	0.5	0 1.	00	0.67	' 1	
4	0.0	0 0.	00	0.00	2	
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 0.	50	0.67	2	
8	0.0	0 1.	00	0.00	0	
accur macro weighted	avg	0.64 0.81	_	0.77 79 ).77	13 0.62 0.77	13 13

Sentence: all do you have a flight from washington to boston that stops in philadelphia

True tags: DET AUX PRON VERB DET NOUN ADP PROPN ADP VERB ADP PROPN

Predicted tags: DET DET PRON VERB DET NOUN ADP PROPN ADP VERB ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4

```
3
           1.00
                  1.00
                          1.00
                                   1
      4
           1.00
                  1.00
                          1.00
                                   2
      5
                                   2
           0.67
                  1.00
                          0.80
      6
           1.00
                  1.00
                         1.00
                                   1
      8
           1.00
                  0.00
                          0.00
                                   1
                         0.93
                               14
  accuracy
               0.95
                             0.83
                                      14
 macro avg
                      0.86
weighted avg
                       0.93
                              0.90
                                       14
                0.95
```

Sentence: show me the flights from san diego to newark by way of houston True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN ADP PROPN Classification Report:

	precis	ion	recall	f1-sco	re supp	ort
1	1.0	00	1.00	1.00	4	
2	1.0	00	1.00	1.00	4	
3	1.0	00	1.00	1.00	2	
4	1.0	00	1.00	1.00	1	
5	1.0	00	1.00	1.00	1	
6	1.0	00	1.00	1.00	1	
accur	acy			1.00	13	
macro	avg	1.00	) 1	.00	1.00	13
weighted	d avg	1.0	00 ′	1.00	1.00	13

Sentence: find a flight on american airlines from boston to san francisco that makes a stopover in denver

True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN ADP VERB DET NOUN ADP PROPN

Classification Report:

	preci	sion	rec	all	†1-sc	core	supp	ort
1	1	.00	1.0	00	1.0	00	6	
2	1	.00	1.0	00	1.0	00	5	
3	1	.00	1.0	00	1.0	00	2	
4	1	.00	1.0	00	1.0	00	2	
5	1	.00	1.0	00	1.0	00	2	
accur	acy				1.0	0	17	
macro	avg	1	.00	1	.00	1.0	00	17
weighte	d avg	•	1.00	•	1.00	1.	00	17

Sentence: i <unk> looking for a flight that goes from ontario to westchester and stops in chicago

True tags: PRON AUX VERB ADP DET NOUN ADP VERB ADP PROPN ADP

PROPN CCONJ VERB ADP PROPN

Predicted tags: PRON AUX VERB ADP DET NOUN ADP NOUN ADP PROPN ADP

PROPN PROPN CCONJ ADP PROPN

Classification Report:

	precision		recall	f1-scc	ore sup	port
1	0.	75	1.00	0.86	3	
2	1.	00	1.00	1.00	5	
3	0.	50	1.00	0.67	7 1	
4	1.	00	0.33	0.50	) 3	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	) 1	
10	0 0	.00	0.00	0.0	0 1	
accur	acy			0.81	16	
macro	avg	0.7	8 0	.79	0.75	16
weighted	d avg	0.	86 (	0.81	0.80	16

Sentence: list the flights from philadelphia to san francisco via dallas

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN

PROPN

Classification Report:

	preci	sion	reca	all	f1-sc	ore	supp	ort
1 2		.80	1.0 0.6		8.0 8.0		4	
3		.00	1.0		1.0		1	
4		.00	1.0		1.0		1	
5	1	.00	1.0	U	1.0	10	1	
accur	асу				0.9	0	10	
macro weighte	_		96 .92		.93 ).90	0.9	)4 90	10 10
	~ ~ v 9	U		•		٥.	~ ~	. 0

Sentence: are there any flights from denver to atlanta with stops in pittsburgh True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

þ	recision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	4
3	1.00	0.50	0.67	2
4	1.00	0.00	0.00	1
5	1.00	1.00	1.00	1

Sentence: i need a flight from baltimore to seattle that stops in minneapolis

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP

PROPN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB

ADP PROPN

Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 3	
2	1.0	00	1.00	1.00	) 4	
3	1.0	00	1.00	1.00	) 1	
4	1.0	00	1.00	1.00	) 2	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
accur	acy			1.00	12	
macro	avg	1.0	0 1	.00	1.00	12
weighted	d avg	1.0	00	1.00	1.00	12

Sentence: i would like a flight that leaves on friday from philadelphia to dallas that makes a stop in atlanta

True tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN

ADP PROPN ADP VERB DET NOUN ADP PROPN

Classification Report:

	preci	sion	recall	f1-sco	re suppo	ort
1	1	.00	1.00	1.00	3	
2	1	.00	1.00	1.00	6	
3	1	.00	1.00	1.00	3	
4	1	.00	1.00	1.00	3	
5	1	.00	1.00	1.00	2	
6	1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
accur	acy			1.00	19	
macro	_	1.0			1.00	19
weighte	d avg	1.	.00	1.00	1.00	19

Sentence: list flights from philadelphia to dallas that stop in atlanta

True tags: VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN PROPN ADP PROPN ADP ADP ADP ADP PROPN

# Classification Report:

	precision		reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	00	3	
2	0	.80	1.00	0.	89	4	
3	1	.00	1.00	1.	00	1	
4	. 1	.00	0.50	0.	67	2	
accur	асу			0.9	90	10	
macro	avg	0.9	95	88.0	8.0	89	10
weighte	d avg	0	.92	0.90	0.	89	10
•	_						

Sentence: what is the available ground transportation between san francisco and downtown

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN PROPN NOUN

#### Classification Report:

	precisi	on re	call	f1-scc	re su	oport
1	0.6	7 1.	.00	0.80	) 2	)
2	1.0	0 1.	.00	1.00	) 1	
3	1.0	0 1.	.00	1.00	) 3	}
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
7	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 1.	.00	1.00	) 1	
10	) 1.0	00 0	.00	0.0	0	1
accura	асу			0.91	11	
macro	avg	0.96	0.	88	0.85	11
weighted	d avg	0.94	0	.91	0.87	11

Sentence: what ground transportation is there from the airport in atlanta to downtown True tags: DET NOUN NOUN VERB PRON ADP DET NOUN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN NOUN PROPN AUX ADP DET PROPN ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1 2	0.25 1.00	1.00 1.00	0.40 1.00	1 3
3	1.00	0.50	0.67	4
4	1.00	0.00	0.00	1
5	1.00	0.50	0.67	2
6	0.00	0.00	0.00	1
8	0.00	1.00	0.00	0
accurac	у		0.58	12

macro avg	0.61	0.57	0.39	12
weighted ava	0.85	0.58	0.62	12

Sentence: what flights go from dallas to denver leaving after 3 pm

True tags: DET NOUN VERB ADP PROPN ADP PROPN VERB ADP NUM NOUN Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN PROPN ADP VERB

NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	0.6	37	1.00	0.8	0	2	
2	1.0	00	1.00	1.0	0	3	
3	0.6	67	1.00	0.8	0	2	
4	0.0	00	0.00	0.0	0	2	
5	1.0	00	0.00	0.0	0	1	
6	0.0	00	1.00	0.0	0	0	
9	1.0	00	0.00	0.0	0	1	
accur	acy			0.6	4	11	
macro	avg	0.62	2 0	.57	0.37	•	11
weighted	d avg	0.7	70	0.64	0.56	3	11

Sentence: can you list all flights from chicago to <unk> louis that depart after 12

True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB ADP NUM NOUN

Predicted tags: VERB PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB NOUN

Classification Report:

Ciaconic	auon	·vopo				
	precis	sion	recall	f1-score	e suppo	ort
1	1.	.00	1.00	1.00	3	
2	1.	.00	1.00	1.00	4	
3	1.	.00	1.00	1.00	2	
4	0	.50	1.00	0.67	2	
5	1.	.00	1.00	1.00	1	
6	1.	.00	1.00	1.00	1	
8	1.	.00	0.00	0.00	1	
9	1.	.00	0.00	0.00	1	
accur	асу			0.87	15	
macro	avg	0.9	94 C	.75 0	.71	15
weighted	d avg	0	.93	0.87	0.82	15

Sentence: is there a flight between philadelphia and denver that leaves philadelphia around 2 <unk> in the afternoon

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP VERB PROPN ADP NUM ADV ADP DET NOUN

Predicted tags: AUX PRON DET NOUN ADP PROPN PROPN PROPN ADP VERB PROPN PROPN VERB VERB ADP DET NOUN

## Classification Report:

	precis	ion r	ecall	f1-sco	re sup	port
1	0.6	60 <sup>2</sup>	1.00	0.75	3	
2	1.0	00 (	0.75	0.86	4	
3	1.0	00 1	1.00	1.00	2	
4	0.3	33 (	0.50	0.40	2	
5	1.0	00 ′	1.00	1.00	2	
6	1.0	00 ′	1.00	1.00	) 1	
8	0.0	00 1	1.00	0.00	0	
9	1.0	00 (	0.00	0.00	) 1	
10	) 1.	00	0.00	0.0	) 1	1
11	1.	00	0.00	0.00	) 1	
accur	асу			0.71	17	•
macro	avg	0.79	0	.62	0.50	17
weighted	d avg	0.8	5 (	).71	0.68	17

Sentence: what flights leaving pittsburgh arrive in denver and leave after say 6 <unk> at night

True tags: DET NOUN VERB PROPN VERB ADP PROPN CCONJ VERB ADP VERB NUM ADV ADP NOUN

Predicted tags: PRON NOUN VERB PROPN VERB ADP PROPN PROPN PROPN ADP PROPN NOUN PROPN ADP PROPN

Classification Report:

precision recall f1-score support

					-  -	
1	0.29	1.0	0 (	0.44	2	
2	1.00	1.0	0 ′	1.00	3	
3	0.50	0.5	0 (	0.50	2	
4	1.00	0.5	0 (	0.67	4	
5	1.00	0.0	0 (	0.00	1	
6	0.00	1.0	0 (	0.00	0	
9	1.00	0.0	0 (	0.00	1	
10	1.00	0.0	00	0.00	1	
11	1.00	0.0	0	0.00	1	
accuracy	y		C	).53	15	
macro av	⁄g 0.	75	0.44	0.2	29	15
weighted a	vg 0	.84	0.5	3 0.	50	15

Sentence: dallas to houston after <unk> am

True tags: PROPN ADP PROPN ADP NUM NOUN

Predicted tags: PROPN ADP PROPN ADP PROPN NOUN

Classification Report:

precision recall f1-score support 2 1 0.67 1.00 0.80 1.00 1.00 2 1.00 2 3 1.00 1.00 1.00 1

9 1.00 0.00 0.00 1

accuracy 0.83 6

macro avg 0.92 0.75 0.70 6

weighted avg 0.89 0.83 0.77 6

Sentence: is there a flight around 3 pm from charlotte to minneapolis

True tags: VERB PRON DET NOUN ADP NUM NOUN ADP PROPN ADP PROPN Predicted tags: AUX PRON DET NOUN NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n recal	l f1-score	e suppo	rt
1	1.00	1.00	1.00	2	
2	1.00	0.67	0.80	3	
3	0.50	1.00	0.67	2	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	0.00	1.00	0.00	0	
9	1.00	0.00	0.00	1	
accura	асу		0.73	11	
macro weighted	•	0.81 0.91		.56 <i>´</i> 0.70	11 11

Sentence: i like to see the information for flights from pittsburgh to san francisco leaving pittsburgh after 12 pm

True tags: PRON VERB PART VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: PRON VERB VERB VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB VERB ADP NOUN NOUN

Classification Report:

	precision		reca	ıll f1	-scoi	e su	ıppo	rt
1	1.	00	0.75	5	0.86		4	
2	1.	00	1.00	)	1.00		4	
3	0.	75	1.00	)	0.86		3	
4	0.	60	1.00	)	0.75		3	
5	1.	00	1.00	)	1.00		1	
6	1.	00	1.00	)	1.00		1	
9	1.	00	0.00	)	0.00		1	
12	2 1	.00	0.0	0	0.00	)	1	
accura	асу			(	0.83	1	8	
macro	avg	0.9	92	0.72	<u>?</u> (	0.68	•	18
weighted	d avg	0.	89	0.8	3	0.79		18

Sentence: a listing of all flights from boston to baltimore before 10 am on thursday

True tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP NUM

**NOUN ADP NOUN** 

Predicted tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP

PROPN NOUN ADP NOUN

Classification Report:

	precision		recall 11-score		ore	suppo	ort
1	0.6	67	1.00	0.8	80	2	
2	1.0	00	1.00	1.0	0	5	
3	1.0	00	1.00	1.0	0	4	
5	1.0	00	1.00	1.0	00	2	
9	1.0	00	0.00	0.0	00	1	
accur	acy			0.9	3	14	
macro	avg	0.93	3 0	.80	0.76	3	14
weighted	d avg	0.9	5	0.93	0.9	0	14

Sentence: i <unk> like a flight from san diego to toronto on alaska airlines leaving around 1 pm

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP NOUN NOUN VERB VERB NOUN NOUN

Classification Report:

	precis	ion re	ecall	f1-scc	re sup	oort
1	1.0	0 0	.60	0.75	5 5	
2	1.0	0 00	.75	0.86	6 4	
3	0.4	40 1	.00	0.57	7 2	
4	0.0	67 1	.00	0.80	2	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
9	1.0	0 00	.00	0.00	) 1	
accur	асу			0.76	17	
macro weighte	•	0.88 0.89		.79 ).76	0.75 0.76	17 17

Sentence: i want a flight from atlanta to washington that leaves after 3 pm

True tags: PRON VERB DET NOUN ADP PROPN ADP VERB ADP

**NUM NOUN** 

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB

ADP NOUN NOUN Classification Report:

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	0.67	1.00	0.80	2

4	1.0	0	1.00	1.	00	2	
5	1.0	0	1.00	1.	00	1	
6	1.0	0	1.00	1.	00	1	
9	1.0	0	0.00	0.	00	1	
accurac	у			0.9	92	13	
macro a	vg	0.95	5 (	0.86	3.0	33	13
weighted a	avg	0.9	5	0.92	0	.89	13

Sentence: list all flights going from boston to atlanta on wednesday after 6 <unk> pm on wednesday

True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN NOUN ADP PROPN ADP PROPN ADP NOUN

ADP NOUN PROPN NOUN ADP NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore su	ıpport
1	0.0	67	1.00	0.8	0	2
2	1.0	00	1.00	1.0	0	5
3	0.0	67	1.00	0.8	0	4
4	1.0	00	0.50	0.6	7	2
5	1.0	00	1.00	1.0	0	1
9	1.0	00	0.00	0.0	0	1
11	1.	00	0.00	0.0	0	1
accur	асу			0.81	1	6
macro	avg	0.9	0 0	.64	0.61	16
weighted	d avg	0.0	38	0.81	0.76	16

Sentence: i need flight information for a flight departing from cleveland to milwaukee wednesday after 6 pm

True tags: PRON VERB NOUN NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP DET NOUN NOUN ADP PROPN ADP PROPN NOUN ADP NOUN NOUN

	precisio	n recall	f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	4	
3	0.7	1.00	0.83	5	
4	1.00	0.50	0.67	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
accura	acv		0.88	16	
	•	0.96	.79 0.7	79	16
	•		0.88 0	.84	
3 4 5 6	0.7′ 1.00 1.00 1.00 1.00 acy avg	1 1.00 0 0.50 0 1.00 0 1.00 0 0.00	0.83 0.67 1.00 1.00 0.00 0.88	5 2 1 1 1	16 16

Sentence: what flights go from boston to denver before 10 am

True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN ADP PROPN

NOUN

Classification Report:

	"OP O					
precis	sion	recal	l f1-s	core	supp	ort
0.	67	1.00	0.8	80	2	
1.	00	1.00	1.0	00	3	
0.	67	1.00	0.8	80	2	
1.	00	0.00	0.0	00	1	
1.	00	0.00	0.0	00	1	
0.	00	1.00	0.0	00	0	
1.	00	0.00	0.0	00	1	
acy			0.7	70	10	
_	0.7	76 (	0.57	0.3	<b>57</b>	10
d avg	0	.87	0.70	0.	62	10
	0. 1. 0. 1. 1.	0.67 1.00 0.67 1.00 1.00 0.00 1.00 acy	0.67 1.00 1.00 1.00 0.67 1.00 1.00 0.00 1.00 0.00 0.00 1.00 1.00 0.00	0.67 1.00 0.3 1.00 1.00 1.0 0.67 1.00 0.3 1.00 0.00 0.0 1.00 0.00 0.0 0.00 1.00 0.0 1.00 0.00 0	precision         recall f1-score           0.67         1.00         0.80           1.00         1.00         1.00           0.67         1.00         0.80           1.00         0.00         0.00           1.00         0.00         0.00           0.00         1.00         0.00           1.00         0.00         0.00           1.00         0.00         0.00           1.00         0.00         0.00	precision         recall f1-score         supp           0.67         1.00         0.80         2           1.00         1.00         1.00         3           0.67         1.00         0.80         2           1.00         0.00         0.00         1           1.00         0.00         0.00         1           0.00         1.00         0.00         0           1.00         0.00         0.00         1           acy         0.70         10           avg         0.76         0.57         0.37

Sentence: list all flights from boston to atlanta after 6 <unk> pm on wednesday True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN NOUN ADP NOUN

Classification Report:

	precis	ion re	call	f1-sco	re supp	ort
1	0.5	50 1	.00	0.67	2	
2	1.0	00 1	.00	1.00	4	
3	1.0	00 1	.00	1.00	3	
4	1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	1	
9	1.0	0 0	.00	0.00	1	
11	l 1.	00 0	.00	0.00	1	
accur	асу			0.85	13	
macro weighte	_	0.93 0.92	_	.71 0.85	0.67 0.79	13 13

Sentence: i <unk> looking for flights from pittsburgh to philadelphia leaving before 9 am

True tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP ADP NOUN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 2

Sentence: list all flights going from boston to atlanta before 7 am on thursday True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Predicted tags: VERB DET NOUN NOUN ADP PROPN ADP PROPN ADP ADP NOUN ADP NOUN

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	1.0	0 1	.00	1.00	) 2	
2	3.0	0 1	.00	0.89	9 4	
3	0.7	'5 1	.00	0.86	3	
4	1.0	0 0	.50	0.67	7 2	
5	1.0	0 1	.00	1.00	) 1	
9	1.0	0 0	.00	0.00	) 1	
accura	асу			0.85	13	,
macro	avg	0.92	0	.75	0.74	13
weighted	d avg	0.88	(	0.85	0.80	13

Sentence: i need flight information for flights departing from cleveland to milwaukee on wednesday after 5 pm

True tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NOUN

	precis	sion	recal	l f1-s	core	supp	ort
4		00	4.00		00	0	
1		00	1.00		00	2	
2	1.	00	1.00	1.	00	5	
3	0.	71	1.00	0.	83	5	
4	1.	00	0.50	0.	67	2	
6	1.	00	1.00	1.	00	1	
9	1.	00	0.00	0.	00	1	
accur	acy			0.8	88	16	
macro	avg	0.9	95	0.75	0.7	5	16
weighte	d avg	0.	91	0.88	0.	84	16

Sentence: can you find me another flight from cincinnati to new york on saturday

before 6 pm

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADP NUM NOUN

Predicted tags: VERB PRON PRON PRON NOUN NOUN ADP PROPN ADP PROPN ADP NOUN ADP NOUN NOUN

Classification Report:

	preci	sion	recal	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	4	
3	0	.60	1.00	0.7	75	3	
4	. 0	.00	0.00	0.0	00	1	
5	1	.00	0.00	0.0	00	1	
6	0	.67	1.00	3.0	30	2	
8	1	.00	0.00	0.0	00	1	
9	1	.00	0.00	0.0	00	1	
accur	acy			0.7	'5	16	
macro	avg			0.50	0.4	4	16
weighte	d avg	0	.82	0.75	0.6	86	16

Sentence: i would like a flight from san francisco to pittsburgh on friday morning after 10 <unk>

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADP NUM ADV

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP NOUN ADP NOUN ADP NOUN PROPN

Classification Report:

precisio	n recal	l f1-score	suppo	rt
0.75	1.00	0.86	3	
1.00	1.00	1.00	4	
0.75	1.00	0.86	3	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	0.00	0.00	1	
1.00	0.00	0.00	1	
асу		0.88	16	
avg l avg	0.94 0.91		-	16 16
	0.75 1.00 0.75 1.00 1.00 1.00 1.00	0.75 1.00 1.00 1.00 0.75 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 0.00	0.75	0.75

Sentence: list all flights going from boston to atlanta before 5 <unk> am on thursday True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN NOUN ADP PROPN ADP PROPN ADP NOUN PROPN NOUN ADP NOUN

## Classification Report:

	precis	on	recal	11 †1-9	score	supp	ort
1	0.6	67	1.00	0	.80	2	
2	1.0	00	1.00	1	.00	4	
3	0.6	60	1.00	0	.75	3	
4	1.0	00	0.50	0	.67	2	
5	1.0	00	1.00	1	.00	1	
9	1.0	00	0.00	0	.00	1	
11	1.	00	0.00	) (	0.00	1	
accur	acy			0.	79	14	
macro	avg	0.9	90	0.64	0.6	60	14
weighted	d avg	0.	.87	0.79	0.	.73	14

Sentence: what is the last flight from baltimore to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	on re	call 1	f1-sco	re suppo	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accura	acv			1.00	9	
macro weighted	avg	1.00 1.00	1.0 1	00 .00	1.00 1.00	9 9

Sentence: what <unk> the latest flight from san jose to houston

True tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	асу			1.00	10	
macro weighted	•	1.00 1.00		00 ′	1.00 1.00	10 10

Sentence: what is the earliest flight from pittsburgh to san francisco

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	†1-sc	ore	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
7	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	10	
macro	avg	1.0	00 1	1.00	1.0	0	10
weighted	d avg	1.	.00	1.00	1.0	00	10

Sentence: show first flight from philadelphia to dallas True tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB NOUN ADP PROPN ADP PROPN

Classification Report:

I	precision	recall	f1-score	e supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	0.50	1.00	0.67	1	
7	1.00	0.00	0.00	1	
accura	су		0.86	7	
macro a	avg 0.	90 0	.80 0	.73	7
weighted	avg (	).93	0.86 (	0.81	7

Sentence: what <unk> the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2 3		1.00 1.00	1.00 0.67	2 1
5		1.00	1.00	1
6		1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
accur	acy		0.89	9

macro avg	0.93	0.86	0.81	9
weighted avg	0.94	0.89	0.85	9

Sentence: what is the shortest flight from milwaukee to <unk> petersburg
True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN
Classification Report:

Ciassilic	auoni	cport.				
	precisi	on re	call	f1-scor	e supp	ort
_					_	
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	1	
8	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	10	
macro	avg	1.00	1	.00 ′	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: shortest evening flight from tampa to cincinnati True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n red	call 1	f1-sco	re su	pport
1	1.00	) 1.0	00	1.00	)	2
2	1.00	1.0	00	1.00	)	2
3	1.00	1.0	00	1.00	)	2
4	0.00	1.0	00	0.00	)	0
7	1.00	0.0	00	0.00	)	1
accur	acy			0.86	7	7
macro	avg	0.80	0.8	80	0.60	7
weighted	d avg	1.00	0	.86	0.86	7

Sentence: what is the earliest flight you have leaving boston heading to philadelphia True tags: PRON AUX DET ADJ NOUN PRON VERB VERB PROPN VERB ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN PROPN VERB VERB PROPN ADP ADP PROPN

p	recision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	0.50	1.00	0.67	1
3	1.00	1.00	1.00	1
4	1.00	0.67	0.80	3
5	1.00	1.00	1.00	1

	6	1.00	) (	).50	0.6	5/	2	
	7	1.00	) 1	.00	1.0	00	1	
	8	1.00	) 1	.00	1.0	00	1	
acci	uracy				0.8	3	12	
	ro avo	]	0.90	0	.90	0.87	-	12
weight	ed av	g	0.90	) (	0.83	0.83	3	12

Sentence: what is the earliest flight from boston to san francisco

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	1.0	0 1	.00	1.00	) 3	
2	1.0	0 1	.00	1.00	) 2	
3	1.0	0 1	.00	1.00	) 1	
5	1.0	0 1	.00	1.00	) 1	
6	1.0	0 1	.00	1.00	) 1	
7	1.0	0 1	.00	1.00	) 1	
8	1.0	0 1	.00	1.00	) 1	
accura	асу			1.00	10	)
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	10 10

Sentence: flights from denver to westchester county new york weekdays
True tags: NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN NOUN
Predicted tags: NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN NOUN
Classification Report:

	precisi	on re	call	f1-scc	re su	pport
1	1.0	0 1.	.00	1.00	) !	5
2	1.0	0 1.	.00	1.00	) :	2
3	1.0	0 1.	.00	1.00	) :	2
accura	асу			1.00	9	)
macro	avg	1.00	1.	.00	1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: what is the last flight from boston to atlanta

True tags: PRON AUX DET ÄDJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

6	1.00	1.0	00	1.00	1	
7	1.00	1.0	00	1.00	1	
8	1.00	1.0	00	1.00	1	
accurac	y			1.00	9	
macro av	/g	1.00	1.00	) 1	.00	9
weighted a	ıvg	1.00	1.0	0 1	1.00	9

Sentence: what is the earliest flight leaving denver going to boston

True tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN PROPN PROPN ADP PROPN

Classification Report:

	precisi	on r	ecall	f1-sc	ore su	pport
1	0.6	67 ´	1.00	0.8	) 2	2
2	1.0	00 1	1.00	1.00	) ,	1
3	0.5	50 1	1.00	0.6	7 '	1
4	1.0	00 (	0.00	0.0	) 2	2
5	1.0	00 1	1.00	1.0	) ,	1
6	1.0	00 1	1.00	1.0	) ,	1
7	1.0	00 1	1.00	1.0	) ,	1
8	1.0	00 1	1.00	1.0	) ′	1
accura	асу			0.80	) 1	0
macro	avg	0.90	0	.88	0.81	10
weighted	d avg	0.88	3 (	08.0	0.73	10

Sentence: what is the earliest flight from ontario to memphis

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-sco	ore su	pport
1	1.0	0 1.	00	1.00	) 2	2
2			00	1.00		2
3	1.0	0 1.	00	1.00	) ′	1
5	1.0	0 1.	00	1.00	) ′	1
6	1.0	0 1.	00	1.00	) ′	1
7	1.0	0 1.	00	1.00	) ′	1
8	1.0	0 1.	00	1.00	) ′	1
accur	acy			1.00	9	)
macro	avg	1.00	1.	.00	1.00	9
weighted	d avg	1.00	1	.00	1.00	9

Sentence: what is the earliest flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support

•		,	00		,	_	
2	1.00	) 1.	00	1.00	)	2	
3	1.00	) 1.	00	1.00	)	1	
5	1.00	) 1.	00	1.00	)	1	
6	1.00	1.0	00	1.00	)	1	
7	1.00	1.0	00	1.00	)	1	
8	1.00	1.0	00	1.00	)	1	
accurac	У			1.00	!	9	
macro av	vg	1.00	1.0	00	1.00		9
weighted a	avg	1.00	1	.00	1.00		9

1.00

1.00

2

Sentence: what is the last flight leaving san francisco going to washington on friday True tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN NOUN PROPN PROPN ADP PROPN ADP NOUN

Classification Report:

1

1.00

	pre	cisio	n red	call	f1-sc	ore	supp	ort
1		0.75	1.	00	8.0	86	3	
2		1.00	1.	00	1.0	0	2	
3		0.67	1.	00	8.0	80	2	
4		1.00	0.	00	0.0	0	2	
5		1.00	1.	00	1.0	0	1	
6		1.00	1.	00	1.0	0	1	
7		1.00	1.	00	1.0	0	1	
8		1.00	1.	00	1.0	0	1	
accur	асу				0.8	5	13	
macro	avg		0.93	0	.88	0.8	3	13
weighte	d av	g	0.89	(	0.85	0.	78	13

Sentence: what is the earliest morning flight from san francisco to boston

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accura	асу		1.00	11

macro avg	1.00	1.00	1.00	11
weighted avg	1.00	1.00	1.00	11

Sentence: what <unk> the earliest flight from dallas to houston True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

Olacollica	acon i topo				
ŗ	precision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
accura	су		0.89	9	
macro a	avg 0.9	93 0	3.0 88.	31	9
weighted	avg 0	.94 (	0.89	85	9

Sentence: i <unk> like to find the earliest flight possible from san francisco to atlanta True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADJ ADP PROPN PROPN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	pred	cision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	3	
2	)	0.67	1.0	00	0.8	0	2	
3	,	0.33	1.0	00	0.5	0	1	
4		1.00	1.0	00	1.0	0	2	
5	,	1.00	1.0	00	1.0	0	1	
6	)	1.00	1.0	00	1.0	0	1	
7	•	1.00	0.0	00	0.0	0	2	
8	}	1.00	1.0	00	1.0	0	1	
12	2	1.00	0.	00	0.0	00	1	
accur macro weighte	avg		).89 0.90		0.79 78 0.79	0.7	14 0 72	14 14

Sentence: what is the latest evening flight leaving san francisco for washington True tags: PRON AUX DET ADJ NOUN NOUN VERB PROPN PROPN ADP PROPN PROPN AUX DET ADJ NOUN NOUN VERB PROPN PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1.00	1.00	) 1.	00	3	
1.00	1.00	) 1.	00	1	
1.00	1.00	) 1.	00	2	
1.00	1.00	) 1.	00	1	
1.00	1.00	) 1.	00	1	
1.00	1.00	) 1.	00	1	
1.00	1.00	) 1.	00	1	
1.00	1.00	) 1.	00	1	
		1.0	00	11	
j 1.	00	1.00	1.00	)	11
g 1	.00	1.00	1.0	00	11
	1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00	1.00	1.00 1.00 1.00 1 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: what is the first flight from boston to atlanta and what is the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET DET NOUN ADP PROPN ADP PROPN PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	reca	ll f1	-scor	e su	pport
1	0.	.80	1.00	)	0.89	4	ļ
2	1.	.00	1.00	)	1.00	2	ļ.
3	1.	.00	1.00	)	1.00	2	2
5	0	.67	1.00	)	08.0	2	2
6	1.	.00	1.00	)	1.00	2	2
7	1.	.00	0.50	)	0.67	2	2
8	1.	.00	1.00	)	1.00	2	2
10	) 1	.00	0.0	0	0.00	)	1
accur	асу				0.89	19	9
macro	_	0.9		0.81		0.79	19
weighted	d avg	0.	92	0.8	9	0.87	19

Sentence: what <unk> the cheapest one way ticket from baltimore to atlanta
True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN PROPN NOUN NOUN ADP PROPN
PROPN

	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	2
3	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1

accuracy		0.8	2 11	
macro avg	0.92	0.75	0.70	11
weighted avg	0.88	0.82	0.75	11

Sentence: what <unk> the cheapest round trip fare between boston and washington True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON AUX DET NOUN NOUN NOUN NOUN ADP PROPN PROPN PROPN

Classification Report:

l	orecision	recall	f1-score	suppo	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	1	
3	0.75	1.00	0.86	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
accura	су		0.82	11	
macro a	9		.75 0.7 0.82 0.	'1 74	11 11
•	_				

Sentence: what is the cheapest round trip fare between boston and san francisco True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET NOUN NOUN NOUN NOUN ADP PROPN PROPN PROPN

Classification Report:

			Γ.						
	pre	cisio	n	recal	l f1-	scor	e s	uppo	ort
1		0.75	5	1.00	C	0.86		3	
2	)	1.00	)	1.00	1	00.1		1	
3	}	0.75	5	1.00	C	0.86		3	
5	,	1.00	)	1.00	1	00.1		1	
6	<b>;</b>	1.00	)	1.00	1	00.1		1	
7	•	1.00	)	0.00	C	0.00		1	
8	3	1.00	)	1.00	1	00.1		1	
10	0	1.0	0	0.00	)	0.00	)	1	
accur	асу				0	.83		12	
macro veighte	_		0.94		0.75 0.83		0.71 0.76	j	12 12
9		_							

Sentence: what is the cheapest round trip fare from atlanta to pittsburgh True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

## Classification Report:

	precisi	on re	ecall	f1-sc	ore su	pport
1	1.0	00 1	.00	1.0	0 :	2
2	1.0	0 1	.00	1.0	0 :	2
3	0.7	'5 1	.00	8.0	6 ;	3
5	1.0	0 1	.00	1.0	0	1
6	1.0	0 1	.00	1.0	0	1
7	1.0	0 0	.00	0.0	0	1
8	1.0	0 1	.00	1.0	0	1
accur	acy			0.91	1 1	1
macro	avg	0.96	0	.86	0.84	11
weighted	d avg	0.93	(	0.91	0.87	11

Sentence: what is the cheapest fare from baltimore to dallas in any class

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN ADP

PROPN NOUN

Classification Report:

		- 1	-					
	prec	ision	reca	all	f1-sc	ore	supp	ort
1	(	).67	1.00	0	0.8	0	2	
2		.00	1.00	-	1.0		3	
3	(	).67	1.00	0	0.8	0	2	
5	1	.00	0.50	0	0.6	7	2	
6	1	.00	1.00	0	1.0	0	1	
7		00.1	0.0	0	0.0	0	1	
8	1	00.1	1.00	0	1.0	0	1	
accur	acy				0.83	3	12	
macro	avg	0	.90	0	.79	0.7	5	12
weighte	d avg	(	0.89	(	0.83	0.	79	12

Sentence: what is the cheapest one way fare from boston to washington

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN PROPN NOUN NOUN ADP PROPN ADP

**PROPN** 

	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	2
3	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1

accuracy		0.8	2 11	
macro avg	0.92	0.75	0.70	11
weighted avg	0.88	0.82	0.75	11

Sentence: i <unk> interested in the cheapest fare from washington to fort worth True tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN PROPN PROPN

Predicted tags: PRON AUX AUX ADP DET NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recal	t1-so	core	supp	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	3	
3	0	.50	1.00	0.6	67	1	
4	1	.00	0.00	0.0	00	1	
5	1	.00	1.00	1.0	00	1	
6	1	.00	1.00	1.0	00	1	
7	1	.00	0.00	0.0	00	1	
8	0	.50	1.00	0.6	67	1	
accur	acy			8.0	3	12	
macro	avg	0.	88 (	0.75	0.6	7	12
weighte	d avg	0	.92	0.83	0.	78	12

Sentence: i would like to book a flight from denver to pittsburgh on july fifteenth i <unk> like it to be the cheapest flight

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN ADJ PRON AUX VERB PRON PART AUX DET ADJ NOUN Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN PRON VERB VERB VERB ADP VERB DET NOUN NOUN

Classification Report:

	pre	cision	reca	ll f1-sc	ore sup	port
1		1.00	1.00	1.0	0 2	
2	) -	0.60	1.00	0.7	5 3	
3	}	0.60	1.00	0.7	5 3	
4		0.50	1.00	0.6	7 3	
5	,	1.00	1.00	1.0	0 2	
6	;	1.00	0.67	0.8	0 3	
7	•	1.00	0.00	0.0	0 2	
8	}	1.00	0.33	0.5	0 3	
12	2	1.00	0.00	0.0	00 2	
accur	acy			0.70	23	
macro	avg	0	.86	0.67	0.61	23
weighte	d av	g (	0.83	0.70	0.63	23

Sentence: what is the cheapest fare from dallas to denver on delta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

	precisi	ion i	recall	f1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	3	
3	0.5	50	1.00	0.6	67	1	
5	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
7	1.0	00	0.00	0.0	00	1	
8	1.0	00	1.00	1.0	00	1	
accur	acv			0.9	1	11	
macro	•	0.93	3 0	.86	0.8		11
weighted	d avg	0.9	5	0.91	0.0	38	11

Sentence: can you show me the cheapest round trip flights between denver and pittsburgh

True tags: AUX PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

Predicted tags: VERB PRON VERB PRON DET NOUN NOUN NOUN ADP PROPN PROPN

Classification Report:

	nre	cisio	n	recall	f1-9	core	supp	ort
	pic	01010	•••	Coan	11 3	0010	барр	Oit
	1	0.67	,	1.00	0.	80	2	
2	2	1.00	)	1.00	1.	00	1	
3	3	0.75	5	1.00	0.	86	3	
4	4	0.50	)	1.00	0.	67	1	
į	5	1.00	)	1.00	1.	00	1	
6	3	1.00	)	1.00	1.	00	2	
7	7	1.00	)	0.00	0.	00	1	
8	3	1.00	)	0.00	0.	00	1	
1	0	1.0	0	0.00	0	.00	1	
accu	racy				0.	77	13	
macro	o avg		0.88	3 (	).67	0.5	59	13
weighte	ed av	g	0.8	5	0.77	0.	.68	13

Sentence: what <unk> the lowest round trip fare from denver to atlanta

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET DET NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

р	recision	recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	

3	1.0	0 1.	.00	1.0	0	3	
5	0.5	0 1.	.00	0.6	7	1	
6	1.0	0 1.	.00	1.0	0	1	
7	1.0	0 0.	.00	0.0	0	1	
8	1.0	0 1.	.00	1.0	0	1	
accurac	У			0.9	1	11	
macro av	√g	0.93	0.	86	0.81		11
weighted a	avg	0.95	C	).91	0.8	8	11

Sentence: what is the cheapest flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	all	f1-sc	ore	supp	ort
1	1	.00	1.0	0	1.0	0	2	
2	1	.00	1.0	0	1.0	0	2	
3	0	.50	1.0	0	0.6	7	1	
5	1	.00	1.0	0	1.0	0	1	
6	1	.00	1.0	0	1.0	0	1	
7	1	.00	0.0	0	0.0	0	1	
8	1	.00	1.0	0	1.0	0	1	
accur	acy				0.89	9	9	
macro	avg	0.	93	0.	.86	0.8	1	9
weighte	d avg	0	.94	(	0.89	0.	85	9

Sentence: i <unk> like to find the cheapest fare from atlanta to dallas

True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB ADP VERB DET NOUN NOUN ADP PROPN ADP

**PROPN** 

1	orecision	recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	0.67	1.00	0.80	2	
3	0.50	1.00	0.67	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
12	1.00	0.00	0.00	1	
accura	су		0.83	12	
macro a	•	-	.78 0.7 0.83 0.		2
weighted	avy 0	.90 (	J.63 U.	<i>i i</i> I	_

Sentence: lowest fare from san francisco to los angeles

True tags: ADJ NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	precision		recall f1-score			suppo	ort
1	1.0	<b>Λ</b> 1	.00	1.0	Λ	4	
2	1.0		.00	1.0		2	
3	1.0		.00	1.0		1	
5	0.0	0 1	.00	0.0		0	
7	1.0	0 0	.00	0.0	0	1	
accura	acv			0.8	8	8	
macro	•	0.80	0	.80	0.60	)	8
weighted	d avg	1.00	(	38.0	0.8	8	8

Sentence: i <unk> like the lowest fare from denver to pittsburgh

True tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX VERB DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		recall f1-score		re supp	oort
1	1.0	0 1	.00	1.00	2	
2	1.0	0 1	.00	1.00	2	
3	1.0	0 1	.00	1.00	1	
4	1.0	0 1	.00	1.00	1	
5	0.5	0 1	.00	0.67	1	
6	1.0	0 1	.00	1.00	1	
7	1.0	0 0	.00	0.00	1	
8	1.0	0 1	.00	1.00	1	
accura	асу			0.90	10	
macro	avg	0.94	0	.88	0.83	10
weighted	l avg	0.95	(	0.90	0.87	10

Sentence: okay i <unk> want to know the cheapest fare from atlanta to boston

True tags: INTJ PRON ADV VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: NOUN PRON AUX VERB ADP PROPN DET NOUN NOUN ADP

PROPN ADP PROPN Classification Report:

	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	0.67	1.00	0.80	2
3	0.33	1.00	0.50	1
4	1.00	0.50	0.67	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1

8	0.00	1.00	0.00	0	
11	1.00	0.00	0.00	1	
12	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accuracy			0.62	13	
macro avo	g 0.7	79 0	.59	).43	13
weighted av	$\sqrt{g}$ 0.	.85	0.62	0.54	13

Sentence: what are the lowest one way fares from atlanta to denver

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET DET NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

i	orecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	0.67	1.00	0.80	2	
5	0.50	1.00	0.67	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
accura	су		0.82	11	
macro a weighted	•		.75 0.6 0.82 0.	88 75	11 11
woiginca	uvy 0	.00 (	J.UZ U.	70	•

Sentence: what is the cheapest one way fare from any city to another

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP DET PROPN ADP DET Predicted tags: PRON AUX DET NOUN PROPN NOUN NOUN ADP PROPN

PROPN ADP PROPN Classification Report:

Oldonie		•	call f1-s	core si	upport
1	0.2	E 1	00 0	40	1
1	_	_		.40	1
2	1.0	0 1.	00 1.	.00	2
3	0.6	7 1.	00 0	.80	2
5	1.0	0 0.	33 0	.50	3
6	1.0	0 1.	00 1	.00	1
7	1.0	0 0.	00 0	.00	1
8	1.0	0 1.	00 1	.00	1
9	1.0	0 0.	00 0	.00	1
accur	acy		0.	67 <i>´</i>	12
macro	avg	0.86	0.67	0.59	12
weighte	d avg	0.88	0.67	0.62	12

Sentence: i <unk> like the cheapest cost fare to fort worth from boston

True tags: PRON AUX VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB DET NOUN NOUN NOUN ADP PROPN PROPN

ADP PROPN

Classification Report:

		1				
	precis	ion	recall	f1-sc	ore sup	port
1	1.0	00	1.00	1.0	0 3	
2	1.0	00	1.00	1.0	0 2	
3	0.0	67	1.00	0.8	0 2	
4	1.0	00	1.00	1.0	0 1	
5	1.0	00	1.00	1.0	0 1	
6	1.0	00	1.00	1.0	0 1	
7	1.0	00	0.00	0.0	0 1	
8	1.0	00	1.00	1.00	0 1	
accur	асу			0.92	2 12	) :
macro	avg	0.9	96 0	.88	0.85	12
weighted	d avg	0.	.94	0.92	0.88	12

Sentence: show me the cheapest one way fares from san diego to miami

True tags: VERB PRON DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN PROPN NOUN NOUN ADP PROPN

PROPN ADP PROPN Classification Report:

	p. 00.0					очрр	0
1	0.	75	1.00	0 0	.86	3	
2	1.	00	1.00	) 1	.00	2	
3	0.	67	1.00	0 (	.80	2	
4	1.	00	1.00	) 1	.00	1	
5	1.	00	1.00	) 1	.00	1	
6	1.	00	1.00	) 1	.00	1	
7	1.	00	0.00	0 (	.00	1	
9	1.	00	0.00	0 (	.00	1	
				_			
accur	acy			0.	.83	12	
macro	_	0.9		0.75	0.7		12
weighted	d avg	0	.88	0.83	0.	76	12

precision recall f1-score support

Sentence: what flights leave philadelphia for dallas and depart before noon on

american airlines

True tags: DET NOUN VERB PROPN ADP PROPN CCONJ VERB ADP NOUN ADP PROPN PROPN

PROPIN PROPIN

Predicted tags: PRON NOUN VERB PROPN ADP PROPN PROPN VERB ADP

VERB ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1	0.80	1.0	0	0.8	9	4	
2	1.00	1.0	0	1.0	0	3	
3	1.00	0.5	0	0.6	7	2	
4	0.67	1.0	0	0.8	0	2	
5	1.00	0.0	0	0.0	0	1	
6	0.00	1.0	0	0.0	0	0	
10	1.00	0.0	00	0.0	00	1	
accuracy	1			0.7	7	13	
macro av	g 0.7	78	0.6	64	0.4	8	13
weighted av	vg 0	.89	0.	77	0.7	73	13

Sentence: i need a flight from cleveland to dallas that leaves before noon see if too much information

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN VERB ADP ADV ADV NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN NOUN NOUN VERB NOUN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	1.0	00	1.00	1.	00	2	
2	1.0	00	0.80	0.	89	5	
3	0.	50	1.00	0.	67	3	
4	0.0	37	0.67	0.	67	3	
5	1.0	00	1.00	1.	.00	1	
6	1.0	00	1.00	1.	.00	1	
11	1.	00	0.00	0	.00	2	
accur	acy			0.	76	17	
macro	avg	3.0	38 (	0.78	0.7	<b>'</b> 5	17
weighted	d avg	0.	85	0.76	0.	73	17

Sentence: list all flights leaving denver on continental on sunday after 2134 True tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP NUM Predicted tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP PROPN

	precisio	n rec	all f1-s	core s	upport	
1 2 3		1.0	0 1.	80 00 00	2 3 2	
4	1.00	1.0	0 1.	00	2	
5	1.00	1.0	0 1.	00	1	
9	1.00	0.0	0 0.	00	1	
accur macro weighted	avg	0.94 0.94	0.9 0.83 0.91	91 0.80 0.87	11 11 ' 11	

Sentence: all flights from san francisco to boston leaving before noon

True tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN Predicted tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	1.	00	1.00	1.	00	3	
2	1.	00	1.00	1.	00	3	
3	1.	00	1.00	1.	00	2	
4	1.	00	1.00	1.	00	1	
5	1.	00	1.00	1.	00	1	
accur	асу			1.0	00	10	
macro	avg	1.0	00	1.00	1.0	0	10
weighted	d avg	1.	00	1.00	1.	00	10

Sentence: i need a flight from cincinnati to san jose leaving after 6 in the evening True tags: PRON VERB DET NOUN ADP PROPN PROPN VERB ADP

NUM ADP DET NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADP PROPN ADP DET NOUN

Classification Report:

	precisi	on re	call	f1-sco	ore sup	port
1	0.7	'5 1.	.00	0.86	3	
2	1.0	0 1.	.00	1.00	) 4	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	2	
6	1.0	0 1.	.00	1.00	) 1	
9	1.0	0 0.	.00	0.00	) 1	
accur	acy			0.93	15	
macro	avg	0.96	0	.86	0.84	15
weighte	d avg	0.95	(	0.93	0.90	15

Sentence: flights from milwaukee to orlando one way True tags: NOUN ADP PROPN ADP PROPN NUM NOUN

Predicted tags: NOUN ADP PROPN ADP PROPN PROPN NOUN

	precis	sion	recall	f1-sc	ore s	uppo	ort
1	0.	67	1.00	0.8	0	2	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	2	
9	1.	00	0.00	0.0	0	1	
accura	асу			0.86	3	7	
macro	avg	0.9	2 0	.75	0.70		7

weighted avg 0.90 0.86 0.80 7

Sentence: i want to fly from baltimore to dallas round trip

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN Predicted tags: PRON VERB ADP VERB ADP PROPN ADP PROPN NOUN NOUN

Classification Report:

	prec	cision	rec	all	f1-sc	core	supp	ort
1		1.00	1.0	00	1.0	00	2	
2	. (	0.67	1.0	00	3.0	30	2	
3		1.00	1.0	00	1.0	00	2	
4		1.00	1.0	00	1.0	00	2	
6		1.00	1.0	00	1.0	00	1	
12	2	1.00	0.	00	0.	00	1	
accur	асу				0.9	0	10	
macro	avg	0	.94	0	.83	8.0	80	10
weighte	d avg	j (	0.93	(	0.90	0.	86	10

Sentence: hi i want a round trip ticket to dallas

True tags: INTJ PRON VERB DET NOUN NOUN NOUN ADP PROPN

Predicted tags: PROPN PRON VERB DET NOUN NOUN ADP PROPN

Classification Report:

<b>C</b> iacomio	precision		f1-score	support
1	0.50	1.00	0.67	1
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
13	1.00	0.00	0.00	1
accura	асу		0.89	9
macro	avg (	.93 (	0.83	31 9
weighted	d avg	0.94	0.89 0.	.85 9

Sentence: what would be cost of a round trip from pittsburgh to san francisco True tags: PRON AUX AUX NOUN ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX AUX VERB ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	0.67	0.80	3
4	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1

Sentence: show me round trip fares from toronto to detroit on delta northwest us air and united airlines

True tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP

PROPN PROPN PROPN PROPN PROPN PROPN

Classification Report:

i	orecision	recall	f1-score	support
1	0.89	1.00	0.94	8
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
10	1.00	0.00	0.00	1
accura	су		0.94	17
macro a	avg 0	.98 0	3.0 88.0	32 17
weighted	avg (	0.95	0.94 0.	91 17

Sentence: give me all the flights from new york to miami round trip

True tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Classification Report:

	precis	ion re	ecall	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	) 3	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	3	
4	1.0	00 1	.00	1.00	) 1	
5	1.0	00 1	.00	1.00	2	
6	1.0	00 1	.00	1.00	) 1	
accur	acy			1.00	12	
macro	avg	1.00	1	.00	1.00	12
weighte	d avg	1.00		1.00	1.00	12

Sentence: how much is a round trip fare from nashville to seattle

True tags: ADV ADV AUX DET NOUN NOUN NOUN ADP PROPN ADP Predicted tags: VERB VERB AUX DET NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

## Classification Report:

	preci	sion	recall	f1-sc	ore su	pport
1	1	.00	1.00	1.0	0 2	2
2	1	.00	1.00	1.0	0 2	2
3	1	.00	1.00	1.0	0 3	3
4	0	.00	1.00	0.0	0 0	)
5	1	.00	1.00	1.0	0 1	
8	1	.00	1.00	1.0	0 1	
11	1	.00	0.00	0.0	0 2	2
accur	acy			0.82	2 11	[
macro	avg	0.0	36 C	.86	0.71	11
weighted	d avg	1	.00	0.82	0.82	11

Sentence: what is the fare going from baltimore to boston one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN PROPN NOUN ADP NOUN NOUN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	0.60	1.00	0.75	3	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
accuracy	/		0.79	14	
macro av	g 0.9	92 0	.67 0.6	62	14
weighted a	vg 0	.87 (	0.79 0.	70	14

Sentence: show me the round trip flights between phoenix and salt lake city True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN

PROPN PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN PROPN

PROPN PROPN PROPN

Classification Report:

precision recall f1-score support 0.80 1.00 0.89 4 1 1.00 2 1.00 1.00 1 3 1.00 1.00 1.00 3 1.00 1.00 1.00 1

5	1.00	1.0	0	1.00		1	
6	1.00	1.0	0	1.00		1	
10	1.00	0.	00	0.00	)	1	
accuracy				0.92	1	2	
macro avg	0.	97	0.8	6 (	0.84		12
weighted av	g C	.93	0.9	92	88.0		12

Sentence: what is the fare going from baltimore to atlanta one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN PROPN NOUN ADP NOUN NOUN

Classification Report:

	o o				
	precision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	0.60	1.00	0.75	3	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
accura	•		0.79	14	
macro	0	_	.67 0.6		14
weighted	davg 0	.87 (	0.79 0.	70	14

Sentence: now i want to see return flights from miami to new york

True tags: ADV PRON VERB PART VERB NOUN NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: NOUN PRON VERB ADP VERB VERB NOUN ADP PROPN ADP PROPN PROPN

рі	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	0.67	1.00	0.80	2	
3	0.50	0.50	0.50	2	
4	0.67	1.00	0.80	2	
6	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
12	1.00	0.00	0.00	1	
accurac	у		0.75	12	
macro a	vg 0.8	83 0	.64 0.	59	12
weighted a	avg 0	.81	0.75 0	.68	12

Sentence: do you have an <unk> flight from denver to san francisco

True tags: AUX PRON VERB DET NUM NOUN ADP PROPN ADP PROPN PROPN Predicted tags: VERB PRON VERB VERB VERB NOUN ADP PROPN ADP PROPN

PROPN

Classification Report:

	precisi	on re	call f	1-sco	re sup	port
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	0.2	5 1.	00	0.40	1	
5	1.0	0 0.	00	0.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 0.	00	0.00	1	
9	1.0	0 0.	00	0.00	1	
accur	acy			0.73	11	
macro	avg	0.91	0.6	32	0.55	11
weighted	d avg	0.93	0.	.73	0.67	11

Sentence: i would like to book a flight from chicago to seattle on june fourth

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

**ADP NOUN ADJ** 

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN ADP NOUN NOUN

Classification Report:

	ρ. σ	0.0.0						Зарр	• • •
1		1.00	)	1.00	)	1.00	)	2	
2	)	0.75	5	1.00	)	0.86	3	3	
3	}	0.67	7	1.00	)	0.80	)	2	
4		1.00	)	1.00	)	1.00	)	2	
5	·	1.00	)	1.00	)	1.00	)	1	
6	;	1.00	)	1.00	)	1.00	)	1	
7	•	1.00	)	0.00	)	0.00	)	1	
8	3	1.00	)	1.00	)	1.00	)	1	
12	2	1.0	0	0.00	)	0.0	0	1	
accur	acy					0.86	;	14	
macro	_		0.94		0.78	_	0.74		14
veighte	d av	g	0.9	90	3.0	36	0.8	0	14

precision recall f1-score support

Sentence: are there any flights from long beach to columbus on wednesday april

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADJ

Predicted tags: AUX PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN NOUN Classification Report:

	preci	sion	recal	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	3	
3	0	.75	1.00	0.8	86	3	
4	1	.00	0.00	0.0	00	1	
5	1	.00	1.00	1.0	00	1	
6	1	.00	1.00	1.0	00	1	
7	1	.00	0.00	0.0	00	1	
8	0	.00	1.00	0.0	00	0	
accur	acy			3.0	35	13	
macro	avg	0.	84	0.75	0.6	51	13
weighted	d avg	C	).94	0.85	0.	81	13

Sentence: i <unk> like flights going from boston to atlanta leaving on august sixth in the afternoon

True tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN ADJ ADP DET NOUN

Predicted tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN NOUN ADP DET NOUN

Classification Report:

	precis	sion	recall	f1-sc	ore su	ıpport
1	1.	.00	1.00	1.0	0	2
2	1.	.00	1.00	1.0	0	4
3	0.	.75	1.00	0.8	6	3
4	. 1.	.00	1.00	1.0	0	3
5	1.	.00	1.00	1.0	0	1
6	1.	.00	1.00	1.0	0	1
7	1.	.00	0.00	0.0	0	1
8	1.	.00	1.00	1.0	0	1
accur	acy			0.94	1 1	6
macro	avg	0.9	97 (	0.88	0.86	16
weighte	d avg	0.	95	0.94	0.91	16

Sentence: i would like to find out what flights there are on friday june eleventh from <unk> petersburg to milwaukee and then from milwaukee to tacoma thank you True tags: PRON AUX VERB PART VERB ADV DET NOUN PRON VERB ADP NOUN NOUN ADJ ADP PROPN PROPN ADP PROPN CCONJ ADV ADP PROPN ADP PROPN VERB PRON

Predicted tags: PRON AUX VERB ADP VERB VERB PRON NOUN NOUN AUX ADP NOUN NOUN ADP PROPN PROPN ADP PROPN VERB ADP PROPN ADP PROPN ADP VERB

рі	recision	recall	f1-score	support
1	0.83	1.00	0.91	5
2	0.71	1.00	0.83	5

3 0	.60	1.00	0.75	3	
4 0	.40	0.50	0.44	4	
5 1	.00	0.00	0.00	1	
6 0	.50	0.33	0.40	3	
7 1	.00	0.00	0.00	1	
8 0	.50	1.00	0.67	1	
10 1	1.00	0.00	0.00	1	
11 1	1.00	0.00	0.00	2	
12 1	1.00	0.00	0.00	1	
accuracy			0.63	27	
macro avg	0.78	3 0.4	4 0.36	3	27
weighted avg	0.7	'1 0.6	3 0.5	4	27

Sentence: i need a flight from chicago to dallas on continental on june fifth

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN ADJ

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN PROPN

Classification Report:

	precisi	on re	call	f1-scc	re supp	oort
1	0.7	'5 1.	.00	0.86	3	
2	1.0	0 1.	.00	1.00	) 4	
3	1.0	0 1.	.00	1.00	) 2	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
7	1.0	0 0.	.00	0.00	) 1	
accur	асу			0.92	13	
macro	avg	0.96	0	.86	0.84	13
weighte	d avg	0.94	(	0.92	0.89	13

Sentence: i <unk> like a flight on july ninth from orlando to kansas city in the afternoon

True tags: PRON AUX VERB DET NOUN ADP NOUN ADJ ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADP DET NOUN

precision		recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4
3	0.75	1.00	0.86	3
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1

8 1.00 1.00 1.00 1

accuracy 0.94 16 macro avg 0.97 0.88 0.86 16 weighted avg 0.95 0.94 0.91 16

Sentence: i <unk> like to arrange a trip to baltimore on january first

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN

ADJ

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP NOUN

NOUN

Classification Report:

	precision	recall	f1-score	suppor	t
1	1.00	1.00	1.00	1	
2	0.67	1.00	0.80	2	
3	0.67	1.00	0.80	2	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
12	1.00	0.00	0.00	1	
accura	ісу		0.83	12	
macro	avg 0.	93 0	.78 0.7	'3 1:	2
weighted	avg 0	.89 (	0.83	77 ′	12

Sentence: okay and then from pittsburgh i <unk> like to travel to atlanta on

september fourth

True tags: INTJ CCONJ ADV ADP PROPN PRON AUX VERB PART VERB ADP

PROPN ADP NOUN ADJ

Predicted tags: NOUN VERB VERB ADP PROPN PRON VERB VERB ADP VERB

ADP PROPN ADP NOUN NOUN

pre	precision		f1-score	support
1	1.00	1.00	1.00	2
2	0.75	1.00	0.86	3
3	0.33	1.00	0.50	1
4	0.40	1.00	0.57	2
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	0.00	0.00	1
10	1.00	0.00	0.00	1
11	1.00	0.00	0.00	1
12	1.00	0.00	0.00	1
13	1.00	0.00	0.00	1
accuracy			0.60	15

macro avg	0.86	0.45	0.36	15
weighted avg	0.83	0.60	0.48	15

Sentence: list the flights from westchester county to denver on june seventh

True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

**NOUN** 

Classification Report:

	precis	ion	reca	ill f	1-sc	ore	supp	ort
1	1.	00	1.00	)	1.0	0	3	
2	1.	00	1.00	)	1.0	0	3	
3	0.	67	1.00	)	0.8	0	2	
4	1.	00	1.00	)	1.0	0	1	
5	1.	00	1.00	)	1.0	0	1	
7	1.	00	0.00	)	0.0	0	1	
accur	acy				0.9	1	11	
macro	_	0.9		0.8		0.8		11
weighted	a avg	Ü.	94	0.	91	0.8	87	11

Sentence: flights from atlanta august second True tags: NOUN ADP PROPN NOUN ADJ

Predicted tags: NOUN ADP PROPN PROPN NOUN

Classification Report:

0.0.00	precis	sion	reca	all	f1-sc	ore	supp	ort
1	0.	50	1.0	0	0.6	67	1	
2	1.	00	1.0	0	1.0	00	1	
3	0.	50	0.5	0	0.5	50	2	
7	1.	00	0.0	0	0.0	00	1	
accur	acy				0.6	0	5	
macro weighte	_	0.7 0	75 .70		62 .60	0.5 0.	4 53	5 5

Sentence: what are the flights between pittsburgh and baltimore on august tenth True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN ADJ Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN PROPN ADP NOUN NOUN

	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	2
3	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1

10 1.00 0.00 0.00 1

accuracy 0.82 11 macro avg 0.92 0.75 0.70 11 weighted avg 0.88 0.82 0.75 11

Sentence: on april first i need a flight going from phoenix to san diego

True tags: ADP NOUN ADJ PRON VERB DET NOUN VERB ADP PROPN ADP

PROPN PROPN

Predicted tags: ADP NOUN NOUN PRON VERB DET NOUN NOUN ADP PROPN

ADP PROPN PROPN Classification Report:

	precisi	on re	call	f1-scc	ore su	pport
1	1.0	00 1.	.00	1.00	) ;	3
2	1.0	0 1.	.00	1.00	) ;	3
3	0.5	50 1.	.00	0.67	7 2	2
4	1.0	0.00	50	0.67	7 :	2
5	1.0	0 1.	.00	1.00	) .	1
6	1.0	0 1.	.00	1.00	)	1
7	1.0	0.00	.00	0.00	)	1
accur	acy			0.85	1	3
macro	avg	0.93	0	.79	0.76	13
weighted	d avg	0.92	(	0.85	0.82	13

Sentence: show me a list of flights from denver to baltimore on united for august third True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP PROPN ADJ

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore	suppo	ort
1	1.	00	1.00	1.0	0	3	
2	1.	00	1.00	1.0	0	5	
3	0.	75	1.00	8.0	6	3	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
7	1.	00	0.00	0.0	0	1	
accur	асу			0.9	3	15	
macro weighte	_	0.90 0.9		).86 0.93	0.84 0.9		15 15

Sentence: what are the flights from san jose to nashville on thursday the twentieth True tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN DET NOUN Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	3	
3	0.6	37	1.00	0.8	0	2	
5	1.0	00	1.00	1.0	0	2	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	0.00	0.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accur	асу			0.9	2	13	
macro	avg	0.9	5 0	.86	0.83	1	3
weighted	d avg	0.9	95 (	0.92	0.89	)	13

Sentence: i need a ticket from nashville to seattle

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	call	f1-scc	re sup	port
1	1.0	00 1.	.00	1.00	) 2	
2	1.0	00 1.	.00	1.00	) 2	
3	1.0	00 1.	.00	1.00	) 1	
4	1.0	00 1.	.00	1.00	) 1	
5	1.0	00 1.	.00	1.00	) 1	
6	1.0	00 1.	.00	1.00	) 1	
accur	acy			1.00	8	
macro	avg	1.00	1	.00	1.00	8
weighte	d avg	1.00	•	1.00	1.00	8

Sentence: how much does it cost to fly on delta from dallas to baltimore

True tags: ADV ADV AUX PRON VERB PART VERB ADP PROPN ADP PROPN

ADP PROPN

Predicted tags: VERB VERB VERB VERB ADP VERB ADP PROPN ADP

PROPN ADP PROPN Classification Report:

precision	recall	f1-score	support
1.00	1.00	1.00	3
0.75	1.00	0.86	3
0.33	1.00	0.50	2
1.00	0.00	0.00	1
1.00	0.00	0.00	1
1.00	0.00	0.00	2
1.00	0.00	0.00	1
	1.00 0.75 0.33 1.00 1.00	1.00 1.00 0.75 1.00 0.33 1.00 1.00 0.00 1.00 0.00 1.00 0.00	0.75     1.00     0.86       0.33     1.00     0.50       1.00     0.00     0.00       1.00     0.00     0.00       1.00     0.00     0.00

accuracy		0.6	2 13	•
macro avg	0.87	0.43	0.34	13
weighted avg	0.84	0.62	0.51	13

Sentence: what are the fares for flights from charlotte to newark on tuesday and wednesday

True tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP NOUN NOUN NOUN

Classification Report:

	prec	ISION	reca	all	t1-sc	ore	supp	ort
1	1	1.00	1.0	0	1.0	0	2	
2	1	1.00	1.0	0	1.0	0	4	
3	(	08.0	1.0	0	0.8	9	4	
5	1	1.00	1.0	0	1.0	0	1	
6		1.00	1.0	0	1.0	0	1	
8		1.00	1.0	0	1.0	0	1	
10	)	1.00	0.0	00	0.0	00	1	
accur	acy				0.93	3	14	
macro	avg	0.9	97	0.	86	8.0	4	14
weighted	d avg	0	.94	C	0.93	0.9	90	14

Sentence: show fares and flights from denver to oakland

True tags: VERB NOUN CCONJ NOUN ADP PROPN ADP PROPN Predicted tags: VERB VERB VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		rec	recall f1-s		ore	supp	ort
1		1.00	1.0	0	1.0	0	2	
2		1.00	1.0	0	1.0	0	2	
3		1.00	0.5	0	0.6	7	2	
4		0.33	1.0	0	0.5	0	1	
10	)	1.00	0.0	00	0.0	00	1	
accur	acv				0.7	5	8	
macro weighted	avg		87 ).92		70 ).75	0.6	•	8 8

Sentence: what is the airfare between denver and pittsburgh True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN

	precision		f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1

	5	1.00	1.00	1.00	) 1	
	6	1.00	1.00	1.00	) 1	
	8	1.00	1.00	1.00	) 1	
	10	1.00	0.00	0.0	0 1	
acc	uracy			0.88	8	
mac	ro avg	0.9	95 0	.86	0.83	8

0.92

0.88

Sentence: what does it cost to fly from boston to oakland on united airlines

0.82

True tags: PRON AUX PRON VERB PART VERB ADP PROPN ADP PROPN ADP

8

PROPN PROPN

weighted avg

Predicted tags: PRON AUX AUX VERB ADP VERB ADP PROPN ADP PROPN ADP

PROPN PROPN

Classification Report:

precis	sion	recall	f1-scc	re sup	port
1.	00	1.00	1.00	) 4	
0.	75	1.00	0.86	3	
1.	00	1.00	1.00	) 2	
1.	00	0.50	0.67	7 2	
0.	50	1.00	0.67	7 1	
2 1	.00	0.00	0.0	0 1	
асу			0.85	13	
avg d avg				0.70 0.81	13 13
	1. 0. 1. 1. 0. 2 1 acy avg	1.00 0.75 1.00 1.00 0.50 2 1.00 acy avg 0.8	1.00 1.00 0.75 1.00 1.00 1.00 1.00 0.50 0.50 1.00 2 1.00 0.00	1.00 1.00 1.00 0.75 1.00 0.86 1.00 1.00 1.00 1.00 0.50 0.67 0.50 1.00 0.67 2 1.00 0.00 0.0 acy 0.85 avg 0.88 0.75	1.00 1.00 1.00 4 0.75 1.00 0.86 3 1.00 1.00 1.00 2 1.00 0.50 0.67 2 0.50 1.00 0.67 1 2 1.00 0.00 0.00 1 acy 0.85 13 avg 0.88 0.75 0.70

Sentence: get saturday fares from washington to montreal True tags: VERB NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

pred	cision	recall	f1-scor	e suppo	rt
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	0.67	1.00	0.80	2	
4	1.00	0.00	0.00	1	
accuracy			0.86	7	
macro avg weighted avg	0.9 0.9		.75 ( 0.86	).70 0.80	7 7

Sentence: give me fares from atlanta to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

1

precision recall f1-score support

1.00 1.00 1.00 2

2	1.00	) 1.	00	1.0	0	2	
3	1.00	) 1.	00	1.0	0	1	
4	1.00	) 1.	00	1.0	0	1	
6	1.00	) 1.	00	1.0	0	1	
accuracy	/			1.00	)	7	
macro av	'g	1.00	1.	00	1.00		7
weighted a	vg	1.00	1	.00	1.00	)	7

Sentence: continental airlines on saturday from chicago to seattle True tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN Predicted tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 4 2 1.00 1.00 1.00 3 3 1.00 1.00 1.00 1 accuracy 1.00 macro avg 1.00 1.00 1.00 8 weighted avg 8 1.00 1.00 1.00

Sentence: does eastern airlines fly between boston and washington True tags: AUX PROPN PROPN VERB ADP PROPN CCONJ PROPN Predicted tags: PROPN PROPN PROPN VERB ADP PROPN PROPN PROPN Classification Report:

ı	precision		f1-score	suppo	rt
1	0.67	1.00	0.80	4	
2	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
8	1.00	0.00	0.00	1	
10	1.00	0.00	0.00	1	
accura	су		0.75	8	
macro a weighted	9		.60 0.5 0.75 0.	56 65	8 8
weignted	avy	0.05	0.75 0.	00	0

Sentence: i would like some information on a flight from denver to san francisco on united airlines

True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN

Predicted tags: PRON AUX VERB VERB NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 5
2 1.00 1.00 4

3	1.00	) 1.	00	1.00	)	2	
4	0.50	) 1.	00	0.67	7	1	
5	1.00	0.	50	0.67	7	2	
6	1.00	) 1.	00	1.00	)	1	
8	1.00	) 1.	00	1.00	)	1	
accurac	у			0.94	. ′	16	
macro a	vg	0.93	0.9	93	0.90		16
weighted a	avg	0.97	0	.94	0.94		16

Sentence: american airlines from denver to milwaukee True tags: PROPN PROPN ADP PROPN Predicted tags: PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 1.00 2 1.00 1.00 accuracy 1.00 macro avg 1.00 1.00 1.00 6 1.00 6 weighted avg 1.00 1.00

Sentence: i need a flight delta airlines kansas city to salt lake

True tags: PRON VERB DET NOUN PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: PRON VERB DET NOUN PROPN PROPN PROPN PROPN ADP

PROPN PROPN

Classification Report:

	precisio	n red	call f1-	score	suppo	ort
1	1.00	1.0	00 1	1.00	6	
2	1.00	1.0	00 1	1.00	1	
3	1.00	1.0	00 1	1.00	1	
4	1.00	1.0	00 1	1.00	1	
5	1.00	1.0	00 1	1.00	1	
6	1.00	1.0	00 1	1.00	1	
accura	асу		1	.00	11	
macro weighted	_	1.00 1.00	1.00 1.00	1.0 1.0	_	11 11

Sentence: list the alaska airlines flights a departing from burbank

True tags: VERB DET PROPN PROPN NOUN DET VERB ADP PROPN

Predicted tags: VERB DET NOUN PROPN NOUN NOUN ADP PROPN

р	recision	recall	recall f1-score		
1	1.00	0.67	0.80	3	
2	1.00	1.00	1.00	1	

	3	0.2	25	1.0	0	0.4	0	1	
	4	1.0	00	0.5	0	0.6	7	2	
	5	1.0	00	0.5	0	0.6	7	2	
							_	_	
ac	curac	У				0.6	7	9	
ma	acro av	/g	0.	85	0.7	<b>7</b> 3	0.7	1	9
weig	hted a	ıvg	0	.92	0.	67	0.7	2	9

Sentence: give me all the flights from miami to chicago on american airlines

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precisio	n red	call	f1-sco	re supp	oort
1	1.00	) 1.0	00	1.00	4	
2	1.00	) 1.0	00	1.00	3	
3	1.00	) 1.0	00	1.00	1	
4	1.00	) 1.0	00	1.00	1	
5	1.00	) 1.0	00	1.00	2	
6	1.00	) 1.0	00	1.00	1	
accur	acy			1.00	12	
macro weighted	_	1.00		.00 1.00	1.00 1.00	12 12

Sentence: i <unk> like united airlines flights from denver to baltimore

True tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB VERB PROPN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-scc	re su	pport
1	1.0	0 0.	75	0.86	5 4	4
2			00	1.00		2
3	1.0	0 1.	00	1.00	) .	1
4	0.5	0 1.	00	0.67	, ·	1
6	1.0	0 1.	00	1.00	)	1
8	1.0	0 1.	00	1.00	)	1
accur	acy			0.90	1	0
macro	_	0.92		96	0.92	10
weighted	d avg	0.95	C	).90	0.91	10

Sentence: i <unk> like a flight from new york to los angeles on saturday morning on us air

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN

PROPN ADP NOUN NOUN ADP PROPN PROPN

## Classification Report:

	precisio	on re	call	t1-sco	re sup	port
1	1.0	0 1.	00	1.00	6	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	3	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	acy			1.00	17	
macro	avg	1.00	1.	00	1.00	17
weighted	d avg	1.00	1	.00	1.00	17

Sentence: show me the southwest airlines flights from san diego to san francisco True tags: VERB PRON DET PROPN PROPN NOUN ADP PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB PRON DET DET PROPN NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

	precis	sion	recal	l f1-so	core	supp	ort
1	1.	00	0.83	0.9	91	6	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	1	
4	1.	00	1.00	1.0	00	1	
5	0.	50	1.00	0.0	67	1	
6	1.	00	1.00	1.0	00	1	
accur	acy			0.9	92	12	
macro	avg	0.9	92	0.97	0.93	3	12
weighte	d avg	0.	96	0.92	0.9	3	12

Sentence: what flights does american airlines have from boston to dallas True tags: DET NOUN AUX PROPN PROPN VERB ADP PROPN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN PROPN

		vp.			
	pre	cision	recall	f1-score	support
1		0.67	1.00	0.80	4
2		1.00	1.00	1.00	2
3		1.00	1.00	1.00	1
4		1.00	0.00	0.00	1
5		1.00	0.00	0.00	1
6		0.00	1.00	0.00	0
8		1.00	0.00	0.00	1
accur	асу			0.70	10

macro avg	0.81	0.57	0.40	10
weighted avg	0.87	0.70	0.62	10

Sentence: what flights go from chicago to seattle on continental airlines on saturday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN

PROPN ADP NOUN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	0.67	1.00	0.80	2
4	1.00	0.00	0.00	1
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
accura	асу		0.83	12
macro	avg 0.	78 0.	.67 0.4	17 12
weighted	lavg 0	).94 (	0.83 0.	80 12

Sentence: list the flights from dallas to san francisco on american airlines

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

**PROPN** 

Classification Report:

	precision		recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	5	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	1	
4	. 1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	) .	11	
macro	avg	1.00	) 1	.00	1.00		11
weighte	d avg	1.0	0	1.00	1.00		11

Sentence: what flights go from chicago to seattle on saturday on continental airlines True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP PROPN PROPN

Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1 00	1 00	1 00	4

3	0.67	1.0	00	0.8	0	2	
4	1.00	0.0	00	0.0	0	1	
5	1.00	0.0	00	0.0	0	1	
6	0.00	1.0	0	0.0	0	0	
accuracy	y			0.83	3	12	
macro av	/g (	0.78	0.6	37	0.47	7	12
weighted a	vg	0.94	0	.83	8.0	30	12

Sentence: show me the flight classes for delta airlines

True tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN ADP ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scc	ore su	pport
1	1.0	0 1	.00	1.00	)	2
2	0.5	50 1	.00	0.67	7	1
3	1.0	0 0	.50	0.67	7	2
4	1.0	0 1	.00	1.00	)	1
5	1.0	0 1	.00	1.00	)	1
6	1.0	0 1	.00	1.00	)	1
accur	acy			0.88	} {	3
macro	avg	0.92	0	.92	0.89	8
weighted	d avg	0.94	(	38.0	0.88	8

Sentence: please list the flights from cincinnati to burbank on american airlines True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

	prec	ision	rec	all	f1-sc	core	supp	ort
1		1.00	1.0	00	1.0	00	4	
2		1.00	1.0	00	1.0	00	3	
3	•	1.00	1.0	00	1.0	00	1	
4	. (	0.50	1.0	00	0.6	67	1	
5	,	1.00	1.0	00	1.0	00	1	
13	3	1.00	0.	00	0.	00	1	
accur	асу				0.9	1	11	
macro	avg	0	.92	0	.83	0.7	'8	11
weighte	d avg	(	0.95	(	0.91	0.	88	11

Sentence: show me all the flights from indianapolis to san diego on us air

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN ADP

PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN

ADP PROPN PROPN Classification Report:

	precis	ion re	call	f1-sco	re supp	port
1	1.0	00 1	.00	1.00	5	
2	1.0	00 1.	.00	1.00	3	
3	1.0	00 1.	.00	1.00	1	
4	1.0	00 1.	.00	1.00	1	
5	1.0	00 1.	.00	1.00	2	
6	1.0	00 1.	.00	1.00	1	
accur	асу			1.00	13	
macro	avg	1.00	1.	.00	1.00	13
weighte	d avg	1.00	1	00.1	1.00	13

Sentence: i would like to fly delta airlines from atlanta to pittsburgh

True tags: PRON AUX VERB PART VERB PROPN PROPN ADP PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB ADP VERB PROPN PROPN ADP PROPN ADP

PROPN

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	1	00	1.00	1	.00	4	
2		67	1.00		80	2	
4	1.	00	1.00	1.	.00	2	
6	1.	00	1.00	1.	00	1	
8	1.	00	1.00	1.	.00	1	
12	2 1	.00	0.00	0	.00	1	
accur	acy			0.	91	11	
macro	avg	0.9	4 (	0.83	8.0	0	11
weighted	d avg	0.	94	0.91	0.0	37	11

Sentence: what flights are available wednesday afternoon from denver to san francisco

True tags: DET NOUN AUX ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN AUX AUX NOUN NOUN ADP PROPN ADP PROPN PROPN

	preci	ision	recall	f1-score	supp	ort
1	1	.00	1.00	1.00	3	
2	1	.00	1.00	1.00	2	
3	1	.00	1.00	1.00	3	
5	1	.00	0.00	0.00	1	
6	C	00.0	1.00	0.00	0	
7	1	.00	0.00	0.00	1	
8	C	).50	1.00	0.67	1	
accur	асу			0.82	11	
macro	avg	0.	79 0	.71 0.5	52	11

weighted avg 0.95 0.82 0.79 11

Sentence: show me all flights to philadelphia in the evening

True tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN

Classification Report:

precis	sion	recall	f1-sc	ore su	pport
1	00	1 00	1 0	Λ	1
					•
					2
				-	2
					1
					2
1.	.00	1.00	1.0	0	1
acy			1.00	) (	9
avg	1.0	00 1	1.00	1.00	9
d avg	1	.00	1.00	1.00	9
	1. 1. 1. 1. 1. 1. acy avg	1.00 1.00 1.00 1.00 1.00 1.00 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy 1.00 9

Sentence: flights from chicago to denver on continental on saturday morning True tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precis	sion	reca	all f	1-sc	ore	supp	ort
1	1.	00	1.0	0	1.0	0	3	
2	1.	00	1.0	0	1.0	0	4	
3	1.	00	1.0	0	1.0	00	3	
accur	асу				1.0	0	10	
macro	avg	1.0	OC	1.0	00	1.0	0	10
weighted	d avg	1	.00	1.	00	1.0	00	10

Sentence: what flights from san jose to dallas on friday afternoon

True tags: DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

NOUN

	preci	sion	reca	II f1-s	core	supp	ort
1	1	.00	1.00	) 1	.00	3	
2	1	.00	1.00	) 1	.00	3	
3	1	.00	1.00	) 1	.00	3	
5	1	.00	0.00	0	.00	1	
6	0	.00	1.00	0	.00	0	
accur	acy			0.	90	10	
macro	avg	3.0	30	0.80	0.6	60	10
weighted	d avg	1.	.00	0.90	0.	90	10

Sentence: what are the flights and prices from la to charlotte for monday morning True tags: PRON AUX DET NOUN CCONJ NOUN ADP PROPN ADP NOUN NOUN

Predicted tags: PRON AUX DET NOUN NOUN PROPN ADP PROPN ADP NOUN NOUN

Classification Report:

	preci	sion	reca	all f	1-sc	ore s	suppo	ort
1	0	.67	1.00	)	0.8	0	2	
2	1	.00	1.00	)	1.0	0	3	
3	0	.75	0.7	5	0.7	5	4	
5	1	.00	1.00	)	1.0	0	1	
6	1	.00	1.00	)	1.0	0	1	
8		.00	1.00		1.0		1	
10		1.00	0.0		0.0		1	
• • •			0.0	•	0.0		•	
accur	acv				0.85	5	13	
macro	•	0.9	92	0.8		0.79		13
weighte	•		.87		.85	0.8		13
	~ ~ • 9	U		٠.		3.0	_	. •

Sentence: on friday night i would like a flight from newark to los angeles

True tags: ADP NOUN NOUN PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: ADP NOUN NOUN PRON VERB VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scoı	e supp	ort
1	1.0	00 1.	.00	1.00	3	
2	1.0	00 1.	.00	1.00	3	
3	1.0	00 1.	.00	1.00	3	
4	0.5	50 1.	.00	0.67	1	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
8	1.0	0 0.	.00	0.00	1	
accur	acy			0.92	13	
macro weighted	_	0.93 0.96	_	86 ( .92	0.81 0.90	13 13

Sentence: <unk> paul to kansas city friday night

True tags: PROPN PROPN ADP PROPN PROPN NOUN NOUN

Predicted tags: VERB PROPN ADP PROPN PROPN PROPN

р	recision	recall	f1-score	support
1	0.60	0.75	0.67	4
2	1.00	1.00	1.00	1
3	1.00	0.00	0.00	2
4	0.00	1.00	0.00	0

accuracy		0.5	7 7	
macro avg	0.65	0.69	0.42	7
weighted avg	0.77	0.57	0.52	7

Sentence: show me the flights from philadelphia to baltimore in the morning True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precisi	on re	call	f1-sc	ore si	upport
1	1.0	00 1.	.00	1.0	0	2
2	1.0	0 1.	.00	1.0	0	3
3	1.0	0 1.	.00	1.0	0	2
4	1.0	0 1.	.00	1.0	0	1
5	1.0	0 1.	.00	1.0	0	2
6	1.0	0 1.	.00	1.0	0	1
accur	acy			1.00	) 1	11
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	•	1.00	1.00	11

Sentence: what flights from chicago to denver in the morning

True tags: DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precisio	n red	call f1	-score	suppo	ort
1	1.0	0 1.0	00	1.00	2	
2	1.0	0 1.0	00	1.00	3	
3	1.0	0 1.0	00	1.00	2	
5	1.0	0.9	50	0.67	2	
6	0.0	0 1.0	00	0.00	0	
accur	асу		(	0.89	9	
macro weighted	_	0.80 1.00	0.90 8.0	-	73 .93	9 9

Sentence: now i need a flight from detroit to san diego leaving tuesday evening True tags: ADV PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB NOUN NOUN

Predicted tags: NOUN PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN

VERB NOUN NOUN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 2 1.00 1.00 1.00 0.86 3 0.75 3 1.00

4	1.00	1.00	) 1	1.00	2	
5	1.00	1.00	) 1	1.00	1	
6	1.00	1.00	) 1	1.00	1	
11	1.00	0.0	0	0.00	1	
accuracy			0	.92	13	
macro avg	0.9	96	0.86	0.	84	13
weighted av	g 0.	.94	0.92	2 0	.89	13

Sentence: how about flights from dallas to atlanta on wednesday morning True tags: ADV ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: VERB ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precisi	on re	call	t1-sc	ore	supp	ort
1	1.0	0 1	.00	1.0	0	2	
2	1.0	0 1	.00	1.0	0	4	
3	1.0	0 1	.00	1.0	0	3	
4	0.0	0 1	.00	0.0	0	0	
11	1.0	0 0	.00	0.0	00	1	
accura	асу			0.9	0	10	
macro	_	0.80	0	.80	0.6	0	10
weighted	d avg	1.00	(	0.90	0.9	90	10

Sentence: show me the evening flights from baltimore to atlanta True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Classification Report:

Olacollic	auon i k	<b>5</b> P O				
	precisio	n re	call	f1-sco	re su	pport
1	1.00	) 1	.00	1.00		2
2			.00	1.00		2
3	1.00	) 1.	.00	1.00	2	2
4	1.00		.00	1.00		1
5			.00	1.00		1
6	1.00	) 1.	.00	1.00	•	1
accur	acy			1.00	S	)
macro	_	1.00			1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: which flights go from pittsburgh to atlanta in the evening True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: DET NOUN NOUN ADP PROPN ADP PROPN ADP DET NOUN Classification Report:

р	recision	recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	

	3	0.6	7	1.0	00	8.0	30	2	
	4	1.0	0	0.0	00	0.0	0	1	
	5	1.0	0	1.0	0	1.0	00	2	
acc	uracy	y				0.9	0	10	
mad	ro av	⁄g	0.9	93	3.0	30	0.7	6	10
weigh	ted a	vg	0	.93	0.	90	0.8	36	10

Sentence: from toronto to atlanta in the afternoon

True tags: ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

precision recall f1-score support 1.00 1.00 2 1 1.00 2 3 1.00 1.00 1.00 3 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 1.00 accuracy macro avg 1.00 1.00 1.00 7 weighted avg 1.00 1.00 1.00 7

Sentence: i need to fly from pittsburgh to oakland and depart in the afternoon True tags: PRON VERB PART VERB ADP PROPN ADP PROPN CCONJ VERB ADP DET NOUN

Predicted tags: PRON VERB ADP VERB ADP PROPN ADP PROPN PROPN VERB

ADP DET NOUN Classification Report:

	precis	ion	recall	f1-scor	e supp	ort
1	0.	67	1.00	0.80	2	
2	0.	75	1.00	0.86	3	
3	1.	00	1.00	1.00	1	
4	1.	00	1.00	1.00	3	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
10	) 1	.00	0.00	0.00	1	
12	2 1	.00	0.00	0.00	1	
accur	асу			0.85	13	
macro weighted	_	0.9 0.8			).71 0.78	13 13

Sentence: i need a flight from los angeles to pittsburgh on monday afternoon True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN NOUN** 

	precisi	on re	call	f1-sc	ore sup	port
1	1.0	0 1.	.00	1.00	0 3	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	3	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	) 12	
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: show me the evening flights from atlanta to boston

True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	call	f1-scc	re su	pport
1	1.0	00 1	.00	1.00	) 2	2
2	1.0	00 1	.00	1.00	) 2	2
3	1.0	00 1	.00	1.00	) 2	2
4	1.0	00 1	.00	1.00	) '	1
5	1.0	00 1	.00	1.00	) '	1
6	1.0	00 1	.00	1.00	) ′	1
accur	acy			1.00	S	)
macro	avg	1.00	1	.00	1.00	9
weighte	d avg	1.00	•	1.00	1.00	9

Sentence: i need to know what flights leave atlanta on sunday evening and arrive in baltimore

True tags: PRON VERB PART VERB DET NOUN VERB PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN

Predicted tags: PRON VERB ADP VERB DET NOUN NOUN PROPN ADP NOUN NOUN VERB ADP PROPN

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	0.67	1.00	0.80	2	
3	0.60	1.00	0.75	3	
4	1.00	0.75	0.86	4	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
12	1.00	0.00	0.00	1	
accurac	СУ		0.80	15	
macro a	vg 0.9	91 0	.72 0.6	8	15

weighted avg 0.88 0.80 0.75 15

Sentence: what flights are there from boston to denver on monday morning

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN ADP NOUN

NOUN

Classification Report:

			•••			
	precis	sion	recall	f1-sc	ore su	ıpport
1	1.	00	1.00	1.0	0	2
2	1.	00	1.00	1.0	0	3
3	1.	00	1.00	1.0	0	3
4	1.	00	0.00	0.0	0	1
5	1.	00	0.00	0.0	0	1
6	0.	50	1.00	0.6	7	1
8	0.	00	1.00	0.0	0	0
accur	acy			0.82	2 1	1
macro	avg	0.7	'9 (	).71	0.52	11
weighte	d avg	0.	95	0.82	0.79	11

Sentence: give me morning flights from atlanta to baltimore

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	on reca	II f1-scor	e support
1	1.0	0 1.00	1.00	2
2	1.0	0 1.00	1.00	2
3	1.0	0 1.00	1.00	2
4	1.0	0 1.00	1.00	1
6	1.0	0 1.00	1.00	1
accur	acy		1.00	8
macro	avg	1.00	1.00	1.00 8
weighted	d avg	1.00	1.00	1.00 8

Sentence: flights from atlanta to dallas in the afternoon

True tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN

ı	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
accura	су		1.00	8	
macro a	avg 1.0	00 1.	.00 1.0	00	8

weighted avg 1.00 1.00 1.00 8

Sentence: morning flights from pittsburgh to atlanta on wednesday True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precis	sion	recall	f1-sco	ore su	ipport
1	1.	.00	1.00	1.00	0	2
2	1.	.00	1.00	1.00	0	3
3	1.	.00	1.00	1.00	0	3
accur	асу			1.00	) {	3
macro	avg	1.0	00 1	.00	1.00	8
weighte	d avg	1.	.00	1.00	1.00	8

Sentence: what are the flights dallas to boston on monday morning

True tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN

Classification Report:

					•	'
1	1.00	) 1.	00	1.00	2	
2	1.00	) 1.	00	1.00	2	
3	1.00	) 1.	00	1.00	3	
5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
8	1.00	) 1.	00	1.00	1	
accura	су			1.00	10	)
macro a	avg	1.00	1.0	00	1.00	10
weighted	avg	1.00	1.	.00	1.00	10

precision recall f1-score support

Sentence: am flights from atlanta to philadelphia True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision			ecall	f1-sc	ore	supp	ort
	1	1.00	) 1	.00	1.0	0	2	
	2	1.00	) 1	.00	1.0	0	2	
	3	1.00	) 1	.00	1.0	0	2	
accı	ıracy				1.0	0	6	
	o avo	•	1.00		.00	1.0		6
weight	ed av	g	1.00		1.00	1.0	00	6

Sentence: tampa to charlotte sunday morning True tags: PROPN ADP PROPN NOUN NOUN Predicted tags: PRON ADP NOUN NOUN NOUN

## Classification Report:

	prec	ision	reca	all f1-s	core	supp	ort
1		1.00	0.0	0 0	.00	2	
2		1.00	1.0	0 1	.00	1	
3	(	0.67	1.0	0 0	.80	2	
6	(	0.00	1.0	0 0	.00	0	
accur	acy			0.	60	5	
macro	avg	0.	67	0.75	0.4	ŀ5	5
weighte	d avg	0	.87	0.60	0.	52	5

Sentence: show flights saturday evening from <unk> louis to burbank
True tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP VERB
Classification Report:

	precisio	n re	call	f1-sco	ore su	uppor	t
1	1.00	0.	67	0.80	)	3	
2	1.00	) 1.	00	1.00	)	2	
3	1.00	) 1.	00	1.00	)	3	
4	0.50	) 1.	00	0.67	7	1	
accura	асу			0.89	) !	9	
macro	avg	88.0	0.	.92	0.87	ç	)
weighted	d avg	0.94	(	).89	0.90		9

Sentence: what pm flights are available from philadelphia to pittsburgh True tags: DET NOUN NOUN AUX ADJ ADP PROPN ADP PROPN

Predicted tags: PRON NOUN NOUN VERB VERB ADP PROPN ADP PROPN

Classification Report:

	pred	cision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	2	
2	<u> </u>	1.00	1.0	00	1.0	0	2	
3	3	1.00	1.0	00	1.0	0	2	
4	ļ	0.00	1.0	00	0.0	0	0	
5	5	1.00	0.0	00	0.0	0	1	
6	6	0.00	1.0	00	0.0	0	0	
7	7	1.00	0.0	00	0.0	0	1	
8	3	1.00	0.0	00	0.0	0	1	
accur	асу				0.6	7	9	
macro veighte	_		).75 1.00		.62 ).67	0.3	8 67	9 9
	_							

Sentence: what are the flights from milwaukee to orlando on wednesday night True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN

## Classification Report:

	precis	ion re	ecall	f1-sc	ore su	pport
1	1.0	00 1	.00	1.0	0 2	2
2	1.0	00 1	.00	1.0	0 3	3
3	1.0	00 1	.00	1.0	0 3	}
5	1.0	00 1	.00	1.0	0 1	
6	1.0	00 1	.00	1.0	0 1	
8	1.0	00 1	.00	1.0	0 1	
accur	acy			1.00	) 11	
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00		1.00	1.00	11

Sentence: show me the flights from san francisco to dallas

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore sup	port
1	1.	00	1.00	1.00	) 3	
2	1.	00	1.00	1.00	2	
3	1.	00	1.00	1.00	1	
4	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	) 1	
accur	асу			1.00	9	
macro	avg	1.0	00 1	.00	1.00	9
weighted	d avg	1	.00	1.00	1.00	9

Sentence: show flights from san francisco to denver on a thursday

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN

Classification Report:

10
10

Sentence: from las vegas to phoenix

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

## Classification Report:

precis	ion re	call f	1-scor	e supp	ort
1 1.0	00 1.	.00	1.00	3	
2 1.0	00 1.	.00	1.00	2	
accuracy			1.00	5	
macro avg	1.00	1.0	0 1	1.00	5
weighted avg	1.00	1.0	00	1.00	5

Sentence: show me all flights from san diego to los angeles

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precision		recall f1-score		ore sup	port
1	1.	.00	1.00	1.00	0 4	
2	1.	.00	1.00	1.00	2	
3	1.	.00	1.00	1.00	0 1	
4	. 1.	.00	1.00	1.00	0 1	
5	1.	.00	1.00	1.00	0 1	
6	1.	.00	1.00	1.00	0 1	
accur	acy			1.00	10	
macro	avg	1.0	00 1	.00	1.00	10
weighte	d avg	1.	.00	1.00	1.00	10

Sentence: show flights from kansas city to minneapolis True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precision		recall	f1-sco	ore su	pport
1 2 3 4	1. 1.	00 00 00 00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	) 2	3 2 1
accur macro	acy avg	1.0	0 1	1.00 .00	7 1.00	, , 7_
weighte	d avg	1.0	00	1.00	1.00	7

Sentence: list flights from las vegas to phoenix

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 3

2	1.00	1.0	0 1.0	00	2	
3	1.00	1.0			1	
4	1.00	1.0	0 1.0	00	1	
accuracy	1		1.0	0	7	
macro av	g 1	.00	1.00	1.00		7
weighted av	vg	1.00	1.00	1.00	)	7

Sentence: flights from las vegas to montreal

True tags: NOUN ADP PROPN PROPN ADP PROPN Predicted tags: NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 3 1.00 2 2 1.00 1.00 1.00 3 1.00 1.00 1.00 1 1.00 accuracy 6 macro avg 1.00 1.00 1.00 6 weighted avg 1.00 1.00 1.00 6

Sentence: i am also interested in a flight that <unk> from <unk> louis to las vegas True tags: PRON AUX ADV VERB ADP DET NOUN ADP VERB ADP PROPN

PROPN ADP PROPN PROPN

Predicted tags: PRON PRON VERB AUX ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	0.	80	1.00	0.	89	4	
2	1.	00	1.00	1.	00	4	
3	1.	00	1.00	1.	00	1	
4	0.	00	0.00	0.	00	2	
5	1.	00	1.00	1.	00	1	
6	0.	50	1.00	0.	67	1	
8	0.	00	0.00	0.	00	1	
11	l 1.	00	0.00	0.	.00	1	
accur	acy			0.7	73	15	
macro weighte	_	0.6 0.	66 ( 71	0.62 0.73	0.5 0.	67 68	15 15

Sentence: <unk> petersburg to detroit True tags: PROPN PROPN ADP PROPN Predicted tags: VERB PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1 1.00 0.67 0.80 3

2 1.	00 1.	00 1.	00	1
4 0.	00 1.	00 0.	00	0
accuracy		0.7	75 4	1
macro avg	0.67	0.89	0.60	4
weighted avg	1.00	0.75	0.85	4

Sentence: show me flights from san francisco to minneapolis

True tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	upport	
1	1.	00	1.00	1.0	0	3	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	8	
macro	avg	1.0	0 1	.00	1.00	8	
weighted	d avg	1.	00	1.00	1.00	8 (	

Sentence: what flights from salt lake city to las vegas

True tags: DET NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scc	re su	oport
1	1.0	0 1.	.00	1.00	) 5	5
2	1.0	0 1.	.00	1.00	) 2	<u>-</u>
3	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 0.	.00	0.00	) 1	
6	0.0	0 1.	.00	0.00	) C	)
accur	acy			0.89	9	
macro weighted	_	0.80 1.00		.80 ).89	0.60 0.89	9 9

Sentence: show me all flights from san francisco to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

precision	recall	f1-score	support
1.00	1.00	1.00	3
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

6 1.0	00 1.0	00 1.0	00	1
accuracy		1.0	0 9	9
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: do you have flights from <unk> petersburg to toronto on monday True tags: AUX PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: VERB PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Classification Report:

	preci	sion	reca	II f1-	score	supp	oort
1	1	.00	1.00	) 1	.00	3	
2	1	.00	1.00	) 1	.00	3	
3	1	.00	1.00	) 1	.00	2	
4	0	.50	1.00	) (	).67	1	
6	1	.00	1.00	) 1	.00	1	
8	1	.00	0.00	) (	00.0	1	
accur	acy			0	.91	11	
macro	_	0.9		0.83	_	.78	11
weighte	d avg	0.	95	0.91		0.88	11

Sentence: what are all the flights on delta in and out of fort worth

True tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ ADP ADP

PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADP PROPN ADP PROPN PROPN

ADP PROPN PROPN Classification Report:

	preci	sion	reca	all 1	f1-sc	ore	supp	ort
1	C	.60	1.00	0	0.7	5	3	
2	1	.00	0.7	5	0.8	6	4	
3	1	.00	1.00	0	1.0	0	1	
5	1	.00	1.00	0	1.0	0	2	
6	1	.00	1.00	0	1.0	0	1	
8	1	.00	1.00	0	1.0	0	1	
10	)	1.00	0.0	0	0.0	0	1	
accur	acy				0.85	5	13	
macro	avg	0.9	94	0.8	32	8.0	0	13
weighte	d avg	0.	91	0	.85	3.0	32	13

Sentence: show flights from <unk> petersburg to charlotte
True tags: VERB NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support

Sentence: i <unk> like flight information from dallas fort worth to boston on tuesday True tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP

PROPN ADP NOUN Classification Report:

	precis	ion	recall	f1-sco	re supp	ort
1	1.0	00	1.00	1.00	4	
2	1.0	00	1.00	1.00	3	
3	1.0	00	1.00	1.00	3	
4	1.0	00	1.00	1.00	1	
6	1.0	00	1.00	1.00	1	
8	1.0	00	1.00	1.00	1	
accur	acy			1.00	13	
macro	avg	1.0	0 1	.00	1.00	13
weighted	d avg	1.0	00	1.00	1.00	13

Sentence: show me all flights from san francisco to pittsburgh on friday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Classification Report:

	precision	on rec	all f1-s	core su	oport
1	1.0	0 1.0	00 1.0	00 3	3
2	1.0	0 1.0	00 1.0	00 3	}
3	1.0	0 1.0	00 1.0	00 2	<u>-</u>
4	1.0	0 1.0	00 1.0	00 1	
5	1.0	0 1.0	00 1.0	00 1	
6	1.0	0 1.0	00 1.0	00 1	
accur	асу		1.0	00 11	
macro	avg	1.00	1.00	1.00	11
weighte	d avg	1.00	1.00	1.00	11

Sentence: from las vegas to montreal

True tags: ADP PROPN PROPN ADP PROPN

Predicted tags: ADP PROPN PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-scc	ore su	ppo	rt
1	1.0	0 1.	00	1.00	)	3	
2	1.0	0 1.	00	1.00	)	2	
accura	асу			1.00	) :	5	
macro	avg	1.00	1	.00	1.00		5
weighted		1.00		1.00	1.00		5

Sentence: sunday flights from new york city to las vegas

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: NOUN NOUN ADP PROPN PROPN PROPN PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sco	re su	pport	
1	1.0	00 1.	.00	1.00	) ;	5	
2	1.0	0 1.	.00	1.00	) :	2	
3	1.0	00 1.	.00	1.00	)	2	
accura	асу			1.00	ç	9	
macro	avg	1.00	1.	.00	1.00	9	
weighted	d avg	1.00	•	1.00	1.00	ç	)

Sentence: please find a flight from kansas city to newark

True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB VERB DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

Ciacomica	uon rope	,, ,,			
þ	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accura	СУ		0.89	9	
macro a	ıvg 0.	92 0	.83 0.7	<sup>7</sup> 8	9
weighted	avg 0	.94	0.89 0.	.85	9

Sentence: i want to go from san francisco to denver

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB ADP VERB ADP PROPN PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	0.67	1 00	0.80	2

4	1.00	1.0	00	1.00	2	
6	1.00	1.0	00	1.00	1	
12	1.00	0.	00	0.00	1	
accuracy			(	0.89	9	
macro avo	<b>)</b> 0	.93	0.80	0.	.76	9
weighted av	g	0.93	0.8	9 (	).84	9

Sentence: list all flights on continental leaving denver on monday

True tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN

Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP NOUN

Classification Report:

	precisio	n re	call	f1-scc	re su	ıpport
1	0.6		00	0.80		2
2			00	1.00		2
3	1.0		00	1.00		2
4	1.0	0 0.	50	0.67	7	2
5	1.0	0 1.	00	1.00	)	1
accur	acy			0.89		9
macro	avg	0.93	0	.90	0.89	9
weighted	d avg	0.93	(	0.89	0.88	9

Sentence: only show continental flights True tags: ADV VERB PROPN NOUN Predicted tags: VERB VERB VERB NOUN

Classification Report:

р	recisio	n re	call	f1-scc	ore si	nbbo	rt
1	1.00	0.	.00	0.00	)	1	
3	1.00	) 1.	00	1.00		1	
4	0.33	3 1.	.00	0.50	)	1	
11	1.00	0 C	.00	0.0	0	1	
accurac	у			0.50		4	
macro a	vg	0.83	0	.50	0.38		4
weighted a	avg	0.83	(	0.50	0.38		4

Sentence: find a flight on delta from philadelphia to san francisco

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

accuracy		1.0	0 10	
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: all delta flights to <unk> if you can

True tags: DET PROPN NOUN ADP NOUN ADP PRON AUX

Predicted tags: DET PROPN NOUN ADP PROPN PROPN VERB VERB

Classification Report:

	precis	sion	recall	f1-sc	ore su	pport
1	0.	.33	1.00	0.5	0 .	1
2	1.	.00	0.50	0.6	7 2	2
3	1.	.00	0.50	0.6	7 2	2
4	0.	.00	1.00	0.0	0 (	)
5	1.	.00	1.00	1.0	0 '	1
6	1.	.00	0.00	0.0	0 '	1
8	1.	.00	0.00	0.0	0 ′	1
accur	acy			0.50	) 8	}
macro	avg	0.7	'6 C	).57	0.40	8
weighte	d avg	0.	92	0.50	0.52	8

Sentence: show me all the flights from toronto on nationair

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

Ciaconiic	ation	, vopo				
	precis	sion	recall	f1-scc	re sup	port
4		00	4.00	4.00		
1	1	.00	1.00	1.00	) 2	
2		.00	1.00	1.00	) 2	
3	1	.00	1.00	1.00	) 1	
4	. 1	.00	1.00	1.00	) 1	
5	1	.00	1.00	1.00	) 2	
6	1	.00	1.00	1.00	) 1	
accur	acv			1.00	9	
macro	•	1.0	00 1	.00	1.00	9
weighte	•			1.00	1.00	9

Sentence: show me all the united flights from boston to denver

True tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN

precision		recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1

5 1.0	00 1.0	0 1.0	0 2	
6 1.0	00 1.0	00 1.0	00 1	
accuracy		1.0	0 10	
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: show me all the flights on united leaving from boston

True tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN

Predicted tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisi	on r	ecall	f1-sc	ore su	pport
1	0.6	67 <sup>^</sup>	1.00	0.8	0 2	2
2	1.0	00 1	1.00	1.0	0 2	2
3	1.0	00 1	1.00	1.0	0 '	1
4	1.0	00 (	0.50	0.6	7 2	2
5	1.0	00 1	1.00	1.0	0 2	2
6	1.0	00 1	1.00	1.0	0 ′	1
accur	acy			0.90	) 1	0
macro	avg	0.94	0	.92	0.91	10
weighted	d avg	0.93	3 (	0.90	0.89	10

Sentence: when are the american flights from phoenix to milwaukee True tags: ADV AUX DET PROPN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB DET PROPN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	1.0	0 1.	.00	1.00	) 3	
2	1.0	0 1.	.00	1.00	) 2	
3	1.0	0 1.	.00	1.00	) 1	
4	0.0	0 1.	.00	0.00	0	
5	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 0	.00	0.00	) 1	
11	1.0	0 0	.00	0.0	0 1	
accur	асу			0.78	9	
macro weighted	•	0.86 1.00	_	.71 ).78	0.57 0.78	9 9

Sentence: please list all united flights between pittsburgh and baltimore True tags: INTJ VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB VERB DET VERB NOUN ADP PROPN PROPN Classification Report:

p	recision	recall	f1-score	support
1	0.67	0.67	0.67	3
2	1 00	1 00	1 00	1

3	1.00	1.00	1.00	1	
4	0.33	1.00	0.50	1	
5	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accuracy			0.67	9	
macro av	g 0.8	36 0	.67 (	0.60	9
weighted av	/g 0.	.81	0.67	0.61	9

Sentence: please list all flights between boston and philadelphia <unk> on sundays True tags: INTJ VERB DET NOUN ADP PROPN CCONJ PROPN VERB ADP

Predicted tags: VERB VERB DET NOUN ADP PROPN PROPN PROPN ADP NOUN

Classification Report:

р	precision		f1-score	supp	ort
1	0.50	0.67	0.57	3	
2	1.00	1.00	1.00	2	
3	0.50	1.00	0.67	1	
4	0.50	0.50	0.50	2	
5	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accurac	СУ		0.64	11	
macro a	vg 0.	79 (	0.60 0.	53	11
weighted	avg 0	.73	0.64	).58	11

Sentence: list all flights from baltimore to san francisco on friday

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN Classification Report:

		-						
	preci	sion	rec	all	f1-s	core	sup	port
1	1	.00	1.0	0	1.	00	3	
2	1	.00	1.0	0	1.	00	3	
3	1	.00	1.0	0	1.	00	2	
4	1	.00	1.0	0	1.	00	1	
5	1	.00	1.0	0	1.	00	1	
accur	асу				1.0	00	10	
macro weighte	_		.00 1.00		.00 1.00		00 .00	10 10

Sentence: show me flights from philadelphia to denver on a monday True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Classification Report:

	precis	ion	recall	f1-sco	ore supp	port
1	1	00	1.00	1.00	) 2	
2		00	1.00	1.00		
3	1.	00	1.00	1.00	2	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
accur	acy			1.00	10	
macro	avg	1.0	00 1	.00	1.00	10
weighte	d avg	1	.00	1.00	1.00	10

Sentence: show me the flights from denver to atlanta on friday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

precision recall f1-score support

10
10

Sentence: flights that go from oakland to philadelphia on friday

True tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN Predicted tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	prec	isior	n red	call	f1-s	core	supp	ort
1		1.00	1.	00	1.	00	2	
2		1.00	1.	00	1.	00	4	
3		1.00	1.	00	1.	00	2	
4	•	1.00	1.	00	1.	00	1	
accur	acy				1.0	00	9	
macro	avg	•	1.00	1	.00	1.0	00	9
weighte	d avç	J	1.00	•	1.00	1	.00	9

Sentence: baltimore to philadelphia wednesday

True tags: PROPN ADP PROPN NOUN

Predicted tags: PROPN ADP PROPN NOUN

Classification Report:

precision recall f1-score support

Sentence: i <unk> like a flight from montreal to san diego for sunday

True tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN

ADP NOUN

Classification Report:

	precisi	on re	call	f1-scc	re supp	ort
1	1.0	0 1.	.00	1.00	) 3	
2	1.0	0 1.	.00	1.00	) 3	
3	1.0	0 1.	.00	1.00	) 2	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 1.	00	1.00	) 1	
accura	асу			1.00	12	
macro	avg	1.00	1	.00	1.00	12
weighted	l avg	1.00	•	1.00	1.00	12

Sentence: what flights are available friday from philadelphia to oakland True tags: DET NOUN AUX ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX AUX ADJ ADP PROPN ADP PROPN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	0.50	0.67	2
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
7	0.00	0.00	0.00	1
8	0.50	1.00	0.67	1
accur	acy		0.67	9
macro weighted	0		.64 0.4 0.67 0.	18 9 67 9

Sentence: i would like to see the flights available from pittsburgh to san francisco for monday

True tags: PRON AUX VERB PART VERB DET NOUN ADJ ADP PROPN ADP

PROPN PROPN ADP NOUN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN NOUN ADP PROPN ADP

PROPN PROPN ADP NOUN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	) 3	
2	0.7	5 1	.00	0.86	3	
3	0.6	7 1	.00	0.80	) 2	
4	1.0	0 1	.00	1.00	) 2	
5	1.0	0 1	.00	1.00	) 1	
6	1.0	0 1	.00	1.00	) 1	
7	1.0	0 0	.00	0.00	) 1	
8	1.0	0 1	.00	1.00	) 1	
12	2 1.0	00 0	0.00	0.0	0 1	1
accura	асу			0.87	15	,
macro	avg	0.94	0	.78	0.74	15
weighted	d avg	0.91	(	).87	0.81	15

Sentence: show me the flights on sunday from tampa to charlotte

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

Ciassilio	auoni	CPO	١.				
	precis	ion	recall	f1-sc	ore s	uppc	ort
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	00	2	
4	1.0	00	1.00	1.0	00	1	
5	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	0	10	
macro	avg	1.0	00 1	.00	1.00		10
weighted	d avg	1.	00	1.00	1.00	)	10

Sentence: what are all flights from denver to philadelphia on saturday
True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN
Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN
Classification Report:

precision recall f1-score support 1.00 1.00 1.00 2 1 2 1.00 1.00 1.00 3 3 1.00 1.00 1.00 2 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1 1.00

accuracy		1.0	0 10	
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: what flights are available from denver to philadelphia on wednesday True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN AUX AUX ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precisio	on re	call	f1-scc	re sup	port
1	1.0	0 1.	00	1.00	) 2	
2	1.0	0 1.	00	1.00	) 3	
3	1.0	0 1.	00	1.00	) 2	
5	1.0	0 0.	00	0.00	) 1	
6	0.0	0 1.	00	0.00	0 (	
7	1.0	0 0.	00	0.00	) 1	
8	0.5	0 1.	00	0.67	7 1	
accur	acy			0.80	10	
macro	avg	0.79	0	.71	0.52	10
weighted	d avg	0.95	(	08.0	0.77	10

Sentence: i want to go from boston to washington on a saturday

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: PRON VERB ADP VERB ADP PROPN ADP PROPN ADP DET

NOUN

Classification Report:

	precisi	ion r	ecall	f1-sco	re sup	port
1	1.0	00 1	00.1	1.00	2	
2	0.7	<b>7</b> 5 1	00.1	0.86	3	
3	1.0	00 1	00.1	1.00	1	
4	1.0	00 1	00.1	1.00	2	
5	1.0	00 1	00.1	1.00	1	
6	1.0	00 1	00.1	1.00	1	
12	2 1.	00	0.00	0.00	) 1	
accura	асу			0.91	11	
macro	avg	0.96	0	.86	0.84	11
weighted	d avg	0.93	3 (	0.91	0.87	11
-	•					

Sentence: show flights from burbank to <unk> louis on monday

True tags: VERB NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1 00	1 00	1 00	3

3 1.0	0.1	00 1.0	0 2	
4 1.0	00 1.0	00 1.0	0 1	
accuracy		1.0	0 9	
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: please show me flights from dallas to atlanta on monday

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

Predicted tags: VERB VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precision		rec	recall f1-score		supp	ort	
1		1.00	1.0	0	1.0	0	2	
2		1.00	1.0	0	1.0	0	3	
3		1.00	1.0	0	1.0	0	2	
4	(	0.50	1.0	0	0.6	67	1	
6		1.00	1.0	0	1.0	0	1	
13	3	1.00	0.0	00	0.	00	1	
accur	acy				0.9	0	10	
macro	avg	0.	92	0	.83	0.7	'8	10
weighted	d avg	j C	.95	(	0.90	0.	87	10

Sentence: show me the flights from pittsburgh to los angeles on thursday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	precisi	on re	ecall	f1-sc	ore	suppo	ort
1	1.0	00 1	.00	1.0	0	3	
2			.00	1.0		3	
3	1.0	0 1	.00	1.0	0	2	
4	1.0	0 1	.00	1.0	0	1	
5	1.0	0 1	.00	1.0	0	1	
6	1.0	00 1	.00	1.0	0	1	
accur	асу			1.0	0	11	
macro weighte	_	1.00 1.00		.00 1.00	1.00		11 11
weignie	aavy	1.00	,	1.00	1.0	,0	

Sentence: i <unk> like a list of the flights from oakland to dallas fort worth on sunday

True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET VERB ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP NOUN

Classification Report:

precision recall f1-score support

1	1.0	0 1	00.1	1.	00	4	
2	1.0	0 1	00.1	1.	00	4	
3	1.0	0 (	0.67	0.	80	3	
4	0.5	0 1	00.1	0.	67	1	
5	1.0	0 1	00.1	1.	00	2	
6	1.0	0 1	00.1	1.	00	1	
8	1.0	0 1	00.1	1.	00	1	
accuracy	/			0.9	94	16	
macro av	'g	0.93	(	0.95	0.	92	16
weighted a	vg	0.97	7	0.94	C	).94	16

Sentence: show me the flights from boston to pittsburgh on wednesday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report: precision recall f1-score support

	proor	31011	rccan	11-300	ne sup	JOIL
1	1	.00	1.00	1.00	) 2	
2	1	.00	1.00	1.00	) 3	
3	1	.00	1.00	1.00	) 2	
4	1	.00	1.00	1.00	) 1	
5	1	.00	1.00	1.00	) 1	
6	1	.00	1.00	1.00	) 1	
accur	acy			1.00	10	
macro	avg	1.0	00 1	.00	1.00	10
weighte	d avg	1	.00	1.00	1.00	10

Sentence: list all flights from nashville to cleveland on sunday

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	pred	isior	n re	call	f1-s	core	supp	ort
1		1.00	1.	00	1.	00	2	
2	, ,	1.00	1.	00	1.	00	3	
3	,	1.00	1.	00	1.	00	2	
4		1.00	1.	00	1.	00	1	
5	,	1.00	1.	00	1.	00	1	
accur	acy				1.0	00	9	
macro	avg	•	1.00	1	.00	1.0	00	9
weighte	d avg	l	1.00	•	1.00	1	.00	9

Sentence: give me a flight from tampa to charlotte on sunday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precis	ion	recall	f1-sc	ore su	ıpport
1	1.0	00	1.00	1.0	0	2
2			1.00	1.0		3
3	1.0	00	1.00	1.0	0	2
4	1.0	00	1.00	1.0	0	1
5	1.0	00	1.00	1.0	0	1
6	1.0	00	1.00	1.0	0	1
accur	acy			1.0	0 1	0
macro	avg	1.0	0 1	.00	1.00	10
weighte	d avg	1.	00	1.00	1.00	10

Sentence: show flights from denver to san francisco

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	precis	ion re	ecall	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	) ;	3
2	1.0	00 1	.00	1.00	) :	2
3	1.0	00 1	.00	1.00	•	1
4	1.0	00 1	.00	1.00	•	1
accur	acv			1.00	7	7
macro	•	1.00	1	.00	1.00	7
weighted	d avg	1.00	)	1.00	1.00	7

Sentence: what are all the flights available between pittsburgh and dallas fort worth True tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

	precisio	n recall	f1-score	support
1	0.80	1.00	0.89	4
2	1.00	1.00	1.00	1
3	0.50	1.00	0.67	1
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
10	1.00	0.00	0.00	1
accura	асу		0.83	12
macro weighted	0		0.75 0.6 0.83 0.	69 12 77 12

Sentence: what flights from seattle to salt lake city

True tags: DET NOUN ADP PROPN ADP PROPN PROPN PROPN Predicted tags: PRON NOUN ADP PROPN ADP PROPN PROPN PROPN Classification Report:

	precisi	on re	recall f1-score		ore su	upport
1	1.0	0 1	.00	1.00	)	4
2	1.0	00 1	.00	1.00	)	2
3	1.0	0 1	.00	1.00	)	1
5	1.0	0 0	.00	0.0	)	1
6	0.0	00 1	.00	0.00	)	0
accur	acy			0.88	3	8
macro	avg	0.80	0	.80	0.60	8
weighted	d avg	1.00	(	38.0	0.88	8

Sentence: what are the flights from memphis to las vegas

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN Classification Paparti

Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.	00	1.00	1.0	0	3	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
8	1.	00	1.00	1.0	00	1	
accur	acv			1.0	0	9	
macro	•	1.0	00 ′	1.00	1.00	)	9
weighte	•	1.	.00	1.00	1.0	00	9

Sentence: what flights are there from pittsburgh to los angeles

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN PROPN

	precisi	on re	call	f1-sco	ore s	uppoi	rt
1	1.0	0 1	.00	1.00	)	3	
2	1.0	0 1	.00	1.00	)	2	
3	1.0	0 1	.00	1.00	)	1	
4	1.0	0 0	.00	0.0	)	1	
5	1.0	0 0	.00	0.0	)	1	
6	0.5	0 1	.00	0.6	7	1	
8	0.0	0 1	.00	0.00	)	0	
accur	acy			0.78	3	9	
macro	avg	0.79	0	.71	0.52	(	9
weighte	d avg	0.94	(	0.78	0.74		9

Sentence: i <unk> looking for a flight from pittsburgh to san francisco

True tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precis	ion i	recall	f1-sc	ore s	suppo	rt
1	1.0	00	1.00	1.0	00	3	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accura	acy			1.0	0	11	
macro	avg	1.00	) 1	.00	1.00	•	11
weighted	d avg	1.0	0	1.00	1.00	)	11

Sentence: show me the flights from dallas to san francisco

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion re	ecall	f1-scc	re su	pport
1	1.0	00 1	.00	1.00	) ;	3
2	1.0	00 1	.00	1.00	) :	2
3	1.0	00 1	.00	1.00	)	1
4	1.0	00 1	.00	1.00	)	1
5	1.0	00 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
accur	acy			1.00	(	)
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00		1.00	1.00	9

Sentence: what are the flights from boston to san francisco

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN

ŗ	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accura	су		1.00	9

macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: what flights do you have leaving boston going to san francisco True tags: DET NOUN AUX PRON VERB VERB PROPN VERB ADP PROPN

**PROPN** 

Predicted tags: PRON NOUN VERB VERB VERB VERB VERB ADP PROPN

**PROPN** 

Classification Report:

precisi	on re	call	f1-scc	ore supp	ort
1.0	0 0	.67	0.80	) 3	
1.0	0 1	.00	1.00	) 1	
1.0	0 1	.00	1.00	) 1	
0.5	0 1	.00	0.67	7 3	
1.0	0 0	.00	0.00	) 1	
0.0	0 0	.00	0.00	) 1	
1.0	0 0	.00	0.00	) 1	
acy			0.64	. 11	
avg d avg	0.79 0.77			0.50 0.58	11 11
	1.0 1.0 1.0 0.5 1.0 0.0 1.0 acy avg	1.00 0 1.00 1 1.00 1 0.50 1 1.00 0 0.00 0 1.00 0	1.00 0.67 1.00 1.00 1.00 1.00 0.50 1.00 1.00 0.00 0.00 0.00 1.00 0.00	1.00 0.67 0.80 1.00 1.00 1.00 1.00 1.00 1.00 0.50 1.00 0.67 1.00 0.00 0.00 0.00 0.00 0.00 1.00 0.00 0.00 acy 0.64 avg 0.79 0.52	1.00 0.67 0.80 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1 0.50 1.00 0.67 3 1.00 0.00 0.00 1 0.00 0.00 0.00 1 1.00 0.00 0.00 1 acy 0.64 11 avg 0.79 0.52 0.50

Sentence: list all flights please from washington to san francisco

True tags: VERB DET NOUN INTJ ADP PROPN ADP PROPN PROPN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore su	oqqı	rt
1	1.0	00	1.00	1.00	)	3	
2	1.0	00	1.00	1.00	)	2	
3	1.0	00	1.00	1.00	)	1	
4	0.5	50	1.00	0.6	7	1	
5	1.0	00	1.00	1.00	)	1	
13	3 1.	00	0.00	0.0	0	1	
accura	асу			0.89	)	9	
macro	avg	0.9	2 0	.83	0.78		9
weighted	d avg	0.	94 (	0.89	0.85		9

Sentence: list flights between oakland and san francisco

True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB NOUN ADP PROPN PROPN PROPN PROPN

р	recision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1 00	1 00	1 00	1

10 1.00 0.00 0.00 1

accuracy 0.86 7

macro avg 0.95 0.80 0.77 7

0.89

Sentence: interested in a flight from washington to fort worth

0.86

True tags: VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

0.80

7

Classification Report:

weighted avg

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 3 1.00 3 1.00 1 1.00 1.00 4 1 1.00 1.00 1.00 5 1.00 1.00 1.00 1 1.00 9 accuracy 1.00 macro avg 1.00 1.00 9 weighted avg 1.00 1.00 1.00 9

Sentence: what flights are <unk> available between boston and dallas fort worth True tags: DET NOUN AUX ADV ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: PRON NOUN AUX VERB AUX ADP PROPN PROPN PROPN PROPN

Classification Report:

ecision	recall	f1-score	support
0.80	1.00	0.89	4
1.00	1.00	1.00	1
1.00	1.00	1.00	1
0.00	1.00	0.00	0
1.00	0.00	0.00	1
0.00	1.00	0.00	0
1.00	0.00	0.00	1
0.50	1.00	0.67	1
1.00	0.00	0.00	1
1.00	0.00	0.00	1
0			11 6 11 57 11
	0.80 1.00 1.00 0.00 1.00 0.00 1.00 0.50 1.00 1.0	0.80	0.80

Sentence: what about flights from boston to san diego

True tags: PRON ADP NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.0	00	1.0	0	3	
2	1.00	0.0	67	0.8	0	3	
3	0.50	1.0	00	0.6	7	1	
6	1.00	1.0	00	1.0	0	1	
accurac	У			0.88	3	8	
macro av	vg	0.88	0.9	92	0.87		8
weighted a	avg	0.94	0.	.88	0.88	3	8

Sentence: flights from baltimore to san francisco True tags: NOUN ADP PROPN ADP PROPN PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call f	f1-sco	re sup	port
1	1.0	0 1.	00	1.00		
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
					_	
accur	acy			1.00	6	
macro	avg	1.00	1.0	00	1.00	6
weighted	d avg	1.00	1.	.00	1.00	6

Sentence: i live in washington and i would like to make a trip to san francisco can you tell me which airlines connect with those two cities

True tags: PRON VERB ADP PROPN CCONJ PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN AUX PRON VERB PRON DET NOUN VERB ADP DET NUM NOUN

Predicted tags: PRON VERB ADP PROPN PROPN PRON AUX VERB ADP VERB DET NOUN ADP PROPN PROPN PROPN PRON VERB PRON DET NOUN NOUN ADP PROPN NOUN NOUN

Ciassilio	auoni	toport.				
	precis	ion re	call	f1-score	e supp	ort
1	0.5	50 1	.00	0.67	3	
2			.00	0.86	3	
3	0.6	30 1	.00	0.75	3	
4	1.0	0 00	.80	0.89	5	
5	1.0	0 00	.67	0.80	3	
6	1.0	_	.00	1.00	4	
8	1.0		.50	0.67	2	
9	1.0		.00	0.00	1	
10			0.00	0.00	1	
12	2 1.	00 0	0.00	0.00	1	
accur	•			0.77	26	
macro	•	0.89			.56	26
weighted	d avg	0.87	(	).77 (	0.73	26

Sentence: show me the flights from detroit to las vegas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precision	on re	call f	1-scor	e suppor	t
1	1.0	-	00	1.00	3	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
accura	acy			1.00	9	
macro weighted	_	1.00 1.00	1.0 1.	00 ´ .00	1.00	9 9

Sentence: what flights go from denver to atlanta

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n reca	II f1-sco	re support
1	1.00	0 1.00	1.00	2
2	1.00	1.00	1.00	2
3	0.50	1.00	0.67	1
4	1.00	0.00	0.00	1
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
accur	acy		0.71	7
macro	avg	0.75	0.67	0.44 7
weighted	d avg	0.93	0.71	0.67 7

Sentence: show me the flights from montreal to philly

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
accur	acy		1.00	8	
macro	avg ´	1.00 1	.00 1.0	00	8
weighted	d avg	1.00	1.00 1	.00	8

Sentence: flight from denver to philadelphia True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	2	)
2	1.0	0 1.	00	1.00	2	)
3	1.0	0 1.	00	1.00	1	
accur	асу			1.00	5	
macro	avg	1.00	1.	00	1.00	5
weighted	d avg	1.00	1	.00	1.00	5

Sentence: give me the flights from baltimore to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore s	suppo	ort
1	1.0	0 1.	.00	1.0	0	2	
2	1.0	0 1.	.00	1.0	0	2	
3	1.0	0 1.	.00	1.0	0	1	
4	1.0	0 1.	.00	1.0	0	1	
5	1.0	0 1.	.00	1.0	0	1	
6	1.0	0 1.	.00	1.0	0	1	
000111	201			1.0	0	8	
accura	•	4.00	4			-	0
macro	avg	1.00	I	.00	1.00		8
weighted	d avg	1.00		1.00	1.0	0	8

Sentence: i would like to fly from boston to baltimore

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN

Classification Report:

	precis	sion	reca	ıll f	1-scc	re s	uppo	rt
1	1.	.00	1.00	)	1.00	)	2	
2	0.	.67	1.00	)	0.80	)	2	
4	1.	.00	1.00	)	1.00	)	2	
6	1.	.00	1.00	)	1.00	)	1	
8	1.	.00	1.00	)	1.00	)	1	
12	2 1	.00	0.0	0	0.0	0	1	
accur	acy				0.89		9	
macro	_	0.9		0.8		0.80		9
weighte	d avg	0.9	93	0.8	39	0.84	•	9

Sentence: tell me the flights that leave philadelphia and go to dallas

True tags: VERB PRON DET NOUN ADP VERB PROPN CCONJ VERB ADP

**PROPN** 

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN VERB ADP

**PROPN** 

Classification Report:

	precisi	ion re	ecall	f1-sco	ore sup	oport
1	0.5	50 1	.00	0.67	7 2	) -
2	1.0	00 1	.00	1.00	) 2	)
3	1.0	00 1	.00	1.00	) 1	
4	1.0	00 0	0.67	0.80	) 3	}
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
10	) 1.	00	0.00	0.0	0	1
accur	асу			0.82	· 11	
macro weighted	_	0.93 0.91		.81 ).82	0.78 0.79	11 11

Sentence: flight information from oakland to denver True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		recall	†1-sc	ore s	suppor	
1	٠	1.00	1.00	1.0	0	2	
2	2	1.00	1.00	1.0	0	2	
3	3 ′	1.00	1.00	1.0	0	2	
accui	racy			1.00	)	6	
macro	avg	1.	00 1	.00	1.00		6
weighte	d avg	1	.00	1.00	1.00	)	6

Sentence: the flight will <unk> from boston
True tags: DET NOUN AUX VERB ADP PROPN

Predicted tags: DET NOUN NOUN PROPN ADP PROPN

Classilic	Siassification (Aeport.									
	precisio	n recall	f1-score	supp	ort					
1	0.50	1.00	0.67	1						
2	1.00	1.00	1.00	1						
3	0.50	1.00	0.67	1						
4	1.00	0.00	0.00	1						
5	1.00	1.00	1.00	1						
8	1.00	0.00	0.00	1						
			0.07	0						
accur	acy		0.67	6						
macro avg 0.		0.83	0.67 0.9	56	6					
weighted	d avg	0.83	0.67 0	.56	6					

Sentence: what are the flights from pittsburgh to oakland

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on r	ecall	f1-sc	ore s	uppo	rt
1	1.0	0 1	1.00	1.0	00	2	
2	1.0	0 1	1.00	1.0	00	2	
3	1.0	0 1	1.00	1.0	00	1	
5	1.0	0 1	1.00	1.0	00	1	
6	1.0	0 1	1.00	1.0	00	1	
8	1.0	0 1	1.00	1.0	00	1	
accur	acy			1.0	0	8	
macro	_	1.00		.00	1.00		8
weighted	d avg	1.00	)	1.00	1.00	)	8

Sentence: what flights are there from baltimore to newark

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

Classification Report:

	preci	31011	reca	11 11-3	COIC	Supp	OIL
1	1	.00	1.00	) 1.	00	2	
2	1	.00	1.00	1.	00	2	
3	1	.00	1.00	1.	00	1	
4	1	.00	0.00	0.	00	1	
5	1	.00	0.00	0.	00	1	
6	0	.50	1.00	0.	67	1	
8	0	.00	1.00	0.	00	0	
accur	асу			0.7	75	8	
macro	_		79	0.71	0.5		8
weighted	d avg	C	.94	0.75	0.	71	8

Sentence: flights from columbus to milwaukee True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

pre	ecision	recal	l f1-sc	ore s	suppo	ort
1	1.00	1.00	1.0	0	2	
2	1.00	1.00	1.0	0	2	
3	1.00	1.00	1.0	0	1	
accuracy			1.0	0	5	
macro avo	g 1.0	OC	1.00	1.00		5
weighted av	/g 1	.00	1.00	1.00	)	5

Sentence: i <unk> like information on boston to washington

True tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB VERB ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	core	supp	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	00	2	
3	1.	00	0.00	0.0	00	1	
4	0.	50	1.00	0.6	67	1	
6	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
accur	acy			0.8	8	8	
macro	avg	0.9	2 0	.83	0.7	8	8
weighte	d avg	0.	94	0.88	0.8	33	8

Sentence: list flights from houston to phoenix

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n red	call	f1-sco	re su	pport
1	1.00	) 1.0	00	1.00	2	2
2	1.00	) 1.0	00	1.00	2	<u> </u>
3	1.00	) 1.0	00	1.00	1	
4	1.00	) 1.0	00	1.00	1	
accur	acy			1.00	6	i
macro	avg	1.00	1.	00	1.00	6
weighted	d avg	1.00	1	.00	1.00	6

Sentence: information of a flight from atlanta to pittsburgh True tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.0	00	2	
2	1	.00	1.00	1.0	00	3	
3	1	.00	1.00	1.0	00	2	
5	1	.00	1.00	1.0	00	1	
accur	асу			1.0	00	8	
macro weighted	_		.00 .00	1.00 1.00	1.0 1.	00 00	8 8

Sentence: i need to go to pittsburgh and denver

True tags: PRON VERB PART VERB ADP PROPN CCONJ PROPN Predicted tags: PRON VERB ADP VERB ADP PROPN VERB PROPN

	prec	ision	rec	all	f1-sc	core	supp	ort
1	,	1.00	1.0	0	1.0	00	2	
2	(	0.50	1.0	0	0.6	67	1	
4	(	0.67	1.0	0	3.0	30	2	
6		1.00	1.0	0	1.0	00	1	
10	)	1.00	0.0	00	0.	00	1	
12	2	1.00	0.0	00	0.	00	1	
accur	acy				0.7	5	8	
macro	avg	0.	86	0	.67	0.5	8	8
weighte	d avg	0	.85	(	0.75	0.	66	8

Sentence: what flights from philadelphia to atlanta True tags: DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
5	1.0	00	0.00	0.0	0	1	
6	0.0	00	1.00	0.0	0	0	
accur	acy			0.83	3	6	
macro	avg	3.0	30 0	.80	0.60		6
weighted	d avg	1.	.00	0.83	0.83		6

Sentence: flight from milwaukee to denver True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

precision			rec	call	f1-s	core	sup	port	
1		1.00		1.00		1.00			
2		1.00		1.00		1.00			
3		1.00		1.00		1.00			
							_		
accuracy					1.0	00	5		
macro avg			1.00		.00	1.0		5_	
weighted avg 1			1.00		1.00	1.	00	5	

Sentence: tell me the flights from baltimore to dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 2

2	1.00	1.00	1.0	0 2	
3	1.00	1.00	1.0	0 1	
4	1.00	1.00	1.0	0 1	
5	1.00	1.00	1.0	0 1	
6	1.00	1.00	1.0	0 1	
accurac	y		1.00	8 (	
macro av	/g 1.	.00	1.00	1.00	8
weighted a	ivg 1	1.00	1.00	1.00	8

Sentence: i <unk> like to book a flight from atlanta to denver

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

			-			
	precis	ion r	ecall	f1-sco	ore su	ıpport
1	1.0	00	1.00	1.00	) :	2
2	0.6	67	1.00	0.80	) :	2
3	1.0	00	1.00	1.00	)	1
4	1.0	00	1.00	1.00	) :	2
5	1.0	00	1.00	1.00	)	1
6	1.0	00	1.00	1.00	)	1
8	1.0	00	1.00	1.00	)	1
12	2 1.	00	0.00	0.0	0	1
accura	асу			0.91	1	1
macro weighted	_	0.96		.88 ).91	0.85	11 11
weignie	avy	0.9	٠ ,	ו פ.ע	0.07	1.1

Sentence: now get me from pittsburgh to denver

True tags: ADV VERB PRON ADP PROPN ADP PROPN

Predicted tags: NOUN NOUN PRON ADP PROPN ADP PROPN

Classification Report:

1	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	0.00	1.00	0.00	0
4	1.00	0.00	0.00	1
6	1.00	1.00	1.00	1
11	1.00	0.00	0.00	1
accura	•		0.71	7
macro a weighted	0		.67 0.5 0.71 0.	50 7 71 7

Sentence: what flights are there from boston to dallas

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

## Classification Report:

	precisi	on re	call	f1-scc	ore su	ipport
1	1.0	0 1.	.00	1.00	) :	2
2	1.0	0 1.	.00	1.00	) :	2
3	1.0	0 1.	.00	1.00	)	1
4	1.0	0 0.	.00	0.00	)	1
5	1.0	0 0.	.00	0.00	)	1
6	0.5	i0 1.	.00	0.67	7	1
8	0.0	0 1.	.00	0.00	)	0
accur	acy			0.75	5 8	3
macro	avg	0.79	0	.71	0.52	8
weighted	d avg	0.94	(	0.75	0.71	8

Sentence: show me flights from pittsburgh to philadelphia True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore su	ıppor	t
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	7	
macro	avg	1.0	00 1	.00	1.00	7	,
weighted	d avg	1.	00	1.00	1.00		7

Sentence: show flights from philadelphia to boston True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore	supp	ort
1	1.	.00	1.00	1.0	0	2	
2	1.	.00	1.00	1.0	0	2	
3	1.	.00	1.00	1.0	0	1	
4	1.	.00	1.00	1.0	0	1	
accur	acy			1.00	0	6	
macro weighte	_	1.0 1.	00 1 .00	1.00 1.00	1.00 1.0		6 6

Sentence: i <unk> like to see flights from pittsburgh to philadelphia

True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB ADP VERB NOUN ADP PROPN ADP PROPN

	precisio	on re	call	f1-sc	ore s	supp	ort
1	1.00	0 1	.00	1.0	0	2	
2	0.6	7 1	.00	8.0	0	2	
3	1.0	0 1	.00	1.0	0	1	
4	1.0	0 1	.00	1.0	0	2	
6	1.0	0 1	.00	1.0	0	1	
8	1.0	0 1	.00	1.0	0	1	
12	1.0	00 0	00.0	0.0	00	1	
accura	асу			0.90	)	10	
macro	avg	0.95	0	.86	0.83		10
weighted	avg	0.93	(	0.90	0.8	6	10

Sentence: give me flights from pittsburgh to baltimore
True tags: VERB PRON NOUN ADP PROPN ADP PROPN
Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	call	f1-scc	re su	ıpport
1	1.0	00 1	.00	1.00	)	2
2	1.0	00 1	.00	1.00	)	2
3	1.0	00 1	.00	1.00	)	1
4	1.0	00 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
accur	acy			1.00		7
macro	avg	1.00	1	.00	1.00	7
weighte	d avg	1.00		1.00	1.00	7

Sentence: i need to go from philadelphia to dallas

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB ADP VERB ADP PROPN ADP PROPN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	0.67	1.00	0.80	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
12	1.00	0.00	0.00	1	
accurac	у		0.88	8	
macro a weighted	0		.80 0.7 0.88 0.	76 82	8 8

Sentence: show flights from pittsburgh to oakland True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

	precision	on re	call	f1-sco	re su	oport
1	1.0	0 1.	.00	1.00	) 2	2
2	1.0	0 1.	.00	1.00	) 2	<u>-</u>
3	1.0	0 1.	.00	1.00	) 1	
4	1.0	0 1.	.00	1.00	) 1	
accur	acy			1.00	6	
macro	avg	1.00	1	.00	1.00	6
weighted	d avg	1.00	•	1.00	1.00	6

Sentence: what are the flights from chicago to indianapolis True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	p. 0 0.0					<b>9</b> 9 9	• • •
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	8	
macro	avg	1.0	00	1.00	1.0	0	8
weighte	d avg	1.	.00	1.00	1.0	00	8

precision recall f1-score support

Sentence: get flights from toronto to milwaukee True tags: VERB NOUN ADP PROPN ADP PROPN

Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		recall	f1-sc	ore su	pport
1	1	.00	1.00	1.0	0 2	2
2	. 1	.00	1.00	1.0	0 2	2
3	0	.50	1.00	0.6	7 ′	1
4	. 1	.00	0.00	0.0	0 ′	1
accur	acy			0.83	3 6	;
macro	_	3.0	38 0	.75	0.67	6
weighte	d avg	0.	.92	0.83	0.78	6

Sentence: what are the different classes that an airline offers True tags: PRON AUX DET ADJ NOUN ADP DET NOUN VERB

Predicted tags: PRON AUX DET NOUN ADP ADP NOUN NOUN NOUN

1

Classification Report:

0.50

2

precision recall f1-score support

1.00 0.67

	3	0.25	0.	50	0.3	3	2	
	4	1.00	0.0	00	0.0	0	1	
	5	1.00	0.	50	0.6	7	2	
	6	1.00	1.0	00	1.0	0	1	
	7	1.00	0.0	00	0.0	0	1	
	8	1.00	1.0	00	1.0	0	1	
ac	ccurac	У			0.56	6	9	
ma	acro av	/g	0.82	0.	57	0.52		9
weig	hted a	ıvg	0.78	0	.56	0.52		9

Sentence: show flights between boston and denver True tags: VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB NOUN ADP PROPN PROPN

Classification Report:

	precis	ion	reca	all	f1-sc	ore	supp	ort
1	0.	67	1.0	0	0.8	0	2	
2	1.	1.00		1.00		1.00		
3	1.	1.00		1.00		1.00		
4	1.	00	1.00		1.00		1	
10	1	.00	0.0	00	0.0	0	1	
accura	асу				0.83	3	6	
macro		0.9	93	0.	.80	0.7	6	6
weighted	l avg	0.	.89	(	0.83	0.	77	6

Sentence: show flights from dallas to oakland

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		recall f1-score			supp	ort
1	1.	00	1.00	1.0	00	2	
2		00	1.00			2	
3	1.	00	1.00	1.0	00	1	
4	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	6	
macro	avg	1.0	00	1.00	1.0	0	6
weighted	d avg	1.	00	1.00	1.0	00	6

Sentence: show me flights from baltimore to dallas

True tags: VERB PRON NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precision		recall	recall f1-score		
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	

3	1.00	) 1.	00	1.00	1	
4	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
accurac	у			1.00	7	
macro av	vg	1.00	1.00	) 1.	.00	7
weighted a	avg	1.00	1.0	0 1	.00	7

Sentence: give me all the flights from memphis to charlotte

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

1 1.00 1.00 1.00 2	
2 1.00 1.00 1.00 2	
3 1.00 1.00 1.00 1	
4 1.00 1.00 1.00 1	
5 1.00 1.00 1.00 2	
6 1.00 1.00 1.00 1	
accuracy 1.00 9	
macro avg 1.00 1.00 1.00	9
weighted avg 1.00 1.00 1.00	9

Sentence: i would like to see the flights from baltimore to philadelphia please True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN INTJ

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precision		recal	l f1-sc	score su		ort
1	(	).67	1.00	3.0	30	2	
2	. (	0.67	1.00	3.0	30	2	
3	•	1.00	1.00	1.0	00	1	
4		1.00	1.00	1.0	00	2	
5	,	1.00	1.00	1.0	00	1	
6	,	1.00	1.00	1.0	00	1	
8	,	1.00	1.00	1.0	00	1	
12	2	1.00	0.00	0.	00	1	
13	3	1.00	0.00	0.	00	1	
accur macro weighte	avg		93 .89	0.8 0.78 0.83	3 0.7 0.	_	12 12

Sentence: what flights are there from indianapolis to orlando True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN

## Classification Report:

	precisi	on r	ecall	f1-sc	ore si	upport
1	1.0	00	1.00	1.0	0	2
2	1.0	00	1.00	1.0	0	2
3	1.0	00	1.00	1.0	0	1
4	1.0	00 (	0.00	0.0	0	1
5	1.0	00 (	0.00	0.0	0	1
6	0.5	50	1.00	0.6	7	1
8	0.0	00	1.00	0.0	0	0
accur	acy			0.7	5	8
macro	avg	0.79	0	.71	0.52	8
weighted	d avg	0.9	4 (	0.75	0.71	8
_	_					

Sentence: no i want to go from denver to oakland

True tags: DET PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: NOUN PRON VERB ADP VERB ADP PROPN ADP PROPN

Classification Report:

	precision		recall f1-scor		ore su	ipport
1	1	.00	1.00	1.0	0	2
2	0	.67	1.00	0.8	0	2
3	0	.00	1.00	0.0	0	0
4	1	.00	1.00	1.0	0	2
5	1	.00	0.00	0.0	0	1
6	1	.00	1.00	1.0	0	1
12	2 1	1.00	0.00	0.0	00	1
accur	acy			0.78	3 9	9
macro weighte	_	9.0 0		).71 0.78	0.54 0.73	9 9

Sentence: show me flights from milwaukee to orlando True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		reca	ll f1-so	core	supp	ort
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	00	2	
3	1.0	00	1.00	1.0	00	1	
4	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
accura	асу			1.0	00	7	
macro weighted	_	1.0 1.	00 .00	1.00 1.00	1.0 1.0		7 7

Sentence: give me a list of flights between denver and oakland

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN PROPN PROPN Classification Report:

precision		recall f1-sco		ore	supp	ort	
0.6	67	1.00	)	0.8	0	2	
1.0	00	1.00	)	1.0	0	2	
1.0	00	1.00	)	1.0	0	2	
1.0	00	1.00	)	1.0	0	1	
1.0	00	1.00	)	1.0	0	1	
1.0	00	1.00	)	1.0	0	1	
) 1.	00	0.0	0	0.0	00	1	
асу				0.90	)	10	
avg l avg							10 10
	0.6 1.0 1.0 1.0 1.0 1.0 1.0 acy avg	acy avg 0.9	0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.0 1.00 0.0	0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00	0.67 1.00 0.8 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 0.00 0.0	0.67 1.00 0.80 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 acy 0.90 avg 0.95 0.86 0.83	0.67 1.00 0.80 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 0.00 0.00 1

Sentence: show me all the flights from charlotte to cleveland

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore su	pport
1	1	00	1.00	1.00	) <u>(</u>	2
2		00	1.00	1.00		2
3		00	1.00	1.00		
4		00	1.00	1.00	) ′	1
5	1.	00	1.00	1.00	) 2	2
6	1.	00	1.00	1.00	) 1	1
				4.00		
accur	acy			1.00	) 9	)
macro	avg	1.0	0 1	.00	1.00	9
weighted	d avg	1.	00 .	1.00	1.00	9

Sentence: give me flights from denver to baltimore

11 64

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

	precision	on re	call	t1-scc	re su	ıpport	
1	1.0	0 1	.00	1.00	)	2	
2			.00	1.00		2	
3	1.0	0 1.	.00	1.00	)	1	
4	1.0	0 1.	.00	1.00	)	1	
6	1.0	0 1.	.00	1.00	)	1	
accur	асу			1.00	-	7	
macro	avg	1.00	1	.00	1.00	7	
weighted	d avg	1.00	•	1.00	1.00	7	7

Sentence: tell me about flights from indianapolis to houston True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN

Classification Report:

р	recision	recall	f1-score	supp	ort
1 2 3 4 6	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00	2 3 1 1	
accurac macro a weighted	cy vg 1.0	00 1	1.00 .00 1.0	8 00 .00	8 8

Sentence: oakland to philadelphia True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 1.00 1 accuracy 1.00 3 macro avg 1.00 1.00 1.00 3 weighted avg 1.00 1.00 1.00

Sentence: what are your flights from denver to baltimore
True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX AUX NOUN ADP PROPN ADP PROPN
Classification Property

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	1.00	1.00	1.00	1	
8	0.50	1.00	0.67	1	
accura	асу		0.88	8	
macro	9		.83 0.7 0.88 0.	78 .83	8 8
weighted	ı avy	0.54	U.00 U.	.03	0

Sentence: list all flights from baltimore to philadelphia True tags: VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN

	precis	sion	recall	f1-sc	ore s	uppo	rt
1	1.	00	1.00	1.0	0	2	
2		00	1.00	1.0		2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
accur	acy			1.00	0	7	
macro	avg	1.0	0 1	.00	1.00		7
weighte	d avg	1.0	00 .	1.00	1.00	)	7

Sentence: what flights are available from boston to dallas True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX AUX ADP PROPN ADP PROPN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
7	1.00	0.00	0.00	1	
8	0.50	1.00	0.67	1	
accura	ісу		0.75	8	
macro	avg 0	.79 0	0.71 0.5	52	8
weighted	avg (	0.94	0.75 0.	.71	8

Sentence: i would like to see all flights from denver to philadelphia

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

**PROPN** 

	precis	sion	recall	f1-sco	re supp	ort
1	1.	00	1.00	1.00	2	
2	0.	67	1.00	0.80	2	
3	1.	00	1.00	1.00	1	
4	1.	00	1.00	1.00	2	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
8	1.	00	1.00	1.00	1	
12	2 1	.00	0.00	0.00	) 1	
accur	acv			0.91	11	
macro	•	0.9	6 0		0.85	11
weighte	•			0.91	0.87	11
5 5	- 3			-	-	

Sentence: atlanta to pittsburgh True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 1.00 1 accuracy 1.00 macro avg 1.00 1.00 3 1.00 weighted avg 1.00 1.00 1.00 3

Sentence: give me a flight from baltimore to newark that arrives as early as possible True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP ADV ADP ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP ADP

NOUN NOUN NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore s	support	t
1	1.0	00	1.00	1.0	0	2	
2	0.	75	0.60	0.6	7	5	
3	0.2	20	1.00	0.3	3	1	
4	1.0	00	0.50	0.6	7	2	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	0.00	0.0	0	1	
11	l 1.	00	0.00	0.0	0	1	
accur	асу			0.64	1	14	
macro	avg	8.0	7 0	.64	0.58	14	4
weighte	d avg	0.0	35	0.64	0.64	<b>∤</b> 1	4

Sentence: what flights are there between atlanta and denver

True tags: DET NOUN VERB PRON ADP PROPN CCONJ PROPN

Predicted tags: PRON NOUN AUX PRON ADP PROPN PROPN

pr	ecision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1.00	0.00	0.00	1
5	1.00	0.00	0.00	1
6	0.50	1.00	0.67	1
8	0.00	1.00	0.00	0
10	1.00	0.00	0.00	1
accurac	y		0.62	8

macro avg	0.77	0.62	0.43	8
weighted ava	0.85	0.62	0.53	8

Sentence: i need a flight from phoenix to atlanta

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

Ciaconio	allonin	oport.				
	precision	on re	call	f1-scc	re su	pport
4	4.0	0 4	00	4.00		<b>^</b>
1	1.0	υ 1.	00	1.00	) .	2
2	1.0	0 1.	00	1.00	) :	2
3	1.0	0 1.	00	1.00	)	1
4	1.0	0 1.	00	1.00	)	1
5	1.0	0 1.	00	1.00	)	1
6	1.0	0 1.	00	1.00	)	1
accur	acy			1.00	3	}
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00	•	1.00	1.00	8

Sentence: i want to fly from atlanta to philadelphia

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB ADP VERB ADP PROPN ADP PROPN

Classification Report:

	preci	sion	recall	f1-scc	re su	ıppor	t
1	1	.00	1.00	1.00	)	2	
2	0	.67	1.00	0.80	)	2	
4	1	.00	1.00	1.00	)	2	
6	1	.00	1.00	1.00	)	1	
12	2 1	1.00	0.00	0.0	0	1	
accur	•	0.9	2 N	0.88 .80	0.76	3	2
macro weighted	_	0.9		.80 0.88	0.76	C	8

Sentence: also give me a list of flights between oakland and boston

True tags: ADV VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB VERB PRON DET NOUN ADP NOUN ADP PROPN PROPN

**PROPN** 

р	recision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	0.50	1.00	0.67	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
10	1.00	0.00	0.00	1

11 1.00 0.00 0.00 1

accuracy 0.82 11 macro avg 0.90 0.75 0.68 11 weighted avg 0.89 0.82 0.75 11

Average Loss: 0.5764

Average Accuracy: 83.49 %

Sentence: what are the coach flights between dallas and baltimore leaving august

tenth and returning august <unk>

True tags: PRON AUX DET NOUN NOUN ADP PROPN CCONJ PROPN VERB

NOUN ADJ CCONJ VERB NOUN NUM

Predicted tags: PRON AUX DET PROPN NOUN ADP PROPN CCONJ PROPN

VERB NOUN ADJ CCONJ ADJ NOUN ADJ

Classification Report:

	pre	JISIO	n r	ecan	II-S	core	supp	ort
1		0.67		1.00	0.	80	2	
2		1.00	, .	1.00		00	1	
3		1.00	(	0.75	0.	86	4	
4		1.00	(	0.50	0.	67	2	
5		1.00	,	1.00	1.	.00	1	
6		1.00	,	1.00	1.	.00	1	
7		0.33	,	1.00	0.	50	1	
8		1.00	,	1.00	1.	.00	1	
9		1.00	) (	00.0	0.	.00	1	
10	)	1.00	)	1.00	1	.00	2	
accur	acy				0.	_	16	
macro	_		0.90		.82	0.7	_	16
weighte	d av	9	0.92	2	0.81	0.	.80	16

Sentence: i want a flight from nashville to seattle that arrives no later than 3 pm True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB DET ADJ ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB NOUN NOUN ADP NOUN NOUN

OL IS A TOOL

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	0.40	1.00	0.57	2
4	1.00	1.00	1.00	2
5	1.00	0.50	0.67	2
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
9	1.00	0.00	0.00	1
accuracy	/		0.80	15

macro avg	0.93	0.69	0.65	15
weighted avg	0.92	0.80	0.77	15

Sentence: i need a flight leaving kansas city to chicago leaving next wednesday and returning the following day

True tags: PRON VERB DET NOUN VERB PROPN PROPN ADP PROPN VERB ADJ NOUN CCONJ VERB DET VERB NOUN

Predicted tags: PRON VERB DET NOUN VERB PROPN PROPN ADP PROPN VERB ADJ NOUN CCONJ NOUN DET ADJ NOUN

Classification Report:

	precis	sion	recall	f1-scc	re sup	port
1	1.	.00	1.00	1.00	) 3	
2	1.	.00	1.00	1.00	) 1	
3	0.	75	1.00	0.86	3	
4	1.	.00	0.60	0.75	5 5	
5	1.	.00	1.00	1.00	) 2	
6	1.	.00	1.00	1.00	) 1	
7	0.	50	1.00	0.67	7 1	
10	) 1	.00	1.00	1.0	0 1	
accur	асу			0.88	17	
macro	avg	0.9	0 0	.95	0.91	17
weighte	d avg	0.	93	88.0	0.88	17

Sentence: explain meal codes <unk> <unk> True tags: VERB NOUN NOUN PROPN PROPN Predicted tags: VERB NOUN NOUN AUX AUX

Classification Report:

1 1.00 0.00 0.00 2	
1 1.00 0.00 0.00 2	
3 1.00 1.00 1.00 2	
4 1.00 1.00 1.00 1	
8 0.00 1.00 0.00 0	
accuracy 0.60 5	
macro avg 0.75 0.75 0.50	5
weighted avg 1.00 0.60 0.60	5

Sentence: show me all flights from atlanta to san francisco which leave the day after tomorrow after 5 <unk> pm

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PRON VERB DET NOUN ADP NOUN ADP NUM ADV NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN DET

VERB DET NOUN ADP NOUN ADP NUM ADV NOUN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 3

2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	4	
4	1.00	1.00	1.00	2	
5	0.67	1.00	0.80	2	
6	1.00	0.50	0.67	2	
9	1.00	1.00	1.00	1	
11	1.00	1.00	1.00	1	
accuracy	/		0.95	19	
macro av	g 0.9	96 0.	94 0	).93	19
weighted a	va 0	.96 0	).95	0.94	19

Sentence: i need a flight from toronto to montreal reaching montreal early on friday True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN VERB PROPN ADJ ADP NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN DET ADJ ADP NOUN

Classification Report:

	precision	on re	call	f1-sc	ore s	suppo	ort
1	0.6	7 0	.67	0.6	57	3	
2	1.0	0 1	.00	1.0	0	3	
3	1.0	0 1	.00	1.0	0	2	
4	1.0	0 0	.50	0.6	57	2	
5	0.5	0 1	.00	0.6	57	1	
6	1.0	0 1	.00	1.0	0	1	
7	1.0	0 1	.00	1.0	0	1	
accura	асу			0.8	5	13	
macro	avg	0.88	0	.88.	0.86		13
weighted	l avg	0.88	(	0.85	0.85	5	13

Sentence: are there any flights from new york to montreal canada leaving on thursday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN

Predicted tags: AUX PRON DET NOUN ADP PROPN PROPN ADP PROPN NOUN VERB ADP NOUN

ŗ	precision	recall	f1-score	support
1	1.00	0.75	0.86	4
2	1.00	1.00	1.00	3
3	0.67	1.00	0.80	2
4	1.00	0.50	0.67	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	0.00	1.00	0.00	0
accura	су		0.85	13

macro avg	0.81	0.89	0.76	13
weighted avg	0.95	0.85	0.87	13

Sentence: show me ground transportation in philadelphia on monday morning True tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Classification Report:

	precision	on re	call	f1-sco	ore su	ipport	[
1	1.0	0 1.	.00	1.00	)	1	
2	1.0	0 1.	00	1.00	)	2	
3	1.0	0 1.	.00	1.00	)	4	
4	1.0	0 1.	.00	1.00	)	1	
6	1.0	0 1.	.00	1.00	)	1	
accura	acy			1.00	) (	9	
macro	avg	1.00	1	.00	1.00	9	)
weighted	d avg	1.00	•	1.00	1.00	!	9

Sentence: find a flight from toronto to san diego with a layover in dc on delta airlines True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

		- 1					
	precisi	on	reca	II †1.	-score	supp	ort
1	1.0	0	1.00	)	1.00	6	
2	1.0	0	1.00	)	1.00	5	
3	1.0	0	1.00	)	1.00	2	
4	1.0	0	1.00	)	1.00	1	
5	1.0	0	1.00	)	1.00	2	
accur	acy			•	.00	16	
macro	avg	1.0	0	1.00	1.	00	16
weighte	d avg	1.0	00	1.0	0 1	.00	16

Sentence: what is restriction ap80
True tags: PRON AUX NOUN PROPN
Predicted tags: PRON AUX NOUN PROPN

	pred	ision	re	call	f1-sc	ore s	supp	ort
1		1.00	1.	.00	1.0	0	1	
3	3	1.00	1.	.00	1.0	0	1	
6	<b>)</b>	1.00	1.	.00	1.0	0	1	
8	}	1.00	1.	.00	1.0	0	1	
accur	acy				1.00	)	4	
macro	avg	1	.00	1	.00	1.00		4

weighted avg 1.00 1.00 1.00 4

Sentence: list the arizona airport

True tags: VERB DET PROPN PROPN Predicted tags: VERB DET NOUN NOUN

Classification Report:

	precis	ion re	ecall	f1-scc	re sup	port
1	1.0	0 0	.00	0.00	) 2	
3	0.0	00 1	.00	0.00	0 (	
4	1.0	00 1	.00	1.00	) 1	
5	1.0	00 1	.00	1.00	) 1	
accur	асу			0.50	4	
macro	avg	0.75	0	.75	0.50	4
weighte	d avg	1.00	) (	0.50	0.50	4

Sentence: what are the nonstop flights on america west or southwest air from kansas city to burbank on saturday may twenty two

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN CCONJ PROPN PROPN ADP PROPN ADP PROPN ADP NOUN NOUN NUM NUM Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN CCONJ PROPN PROPN ADP PROPN ADP PROPN ADP NOUN NOUN NUM NUM Classification Report:

precisio	n recall	f1-score	support
1.00	1.00	1.00	7
1.00	1.00	1.00	4
1.00	1.00	1.00	4
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	2
1.00	1.00	1.00	1
асу		1.00	21
avg I avg	1.00 1 1.00		00 21 .00 21
	1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: what times does the late afternoon flight leave from washington for denver

True tags: DET NOUN AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP

PROPN

Predicted tags: PRON NOUN AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3

Sentence: what does the meal code s stand for

True tags: PRON AUX DET NOUN NOUN PROPN VERB ADP

Predicted tags: PRON AUX DET NOUN NOUN PROPN PROPN ADP

Classification Report:

	precis	sion	recall	f1-scc	re su	pport
1	0.	.50	1.00	0.67	7	1
2	1.	.00	1.00	1.00	) 1	
3	1.	.00	1.00	1.00	) 2	2
4	1.	.00	0.00	0.00	) 1	
5	1.	.00	1.00	1.00	) 1	l
6	1.	.00	1.00	1.00	) 1	l
8	1.	.00	1.00	1.00	) 1	1
accur	acy			0.88	8	
macro	avg	0.9	3 0	.86	0.81	8
weighted	d avg	0.9	94 (	3.88	0.83	8

Sentence: is there ground transportation from the memphis airport into town when if i arrive at <unk> in the morning

True tags: VERB PRON NOUN NOUN ADP DET PROPN PROPN ADP PROPN ADV ADP PRON VERB ADP NUM ADP DET NOUN

Predicted tags: AUX PRON NOUN NOUN ADP DET PROPN PROPN ADP PROPN NUM VERB PRON VERB ADP PROPN ADP DET NOUN Classification Report:

	precis	ion	recall	f1-sco	ore sup	port
1	0.7	75	1.00	0.8	3	
2	1.0	00	0.80	0.89	9 5	
3	1.0	00	1.00	1.00	3	
4	0.5	50	0.50	0.50	2	
5	1.0	00	1.00	1.00	2	
6	1.0	00	1.00	1.00	2	
8	0.0	00	1.00	0.0	0 0	
9	0.0	00	0.00	0.0	) 1	
11	1.	00	0.00	0.0	0 1	
accur	acy			0.79	) 19	
macro	avg	0.6	69 O	.70	0.58	19
weighted	d avg	0.	86 (	0.79	0.79	19

Sentence: what flights between dfw and oakland arrive in oakland between <unk> am and <unk> pm

True tags: DET NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN ADP NUM NOUN CCONJ NUM NOUN

Predicted tags: PRON NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN ADP PROPN NOUN CCONJ PROPN NOUN

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	0.6	0 1.	00	0.75	3	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	3	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
9	1.0	0 0.	00	0.00	2	
10	1.0	00 1	.00	1.00	2	
accur	асу			0.80	15	
macro	avg	0.82	0.	75 C	.59	15
weighted	d avg	0.92	C	0.80	0.75	15

Sentence: what are the flights on mondays that travel from charlotte north carolina to phoenix arizona

True tags: PRON AUX DET NOUN ADP PROPN ADP VERB ADP PROPN ADV PROPN ADP PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP NOUN ADP VERB ADP PROPN PROPN PROPN PROPN PROPN

Classification Report:

	precis	sion	recal	l f1-sc	ore	supp	ort
1	0.	80	0.80	0.8	30	5	
2	1.	00	1.00	1.0	00	4	
3	0.	50	1.00	0.6	67	1	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
1′	1 1	.00	0.00	0.0	00	1	
accur	асу			0.8	7	15	
macro weighte	_	0.9 0.	91 ( .90	0.85 0.87	0.81 0.8		15 15

Sentence: what kind of ground transportation is there in washington dc

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN PROPN Predicted tags: PRON NOUN ADP NOUN NOUN AUX PRON ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.0	00	1.00	) 2	2
2	1.00	1.0	00	1.00	) 2	2
3	1.00	1.0	00	1.00	) ;	3
4	1.00	0.0	00	0.00	) ′	1
5	1.00	0.0	00	0.00	) ′	1
6	0.50	1.0	00	0.67	7 ·	1
8	0.00	1.0	00	0.00	) (	)
accuracy	/			0.80	1	0
macro av	g (	0.79	0.	71	0.52	10
weighted a	vg	0.95	0	.80	0.77	10

Sentence: in economy class from dallas to baltimore arriving july seventh i <unk> like to know what <unk> the cheapest ticket possible

True tags: ADP NOUN NOUN ADP PROPN ADP PROPN VERB NOUN ADJ PRON AUX VERB PART VERB PRON AUX DET ADJ NOUN ADJ

Predicted tags: ADP PROPN NOUN ADP PROPN ADP PROPN VERB NOUN ADJ PRON AUX VERB PART VERB DET AUX DET ADJ NOUN ADJ Classification Report:

	p. 00.	0.0			000.0	очрр	0
1	0	.67	1.00	) 0	08.0	2	
2	1	.00	1.00	) 1	.00	3	
3	1	.00	0.75	5 0	.86	4	
4	1	.00	1.00	) 1	.00	3	
5	0	.50	1.00	0	.67	1	
6	1	.00	0.50	0	.67	2	
7	1	.00	1.00	) 1	.00	3	
8	1	.00	1.00	) 1	.00	2	
12	2 '	1.00	1.0	0	1.00	1	
accur	асу			0	.90	21	
macro	avg	0.9	91	0.92	0.	89	21
weighted	d avg	0.	.94	0.90	0 (	.91	21

precision recall f1-score support

Sentence: show flights from baltimore to san francisco between 6 pm and 8 pm on friday

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN

CCONJ NUM NOUN ADP NOUN

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN

CCONJ NUM NOUN ADP NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	4
4	1.00	1.00	1.00	1
9	1.00	1.00	1.00	2

10 1.00 1.00 1.00 1

accuracy 1.00 15 macro avg 1.00 1.00 1.00 15 weighted avg 1.00 1.00 1.00 15

Sentence: what meals are available on dl <unk> which <unk> arrives in san

francisco at <unk> am

True tags: DET NOUN AUX ADJ ADP PROPN NUM DET PROPN VERB ADP

PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN AUX ADJ ADP PROPN PROPN DET AUX VERB ADP

PROPN PROPN ADP PROPN NOUN

Classification Report:

0.0.00	precisio	n re	call	f1-scor	e supp	ort
1	0.60	0.	75	0.67	4	
2	1.00	) 1.	00	1.00	3	
3	1.00	) 1.	00	1.00	2	
4	1.00	) 1.	00	1.00	1	
5	1.00	0.	50	0.67	2	
6	0.0	) 1.	00	0.00	0	
7	1.00	) 1.	00	1.00	1	
8	0.50	) 1.	00	0.67	1	
9	1.00	0.	00	0.00	2	
accura	acy			0.75	16	
macro	•	0.79	0.	81 (	).67	16
weighted	•	0.87	C	).75	0.73	16
	3					

Sentence: i want to fly from kansas city to chicago next wednesday arriving in the evening and returning the next day

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ NOUN VERB ADP DET NOUN CCONJ VERB DET ADJ NOUN

Predicted tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ

NOUN VERB ADP DET NOUN CCONJ ADJ DET ADJ NOUN

	preci	sion	reca	ll f1-sc	ore s	uppo	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	3	
3	1	.00	1.00	1.0	00	3	
4	1	.00	0.75	3.0	36	4	
5	1	.00	1.00	1.0	00	2	
6	1	.00	1.00	1.0	00	1	
7	C	.67	1.00	3.0	30	2	
10	)	1.00	1.00	0 1.	00	1	
12	2	1.00	1.00	0 1.	00	1	
accur	acy			0.9	5 2	20	
macro	avg	0.	96	0.97	0.96		20

weighted avg 0.97 0.95 0.95 20

Sentence: please book for me a flight on twa from washington dc to san francisco earliest possible time

True tags: INTJ VERB ADP PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN ADV ADJ NOUN

Predicted tags: INTJ VERB ADP PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADJ NOUN

Classification Report:

pr	ecision	recall	f1-score	suppo	rt
1	0.83	1.00	0.91	5	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
13	1.00	1.00	1.00	1	
accuracy	/		0.94	17	
macro av	_		.89 0.8 ).94 0.	_	17 17
5.5	. 9				• •

Sentence: is there a red eye flight from san jose to nashville on wednesday the nineteenth of may

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP NOUN DET ADJ ADP NOUN

Predicted tags: AUX PRON DET NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET NOUN ADP NOUN

Classification Report:

	precis	ion re	ecall	f1-sco	re sup	port
1	1.	00 1	.00	1.00	3	
2	1.	00 1	.00	1.00	) 4	
3	0.	60 C	).75	0.67	4	
4	1.	00 C	00.0	0.00	) 1	
5	1.	00 1	.00	1.00	2	
6	1.	00 1	.00	1.00	) 1	
7	0.	00 C	00.0	0.00	2	
8	0.	00 1	.00	0.00	0	
accur	асу			0.76	17	
macro weighted	_	0.70 0.79	_	.72 ).76	0.58 0.75	17 17

Sentence: i <unk> like to arrange for two friends to fly into los angeles next saturday evening one of the people is coming from kansas city and the other is coming from las vegas

True tags: PRON AUX VERB PART VERB ADP NUM NOUN PART VERB ADP PROPN PROPN ADJ NOUN NOUN NUM ADP DET NOUN AUX VERB ADP PROPN PROPN CCONJ DET ADJ AUX VERB ADP PROPN PROPN PROPN Predicted tags: PRON AUX VERB PART VERB ADP NOUN VERB ADP VERB ADP PROPN PROPN ADJ NOUN NOUN NUM ADP DET NOUN AUX VERB ADP PROPN PROPN CCONJ DET ADJ AUX VERB ADP PROPN PROPN Classification Report:

	precisi	on red	call f1-s	core si	upport
1	1.0	0 1.	00 1.	00	6
2	0.8	3 1.	00 0.	91	5
3	0.7	5 0.	75 O.	75	4
4	0.8	3 1.	00 0.	91	5
5	1.0	0 1.	00 1.	.00	2
6	1.0	0 1.	00 1.	00	1
7	1.0	0 1.	00 1.	.00	2
8	1.0	0 1.	00 1.	00	3
9	1.0	0 0.	50 0.	67	2
10	1.0	00 1	.00 1	.00	1
12	2 1.0	0 0	.50 0	.67	2
accur	acy		0.9	91 3	33
macro	avg	0.95	0.89	0.90	33
weighted	d avg	0.92	0.91	0.90	33

Sentence: what is restriction ap <unk>

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sco	ore su	upport
1	0.5	50 1	.00	0.67	7	1
3	1.0	0 1	.00	1.00	)	1
6	1.0	0 1	.00	1.00	)	1
8	1.0	0 1	.00	1.00	)	1
9	1.0	0 0	.00	0.00	)	1
accur	acy			0.80	) !	5
macro	avg	0.90	0	.80	0.73	5
weighted	d avg	0.90	(	08.0	0.73	5

Sentence: what is restriction ap 80

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

р	recision	recall	f1-score	support
1	0.50	1.00	0.67	1
3	1.00	1.00	1.00	1
6	1 00	1 00	1 00	1

8 1.	.00 ′	1.00	1.00	) '	1
9 1.	.00 (	0.00	0.00	) ,	1
000115001			0.00	۰ ۵	<del>.</del>
accuracy			0.80	) 5	)
macro avg	0.90	0.	.80	0.73	5
weighted avg	0.90	) (	08.0	0.73	5

Sentence: show me all flights from philadelphia to san francisco with one stop in dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NUM ADP PROPN

Classification Report:

	precisi	on r	ecall	t1-sc	ore su	pport
1	1.0	00	1.00	1.00	) <i>,</i>	4
2	1.0	00	1.00	1.0	o ,	4
3	1.0	00	0.50	0.6	7 :	2
4	1.0	00	1.00	1.0	<b>C</b>	1
5	1.0	00	1.00	1.0	<b>C</b>	1
6	1.0	00	1.00	1.0	<b>C</b>	1
9	0.5	50	1.00	0.6	7	1
accur	acy			0.93	3 1	4
macro weighted	•	0.93		.93 0.93	0.90 0.93	14 14
9	J					

Sentence: show me the flights from miami to san diego with one stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NUM ADP PROPN

Classification Report:

	precision	on re	call	f1-scc	re sup	port
1	1.0	0 1.	.00	1.00	) 4	
2	1.0	0 1.	.00	1.00	) 4	
3	1.0	0 0.	.50	0.67	7 2	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
9	0.5	0 1.	.00	0.67	1	
accur	acy			0.93	14	
macro weighted	•	0.93 0.96	_	.93 0.93	0.90 0.93	14 14

Sentence: do you have a flight from atlanta to charlotte north carolina next monday

True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN ADV PROPN ADJ NOUN

Predicted tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN ADJ NOUN

Classification Report:

Ciaconic	auonin	port.				
	precisio	n re	call 1	f1-scor	e supp	ort
1	0.75	5 1.	00	0.86	3	
2	1.00	) 1.	00	1.00	2	
3	1.00	) 1.	00	1.00	2	
4	1.00	) 1.	00	1.00	1	
5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
7	1.00	) 1.	00	1.00	1	
8	1.00	) 1.	00	1.00	1	
11	1.0	0 0	.00	0.00	1	
accur	асу			0.92	13	
macro weighted	_	0.97 0.94	8.0 0	39 ( .92	0.87 0.89	13 13

Sentence: i would like to book an early morning flight from tampa florida to charlotte north carolina on april sixth

True tags: PRON AUX VERB PART VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ

Predicted tags: PRON AUX VERB PART VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN ADJ Classification Report:

1	precision	recall	f1-score	suppo	rt
1	0.80	1.00	0.89	4	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	2	
8	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
12	1.00	1.00	1.00	1	
accura	су		0.95	19	
macro a	avg 0.9	98 0	.90 0.8	9	19
weighted	avg 0	.96 (	0.95 0.	92	19

Sentence: now i <unk> like flights from philadelphia to pittsburgh leaving between 430 and 530 pm

True tags: ADV PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB ADP NUM CCONJ NUM NOUN

Predicted tags: ADV PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB

ADP NOUN CCONJ PROPN NOUN

Classification Report:

	preci	sion	recall	f1-sco	re supp	ort
1	0	.67	1.00	0.80	2	
2	1	.00	1.00	1.00	3	
3	0	.67	1.00	0.80	2	
4	1	.00	1.00	1.00	2	
6	1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
9	1	.00	0.00	0.00	2	
1(	) 1	00.1	1.00	1.00	) 1	
11	l 1	.00	1.00	1.00	1	
accur	acy			0.87	15	
macro weighte	avg	0.9 0.9		.89 ( 0.87	0.84 0.81	15 15

Sentence: from sfo to denver

True tags: ADP PROPN ADP PROPN Predicted tags: ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 2 1.00 1.00 1.00 accuracy 1.00 4 1.00 1.00 1.00 macro avg 4 weighted avg 1.00 1.00 1.00 4

Sentence: what is the lowest fare from bwi to salt lake city

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

**PROPN** 

	precision	n recall	f1-score	suppo	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accur	acy		1.00	11	
macro	avg 1	1.00 1	.00 1.0	00	11
weighted	d avg	1.00	1.00 1	.00	11

Sentence: flight numbers from minneapolis to long beach on june twenty six

True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM NUM Predicted tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM

NUM

Classification Report:

	precis	sion	recall	f1-sc	ore	supp	ort
1	1.	00 00	1.00	1.0	0	3	
3		00	1.00	1.0		3	
9	1.	00	1.00	1.0	0	2	
accur	асу			1.0	0	11	
macro	avg	1.0	00 1	.00	1.0	0	11
weighte	d avg	1.	00	1.00	1.0	00	11

Sentence: which is the flight number for the us air flight from philadelphia to boston is it <unk> or is it <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP PROPN AUX PRON NUM CCONJ AUX PRON NUM

Predicted tags: DET AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP

PROPN ADP PROPN VERB VERB AUX CCONJ AUX VERB AUX

Classification Report:

	precis	sion	recall	f1-sco	re sup	port
1	1.	00	1.00	1.00	4	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	3	
4	0.	00	1.00	0.00	0	
5	0.	67	1.00	0.80	2	
6	1.	00	0.00	0.00	3	
8	0.	50	0.67	0.57	3	
9	1.	00	0.00	0.00	2	
10	) 1	.00	1.00	1.00	) 1	
accur	асу			0.71	21	
macro weighted	_	0.80 9.0		.74 ).71	0.60 0.68	21 21

Sentence: how much would car rental cost in atlanta

True tags: ADV ADV AUX NOUN ADJ VERB ADP PROPN

Predicted tags: ADV ADV AUX AUX PROPN NOUN ADP PROPN

р	recision	recall	f1-score	support
1	0.50	1.00	0.67	1
2	1.00	1.00	1.00	1
3	0.00	0.00	0.00	1
4	1.00	0.00	0.00	1

7	1.0	0	0.0	0	0.0	)	1	
8	0.5	0	1.0	0	0.6	7	1	
11	1.0	0	1.0	0	1.0	0	2	
accuracy	,				0.62	2	8	
macro av	g	0.7	1	0.5	7	0.48		8
weighted av	۷g	0.	75	0.	62	0.54	4	8

Sentence: please list the prices for a rental car in pittsburgh

True tags: INTJ VERB DET NOUN ADP DET ADJ NOUN ADP PROPN

Predicted tags: INTJ VERB DET NOUN ADP DET PROPN NOUN ADP PROPN

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	0.	50	1.00	0.	67	1	
2	1.	00	1.00	1.	00	2	
3	1.	00	1.00	1.	00	2	
4	1.	00	1.00	1.	00	1	
5	1.	00	1.00	1.	00	2	
7	1.	00	0.00	0.	00	1	
13	3 1	.00	1.00	) 1	.00	1	
accur	acy			0.9	90	10	
macro	avg	0.9	93 (	0.86	0.81	1	10
weighte	d avg	0.	95	0.90	0.8	7	10

Sentence: what does the restriction <unk> mean True tags: PRON AUX DET NOUN PROPN VERB Predicted tags: PRON AUX DET NOUN AUX VERB

Classification Report:

	precisi	on re	ecall	f1-sc	ore s	suppo	ort
1	1.0	0 0	.00	0.0	0	1	
3	1.0	0 1	.00	1.0	0	1	
4	1.0	0 1	.00	1.0	0	1	
5	1.0	0 1	.00	1.0	0	1	
6	1.0	0 1	.00	1.0	0	1	
8	0.5	0 1	.00	0.6	57	1	
accur	acy			0.8	3	6	
macro	avg	0.92		.83	0.78		6
weighte	d avg	0.92	<u>?</u> (	0.83	0.78	3	6

Sentence: list nonstop flights from baltimore washington to oakland that arrive

between <unk> and <unk> pm

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP

NUM CCONJ NUM NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB

ADP PROPN CCONJ PROPN NOUN

	prec	ision	reca	all	f1-sc	ore	supp	ort
1	(	0.60	1.0	0	0.7	5	3	
2	2 1	1.00	1.0	0	1.0	0	4	
3	3	1.00	1.0	0	1.0	0	3	
4	. 1	1.00	1.0	0	1.0	0	2	
9	) 1	1.00	0.0	0	0.0	0	2	
10	0	1.00	1.0	00	1.0	00	1	
accur	acy				0.8	7	15	
macro	avg	0.9	93	0.	.83	0.7	'9	15
weighte	d avg	0	.92	(	).87	0.	82	15

Sentence: list all of the daily flights arriving in denver from 8 to 9 pm

True tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP NUM ADP

NUM NOUN

Predicted tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP PROPN

ADP NUM NOUN
Classification Report:
 precision recall f1-score support

'						
1	0.50	1.0	00	0.67	1	
2	1.00	1.0	00	1.00	4	
3	1.00	1.0	00	1.00	2	
4	1.00	1.0	00	1.00	2	
5	1.00	1.0	00	1.00	2	
7	1.00	1.0	00	1.00	1	
9	1.00	0.	50	0.67	2	
accura	су			0.93	14	
macro a weighted	_	0.93 0.96	0.9		.90 0.93	14 14
5 5	- 5					

Sentence: get flights from milwaukee to <unk>
True tags: VERB NOUN ADP PROPN ADP PROPN
Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	prec	ision	reca	ıll f1-s	core	supp	ort
1	1	1.00	1.00	) 1.	00	2	
2	. 1	.00	1.00	) 1.	00	2	
3	3 1	.00	1.00	) 1.	00	1	
4	. 1	.00	1.00	) 1.	00	1	
accur	acy			1.0	00	6	
macro	avg	1.	00	1.00	1.0	00	6
weighte	d avg	1	.00	1.00	1.	00	6

Sentence: what is the earliest flight from boston to bwi that serves a snack

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB

**DET PROPN** 

Classification Report:

auoni	vopo.	٠.			
precisi	ion	recall	f1-sco	re supp	port
0.6	67	1.00	0.80	2	
1.0	00	1.00	1.00	3	
1.0	00	0.50	0.67	2	
1.0	00	1.00	1.00	1	
1.0	00	1.00	1.00	2	
1.0	00	1.00	1.00	) 1	
1.0	00	1.00	1.00	) 1	
1.0	00	1.00	1.00	1	
асу			0.92	13	
avg	0.9	6 0	.94	0.93	13
d avg	0.9	95	0.92	0.92	13
	0.6 1.0 1.0 1.0 1.0 1.0	0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy	0.67 1.00 1.00 1.00 1.00 0.50 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.67 1.00 0.80 1.00 1.00 1.00 1.00 0.50 0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	precision         recall f1-score         support support           0.67         1.00         0.80         2           1.00         1.00         1.00         3           1.00         0.50         0.67         2           1.00         1.00         1.00         1           1.00         1.00         1.00         2           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00

Sentence: is bwi washington

True tags: VERB PROPN PROPN Predicted tags: AUX NOUN PROPN

Classification Report:

	precision	on re	call 1	f1-sco	re supp	ort
1	1.0	0 0.	50	0.67	2	
3	0.0	0 1.	00	0.00	0	
4	1.0	0 0.	00	0.00	1	
8	0.0	0 1.	00	0.00	0	
accur	acy			0.33	3	
macro	avg	0.50	0.6	62	0.17	3
weighted	d avg	1.00	0	.33	0.44	3

Sentence: what are the cities that american airlines serves

True tags: PRON AUX DET NOUN ADP PROPN PROPN VERB

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN

	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1.00	0.00	0.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accura	асу		0.88	8

macro avg	0.95	0.86	0.83	8
weighted avg	0.92	0.88	0.82	8

Sentence: which cities are serviced by both american and delta airlines

True tags: DET NOUN AUX VERB ADP DET PROPN CCONJ PROPN PROPN Predicted tags: DET NOUN VERB ADJ ADP PROPN PROPN CCONJ PROPN **PROPN** 

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	0.7	'5 1	.00	0.86	3	
2	1.0	0 1	.00	1.00	) 1	
3	1.0	0 1	.00	1.00	) 1	
4	0.0	0 0	.00	0.00	) 1	
5	1.0	0 0	.50	0.67	7 2	
7	0.0	0 1	.00	0.00	0 (	
8	1.0	0 0	.00	0.00	) 1	
10	) 1.0	00 1	.00	1.0	0 1	
accur	асу			0.70	10	
macro	avg	0.72	0	.69	0.57	10
weighted	d avg	0.82	(	0.70	0.69	10

Sentence: show me all the us air flights to pittsburgh between 12 and 4 in the

afternoon

True tags: VERB PRON DET DET PROPN PROPN NOUN ADP PROPN ADP NUM CCONJ NUM ADP DET NOUN

Predicted tags: VERB PRON DET DET PROPN PROPN NOUN ADP PROPN ADP

NUM CCONJ NUM ADP DET NOUN

Classification Report:

	pred	ision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	3	
2		1.00	1.0	00	1.0	0	3	
3		1.00	1.0	00	1.0	0	2	
4	•	1.00	1.0	00	1.0	0	1	
5		1.00	1.0	00	1.0	0	3	
6	•	1.00	1.0	00	1.0	0	1	
9	•	1.00	1.0	00	1.0	0	2	
10	)	1.00	1.	00	1.0	00	1	
accur	асу				1.00	)	16	
macro weighted	_		.00 1.00		.00 1.00	1.0 1.	0 00	16 16
9								

Sentence: what is the cost of limousine service in philadelphia

True tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN

Classification Report:

precision recall f1-score support

1	1	.00	1.00	1.	.00	1	
2	1	.00	1.00	1.	.00	2	
3	1	.00	1.00	1.	.00	3	
5	1	.00	1.00	1.	.00	1	
6	1	.00	1.00	1.	.00	1	
8	1	.00	1.00	1.	.00	1	
accur	acy			1.	00	9	
macro	avg	1.00	)	1.00	1	.00	9
weighte	d avg	1.0	0	1.00	•	1.00	9

Sentence: how much does the limousine service cost within pittsburgh True tags: ADV ADV AUX DET NOUN NOUN VERB ADP PROPN

Predicted tags: ADV ADV AUX DET NOUN NOUN NOUN NOUN PROPN

Classification Report:

	precis	ion re	ecall	f1-scc	ore sup	port
1	1.0	00 1	.00	1.00	) 1	
2	1.0	00 0	.00	0.00	) 1	
3	0.	50 1	.00	0.67	7 2	
4	1.0	00 0	.00	0.00	) 1	
5	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
11	1.	00 1	1.00	1.0	0 2	
accur	асу			0.78	9	
macro	avg	0.93	0	.71	0.67	9
weighted	d avg	0.89	) (	0.78	0.70	9

Sentence: on november twenty third of this <unk> 1991 i <unk> like to fly from atlanta to denver and i <unk> like to fly on delta

True tags: ADP NOUN NUM PROPN ADP DET NOUN NUM PRON AUX VERB PART VERB ADP PROPN ADP PROPN CCONJ PRON AUX VERB PART VERB ADP PROPN

Predicted tags: ADP NOUN NUM ADJ ADP DET ADV NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN CCONJ PRON AUX VERB PART VERB ADP PROPN

	precision	recall	f1-score	support
1	1.00	0.75	0.86	4
2	1.00	1.00	1.00	5
3	0.50	0.50	0.50	2
4	1.00	1.00	1.00	4
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	2
7	0.00	1.00	0.00	0
8	1.00	1.00	1.00	2
9	1.00	0.50	0.67	2

10	1.00	1.00	1.00	1	
11	0.00	1.00	0.00	0	
12	1.00	1.00	1.00	2	
accuracy			0.88	25	
macro avo	0.7	9 09	90 0	75	25

0.88

0.96

Sentence: can you tell me the flights on october fifteenth 1991 from boston to oakland

0.91

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADJ NUM ADP PROPN ADP PROPN

Predicted tags: AUX PRON VERB PRON DET NOUN ADP PROPN PROPN NOUN ADP PROPN ADP PROPN

25

Classification Report:

weighted avg

	precis	sion	recall	f1-sco	ore supp	ort
1	0.	75	1.00	0.86	3	
2	1.	00	1.00	1.00	3	
3	0.	50	1.00	0.67	7 1	
4	. 1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 2	
7	' 1.	00	0.00	0.00	) 1	
8	1.	00	1.00	1.00	) 1	
9	1.	00	0.00	0.00	) 1	
accur	асу			0.86	5 14	
macro	avg	0.9	92 (	).78	0.72	14
weighte	d avg	0	.91	0.86	0.80	14

Sentence: show me all united flights from denver to san francisco for september first 1991

True tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADJ NUM

Predicted tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADJ NOUN

pre	ecision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	3
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1
accuracy			0.93	14

macro avg	0.96	0.88	0.85	14
weighted avg	0.95	0.93	0.90	14

Sentence: information on american airline flights from washington to philadelphia

early morning times of flight

True tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADJ NOUN NOUN ADP NOUN

Predicted tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADJ

NOUN NOUN ADP NOUN

Classification Report:

	preci	sion	reca	all f1	-score	e supp	ort
1	1	.00	1.00	)	1.00	4	
2	1	.00	1.00	)	1.00	4	
3	1	.00	1.00	)	1.00	5	
7	1	.00	1.00	)	1.00	1	
accur	асу			1	1.00	14	
macro	_	1.0		1.00		.00	14
weighted	d avg	1.	.00	1.0	0 '	1.00	14

Sentence: please give me the flight times i would like to fly from boston to baltimore in the morning before 8

True tags: INTJ VERB PRON DET NOUN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NUM

Predicted tags: INTJ VERB PRON DET NOUN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NUM Classification Report:

р	recision	recall	f1-score	suppor	t
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
8	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accurac	-	4	1.00	20	_
macro a weighted	•		.00 1.0 1.00 1.	_	0 20

Sentence: please list the flight times for boston to pittsburgh

True tags: INTJ VERB DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: INTJ VERB DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support

Sentence: show me all flights and fares from dallas to san francisco

True tags: VERB PRON DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

PROPN

Classification Report:

o acomoditor respons							
	precisio	n rec	all f	1-score	e supp	ort	
1	1.00	) 1.(	00	1.00	3		
2	1.00			1.00	2		
3	1.00	1.0	00	1.00	2		
4	1.00	) 1.0	00	1.00	1		
5	1.00			1.00	1		
6	1.00			1.00	1		
10	1.0	0 1.	00	1.00	1		
accura	асу			1.00	11		
macro	avg	1.00	1.0	00 1	.00	11	
weighted	l avg	1.00	1.	.00 ′	1.00	11	

Sentence: please list me the flights and their cost of all airlines flying from denver to baltimore

True tags: INTJ VERB PRON DET NOUN CCONJ DET NOUN ADP DET NOUN VERB ADP PROPN

Predicted tags: INTJ VERB PRON DET NOUN CCONJ ADP VERB ADP DET NOUN VERB ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.75	1.00	0.86	3
3	1.00	0.67	0.80	3
4	0.67	1.00	0.80	2
5	1.00	0.67	0.80	3
6	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
13	3 1.00	1.00	1.00	1

accuracy		0.8	8 16	3
macro avg	0.93	0.92	0.91	16
weighted avg	0.91	0.88	0.87	16

Sentence: give me the flights and fares on december twenty seventh from

indianapolis to orlando

True tags: VERB PRON DET NOUN CCONJ NOUN ADP NOUN NUM ADJ ADP

PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN CCONJ NOUN ADP NOUN NUM ADJ

ADP PROPN ADP PROPN

Classification Report:

	preci	sion	recall	f1-sco	re su	pport
1	1	.00	1.00	1.00	2	2
2	1	.00	1.00	1.00	3	3
3	1	.00	1.00	1.00	3	3
4	1	.00	1.00	1.00	1	
5	1	.00	1.00	1.00	1	
6	1	.00	1.00	1.00	1	
7	1	.00	1.00	1.00	1	
9	1	.00	1.00	1.00	1	
10	)	1.00	1.00	1.00	)	1
accur	асу			1.00	14	4
macro	avg	1.00	1	.00	1.00	14
weighte	d avg	1.0	00 1	1.00	1.00	14

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

	precisio	n re	call	f1-sco	ore	supp	ort
1	1.00	0.	.00	0.00	)	1	
6	1.00	) 1.	.00	1.00	)	1	
8	0.50	) 1.	.00	0.67	7	1	
accura	асу			0.67	,	3	
macro weighted	_	0.83 0.83		.67 ).67	0.56		3 3

Sentence: is there ground transportation from Iga into new york city

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN

**PROPN** 

precision		recall f1-score		support	
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	2	

3	1.00	1.00	1.00	2
4	1.00	0.00	0.00	1
6	1.00	1.00	1.00	1
8	0.00	1.00	0.00	0

accuracy		0.9	0 10	0
macro avg	0.83	0.83	0.67	10
weighted avg	1.00	0.90	0.90	10

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

precision recall f1-score support 1 1.00 0.00 0.00 6 1.00 1.00 1.00 1 8 0.50 1.00 0.67 1 accuracy 0.67 macro avg 0.83 0.67 0.56 3 weighted avg 3 0.83 0.67 0.56

Sentence: how far is toronto international from downtown True tags: ADV ADV AUX PROPN PROPN ADP NOUN Predicted tags: ADV ADP AUX PROPN PROPN ADP NOUN

Classification Report:

i	precision		f1-score	e supp	ort
1	1.00	1.00	1.00	2	
2	0.50	1.00	0.67	1	
3	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
11	1.00	0.50	0.67	2	
accura	су		0.86	7	
macro a	avg 0.9	90 0	.90 0	.87	7
weighted	avg 0	.93	0.86 (	0.86	7

Sentence: how far is los angeles international from downtown True tags: ADV ADV AUX PROPN PROPN ADP NOUN Predicted tags: ADV ADP AUX PROPN PROPN PROPN ADP NOUN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 0.50 1.00 1 0.67 3 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 2 11 1.00 0.50 0.67

accuracy		8.0	8 8	
macro avg	0.90	0.90	0.87	8
weighted avg	0.94	0.88	0.87	8

Sentence: how long does a flight from baltimore to san francisco take

True tags: ADV ADV AUX DET NOUN ADP PROPN ADP PROPN PROPN VERB Predicted tags: ADV ADV AUX DET NOUN ADP PROPN ADP PROPN PROPN

**PROPN** 

Classification Report:

	precis	sion	recall	f1-sco	ore sup	port
1	0.	75	1.00	0.86	3	
2	1.	00	1.00	1.00	2	
3	1.	00	1.00	1.00	) 1	
4	1.	00	0.00	0.00	) 1	
5	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	) 1	
11	1	.00	1.00	1.0	0 2	
accur	acy			0.91	11	
macro weighted	_	0.9 0.		.86 0.91	0.84 0.87	11 11

Sentence: what airport in new york is closest to downtown

True tags: DET NOUN ADP PROPN PROPN AUX ADJ ADP NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN VERB PROPN ADP NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	0.6	<b>37</b>	1.00	0.8	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	2	
4	0.0	00	1.00	0.0	0	0	
5	1.0	00	0.00	0.0	0	1	
6	0.0	00	1.00	0.0	0	0	
7	1.0	00	0.00	0.0	0	1	
8	1.0	00	0.00	0.0	0	1	
accura	асу			0.67	7	9	
macro	avg	0.7	1 0	.62	0.35	!	9
weighted	d avg	0.9	93	0.67	0.62		9

Sentence: houston airports True tags: PROPN NOUN Predicted tags: PROPN NOUN

1.00

Classification Report:

1

precision recall f1-score support

1.00

1

1.00

3 1.00 1.00 1.00 1

accuracy 1.00 2

macro avg 1.00 1.00 1.00 2

weighted avg 1.00 1.00 1.00 2

Sentence: give me a list of airports in baltimore

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN

Classification Report:

0.0000		op 0				
	precision	on re	call	f1-sco	re sup	port
1	1.0	<b>Λ</b> 1	.00	1.00	1	
=						
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	8	
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00	•	1.00	1.00	8

Sentence: where does delta fly to that american does not

True tags: ADV AUX PROPN VERB PART ADP PROPN AUX ADV

Predicted tags: ADJ AUX PROPN VERB ADP ADP PROPN AUX PROPN

Classification Report:

	precision		recall f1-score		re s	uppo	rt	
1	0.	67	1.00	)	0.80	)	2	
2	0.	50	1.00	)	0.67	7	1	
4	1.	00	1.00	)	1.00	)	1	
7	0.	00	1.00	)	0.00	)	0	
8	1.	00	1.00	)	1.00	)	2	
11	1	.00	0.0	0	0.0	0	2	
12	2 1	.00	0.0	0	0.0	0	1	
accur	асу				0.67		9	
macro weighted	•	0.7 0.	'4 87	0.7	-	0.50 0.59	)	9 9

Sentence: which airline has the smallest plane leaving pittsburgh and arriving in

baltimore on july fourth

True tags: DET NOUN VERB DET ADJ NOUN VERB PROPN CCONJ VERB ADP

PROPN ADP NOUN ADJ

Predicted tags: DET NOUN VERB DET ADJ NOUN VERB PROPN CCONJ VERB

ADP PROPN ADP NOUN ADJ

Classification Report:

precision recall f1-score support

1	1.00	1.0	00	1.00	)	2	
2	1.00	1.0	00	1.00	)	2	
3	1.00	1.0	00	1.00	)	3	
4	1.00	1.0	00	1.00	)	3	
5	1.00	1.0	00	1.00	)	2	
7	1.00	1.0	00	1.00	)	2	
10	1.00	0 1.	.00	1.0	0	1	
accurac	У			1.00	) 1	15	
macro av	vg	1.00	1.0	00	1.00		15
weighted a	avg	1.00	1.	.00	1.00		15

Sentence: which flight from pittsburgh to baltimore carries the smallest number of passengers

True tags: DET NOUN ADP PROPN ADP PROPN VERB DET ADJ NOUN ADP NOUN

Predicted tags: DET NOUN ADP PROPN ADP PROPN DET ADJ NOUN ADP NOUN

Classification Report:

	precisi	on re	ecall	f1-sco	re supp	ort
1	0.6	7 1	.00	0.80	2	
2	1.0	0 1	.00	1.00	3	
3	1.0	0 1	.00	1.00	3	
4	1.0	0 0	.00	0.00	1	
5	1.0	0 1	.00	1.00	2	
7	1.0	0 1	.00	1.00	1	
accur	acy			0.92	12	
macro	avg	0.94	0	.83	0.80	12
weighted	d avg	0.94	. (	0.92	0.88	12

Sentence: what is the first flight from boston to stapleton airport for tomorrow True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

	precision	on re	ecall	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	3	
2	1.0	0 1	.00	1.00	3	
3	1.0	0 1	.00	1.00	2	
5	1.0	0 1	.00	1.00	1	
6	1.0	0 1	.00	1.00	1	
7	1.0	0 1	.00	1.00	1	
8	1.0	0 1	.00	1.00	1	
accura	acy			1.00	12	
macro	avg	1.00	1	.00	1.00	12

weighted avg 1.00 1.00 1.00 12

Sentence: list all the flights that arrive at general mitchell international

True tags: VERB DET DET NOUN ADP VERB ADP PROPN PROPN PROPN Properties tags: VERB DET DET NOUN ADP VERB ADP PROPN PROPN PROPN

Classification Report:

O 1010 O 1110								
	precis	sion	reca	all	f1-sc	ore	supp	ort
4	4	00	1.0	^	4 (	0	2	
1	١.	00	1.0	U	1.0	JU	3	
2	1.	00	1.0	0	1.0	00	2	
3	1.	00	1.0	0	1.0	00	1	
4	1.	00	1.0	0	1.0	00	2	
5	1.	00	1.0	0	1.0	00	2	
accur	acy				1.0	0	10	
macro	avg	1.0	00	1.	.00	1.0	00	10
weighted	d avg	1.	.00	1	.00	1.	00	10

Sentence: how much does it cost to go from downtown to logan airport

True tags: ADV ADV AUX PRON VERB PART VERB ADP NOUN ADP PROPN

**PROPN** 

Predicted tags: ADV ADV AUX PRON VERB PART VERB ADP NOUN ADP PROPN

**PROPN** 

Classification Report:

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
11	1.00	1.00	1.00	2
12	1.00	1.00	1.00	1
accura	су		1.00	12
macro a weighted	•		.00 1.0 1.00 1.	00 12 00 12

Sentence: show me flights from all airports to love field

True tags: VERB PRON NOUN ADP DET NOUN ADP PROPN PROPN Predicted tags: VERB PRON NOUN ADP DET NOUN ADP PROPN PROPN

precision	recall	f1-score	support
1.00	1.00	1.00	2
1.00	1.00	1.00	2
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

6 1.0	00 1.0	00 1.0	00 1	
accuracy		1.0	0 9	
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: flights from cincinnati to <unk> departing after 718 am american True tags: NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN PROPN Predicted tags: NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN

**PROPN** 

Classification Report:

	precisi	on	recall	t1-sc	ore su	ıpport
1	0.7	<b>'</b> 5	1.00	0.8	6	3
2	1.0	00	1.00	1.0	0	3
3	1.0	00	1.00	1.0	0	2
4	1.0	00	0.00	0.0	0	1
9	1.0	00	1.00	1.0	0	1
accur	acv			0.90	າ 1	0
macro	avg	0.9		08.0	0.77	10
weighted	u avg	0.9	13	0.90	0.86	10

Sentence: show me all flights to dallas that are less than 1500 dollars round trip True tags: VERB PRON DET NOUN ADP PROPN ADP AUX ADJ ADP NUM NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP VERB ADJ ADP NOUN NOUN NOUN NOUN

Classification Report:

precision recall f1-score support

								1- 1-	
	1	1.0	0	1.0	00	1.0	00	1	
	2	1.0	0	1.0	00	1.0	00	3	
	3	0.8	0	1.0	00	0.8	39	4	
	4	0.5	0	1.0	00	0.6	37	1	
	5	1.0	0	1.0	00	1.0	00	1	
	6	1.0	0	1.0	00	1.0	00	1	
	7	1.0	0	1.0	00	1.0	00	1	
	8	1.0	0	0.0	00	0.0	00	1	
	9	1.0	0	0.0	00	0.0	00	1	
					-				
acc	urac	V				0.8	6	14	
mac		•	0.9	92	0.	78	0.7	'3	14
weigh		•		.91		.86	_	80	14
oigii		^•9	Ū				٥.	-	• •

Sentence: round trip fares from pittsburgh to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN VERB PROPN NOUN

	precisi	on	recall	f1-sc	core	supp	ort
1	0.6	67	1.00	3.0	30	2	
2	1.0	00	0.67	0.8	30	3	
3	1.0	00	1.00	1.0	00	4	
4	0.0	00	1.00	0.0	00	0	
9	1.0	00	0.00	0.0	00	1	
accura	acy			0.8	0	10	
macro	avg	0.73	3 0	.73	0.5	2	10
weighted	d avg	0.9	93 (	08.0	3.0	30	10

Sentence: round trip fares from baltimore to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN VERB PROPN NOUN

Classification Report:

	precis	sion	reca	all f1	l-sco	re su	pport
1	0.	67	1.0	0	0.80	) 2	2
2	1.	00	0.6	7	0.80	) 3	3
3	1.	00	1.0	0	1.00	) 4	1
4	0.	00	1.0	0	0.00	) (	)
9	1.	00	0.0	0	0.00	) 1	1
accur	acy				0.80	10	)
macro	avg	0.7	73	0.7	3	0.52	10
weighted	d avg	0.	.93	0.8	30	0.80	10

Sentence: all flights from baltimore to philadelphia less than 1000 dollars True tags: DET NOUN ADP PROPN ADP PROPN ADJ ADP NUM NOUN Predicted tags: DET NOUN ADP PROPN ADP PROPN ADJ ADP NUM NOUN Classification Report:

0.000		. <b>.</b>					
	preci	sion	recal	l f1-sc	ore	supp	ort
1	1	.00	1.00	1.0	0	2	
2	2 1	.00	1.00	1.0	0	3	
3	3 1	.00	1.00	1.0	0	2	
5	5 1	.00	1.00	1.0	0	1	
7	1	.00	1.00	1.0	0	1	
9	1	.00	1.00	1.0	0	1	
accur	acy			1.0	0	10	
macro	avg	1.0	00	1.00	1.0	0	10
weighte	•	1	.00	1.00	1.0	00	10
_	_						

Sentence: how many seats in a 100

True tags: ADV ADJ NOUN ADP DET PROPN Predicted tags: ADV ADJ NOUN ADP DET NOUN

	precisi	on re	call	f1-sco	ore su	ppo	rt
1	1.0	0 0	.00	0.00	)	1	
2	1.0	0 1	.00	1.00	)	1	
3	0.5	0 1	.00	0.67	7	1	
5	1.0	0 1	.00	1.00	)	1	
7	1.0	0 1.	.00	1.00	)	1	
11	1.0	00 1	.00	1.0	0	1	
accura	асу			0.83	3 (	6	
macro	avg	0.92	0	.83	0.78		6
weighted	d avg	0.92	(	0.83	0.78		6

Sentence: how many passengers can a boeing 737 hold True tags: ADV ADJ NOUN AUX DET PROPN NUM VERB Predicted tags: ADV ADJ NOUN AUX DET NOUN ADJ PROPN

Classification Report:

	precisi	on re	call	f1-sco	ore su	ipport
1	0.0	0 0	.00	0.00	)	1
3	0.5	0 1	.00	0.67	7	1
4	1.0	0 0	.00	0.00	)	1
5	1.0	0 1	.00	1.00	)	1
7	0.5	0 1	.00	0.67	7	1
8	1.0	0 1	.00	1.00	)	1
9	1.0	0 0	.00	0.00	)	1
11	1.0	00 1	.00	1.0	0	1
accur	acy			0.62	2 8	3
macro	avg	0.75	0.	.62	0.54	8
weighted	d avg	0.75	(	0.62	0.54	8

Sentence: what is the seating capacity of a <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP DET PROPN

Classification Report:

	precis	ion r	recall f1-score		ore s	suppo	ort
1	1.0	00 -	1.00	1.0	0	1	
2	1.0	00 1	1.00	1.0	0	1	
3	1.0	00 1	1.00	1.0	0	2	
5	1.0	00 1	1.00	1.0	0	2	
6	1.0	00 1	1.00	1.0	0	1	
8	1.0	00 1	1.00	1.0	0	1	
accur	acy			1.0	0	8	
macro	avg	1.00	1	.00	1.00		8
weighte	d avg	1.00	)	1.00	1.00	0	8

Sentence: what is the seating capacity for delta be1

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN NOUN

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	1.	00	0.50	0.	67	2	
2	1.	00	1.00	1.	00	1	
3	0.	67	1.00	0.	80	2	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
8	1.	00	1.00	1.	00	1	
accur	acy			0.8	38	8	
macro	avg	0.9	94	0.92	0.9	1	8
weighted	d avg	0.	92	0.88	0.	87	8

Sentence: show me the flights from indianapolis to orlando with round trip fares less than <unk>

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN ADJ ADP NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ ADP ADV

Classification Report:

	precis	ion ı	ecall	f1-sco	re supp	oort
1	1.	00	1.00	1.00	) 2	
2	1.	00	1.00	1.00	4	
3	1.	00	1.00	1.00	4	
4	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
7	1.	00	1.00	1.00	1	
9	1.	00	0.00	0.00	) 1	
11	1 0.	00	1.00	0.00	0 0	
accur	асу			0.93	15	
macro	_	0.89		.89	0.78	15
weighte	d avg	1.0	0 (	0.93	0.93	15

Sentence: show me what flights are available from baltimore to dallas with economy fares

True tags: VERB PRON DET NOUN AUX ADJ ADP PROPN ADP PROPN ADP

NOUN NOUN

Predicted tags: VERB PRON PRON NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3

3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	1
5	1.00	0.00	0.00	1
6	0.50	1.00	0.67	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		0.9	2 1	3
macro avg	0.94	0.88	0.83	13
weighted avg	0.96	0.92	0.90	13

Sentence: baltimore to kansas city economy
True tags: PROPN ADP PROPN PROPN NOUN
Predicted tags: PROPN ADP PROPN PROPN NOUN

Classification Report:

precision recall f1-score support 1 3 1.00 1.00 1.00 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 1 5 accuracy 1.00 macro avg 1.00 1.00 1.00 5 weighted avg 1.00 1.00 1.00 5

Sentence: economy fares new york to miami round trip

True tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN Predicted tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN

Classification Report:

	precisi	on re	ecall	f1-sco	ore s	uppo	ort
1	1.0	00 1	.00	1.00	)	3	
2	1.0	00 1	.00	1.00	)	1	
3	1.0	00 1	.00	1.00	)	4	
accur	acy			1.00	)	8	
macro weighte	_	1.00 1.00		.00 1.00	1.00 1.00	)	8 8

Sentence: find me all the round trip flights from burbank to milwaukee stopping in <unk> louis

True tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN VERB ADP PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN VERB ADP PROPN PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	3

Sentence: i <unk> like to find a flight from charlotte to las vegas and make a stop in <unk> louis

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN CCONJ VERB DET NOUN ADP PROPN PROPN Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	5	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accurac	;y		1.00	19	
macro a	vg 1.0	00 1	.00 1.0	00	19
weighted a	avg 1	.00	1.00 1.	00	19

Sentence: can you tell me which flights go from memphis to tacoma and make a stop in los angeles

True tags: AUX PRON VERB PRON DET NOUN VERB ADP PROPN ADP PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: AUX PRON VERB PRON DET NOUN VERB ADP PROPN ADP PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	3
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	2
8	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1

accuracy		1.0	0 18	}
macro avg	1.00	1.00	1.00	18
weighted avg	1.00	1.00	1.00	18

Sentence: is there a flight between oakland and boston with a stopover in dallas fort worth on twa

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Classification Report:

оро				
orecision	recall	f1-score	suppo	rt
1.00	1.00	1.00	6	
1.00	1.00	1.00	4	
1.00	1.00	1.00	2	
1.00	0.00	0.00	1	
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
0.00	1.00	0.00	0	
1.00	1.00	1.00	1	
су		0.94	17	
avg 0.8	88 0	.88 0.7	'5 ´	17
avg 1	.00	0.94 0.	94	17
	1.00 1.00 1.00 1.00 1.00 0.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 0.00 1.00 1.00 1.00 cy 0.94 avg 0.88 0.88 0.7	1.00 1.00 1.00 6 1.00 1.00 1.00 4 1.00 1.00 1.00 2 1.00 0.00 0.00 1 1.00 1.00 1.00 2 1.00 1.00 1.00 1 0.00 1.00 1.00 1 0.00 1.00 0.00 0

Sentence: show me all direct flights from san francisco to boston departing before noon

True tags: VERB PRON DET ADJ NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Predicted tags: VERB PRON DET ADJ NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	13	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	13 13

Sentence: do you have an early morning direct flight from philadelphia to pittsburgh True tags: AUX PRON VERB DET ADJ NOUN ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: AUX PRON VERB DET ADJ NOUN ADJ NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precis	ion r	ecall	f1-sc	ore su	pport
1	1 (	00	1.00	1.0	n :	2
2			1.00	1.0		2
3	1.0	00	1.00	1.0	) 2	2
4	1.0	00	1.00	1.0	) ′	1
5	1.0	00	1.00	1.0	) <i>'</i>	1
6	1.0	00	1.00	1.00	) <i>'</i>	1
7	1.0	00	1.00	1.00	0 2	2
8	1.0	00	1.00	1.0	) ′	1
accur	acv			1.00	) 1:	2
macro	•	1.00	1	.00	1.00	12
	•					
weighte	u avg	1.0	U	1.00	1.00	12

Sentence: which united flights from boston to san francisco make connections True tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN VERB NOUN Predicted tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN VERB

NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore s	upport	
1	1.0	00	1.00	1.0	00	4	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	00	1	
accura	acy			1.0	0 '	10	
macro	avg	1.00	0 1	.00	1.00	10	)
weighted	d avg	1.0	00	1.00	1.00	1	0

Sentence: nonstop or connecting flights from seattle to boston True tags: NOUN CCONJ VERB NOUN ADP PROPN ADP PROPN Predicted tags: NOUN CCONJ VERB NOUN ADP PROPN ADP PROPN Classification Report:

	precis	ion	reca	all '	f1-sc	ore	supp	ort
1	1.0	00	1.0	0	1.0	0	2	
2	1.0	00	1.0	0	1.0	0	2	
3	1.0	00	1.0	0	1.0	0	2	
4	1.0	00	1.0	0	1.0	0	1	
10	) 1.	.00	1.0	00	1.0	00	1	
accur	acy				1.00	)	8	
macro	avg	1.0	00	1.0	00	1.0	0	8
veighted	d avg	1.	.00	1	.00	1.0	00	8

Sentence: please give me direct morning flights from pittsburgh to atlanta True tags: INTJ VERB PRON ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: INTJ VERB PRON NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	pred	cision	rec	call	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	2	
2	)	1.00	1.0	00	1.0	0	2	
3	}	0.67	1.0	00	3.0	80	2	
4	Ī	1.00	1.0	00	1.0	0	1	
6	;	1.00	1.0	00	1.0	0	1	
7	•	1.00	0.0	00	0.0	0	1	
13	3	1.00	1.	.00	1.	00	1	
accur	асу				0.9	0	10	
macro	avg	0	.95	0	.86	8.0	3	10
weighte	d avo	9	0.93	(	0.90	0.	86	10

Sentence: list the flights that leave from philadelphia to atlanta early thursday morning before 8 am

True tags: VERB DET NOUN ADP VERB ADP PROPN ADP PROPN ADJ NOUN NOUN ADP NUM NOUN

Predicted tags: VERB DET NOUN ADP VERB ADP PROPN ADP PROPN ADJ NOUN NOUN ADP NUM NOUN

Classification Report:

	precis	ion re	ecall	f1-sc	ore sup	port
1	1.0	00 1	.00	1.00	0 2	
2	1.0	00 1	.00	1.0	0 4	
3	1.0	00 1	.00	1.00	0 4	
4	1.0	00 1	.00	1.0	0 2	
5	1.0	00 1	.00	1.00	0 1	
7	1.0	00 1	.00	1.00	0 1	
9	1.0	00 1	.00	1.0	0 1	
accur	асу			1.00	) 15	5
macro	avg	1.00	1	.00	1.00	15
weighte	d avg	1.00	)	1.00	1.00	15

Sentence: give me the flights from boston to san francisco leaving early today

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADJ

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADJ ADJ

р	precision reca		f1-score	support	
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	

```
3
           1.00
                  0.50
                         0.67
                                  2
     4
           1.00
                  1.00
                         1.00
                                  2
      5
                                  1
           1.00
                  1.00
                         1.00
     6
           1.00
                  1.00
                         1.00
                                  1
     7
          0.50
                  1.00
                         0.67
                                  1
                         0.92
                              12
  accuracy
              0.93
                             0.90
                                     12
 macro avg
                      0.93
weighted avg
               0.96
                      0.92
                             0.92
                                      12
```

Sentence: show me the continental flights leaving chicago early saturday morning True tags: VERB PRON DET PROPN NOUN VERB PROPN ADJ NOUN NOUN Predicted tags: VERB PRON DET PROPN NOUN VERB PROPN ADJ NOUN NOUN Classification Report:

	precisi	on re	ecall	f1-sco	re sup	oort
1	1.0	0 1	.00	1.00	2	
3	1.0	0 1	.00	1.00	3	
4	1.0	0 1	.00	1.00	2	
5	1.0	0 1	.00	1.00	1	
6	1.0	0 1	.00	1.00	1	
7	1.0	0 1	.00	1.00	1	
accura	асу			1.00	10	
macro	_	1.00			1.00	10
weighted	d avg	1.00	)	1.00	1.00	10

Sentence: which flights are leaving from kansas city to atlanta early monday morning True tags: DET NOUN AUX VERB ADP PROPN PROPN ADP PROPN ADJ NOUN NOUN

Predicted tags: DET NOUN VERB VERB ADP PROPN PROPN ADP PROPN ADJ NOUN NOUN

Classification Report:

		-				
	precision	on re	call	f1-scc	re supp	ort
1	1.0	0 1.	00	1.00	) 3	
2	1.0	0 1.	00	1.00	) 2	
3	1.0	0 1.	00	1.00	) 3	
4	0.5	0 1.	00	0.67	7 1	
5	1.0	0 1.	00	1.00	) 1	
7	1.0	0 1.	00	1.00	) 1	
8	1.0	0 0.	00	0.00	) 1	
				0.00	40	
accura	•		_	0.92		
macro	_	0.93	_	.86	0.81	12
weighted	d avg	0.96	(	0.92	0.89	12

Sentence: i would like to find flights from columbus to minneapolis on monday june fourteenth early in the morning or in the evening sunday june thirteenth thank you

True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP NOUN NOUN ADJ ADJ ADP DET NOUN CCONJ ADP DET NOUN NOUN ADJ VERB PRON

Predicted tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP NOUN NOUN PROPN ADJ ADP DET NOUN CCONJ ADP DET NOUN NOUN NOUN PROPN VERB PRON

Classification Report:

ŀ	orecision	recall	f1-score	supp	ort
1	0.50	1.00	0.67	2	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	7	
4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
7	1.00	0.33	0.50	3	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	•		0.93	27	
macro a	0		.93 0.9		27
weighted	avg 0	.96 (	0.93 0.	92	27

Sentence: and from milwaukee to atlanta before 10 am daily

True tags: CCONJ ADP PROPN ADP PROPN ADP NUM NOUN ADJ Predicted tags: CCONJ ADP PROPN ADP PROPN ADP NUM NOUN ADJ

Classification Report:

Ciaconiic	ation	i topoi	٠.			
	preci	sion	recall	f1-sco	re su	pport
1	1	.00	1.00	1.00	) 2	2
2	1	.00	1.00	1.00	) (	3
3	1	.00	1.00	1.00	) -	1
7	1	.00	1.00	1.00	) -	1
9	1	.00	1.00	1.00	) 1	1
10	) ′	1.00	1.00	1.00	0	1
accur	acy			1.00	9	<del>)</del>
macro	•	1.0		.00	1.00	9
weighte	d avg	1.0	00 ´	1.00	1.00	9

Sentence: list daily flights from denver to boston

True tags: VERB ADJ NOUN ADP PROPN ADP PROPN Predicted tags: VERB ADJ NOUN ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1 00	1

4 1.0	00 1.0	00 1.0	0 1	
7 1.0	00 1.0	00 1.0	00 1	
accuracy		1.0	0 7	
accuracy macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: list flights from boston to pittsburgh daily True tags: VERB NOUN ADP PROPN ADP PROPN ADJ Predicted tags: VERB NOUN ADP PROPN ADJ

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	1.	.00	1.00	1.00	) :	2
2	1.	.00	1.00	1.00	) :	2
3	1.	.00	1.00	1.00	)	1
4	1.	.00	1.00	1.00	)	1
7	1.	.00	1.00	1.00	)	1
accur	асу			1.00	) 7	7
macro	avg	1.0	0 1	.00	1.00	7
weighte	d avg	1.0	00	1.00	1.00	7

Sentence: show me all daily flights between milwaukee and orlando True tags: VERB PRON DET ADJ NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB PRON DET ADJ NOUN ADP PROPN CCONJ PROPN Classification Report:

pre	ecision	recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy	,		1.00	9	
macro av	_		.00 1.0	_	
weighted av	/g 1.	.00	1.00 1.	00 9	

Sentence: list daily flights from boston to oakland using continental airlines
True tags: VERB ADJ NOUN ADP PROPN ADP PROPN VERB PROPN PROPN
Predicted tags: VERB ADJ NOUN ADP PROPN ADP PROPN VERB PROPN
PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 4

Sentence: show me the flights arriving in baltimore on june fifteenth leaving either from denver or dallas

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ VERB CCONJ ADP PROPN CCONJ PROPN

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ

VERB VERB ADP PROPN CCONJ PROPN

Classification Report:

	precis	ion i	recall	f1-sco	ore su	pport
1	1.0	00	1.00	1.00	) ;	3
2	1.0	00	1.00	1.00	) ;	3
3	1.0	00	1.00	1.00	) 2	2
4	0.7	75	1.00	0.86	3 3	3
5	1.0	00	1.00	1.00	) '	1
6	1.0	00	1.00	1.00	) '	1
7	1.0	00	1.00	1.00	) '	1
10	) 1.	00	0.50	0.6	7	2
accur	асу			0.94	. 10	6
macro	avg	0.97	7 0	.94	0.94	16
weighted	d avg	0.9	5 (	0.94	0.93	16

Sentence: list the flights from pittsburgh to baltimore arriving on july first

True tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN ADJ

Classification Report:

	precis	ion re	ecall	f1-sco	ore si	upport
1	1.0	00 1	.00	1.00	)	2
2	1.0	00 1	.00	1.00	)	3
3	1.0	00 1	.00	1.00	)	2
4	. 1.0	00 1	.00	1.00	)	2
5	1.0	00 1	.00	1.00	)	1
7	1.0	00 1	.00	1.00	)	1
accur	асу			1.00	) 1	11
macro	avg	1.00	1	.00	1.00	11
weighte	d avg	1.00	)	1.00	1.00	11

Sentence: show me the flights arriving on baltimore on june fourteenth

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ Classification Report:

	precisi	on re	call	f1-sco	ore su	ıpport
1	1.0	0 1	.00	1.00	)	1
2	1.0		.00	1.00	)	2
3	1.0	0 1	.00	1.00		2
4	1.0	0 1	.00	1.00	)	2
5	1.0	0 1	.00	1.00	)	1
6	1.0	0 1	.00	1.00	)	1
7	1.0	0 1	.00	1.00	)	1
accura	асу			1.00	) 1	0
macro	avg	1.00	1	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: show me the cheapest flight arriving in baltimore on june fourteenth starting from dallas

True tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN ADJ VERB ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN ADJ VERB ADP PROPN

Classification Report:

	prec	ision	recal	l f1-sco	ore supp	ort
1		1.00	1.00	1.00	) 2	
2	<u> </u>	1.00	1.00	1.00	3	
3	} '	1.00	1.00	1.00	) 2	
4	ļ '	1.00	1.00	1.00	3	
5	5 1	1.00	1.00	1.00	) 1	
6	) ´	1.00	1.00	1.00	) 1	
7	,	1.00	1.00	1.00	) 2	
accur	асу			1.00	14	
macro	avg	1.	00 ′	1.00	1.00	14
weighte	d avg	1	.00	1.00	1.00	14

Sentence: how many airlines fly from new york to los angeles by way of milwaukee True tags: ADV ADJ NOUN VERB ADP PROPN PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: ADV ADJ NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP NOUN

pı	recision	recall	f1-score	support
1	1.00	0.80	0.89	5
2	1.00	1.00	1.00	4
3	0.67	1.00	0.80	2
4	1 00	1 00	1 00	1

7 1	1.00	1.00	1.00	1	
11	1.00	1.00	1.00	) 1	
accuracy			0.93	14	
macro avg	0.9	4 0	.97	0.95	14
weighted avg	0.9	95 (	0.93	0.93	14

Sentence: how many flights does twa have in business class

True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN

Predicted tags: ADV ADJ NOUN AUX PROPN VERB ADP PROPN NOUN

Classification Report:

	precisi	on r	ecall	f1-sc	ore si	uppoi	rt
1	0.5	50	1.00	0.6	7	1	
2	1.0	00	1.00	1.0	<b>O</b>	1	
3	1.0	0 (	0.67	0.8	)	3	
4	1.0	00 -	1.00	1.00	)	1	
7	1.0	00 -	1.00	1.00	)	1	
8	1.0	00 -	1.00	1.00	)	1	
11	1.0	00	1.00	1.0	0	1	
accur	acy			0.89	)	9	
macro	avg	0.93	0	.95	0.92	(	9
weighted	d avg	0.94	4 (	0.89	0.90		9

Sentence: how many first class flights does delta have today

True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB NOUN

Predicted tags: ADV ADJ ADJ NOUN NOUN AUX PROPN VERB NOUN

Classification Report:

2

1.00

prec	ision	recall	f1-sco	ore	supp	ort
	1.00	1.00	1.00	)	1	
} .	1.00	1.00	1.00	)	3	
	1.00	1.00	1.00	)	1	
' (	0.50	1.00	0.6	7	1	
} '	1.00	1.00	1.00	C	1	
1	1.00	0.50	0.6	7	2	
асу			0.89	)	9	
avg	0.9	0 0	.92	0.8	9	9
d avg	0.	94 (	0.89	3.0	39	9
֡֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜	( ) ( ) acy	1.00 1.00 1.00 0.50 1.00 1 1.00 acy	1.00 1.00 1.00 1.00 1.00 1.00 0.50 1.00 1.00 1.00 1 1.00 0.50 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.67 1.00 1.00 1.00 1 1.00 0.50 0.67 acy 0.89 avg 0.92 0.92 0.8	1.00 1.00 1.00 3 1.00 1.00 1.00 1 0.50 1.00 0.67 1 1 1.00 1.00 1.00 1 1 1.00 0.50 0.67 2 acy 0.89 9 avg 0.92 0.92 0.89

Sentence: how many flights does twa have with business class True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN Predicted tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN Classification Report:

1

precision recall f1-score support
1 1.00 1.00 1.00 1

1.00

1.00

3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
11	1.00	1.00	1.00	1	
accuracy	/		1.00	9	
macro av	g 1.0	00 1.	00 1.0	00	9
weighted a	vg 1	.00 1	.00 1.	00	9

Sentence: how many first class flights does united have leaving from all cities today True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB VERB ADP DET NOUN NOUN

Predicted tags: ADV ADJ ADJ NOUN NOUN AUX PROPN VERB VERB ADP DET NOUN NOUN

Classification Report:

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	4	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
7	0.50	1.00	0.67	1	
8	1.00	1.00	1.00	1	
11	1.00	0.50	0.67	2	
accurac	У		0.92	13	
macro a	vg 0.9	94 0	.94 0.9	92	13
weighted a	avg 0	.96 (	0.92 0.	92	13

Sentence: what time does the tuesday morning 755 flight leaving washington arrive in san francisco

True tags: DET NOUN AUX DET NOUN NOUN NUM NOUN VERB PROPN VERB ADP PROPN PROPN

Predicted tags: PRON NOUN AUX DET NOUN NOUN NOUN NOUN VERB PROPN VERB ADP PROPN PROPN

pre	ecision	recall	f1-score	support
1 2	1.00 1.00	1.00 1.00	1.00 1.00	3 1
3	0.80	1.00	0.89	4
4	1.00	1.00	1.00	2
5	1.00	0.50	0.67	2
6	0.00	1.00	0.00	0
8	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1
			0.06	1.1
accuracy			0.86	14

macro avg	0.85	0.81	0.69	14
weighted avg	0.94	0.86	0.85	14

Sentence: i would like the time of your earliest flight in the morning from philadelphia to washington on american airlines

True tags: PRON AUX VERB DET NOUN ADP DET ADJ NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP DET ADJ NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	upport	•
1	1.0	00	1.00	1.0	0	4	
2	1.0	00	1.00	1.0	0	5	
3	1.0	00	1.00	1.0	0	3	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	3	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	) <i>'</i>	19	
macro	avg	1.0	0 1	.00	1.00	19	9
weighted	d avg	1.0	00	1.00	1.00	1	9

Sentence: when does continental fly from philadelphia to denver on sundays True tags: ADV AUX PROPN VERB ADP PROPN ADP PROPN ADP PROPN Predicted tags: VERB AUX PROPN VERB ADP PROPN ADP PROPN Classification Report:

	preci	sion	reca	ıll f	1-sc	ore	supp	ort
1	1	.00	1.00	)	1.0	0	4	
2	1	.00	1.00	)	1.0	0	3	
4	0	.50	1.00	)	0.6	7	1	
8	1	.00	1.00	)	1.0	0	1	
11	1 1	.00	0.0	0	0.0	0	1	
accur	acy				0.90	)	10	
macro	avg	0.9	0	8.0	0	0.73	3	10
weighted	d avg	0.	95	0.9	90	0.8	37	10

Sentence: i would like a schedule of flights from san francisco to boston on wednesday

True tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN

ADP PROPN ADP NOUN Classification Report:

precision recall f1-score support

	1	1.0	0	1.0	00	1.0	0	3	
	2	1.0	0	1.0	00	1.0	0	4	
	3	1.0	0	1.0	00	1.0	0	3	
	4	1.0	0	1.0	00	1.0	0	1	
	5	1.0	0	1.0	00	1.0	0	1	
	6	1.0	0	1.0	00	1.0	0	1	
	8	1.0	0	1.0	00	1.0	0	1	
ac	curac	У				1.0	0	14	
	acro a	_	1.	00	1.	00	1.0	0	14
weig	hted a	avg	1	.00	1	.00	1.	00	14

Sentence: in pittsburgh i <unk> like to rent a car

True tags: ADP PROPN PRON AUX VERB PART VERB DET NOUN Predicted tags: ADP PROPN PRON AUX VERB PART VERB DET NOUN

Classification Report:

		-				
	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 1.	.00	1.00	1	
2	1.0		00	1.00	1	
3	1.0	0 1.	.00	1.00	1	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
8	1.0	0 1.	.00	1.00	1	
12	2 1.0	00 1	.00	1.00	1	
accura	acv			1.00	9	
macro	•	1.00	1.	.00 ′	1.00	9
weighted	_	1.00	•	1.00	1.00	9

Sentence: is there limousine service available at baltimore airport True tags: AUX PRON NOUN NOUN ADJ ADP PROPN PROPN Predicted tags: AUX PRON NOUN NOUN ADJ ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore su	ıbboı	rt
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	1	
3	1.	00	1.00	1.0	0	2	
6	1.	00	1.00	1.0	0	1	
7	1.	00	1.00	1.0	0	1	
8	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	8	
macro	•	1.0		.00	1.00	8	8
weighte	d avg	1.0	00	1.00	1.00		8

Sentence: may i have a listing of flights from long beach california to columbus ohio on wednesday

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN

PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: NOUN PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN

PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	precis	sion	reca	I f1-s	core	supp	ort
1	1.	00	1.00	1.	00	5	
2	1.	00	1.00	1.	00	4	
3	0.	75	1.00	0.	86	3	
4	1.	00	1.00	1.	00	1	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
8	1.	00	0.00	0.	00	1	
accur	acy			0.9	94	16	
macro	•	0.9	96	0.86	0.8	34	16
weighte	•		95	0.94	0.	91	16
5	9						

Sentence: i need a ticket from nashville tennessee to seattle

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-scc	re su	oport
1	1.0	0 1.	00	1.00	) 3	3
2	1.0	0 1.	00	1.00	) 2	<u>-</u>
3	1.0	0 1.	00	1.00	) 1	
4	1.0	0 1.	00	1.00	) 1	
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	
accur	асу			1.00	9	
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	9 9

Sentence: i <unk> need information please on a flight from washington dc san

francisco california

True tags: PRON AUX VERB NOUN INTJ ADP DET NOUN ADP PROPN PROPN

PROPN PROPN PROPN

Predicted tags: PRON AUX VERB NOUN INTJ ADP DET NOUN ADP PROPN PROPN PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

1.00	1.	UU	1.00	1	
1.00	1.	00	1.00	1	
1.00	) 1	.00	1.00	1	
			1.00	14	
)	1.00	1.00	) 1	.00	14
g	1.00	1.0	00	1.00	14
	1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 3 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: please list any flights from oakland california to philadelphia on tuesday True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN Predicted tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Classification Report:

	precis	sion	recall	f1-score	e support	
1		.00	1.00	1.00	3	
2	1.	.00	1.00	1.00	3	
3	1.	.00	1.00	1.00	2	
4	1.	.00	1.00	1.00	1	
5	1.	.00	1.00	1.00	1	
13	3 1	.00	1.00	1.00	1	
accura	асу			1.00	11	
macro weighted	_	1.0 1.			.00 11 1.00 1	1

Sentence: can you tell me which flight from dallas to baltimore has the least expensive fare

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN VERB DET ADJ ADJ NOUN

Predicted tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN DET ADJ ADJ NOUN

Classification Report:

0.0000		.оро. с	•			
	precis	ion ı	recall	f1-sco	ore sup	port
1	0.6	67	1.00	0.80	) 2	
2	1.0	00	1.00	1.00	2	
3	1.0	00	1.00	1.00	2	
4	1.0	00	0.50	0.67	7 2	
5	1.0	00	1.00	1.00	) 2	
6	1.0	00	1.00	1.00	) 2	
7	1.0	00	1.00	1.00	) 2	
8	1.0	00	1.00	1.00	) 1	
accur	асу			0.93	15	
macro	avg	0.96	0	.94	0.93	15
weighte	d avg	0.9	6	0.93	0.93	15

Sentence: of the flights available from dallas to baltimore on august third which airline has the least expensive flight

True tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ DET

NOUN VERB DET ADJ ADJ NOUN

Predicted tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ DET NOUN PROPN DET ADJ ADJ NOUN

Classification Report:

	precisior	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	4	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	3	
7	1.00	1.00	1.00	4	
accura	асу		0.94	18	
macro	avg (	0.94	0.83	80	18
weighted	l avg	0.96	0.94 0	.92	18

Sentence: what are the most expensive first class tickets between boston and san francisco

True tags: PRON AUX DET ADJ ADJ ADV NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

	pre	cisio	n re	call	f1-sc	ore	supp	ort
1		1.00	1.	.00	1.0	0	3	
2	2	1.00	1.	.00	1.0	00	1	
3	3	1.00	1.	.00	1.0	00	2	
5	5	1.00	1.	.00	1.0	0	1	
6	3	1.00	1.	.00	1.0	00	1	
7	7	0.67	1.	.00	3.0	30	2	
8	3	1.00	1.	.00	1.0	00	1	
1	0	1.00	) 1	.00	1.	00	1	
1	1	1.00	0	.00	0.0	00	1	
accui	racy				0.9	2	13	
macro weighte	_		0.96 0.95	_	.89 ).92	0.8 0.	87 89	13 13

Sentence: what are the least expensive flights from denver to atlanta True tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN Classification Report:

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1

5	1.0	0 1.	00	1.00	•	1	
6	1.0	0 1.	00	1.00		1	
7	1.0	0 1.	00	1.00	2	2	
8	1.0	0 1.	00	1.00	•	1	
accura	асу			1.00	1	0	
macro	avg	1.00	1.0	0	1.00	10	)
weighted	d avg	1.00	1.	00	1.00	1	0

Sentence: what <unk> the price of the least expensive first class round trip ticket on us air from cleveland to miami

True tags: PRON AUX DET NOUN ADP DET ADJ ADV NOUN NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP DET ADJ ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN ADP PROPN

Classification Report:

pre	cision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	5	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	0.67	1.00	0.80	2	
8	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accuracy			0.95	20	
macro avo	9.0	96 0	8.0 88.	35	20
weighted av	/g 0.	.97 (	0.95 0	.93	20

Sentence: great now what i want to find out is on april twentieth from washington to denver do you have a flight least expensive fare around 5 <unk> in the morning True tags: ADJ ADV PRON PRON VERB PART VERB ADV AUX ADP NOUN ADJ ADP PROPN AUX PRON VERB DET NOUN ADJ ADJ NOUN ADP NUM ADV ADP DET NOUN

Predicted tags: VERB ADV DET PRON VERB PART VERB ADP VERB ADP NOUN NOUN ADP PROPN ADP PROPN AUX PRON VERB DET NOUN ADJ ADJ NOUN ADP NUM ADV ADP DET NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.83	1.00	0.91	5
3	0.80	1.00	0.89	4
4	0.60	1.00	0.75	3
5	0.67	1.00	0.80	2
6	1.00	0.67	0.80	3
7	1.00	0.50	0.67	4
8	1.00	0.50	0.67	2

9	1.00	1.0	0	1.00	1	
11	1.00	0.6	37	08.0	3	
12	1.00	1.0	00	1.00	1	
accuracy			(	0.83	30	
macro av	g 0	.90	0.85	0	.84	30
weighted av	/g (	88.0	8.0	3 (	0.83	30

Sentence: what ground transportation is available between milwaukee airport and downtown milwaukee

True tags: DET NOUN NOUN AUX ADJ ADP PROPN CCONJ NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN CCONJ NOUN PROPN

Classification Report:

	precision	on red	call †1	-score	supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	1	
3	1.0	0 1.	00	1.00	3	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
10	1.0	0 1	.00	1.00	1	
accura	асу		(	0.91	11	
macro weighted	•	0.88 1.00	0.88 0.9	-	.75 ).91	11 11
	_					

Sentence: please list all the takeoffs and landings for general mitchell international True tags: INTJ VERB DET DET NOUN CCONJ NOUN ADP PROPN PROPN
PROPN

Predicted tags: INTJ VERB DET DET PROPN CCONJ PROPN ADP PROPN PROPN

	precis	sion	reca	f1-	score	supp	ort
1	0.	60	1.00	) C	.75	3	
2	1.	00	1.00	) 1	.00	1	
3	1.	00	0.00	) C	.00	2	
4	1.	00	1.00	) 1	.00	1	
5	1.	00	1.00	) 1	.00	2	
10	) 1	.00	1.0	0	1.00	1	
13	3 1	.00	1.0	0	1.00	1	
accur	acv			0	.82	11	
macro	•	0.9	94	0.86	0.8	32	11
weighted	•	0.	89	0.82	2 0.	.75	11

Sentence: what ground transportation is available from la guardia airport into new york city

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN PROPN

Classification Report:

Ciassilic	alloni	cport.				
	precisi	on re	call	f1-scc	ore su	upport
	ı					• •
1	1.0	00 1.	.00	1.00	)	6
2	1.0	00 1.	.00	1.00	)	2
3	1.0	00 1.	.00	1.00	)	2
5	1.0	0 0	.00	0.00	)	1
6	0.0	00 1.	.00	0.00	)	0
7	1.0	00 1.	.00	1.00	)	1
8	1.0	00 1.	.00	1.00	)	1
accur	асу			0.92	2 1	3
macro	avg	0.86	0	.86	0.71	13
weighte	d avg	1.00	(	0.92	0.92	13

Sentence: what ground transportation is available from dallas fort worth airport to downtown dallas

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN ADP NOUN PROPN

Classification Report:

	precisi	on re	call	f1-scor	e suppo	rt
1	1.0	00 1.	.00	1.00	5	
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	3	
5	1.0	0 0.	.00	0.00	1	
6	0.0	00 1.	.00	0.00	0	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
accur	acy			0.92	13	
macro	avg	0.86	0.	86 (	).71 1	13
weighte	d avg	1.00	0	.92	0.92	13

Sentence: ground transportation please in the city of boston between airport and downtown

True tags: NOUN NOUN INTJ ADP DET PROPN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: NOUN NOUN INTJ ADP DET PROPN ADP PROPN ADP NOUN CCONJ NOUN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	4
5	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
13	1.00	1.00	1.00	1
accurac	.,		1 00	12

accuracy		1.0	0 1	2
macro avg	1.00	1.00	1.00	12
weighted avg	1.00	1.00	1.00	12

Sentence: ground san francisco True tags: NOUN PROPN PROPN Predicted tags: NOUN PROPN PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 2 1 1.00 3 1.00 1.00 1.00 1 accuracy 1.00 3 macro avg 1.00 1.00 1.00 3 weighted avg 1.00 1.00 1.00 3

Sentence: tell me about ground transportation at san francisco True tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN

Classification Report:

	precis	ion r	ecall	f1-sc	ore s	uppor	rt
1	1.0		1.00	1.0		2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
accur	асу			1.0	C	8	
macro weighted	•	1.00 1.0		.00 1.00	1.00 1.00		3 8

Sentence: now show me all the flights from <unk> louis to burbank

True tags: ADV VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP PROPN ADP

**PROPN** 

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2

3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
11	1.00	1.00	1.00	1	
accuracy	/		1.00	11	
macro av	g 1.0	00 1	.00 1.	.00	11
weighted a	vg 1	.00	1.00 1	.00	11

Sentence: saturday or sunday flights between milwaukee and phoenix american

airlines

True tags: NOUN CCONJ NOUN NOUN ADP PROPN CCONJ PROPN PROPN **PROPN** 

Predicted tags: NOUN CCONJ NOUN NOUN ADP PROPN CCONJ PROPN PROPN **PROPN** 

Classification Report:

Ciassillo	auon	i (CpC	1					
	precision		reca	recall f1-score		supp	ort	
1	1	.00	1.0	Λ	1.0	Λ	4	
•							-	
2	1	.00	1.0	0	1.0	0	1	
3	1	.00	1.0	0	1.0	0	3	
10	) 1	.00	1.0	00	1.0	00	2	
accur	acy				1.00	)	10	
macro	avg	1.0	00	1	.00	1.0	0	10
weighted	d avg	1.	.00	•	1.00	1.0	00	10

Sentence: show me all flights from denver or philadelphia or pittsburgh to baltimore True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN CCONJ PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN CCONJ PROPN ADP PROPN

Classification Report:

	precision		recal	l f1-so	core	supp	ort
	1	1.00	1.00	1.0	00	4	
	2	1.00	1.00	1.0	00	2	
;	3	1.00	1.00	1.0	00	1	
4	4	1.00	1.00	1.0	00	1	
!	5	1.00	1.00	1.0	00	1	
(	6	1.00	1.00	1.0	00	1	
1	0	1.00	1.00	) 1.	.00	2	
accu	racy			1.0	00	12	
macro	o avg	1.	00	1.00	1.0	0	12
weighte	ed av	g 1	.00	1.00	1.0	00	12

Sentence: what are the flights from cleveland to indianapolis on wednesday may twelfth on either twa delta or continental

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN

ADJ ADP CCONJ PROPN PROPN CCONJ PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN

NOUN ADP ADP PROPN PROPN PROPN CCONJ PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	ort
1	0.0	33	1.00	0.9	1	5	
2	0.0	30	1.00	0.8	9	4	
3	1.0	00	1.00	1.0	0	3	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	0.00	0.0	0	1	
8	1.0	00	1.00	1.0	0	1	
10	) 1.	.00	0.50	0.6	67	2	
accur	асу			0.89	)	18	
macro	avg	0.9	5 0	.81	0.81		18
weighted	d avg	0.9	91	0.89	0.86	;	18

Sentence: list all flights that leave from baltimore or denver or pittsburgh and arrive in philadelphia

True tags: VERB DET NOUN ADP VERB ADP PROPN CCONJ PROPN CCONJ

PROPN CCONJ VERB ADP PROPN

Predicted tags: VERB DET NOUN ADP VERB ADP PROPN CCONJ PROPN

CCONJ PROPN CCONJ VERB ADP PROPN

Classification Report:

	preci	sion	recall	†1-sc	ore	supp	ort
1	1	.00	1.00	1.0	0	4	
2	1	.00	1.00	1.0	0	3	
3	1	.00	1.00	1.0	0	1	
4	1	.00	1.00	1.0	0	3	
5	1	.00	1.00	1.0	0	1	
10	) ′	1.00	1.00	1.0	00	3	
accur	acy			1.0	0	15	
macro	avg	1.0	00 ′	1.00	1.00	0	15
weighted	d avg	1.	.00	1.00	1.0	00	15

Sentence: what does the fare code y mean

True tags: PRON AUX DET NOUN NOUN VERB Predicted tags: PRON AUX DET NOUN NOUN NOUN VERB

pr	precision		f1-score	support
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1 00	1 00	1

8	1.00	1.00	1.00	1	
accuracy			1.00	7	
macro avg	1.	00 1	1.00	1.00	7
weighted av	a 1	.00	1.00	1.00	7

Sentence: what does fare code qw mean

True tags: PRON AUX NOUN NOUN PROPN VERB Predicted tags: PRON AUX NOUN NOUN PROPN VERB

Classification Report:

	precisi	on re	call f	1-sco	re su	pport
1	1.0	0 1.	00	1.00	)	1
3	1.0	0 1.	00	1.00		2
4	1.0	0 1.	00	1.00	)	1
6	1.0	0 1.	00	1.00	)	1
8	1.0	0 1.	00	1.00	)	1
accur	201			1.00	a	3
accur	•				•	_
macro	avg	1.00	1.0	)()	1.00	6
weighted	d avg	1.00	1.	.00	1.00	6

Sentence: what is fare code qw

True tags: PRON AUX NOUN NOUN PROPN Predicted tags: PRON AUX NOUN NOUN PROPN

Classification Report:

	preci	sion	reca	all	f1-sc	ore	supp	ort
1	1	.00	1.0	0	1.0	00	1	
3	1	.00	1.0	0	1.0	00	2	
6	1	.00	1.0	0	1.0	00	1	
8	1	.00	1.0	0	1.0	00	1	
accur	асу				1.0	0	5	
macro	avg	1.	00	1.	00	1.0	0	5
weighte	d avg	1	.00	1	.00	1.	00	5

Sentence: what does fare code <unk> mean

True tags: PRON AUX NOUN NOUN PROPN VERB Predicted tags: PRON AUX NOUN NOUN PROPN VERB

pre	ecision	recall	f1-score	support
1	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accuracy	,		1.00	6

macro avg	1.00	1.00	1.00	6
weighted avg	1.00	1.00	1.00	6

Sentence: what does the fare code yn mean

True tags: PRON AUX DET NOUN NOUN PROPN VERB Predicted tags: PRON AUX DET NOUN NOUN PROPN VERB

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	,	1
3	1.0	00 1.	.00	1.00	) 2	2
4	1.0	00 1.	.00	1.00	,	1
5	1.0	00 1.	.00	1.00	,	1
6	1.0	00 1.	.00	1.00	•	1
8	1.0	00 1.	.00	1.00	•	1
accur	acy			1.00	7	,
macro	avg	1.00	1	.00	1.00	7
weighted	d avg	1.00	•	1.00	1.00	7

Sentence: list all flights on united from san francisco to boston with fare code qx True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NOUN NOUN

Classification Report:

	precis	sion	recall	f1-sco	ore sup	oport
1	1.	.00	0.80	0.89	9 5	;
2	1.	.00	1.00	1.00	) 4	
3	0.	75	1.00	0.86	3	}
4	1.	.00	1.00	1.00	) 1	
5	1.	.00	1.00	1.00	) 1	
accur	acy			0.93	3 14	ļ
macro	avg	0.9	)5 C	.96	0.95	14
weighte	d avg	0.	95	0.93	0.93	14

Sentence: what is the latest flight from boston to denver that serves a meal

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB

**DET NOUN** 

pı	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

5	1.0	0	1.00	1	.00	2	
6	1.0	0	1.00	1	.00	1	
7	1.0	0	1.00	1	.00	1	
8	1.0	0	1.00	1	.00	1	
accurac	y			1	.00	13	
macro av	/g	1.00	)	1.00	1	.00	13
weighted a	vg	1.0	0	1.00	)	1.00	13

Sentence: list all flights from chicago to seattle on continental which depart on saturday and serve meals

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PRON VERB ADP NOUN CCONJ VERB NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN DET

VERB ADP NOUN CCONJ VERB PROPN

Classification Report:

	precisi	on re	ecall	f1-sco	re sup	port
1	0.7	<b>'</b> 5 1	.00	0.86	3	
2	1.0	0 1	.00	1.00	4	
3	1.0	0 0	.67	0.80	3	
4	1.0	00 1	.00	1.00	3	
5	0.5	50 1	.00	0.67	1	
6	1.0	0 0	.00	0.00	1	
10	1.	00	1.00	1.00	) 1	
accura	асу			0.88	16	
macro	avg	0.89	0	.81	0.76	16
weighted	d avg	0.92	<u>?</u> (	88.0	0.85	16

Sentence: could you tell me what the earliest flight that goes between atlanta and denver is which serves a meal

True tags: AUX PRON VERB PRON PRON DET ADJ NOUN ADP VERB ADP PROPN CCONJ PROPN AUX PRON VERB DET NOUN

Predicted tags: AUX PRON VERB PRON PRON DET ADJ NOUN ADP VERB ADP PROPN CCONJ PROPN VERB DET PROPN DET NOUN

pre	ecision	recall	f1-score	support
1	0.67	1.00	0.80	2
2 3	1.00 1.00	1.00 1.00	1.00 1.00	2 2
4	0.67	0.67	0.67	3
5	0.67	1.00	0.80	2
6	1.00	0.75	0.86	4
7	1.00	1.00	1.00	1
8	1.00	0.50	0.67	2
10	1.00	1.00	1.00	1
accuracy	/		0.84	19

macro avg	0.89	0.88	0.87	19
weighted ava	0.88	0.84	0.84	19

Sentence: give me the saturday morning flights with meals from chicago to minneapolis

True tags: VERB PRON DET NOUN NOUN NOUN ADP NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	suppo	ort
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	4	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
accur	acy			1.0	0	12	
macro	avg	1.0	00 1	1.00	1.00		12
weighte	d avg	1.	00	1.00	1.0	0	12

Sentence: list flights from seattle to salt lake city on delta 110

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN

Classification Report:

	precisi	on re	ecall	f1-scc	re sup	port
1	1.0	00 1	.00	1.00	) 6	
2	1.0	00 1	.00	1.00	) 3	
3	1.0	00 1	.00	1.00	) 1	
4	1.0	00 1	.00	1.00	) 1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	,	1.00	1.00	11

Sentence: show me all flights from san diego to phoenix on a boeing 737

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET

PROPN NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

DET PROPN ADJ Classification Report:

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1 00	1 00	1 00	3

3	1.00	) 1.	00	1.0	0	1	
4	1.00	) 1.	00	1.0	0	1	
5	1.00	<b>)</b> 1.	00	1.0	0	2	
6	1.00	) 1.	00	1.0	0	1	
7	0.0	) 1.	00	0.0	0	0	
9	1.00	0.	00	0.0	0	1	
accurac	У			0.92	2	13	
macro av	٧g	0.88	0.8	88	0.75		13
weighted a	avg	1.00	0	.92	0.92		13

Sentence: what is a d9s

True tags: PRON AUX DET PROPN Predicted tags: PRON AUX DET NOUN

Classification Report:

	preci	sion	reca	all f	1-sc	ore	supp	ort
	4	00	0.0	_	0.0	^		
1	1	.00	0.0	U	0.0	U	1	
3	0	.00	1.0	0	0.0	0	0	
5	1	.00	1.0	0	1.0	0	1	
6	1	.00	1.0	0	1.0	0	1	
8	1	.00	1.0	0	1.0	0	1	
accur	acy				0.7	5	4	
macro	avg	3.0	30	0.8	30	0.6	0	4
weighted	d avg	1.	.00	0.	.75	0.	75	4

Sentence: what is the earliest flight between baltimore and oakland that serves

breakfast

True tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN ADP VERB

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN ADP

**VERB NOUN** 

	precisi	on re	call	t1-score	supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
10	) 1.0	00 1	.00	1.00	1	
accura	acy			1.00	12	
macro	avg	1.00	1.0	00 1.	.00	12
weighted	d avg	1.00	1	.00 1	1.00	12

Sentence: a breakfast flight from denver to san francisco please

True tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN INTJ Predicted tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN INTJ

Classification Report:

	precision		recall	f1-scc	ore su	ıpport
1	1.	00	1.00	1.00	)	3
2	1.	00	1.00	1.00	)	2
3	1.	00	1.00	1.00	)	2
5	1.	00	1.00	1.00	)	1
13	3 1	.00	1.00	1.0	0	1
accur	acy			1.00	) (	9
macro	avg	1.0	0 1	.00	1.00	9
weighted	d avg	1.0	00 ′	1.00	1.00	9

Sentence: list flights between boston and san francisco that serve breakfast True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN ADP VERB NOUN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN ADP VERB NOUN

Classification Report:

			••			
	precision		recall f1-sc		ore su	upport
1	1.0	00	1.00	1.0	0	3
2	1.0	00	1.00	1.0	0	2
3	1.0	00	1.00	1.0	0	2
4	1.0	00	1.00	1.0	0	2
10	1.	00	1.00	1.0	00	1
accura	асу			1.00	) 1	10
macro	avg	1.0	0 1	.00	1.00	10
weighted	l avg	1.0	00	1.00	1.00	10

Sentence: give me all flights from boston to philadelphia next week arriving after lunch

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADJ NOUN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADJ NOUN VERB ADP NUM

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	0.67	0.80	3
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
9	0.00	1.00	0.00	0

accuracy		0.9	2 13	
macro avg	0.88	0.96	0.85	13
weighted avg	1.00	0.92	0.95	13

Sentence: please show me flights from pittsburgh to atlanta on wednesday morning serving breakfast

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN NOUN VERB NOUN

Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP NOUN NOUN NOUN NOUN

Classification Report:

	prec	ision	rec	all	f1-so	core	supp	ort
4		1 00	4.0		4 (	20	0	
1		1.00	1.0	U	1.0	JU	2	
2		1.00	1.0	0	1.0	00	3	
3	(	08.0	1.0	0	0.8	39	4	
4		1.00	0.5	0	0.6	37	2	
6	,	1.00	1.0	0	1.0	00	1	
13	3	1.00	1.0	00	1.	00	1	
accur	acy				0.9	2	13	
macro	avg	0.	97	0	.92	0.9	3	13
weighte	d avg	0	.94	(	0.92	0.	91	13

Sentence: what is the first flight that goes from atlanta to baltimore that serves breakfast

True tags: PRON AUX DET ADJ NOUN ADP VERB ADP PROPN ADP PROPN ADP VERB NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP VERB ADP PROPN ADP PROPN ADP VERB NOUN

Classification Report:

precision	n recall	f1-score	suppo	ort
1.00	1.00	1.00	2	
1.00	1.00	1.00	4	
1.00	1.00	1.00	2	
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
асу		1.00	14	
avg ´ I avg	1.00 1 1.00			14 14
	1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 2 1.00 1.00 1.00 4 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1

Sentence: which flights arrive in <unk> louis from <unk> paul on thursday morning True tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN

Predicted tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN ADP

**NOUN NOUN** 

Classification Report:

	precision		recall f1-se		re supp	ort
1	1	.00	1.00	1.00	) 4	
2		.00	1.00	1.00		
3	, 1	.00	1.00	1.00	3	
4	. 1	.00	1.00	1.00	) 1	
5	5 1	.00	1.00	1.00	) 1	
accur	acy			1.00	12	
macro	avg	1.0	00 1	.00	1.00	12
weighte	d avg	1	.00	1.00	1.00	12

Sentence: i would like one flight from kansas city to <unk> paul arriving around

dinnertime 6 pm

True tags: PRON AUX VERB NUM NOUN ADP PROPN PROPN ADP PROPN

PROPN VERB ADP NOUN NUM NOUN

Predicted tags: PRON AUX VERB NUM NOUN ADP PROPN PROPN ADP PROPN

PROPN VERB ADP NOUN NUM NOUN

Classification Report:

•						• •	
1	1.00	) 1.0	00	1.00	) 4	4	
2	1.00	1.0	00	1.00	) ;	3	
3	1.00	1.0	00	1.00	) ;	3	
4	1.00	1.0	00	1.00	) :	2	
6	1.00	1.0	00	1.00	)	1	
8	1.00	) 1.	00	1.00	)	1	
9	1.00	) 1.	00	1.00	) :	2	
accurac	У			1.00	1	6	
macro av	vg	1.00	1.0	00	1.00	16	
weighted a	avg	1.00	1.	00	1.00	16	

precision recall f1-score support

Sentence: list flights from dallas to houston arriving sunday afternoon True tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Classification Report:

	precision	on re	call	f1-sco	re su	pport
1	1.0	0 1.	.00	1.00	) 2	2
2	1.0	0 1.	.00	1.00	) 2	2
3	1.0	0 1.	.00	1.00	) ;	3
4	1.0	0 1.	.00	1.00	) 2	2
accura	acy			1.00	ç	)
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: list nonstop flights from baltimore washington airport to oakland that depart in the afternoon

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

Classification Report:

	precis	ion re	call	f1-sco	ore su	upport
1	1.0	00 1	.00	1.00	)	4
2	1.0	00 1	.00	1.00	)	4
3	1.0	00 1	.00	1.00	)	3
4	1.0	00 1	.00	1.00	C	2
5	1.0	00 1	.00	1.00	C	1
accur	acy			1.00	) 1	4
macro	avg	1.00	1	.00	1.00	14
weighted	d avg	1.00	•	1.00	1.00	14

Sentence: i need flight information on thursday leaving pittsburgh and arriving in baltimore in the morning

True tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN CCONJ VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN CCONJ VERB ADP PROPN ADP DET NOUN

Classification Report:

	precisi	on re	call	f1-scor	e suppo	rt
1	1.0	0 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	4	
4	1.0	0 1.	.00	1.00	3	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
10	1.0	00 1	.00	1.00	1	
accur	acy			1.00	15	
macro weighted	avg	1.00 1.00		.00 1 1.00	.00 1 1.00	15 15

Sentence: morning flights out of san francisco arriving boston afternoon True tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Predicted tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Classification Report:

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3

4 1.00 1.00 1.00 1

accuracy 1.00 9

macro avg 1.00 1.00 1.00 9

weighted avg 1.00 1.00 1.00 9

Sentence: i would like to <unk> my flight in washington dc stop in denver with the destination city of san francisco

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN VERB ADP PROPN ADP DET NOUN PROPN ADP PROPN

Predicted tags: PRON AUX VERB PART PART PROPN NOUN ADP PROPN PROPN VERB ADP PROPN ADP DET NOUN NOUN ADP PROPN PROPN Classification Report:

pre	ecision	recall	t1-score	supp	ort
1	0.83	0.83	0.83	6	
2	1.00	1.00	1.00	4	
3	0.67	1.00	0.80	2	
4	1.00	0.67	0.80	3	
5	1.00	0.50	0.67	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	0.50	1.00	0.67	1	
accuracy	•		0.85	20	
macro av	g 0.8	38 0	.88 0.8	35	20
weighted av	/g 0	.89	0.85 0.	.85	20

Sentence: show me a list of flights on july twenty second leaving dc to dallas leaving dc after 6 pm

True tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB PROPN ADP PROPN VERB PROPN ADP NUM NOUN

	precis	ion re	call	t1-scor	e supp	ort
1	1.0	00 1	.00	1.00	3	
2			.00	1.00	4	
3	1.0	00 1	.00	1.00	4	
4	1.0	00 1	.00	1.00	3	
5	1.0	00 1	.00	1.00	1	
6	1.0	00 1	.00	1.00	1	
7	1.0	00 1	.00	1.00	1	
9	1.0	00 1	.00	1.00	2	
accur	acy			1.00	19	
macro	avg	1.00	1	.00 ′	1.00	19
weighte	d avg	1.00	•	1.00	1.00	19

Sentence: what airlines from washington dc to columbus True tags: DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore	suppo	ort
1	1	00	1.00	1.0	10	3	
2		00	1.00	1.0		2	
3		00	1.00	1.0		1	
5	1.	00	0.00	0.0	0	1	
6	0.	00	1.00	0.0	0	0	
				0.0	•	-	
accur	acy			0.8	6	1	
macro	avg	3.0	30 (	08.0	0.60	)	7
weighted	d avg	1.	.00	0.86	3.0	36	7

Sentence: list flights from washington dc to boston

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	suppo	ort
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	0	7	
macro	avg	1.00	) 1	.00	1.00		7
weighted	d avg	1.0	0	1.00	1.00	)	7

Sentence: could you please give me information <unk> american airlines a flight from washington dc to philadelphia the earliest one in the morning as possible True tags: AUX PRON INTJ VERB PRON NOUN VERB PROPN PROPN DET NOUN ADP PROPN PROPN ADP PROPN DET ADJ PRON ADP DET NOUN ADP ADJ

Predicted tags: AUX PRON INTJ VERB PRON NOUN AUX PROPN PROPN DET NOUN ADP PROPN PROPN ADP PROPN DET ADJ NUM ADP DET NOUN ADP ADJ

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3
4	1.00	0.50	0.67	2
5	1.00	1.00	1.00	3
6	1.00	0.67	0.80	3
7	1.00	1.00	1.00	2
8	0.50	1.00	0.67	1

9 0.	00	1.00	0.00	) (	0
13 1	.00	1.00	1.0	0	1
accuracy			0.92	2 2	4
macro avg	0.85	5 0	.92	0.81	24
weighted avg	0.9	8 (	0.92	0.93	24

Sentence: list flights from washington dc to pittsburgh

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion r	ecall	f1-scc	re su	pport
1	1.	00	1.00	1.00	) ;	3
2	1.	00	1.00	1.00	) :	2
3	1.	00	1.00	1.00	)	1
4	1.	00	1.00	1.00	)	1
accur	acy			1.00	7	7
macro	avg	1.00	1	.00	1.00	7
weighted	d avg	1.0	0	1.00	1.00	7

Sentence: i need a flight from washington dc to san diego

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN PROPN

Classification Report:

	pred	isior	n red	call	f1-so	core	supp	ort
1		1.00	1.	00	1.0	00	4	
2		1.00	1.	00	1.0	00	2	
3	,	1.00	1.	00	1.0	00	1	
4		1.00	1.	00	1.0	00	1	
5	,	1.00	1.	00	1.0	00	1	
6	,	1.00	1.	00	1.0	00	1	
accur	acy				1.0	0	10	
macro	_		1.00	1	.00	1.0	0	10
weighte	d avg	J	1.00	•	1.00	1.	00	10

Sentence: i would like to fly from boston to baltimore please tell me what are the times of the flights

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN INTJ VERB PRON PRON AUX DET NOUN ADP DET NOUN

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN INTJ VERB PRON PRON AUX DET NOUN ADP DET NOUN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 2

2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	3	
8	1.00	1.00	1.00	2	
12	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accuracy	,		1.00	19	
macro av	g 1.0	00 1.	00 1.	00	19
weighted av	/g 1.	.00 1	.00 1	.00	19

Sentence: does flight dl <unk> dl <unk> from boston to denver stop in philadelphia True tags: AUX NOUN PROPN NUM PROPN NUM ADP PROPN ADP PROPN VERB ADP PROPN

Predicted tags: AUX NOUN PROPN ADV PROPN ADV ADP PROPN ADP PROPN VERB ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re su	pport
1	1.0	0 1.	00	1.00	) !	5
2	1.0	0 1.	00	1.00	) ;	3
3	1.0	0 1.	00	1.00	) .	1
4	1.0	0 1.	00	1.00	) .	1
8	1.0	0 1.	00	1.00	) .	1
9	1.0	0 0.	00	0.00	) :	2
11	0.0	00 1	.00	0.0	0	0
accura	асу			0.85	1	3
macro weighted	•	0.86 1.00	_	.86 ).85	0.71 0.85	13 13

Sentence: what kind of airplane is flight ua 281 from boston to denver

True tags: DET NOUN ADP NOUN AUX NOUN PROPN NUM ADP PROPN ADP

PROPN

Predicted tags: PRON NOUN ADP NOUN AUX NOUN PROPN PROPN ADP

PROPN ADP PROPN Classification Report:

	precision	recall	f1-score	support
	prediction	roodii	11 30010	Support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
8	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1
accura	асу		0.83	12

macro avg	0.82	0.71	0.55	12
weighted avg	0.94	0.83	0.80	12

Sentence: what is the price of american airlines flight <unk> from new york to los angeles

True tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN NUM ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN PROPN ADP PROPN PROPN PROPN PROPN

Classification Report:

				C.A		
	precisi	on r	ecall	t1-sc	ore si	upport
1	0.8	36	1.00	0.9	2	6
2	1.0	00	1.00	1.0	0	3
3	1.0	00	1.00	1.0	0	2
5	1.0	00	1.00	1.0	0	1
6	1.0	00	1.00	1.0	0	1
8	1.0	00	1.00	1.0	0	1
9	1.0	00	0.00	0.0	0	1
accura	acy			0.93	3 1	15
macro	avg	0.98	3 0	.86	0.85	15
weighted	d avg	0.9	4 (	0.93	0.90	15

Sentence: what is the first class fare on united flight <unk> from denver to boston True tags: PRON AUX DET ADV NOUN NOUN ADP PROPN NOUN NUM ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN NOUN ADV ADP PROPN ADP PROPN

Classification Report:

t
4 14

Sentence: how much does flight ua 281 from boston to denver cost

True tags: ADV ADV AUX NOUN PROPN NUM ADP PROPN ADP PROPN VERB Predicted tags: ADV ADV AUX NOUN PROPN PROPN ADP PROPN ADP PROPN VERB

## Classification Report:

	precisi	on re	ecall	f1-sc	ore su	ıpport
4	0.7	75 4	00	0.00	^	2
1	0.7	<b>5</b> 1	.00	0.8		3
2	1.0	00 1	.00	1.0	0	2
3	1.0	0 1	.00	1.0	0	1
4	1.0	0 1	.00	1.0	0	1
8	1.0	0 1	.00	1.0	0	1
9	1.0	00 0	.00	0.0	0	1
11	1.0	00	1.00	1.0	0	2
accur	acy			0.91	l 1	1
macro	avg	0.96	0	.86	0.84	11
weighted	d avg	0.93	3 (	0.91	0.87	11

Sentence: does flight dl <unk> from philadelphia to denver fly on saturdays True tags: AUX NOUN PROPN PROPN ADP PROPN VERB ADP PROPN

Predicted tags: AUX NOUN PROPN ADV ADP PROPN ADP PROPN VERB ADP

PROPN

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	n n	.80	0.89	5	
•						
2	_	_	.00	1.00	3	
3	1.0	0 1.	.00	1.00	1	
4	1.0	0 1.	.00	1.00	1	
8	1.0	0 1.	.00	1.00	1	
11	0.0	00 1	.00	0.00	0	
000118	001			0.01	11	
accur	•		_	0.91	11	
macro	avg	0.83	0	.97 0	).81	11
weighted	d avg	1.00	(	0.91	0.95	11

Sentence: what airline is dl <unk>

True tags: DET NOUN AUX PROPN NUM

Predicted tags: PRON NOUN AUX PROPN PROPN

precision	on re	call	f1-scc	re su	upport
0.5	0 1.	00	0.67	7	1
1.0	0 1.	00	1.00	)	1
1.0	0 0.	00	0.00	)	1
0.0	0 1.	00	0.00	)	0
1.0	0 1.	00	1.00	)	1
1.0	0 0.	00	0.00	)	1
acy			0.60		5
avg	0.75	0.	67	0.44	5
d avg	0.90	C	0.60	0.53	5
	0.5 1.0 1.0 0.0 1.0 1.0 acy avg	0.50 1. 1.00 1. 1.00 0. 0.00 1. 1.00 1. 1.00 0. acy	0.50 1.00 1.00 1.00 1.00 0.00 0.00 1.00 1.00 1.00 1.00 0.00 acy	0.50 1.00 0.67 1.00 1.00 1.00 1.00 0.00 0.00 0.00 1.00 0.00 1.00 1.00 1.00 1.00 0.00 0.00 acy 0.60 avg 0.75 0.67	0.50 1.00 0.67 1.00 1.00 1.00 1.00 0.00 0.00 0.00 1.00 0.00 1.00 1.00

Sentence: what first class airplane goes from philadelphia to san francisco and stops

in dallas in the afternoon on monday

True tags: DET ADV NOUN NOUN VERB ADP PROPN ADP PROPN PROPN

CCONJ VERB ADP PROPN ADP DET NOUN ADP NOUN

Predicted tags: PRON ADJ NOUN NOUN PROPN ADP PROPN ADP PROPN

PROPN CCONJ PROPN ADP PROPN ADP DET NOUN ADP NOUN

Classification Report:

		- P				
	precisio	n red	call	f1-sco	re sup	port
1	0.67	7 1.	00	0.80	4	
2	1.00	) 1.	00	1.00	5	
3	1.00	) 1.	00	1.00	4	
4	1.00	0.	00	0.00	2	
5	1.00	0.	50	0.67	2	
6	0.00	) 1.	00	0.00	0	
7	0.00	) 1.	00	0.00	0	
10	1.0	0 1	.00	1.00	) 1	
11	1.0	0 0.	.00	0.00	) 1	
accur	acv			0.79	19	
macro	•	0.74	0.		0.50	19
veighte	d avg	0.93	(	).79	0.76	19

Sentence: what planes are used by twa

True tags: DET NOUN AUX VERB ADP PROPN

Predicted tags: PRON NOUN AUX VERB ADP PROPN

Classification Report:

	precisio	on re	call	f1-sco	ore su	ipport
1	1.0	0 1.	00	1.00	)	1
2	1.0	0 1.	00	1.00	)	1
3	1.0	0 1.	00	1.00	)	1
4	1.0	0 1.	00	1.00	)	1
5	1.0	0 0.	00	0.00	)	1
6	0.0	0 1.	00	0.00	)	0
8	1.0	0 1.	00	1.00	)	1
accur	acy			0.83	3 (	3
macro	avg	0.86	0	.86	0.71	6
weighted	d avg	1.00	(	0.83	0.83	6

Sentence: <unk> leaving denver to san francisco before 10 am what type of aircraft is used

True tags: VERB VERB PROPN ADP PROPN PROPN ADP NUM NOUN DET

NOUN ADP NOUN AUX VERB

Predicted tags: AUX VERB PROPN ADP PROPN PROPN ADP NUM NOUN PRON

NOUN ADP NOUN VERB VERB

Classification Report:

precision recall f1-score support

1	1.00	1.00	) 1.0	00	3	
2	1.00	1.00	) 1.0	00	3	
3	1.00	1.00	) 1.0	00	3	
4	0.67	0.67	7 0.0	67	3	
5	1.00	0.00	0.0	00	1	
6	0.00	1.00	0.0	00	0	
8	0.00	0.00	0.0	00	1	
9	1.00	1.00	) 1.0	00	1	
accuracy	/		3.0	30	15	
macro av	g (	).71	0.71	0.58		15
weighted a	va	0.87	0.80	0.80	)	15

Sentence: what kinds of planes are used by midway airlines

True tags: DET NOUN ADP NOUN AUX VERB ADP NOUN PROPN

Predicted tags: PRON AUX ADP NOUN VERB VERB ADP PROPN PROPN

Classification Report:

	precisio	n re	call	f1-sc	ore si	upport
1	0.50	) 1.	00	0.6	7	1
2	1.00	) 1.	00	1.0	0	2
3	1.00	0.	33	0.5	0	3
4	0.50	) 1.	00	0.6	7	1
5	1.00	0.	00	0.0	0	1
6	0.00	) 1.	00	0.0	0	0
8	0.00	0.	00	0.0	0	1
accura	асу			0.56	6	9
macro	avg	0.57	0	.62	0.40	9
weighted	l avg	0.78	(	0.56	0.54	9

Sentence: what type of aircraft leaves from boston to washington dc at 9 am during a weekday

True tags: DET NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP DET NOUN

Predicted tags: PRON NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADJ DET NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	0.80	0.89	5
3	1.00	1.00	1.00	4
4	1.00	1.00	1.00	1
5	1.00	0.50	0.67	2
6	0.00	1.00	0.00	0
7	0.00	1.00	0.00	0
9	1.00	1.00	1.00	1

accuracy		0.8	8 1	6
macro avg	0.75	0.91	0.69	16
weighted avg	1.00	0.88	0.92	16

Sentence: what type of aircraft are flying from cleveland to dallas before noon True tags: DET NOUN ADP NOUN AUX VERB ADP PROPN ADP NOUN

Predicted tags: PRON NOUN ADP NOUN VERB VERB ADP PROPN ADP PROPN

**ADP NOUN** 

Classification Report:

	precisio	n re	call	f1-scc	re supp	ort
1	1.0	0 1.	00	1.00	) 2	
2	1.0	0 1.	00	1.00	) 4	
3	1.0	0 1.	00	1.00	) 3	
4	0.5	0 1.	00	0.67	7 1	
5	1.0	0.	00	0.00	) 1	
6	0.0	0 1.	00	0.00	0 (	
8	1.0	0.	00	0.00	) 1	
accura	асу			0.83	12	
macro	avg	0.79	0	.71	0.52	12
weighted	l avg	0.96	(	0.83	0.81	12

Sentence: what airplane types fly from pittsburgh to baltimore True tags: DET NOUN NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN NOUN VERB ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	00	2	
2	1	.00	1.00	1.	00	2	
3	1	.00	1.00	1.	00	2	
4	1	.00	1.00	1.	00	1	
5	1	.00	0.00	0.	00	1	
6	0	.00	1.00	0.	00	0	
accur	acy			0.8	88	8	
macro	avg	3.0	33	0.83	0.6	<b>57</b>	8
weighte	d avg	1.	.00	0.88	0.	88	8

Sentence: what is ground transportation between the san francisco airport and the city

True tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN CCONJ

**DET PROPN** 

Predicted tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN

CCONJ DET PROPN Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy	/		1.00	12	
macro av	g 1.0	00 1	.00 1.0	00	12
weighted a	vg 1	.00 ′	1.00 1	.00	12

Sentence: what flights on united leave la guardia for san jose and arrive around 10 pm

True tags: DET NOUN ADP PROPN VERB PROPN PROPN ADP PROPN PROPN CCONJ VERB ADP NUM NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN CCONJ VERB ADP NUM NOUN

Classification Report:

	precis	sion	recall	f1-scor	e supp	ort
1	0.	83	1.00	0.91	5	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	2	
4	1.	00	0.50	0.67	2	
5	1.	00	0.00	0.00	1	
6	0.	00	1.00	0.00	0	
9	1.	00	1.00	1.00	1	
10	) 1	.00	1.00	1.00	1	
accur	асу			0.87	15	
macro	avg	3.0	35 0	.81 0	.70	15
weighte	d avg	0.	.94	0.87	0.86	15

Sentence: what ground transportation is available from the denver airport to downtown denver

True tags: DET NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP NOUN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3
5	1.00	0.50	0.67	2
6	0.00	1.00	0.00	0
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		0.9	2 12	<u> </u>
macro avg	0.86	0.93	0.81	12
weighted avg	1.00	0.92	0.94	12

Sentence: list us air flights leaving saturday from charlotte airport around 1 pm True tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN ADP NUM NOUN

Predicted tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN ADP NUM NOUN

Classification Report:

	precis	sion	reca	all	f1-sc	ore	supp	ort
4		00	4.0	^	4.0		4	
1	1	.00	1.0	U	1.0	U	4	
2		.00	1.0	0	1.0	0	2	
3	1	.00	1.0	0	1.0	0	3	
4	1	.00	1.0	0	1.0	0	2	
9	1	.00	1.0	0	1.0	0	1	
accur	acy				1.0	0	12	
macro	avg	1.	00	1	.00	1.0	0	12
weighted	d avg	1	.00	•	1.00	1.0	00	12

Sentence: could you tell me about ground transportation arrangements from the dallas airport to downtown dallas

True tags: AUX PRON VERB PRON ADP NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: AUX PRON VERB PRON ADP NOUN NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN

Classification Report:

		- 1						
	pre	cisior	n re	call	f1-sc	core	supp	ort
1		1.00	1.	00	1.0	00	3	
2	<u>)</u>	1.00	1.	00	1.0	00	3	
3	}	1.00	1.	00	1.0	00	4	
4		1.00	1.	00	1.0	00	1	
5	,	1.00	1.	00	1.0	00	1	
6	;	1.00	1.	00	1.0	00	2	
8	}	1.00	1.	00	1.0	00	1	
accur	acy				1.0	0	15	
macro	avg		1.00	1	.00	1.0	0	15
weighte	d av	g	1.00	•	1.00	1.	00	15

Sentence: please list the flights taking off and landing on general mitchell international airport

True tags: INTJ VERB DET NOUN VERB ADV CCONJ NOUN ADP PROPN PROPN PROPN

Predicted tags: INTJ VERB DET NOUN PROPN PROPN CCONJ PROPN ADP PROPN PROPN PROPN PROPN

## Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	0.57	1.00	0.73	4	
2	1.00	1.00	1.00	1	
3	1.00	0.50	0.67	2	
4	1.00	0.50	0.67	2	
5	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
13	1.00	1.00	1.00	1	
accuracy			0.77	13	
macro av	g 0.9	95 0	.75 0.7	'6	13
weighted av	vg 0	.87 (	0.77 0.	74	13

Sentence: i <unk> like to fly from cleveland to indianapolis tomorrow morning as early as possible what <unk> available

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN ADP ADV ADP ADJ PRON AUX ADJ

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN ADP ADJ ADP ADJ PRON AUX ADJ

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
7	0.67	1.00	0.80	2	
8	1.00	1.00	1.00	2	
11	1.00	0.00	0.00	1	
12	1.00	1.00	1.00	1	
accurac	y		0.94	18	
macro av	•		.89 0.8 0.94 0.	37 92	18 18

Sentence: i need a flight from logan to atlanta this afternoon

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN DET NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN

	precision		f1-score	support
	prodicion		000.0	опрост
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	0.50	0.67	2

6 1.00 1.00 1.00 1

accuracy 0.90 10

macro avg 0.94 0.92 0.91 10

weighted avg 0.93 0.90 0.89 10

Sentence: give me the latest flight tomorrow on american airlines from milwaukee to tacoma

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP

PROPN ADP PROPN Classification Report:

0.0000		·OP O					
	precis	ion	recal	l f1-so	core	supp	ort
1	1.	00	1.00	1.0	00	4	
2	1.	00	1.00	1.0	00	3	
3	1.	00	1.00	1.0	00	2	
4		00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
7	1.	00	1.00	1.0	00	1	
accur	acy			1.0	00	13	
macro	_	1.0		1.00	1.0		13
weighted	d avg	1.	.00	1.00	1.0	00	13

Sentence: i <unk> like to fly from columbus to nashville tomorrow morning

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN

NOUN

Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	0	1.00	0	2	
2		1.00	1.0	0	1.0	0	2	
3	,	1.00	1.0	0	1.0	0	2	
4		1.00	1.0	0	1.0	0	2	
6	;	1.00	1.0	0	1.0	0	1	
8	;	1.00	1.0	0	1.0	0	1	
12	2	1.00	1.	00	1.0	0	1	
accur macro	•	1	.00	1	1.00 .00	) 1.0	11 0	11
veighte	•		1.00		1.00		00	11

Sentence: and what is the last flight from denver to boston for tomorrow evening True tags: CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP NOUN NOUN

Predicted tags: CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

ADP NOUN NOUN Classification Report:

	precis	ion ı	recall	f1-scc	ore su	ıpport
1	1.0	00	1.00	1.00	)	2
2	1.0	00	1.00	1.00	)	3
3	1.0	00	1.00	1.00	)	3
5	1.0	00	1.00	1.00	)	1
6	1.0	00	1.00	1.00	)	1
7	1.0	00	1.00	1.00	)	1
8	1.0	00	1.00	1.00	)	1
10	) 1.	.00	1.00	1.0	0	1
accur	acy			1.00	1	3
macro	avg	1.00	) 1	.00	1.00	13
weighted	d avg	1.0	0	1.00	1.00	13

Sentence: list evening flights tomorrow from phoenix to detroit True tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

Ciaconio	Oldoomodion Roport.							
	precision		recall f1-score		e suppo	rt		
1	1.0		00	1.00	2			
2	1.0	0 1.	00	1.00	2			
3	1.0	0 1.	00	1.00	3			
4	1.0	0 1.	00	1.00	1			
accur	acy			1.00	8			
macro	avg	1.00	1.0	0 1	.00	8		
weighted	d avg	1.00	1.0	00 ′	1.00	8		

Sentence: show me the flights on continental from indianapolis to san diego in the afternoon tomorrow

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN ADP DET NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP DET NOUN NOUN

	pre	cision	recall	f1-score	support
	1	1.00	1.00	1.00	4
	2	1.00	1.00	1.00	4
	3	1.00	1.00	1.00	3
	4	1.00	1.00	1.00	1
	5	1.00	1.00	1.00	2
	6	1.00	1.00	1.00	1
accı	uracy			1.00	15

macro avg	1.00	1.00	1.00	15
weighted avg	1.00	1.00	1.00	15

Sentence: how many flights does northwest have leaving dulles True tags: ADV ADJ NOUN AUX PROPN VERB VERB PROPN Predicted tags: ADV ADJ NOUN AUX PROPN VERB VERB VERB

Classification Report:

	precisi	on re	recall f1-so		re su	pport
1	1.0	0 0	.50	0.67	, 2	2
3	1.0	0 1	.00	1.00	) 1	1
4	0.6	7 1	.00	0.80	) 2	2
7	1.0	0 1	.00	1.00	) 1	1
8	1.0	0 1	.00	1.00	) 1	1
11	1.0	00 1	.00	1.00	)	1
accur	асу			0.88	8	<b>,</b>
macro	avg	0.94	0	.92	0.91	8
weighted	d avg	0.92	(	0.88	0.87	8

Sentence: nonstop flights from new york city to las vegas on sunday

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	precis	ion re	recall f1-score			uppo	rt
1	1.0	00 1	.00	1.00	0	5	
2	1.0	00 1	.00	1.0	0	3	
3	1.0	00 1	.00	1.0	0	3	
					_		
accur	acy			1.00	)	11	
macro	avg	1.00	1	.00	1.00		11
weighted	d avg	1.00	)	1.00	1.00	)	11

Sentence: show me the flights from los angeles to pittsburgh which arrive at

pittsburgh on monday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB

ADP PROPN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN DET VERB ADP PROPN ADP NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	0.80	0.89	5
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
5	0.50	1.00	0.67	1

6 1.00 1.00 1.00 1

accuracy 0.93 15 macro avg 0.92 0.97 0.93 15 weighted avg 0.97 0.93 0.94 15

Sentence: show me all flights from philadelphia to dallas which arrive in dallas before 3 <unk> pm on saturday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN DET VERB ADP PROPN ADP NUM ADV NOUN ADP NOUN

Classification Report:

	precision		recall f1-scor		ore sup	oport
1	1.0	00	1.00	1.00	) 3	}
2	1.0	00	0.83	$0.9^{\circ}$	1 6	;
3	1.0	00	1.00	1.00	) 3	}
4	1.0	00	1.00	1.00	) 2	<u> </u>
5	0.	50	1.00	0.67	7 1	
6	1.0	00	1.00	1.00	) 1	
9	1.0	00	1.00	1.00	) 1	
11	1.	00	1.00	1.0	0 ′	1
accur	acy			0.94	. 18	3
macro	avg	0.94	1 0	.98	0.95	18
weighted	d avg	0.9	7 (	0.94	0.95	18

Sentence: what flights leave pittsburgh and arrive in los angeles after 5 pm on thursday

True tags: DET NOUN VERB PROPN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

Predicted tags: PRON NOUN VERB PROPN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

	precision		recall	t1-scc	re sup	port
1	1.	00	1.00	1.00	) 3	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	) 3	
4	1.	00	1.00	1.00	) 2	
5	1.	00	0.00	0.00	) 1	
6	0.	00	1.00	0.00	0	
9	1.	00	1.00	1.00	) 1	
10	) 1	.00	1.00	1.0	0 1	
accur	acy			0.93	14	
macro	•	0.8	8 0	.88	0.75	14
weighted	•	1.0		0.93	0.93	14

Sentence: what is the earliest flight arriving in charlotte from <unk> louis on friday True tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN

PROPN ADP NOUN Classification Report:

	precis	sion r	ecall	f1-sc	ore si	upport
1	1.	00 -	1.00	1.00	)	3
2	1.	00 ′	1.00	1.0	<b>C</b>	3
3	1.	00 ′	1.00	1.0	<b>C</b>	2
4	1.	00 ′	1.00	1.0	<b>C</b>	1
5	1.	00 ′	1.00	1.0	<b>C</b>	1
6	1.	00 ′	1.00	1.0	C	1
7	1.	00 ′	1.00	1.0	)	1
8	1.	00 ′	1.00	1.0	<b>C</b>	1
accur	асу			1.00	) 1	13
macro	avg	1.00	1	.00	1.00	13
weighte	d avg	1.00	) ′	1.00	1.00	13

Sentence: what flights do you have from boston to pittsburgh on wednesday of next week after 6 pm

True tags: DET NOUN AUX PRON VERB ADP PROPN ADP PROPN ADP NOUN ADP ADJ NOUN ADP NUM NOUN

Predicted tags: PRON NOUN AUX PRON VERB ADP PROPN ADP PROPN ADP NOUN ADP ADJ NOUN ADP NUM NOUN

Classification Report:

	prec	ision	rec	all	f1-sco	ore	supp	ort
1		1.00	1.0	00	1.00	0	2	
2	•	1.00	1.0	00	1.00	0	5	
3		1.00	1.0	00	1.00	0	4	
4	•	1.00	1.0	00	1.00	0	1	
5		1.00	0.0	00	0.0	0	1	
6	(	0.50	1.0	00	0.6	7	1	
7	•	1.00	1.0	00	1.00	0	1	
8		1.00	1.0	00	1.00	0	1	
9	•	1.00	1.0	00	1.0	0	1	
accur macro	•	C	).94	0	0.94 .89	ļ 0.8	17 5	17
weighte	d avg		0.97	(	0.94	0.9	92	17

Sentence: i <unk> like a flight from <unk> petersburg to miami on that next thursday True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP DET ADJ NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN

ADP ADP ADJ NOUN Classification Report:

	precis	sion	recall	f1-sc	ore sup	port
1	1.	00	1.00	1.00	) 3	
2	0.	75	1.00	0.8	3	
3	1.	00	1.00	1.0	2	
4	1.	00	1.00	1.0	1	
5	1.	00	0.50	0.6	7 2	
6	1.	00	1.00	1.0	1	
7	1.	00	1.00	1.00	1	
8	1.	00	1.00	1.00	1	
accur	acy			0.93	3 14	
macro	avg	0.9	97 0	.94	0.94	14
weighte	d avg	0.	95	0.93	0.92	14

Sentence: i <unk> like to travel from kansas city to chicago next wednesday

True tags: PRON AUX VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ

NOUN

Predicted tags: PRON AUX VERB PART VERB ADP PROPN PROPN ADP PROPN

**ADJ NOUN** 

Classification Report:

	preci	sion	recall	f1-sco	re supp	ort
1	1	.00	1.00	1.00	3	
2	1	.00	1.00	1.00	2	
3	1	.00	1.00	1.00	1	
4	. 1	.00	1.00	1.00	2	
6	1	.00	1.00	1.00	1	
7	<sup>'</sup> 1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
12	2 1	1.00	1.00	1.00	) 1	
accur	асу			1.00	12	
macro	avg	1.0	00 1	.00	1.00	12
weighte	d avg	1.	.00	1.00	1.00	12

Sentence: i would like to fly from boston to philadelphia next thursday

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADJ NOUN Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADJ

NOUN

precision	recall	f1-score	support
1.00	1.00	1.00	2
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

12 1.00 1.00 1.00 1

accuracy 1.00 11

macro avg 1.00 1.00 1.00 11

weighted avg 1.00 1.00 1.00 11

Sentence: tell me about flights from atlanta to charlotte next monday

True tags: VERB PRON ADP NOUN ADP PROPN ADJ NOUN Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN ADJ NOUN

Classification Report:

	precis	ion	recall	†1-sc	ore s	suppo	rt
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	00	3	
3	1.	00	1.00	1.0	00	2	
4	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
7	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	10	
macro	•	1.0	0 1	.00	1.00	•	10
weighted	_	1.	00	1.00	1.00	)	10
_	•						

Sentence: what flights go from pittsburgh to baltimore after 8 <unk> next wednesday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV ADJ NOUN Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV ADJ NOUN

Classification Report:

	pred	cisio	n re	call	f1-s	core	supp	ort
1		1.00	) 1	.00	1.0	00	2	
2	1	1.00	1	.00	1.0	00	3	
3	,	1.00	1	.00	1.0	00	2	
4	i	1.00	1	.00	1.0	00	1	
5	)	1.00	0	.00	0.0	00	1	
6		0.00	1	.00	0.0	00	0	
7	•	1.00	1	.00	1.0	00	1	
9	)	1.00	1	.00	1.0	00	1	
11	1	1.00	) 1	.00	1.	00	1	
accur	acy				0.9	92	12	
macro	avg		0.89	0	.89	0.7	8	12
weighted	d avç	3	1.00	(	0.92	0.	92	12

Sentence: give me the fares for round trip flights from cleveland to miami next wednesday

True tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADJ NOUN

## Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	5	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
accur	acy			1.00	14	
macro	avg	1.00	1.	.00	1.00	14
weighted	d avg	1.00	1	1.00	1.00	14

Sentence: i want to leave chicago next tuesday and arrive in detroit around 6 pm True tags: PRON VERB PART VERB PROPN ADJ NOUN CCONJ VERB ADP PROPN ADP NUM NOUN

Predicted tags: PRON VERB PART VERB PROPN ADJ NOUN CCONJ VERB ADP

PROPN ADP NUM NOUN

Classification Report:

	precis	ion re	ecall	f1-sco	re supp	ort
1	1.0	00 1	.00	1.00	2	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	2	
4	1.0	00 1	.00	1.00	3	
6	1.0	00 1	.00	1.00	1	
7	1.0	00 1	.00	1.00	1	
9	1.0	00 1	.00	1.00	1	
10	) 1.	.00	1.00	1.00	) 1	
12	2 1.	.00	1.00	1.00	) 1	
accur	acy			1.00	14	
macro	-	1.00	1	.00	1.00	14
weighted	_	1.00	)	1.00	1.00	14
_	_					

Sentence: i want a flight from montreal to washington dc

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN PROPN

	precision	recall f1-score		support	
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	

accuracy		1.0	0 9	
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: show me the flights leaving from atlanta for washington dc on thursday morning

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN ADP

**NOUN NOUN** 

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN

ADP NOUN NOUN Classification Report:

	precisi	on re	ecall	f1-sco	ore sup	port
1	1.0	00 1	.00	1.00	) 3	
2	1.0	00 1	.00	1.00	3	
3	1.0	00 1	.00	1.00	3	
4	1.0	00 1	.00	1.00	) 2	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
accur	acy			1.00	13	
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	13 13

Sentence: show me flights from denver to dc on wednesday

True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precisi	on red	call f1-	score	suppor	t
1	1.0			.00	2	
2	1.0	0 1.	00 1	.00	3	
3	1.0	0 1.	00 1	.00	2	
4	1.0	0 1.	00 1	.00	1	
6	1.0	0 1.	00 1	.00	1	
accur	асу		1	.00	9	
macro weighte	_	1.00 1.00	1.00 1.00	1.00 1.0		9 9

Sentence: please give me the flights from san francisco to washington dc True tags: INTJ VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

PROPN

Predicted tags: INTJ VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

**PROPN** 

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	2

Sentence: show me the prices of all flights from atlanta to washington dc

True tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

	nrecio	sion	recall	f1-sco	re supp	ort
	preci	31011	recan	11-300	ie supp	OIL
1	1.	.00	1.00	1.00	3	
2	1.	.00	1.00	1.00	3	
3	1.	.00	1.00	1.00	2	
4	1.	.00	1.00	1.00	1	
5	1.	.00	1.00	1.00	2	
6	1.	.00	1.00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.0	00 1	.00	1.00	12
weighte	d avg	1	.00	1.00	1.00	12

Sentence: what is the latest flight on wednesday going from atlanta to washington dc True tags: PRON AUX DET ADJ NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN

	precisio	n red	call f1-	score	supp	ort
1	1.00	0 1.	00 ′	1.00	3	
2	1.00	0 1.	00 ′	1.00	3	
3	1.00	0 1.	00 ′	1.00	2	
4	1.00	0 1.	00 ′	1.00	1	
5	1.00	) 1.	00 1	1.00	1	
6	1.00	) 1.	00 1	1.00	1	
7	1.00	) 1.	00 ′	1.00	1	
8	1.00	0 1.	00 ′	1.00	1	
accur	асу		1	.00	13	
macro	avg	1.00	1.00	1.0	0	13
weighted	d avg	1.00	1.00	) 1.0	00	13

Sentence: list flights from toronto to washington dc saturday am

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN

Classification Report:

	precision	on re	call f1-s	score s	upport
1	1.0	0 1.	00 1	.00	3
2				.00	2
3	1.0	0 1.	00 1	.00	3
4	1.0	0 1.	00 1	.00	1
accur	асу		1.	.00	9
macro weighted	_	1.00 1.00	1.00 1.00	1.00 1.00	9

Sentence: i <unk> like to see the flights from atlanta to washington dc

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN PROPN Classification Report:

								- 1- 1-	
	1	1.00	)	1.00	)	1.00	)	3	
	2	1.00	)	1.00	)	1.00	)	2	
	3	1.00	)	1.00	)	1.00	)	1	
	4	1.00	)	1.00	)	1.00	)	2	
	5	1.00	)	1.00	)	1.00	)	1	
	6	1.00	)	1.00	)	1.00	)	1	
	8	1.00	)	1.00	)	1.00	)	1	
	12	1.0	0	1.0	0	1.0	0	1	
acc	uracy					1.00	)	12	
	ro avo		1.00		1.00	0	1.00		12
weight	ted av	g	1.0	00	1.0	00	1.00	)	12

precision recall f1-score support

Sentence: i <unk> sorry i want to book a flight from atlanta to denver colorado

True tags: PRON AUX ADJ PRON VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX VERB PRON VERB PART VERB DET NOUN ADP

PROPN ADP PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	0.67	0.80	3
3	1.00	1.00	1.00	1
4	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	2

7	1.00	0.0	00	0.00	1	
8	1.00	1.0	00	1.00	1	
12	0.00	1.	00	0.00	0	
accuracy			(	0.86	14	
macro av	g 0	.85	0.85	5 0	.73	14
weighted av	/g	0.95	0.8	6 (	0.86	14

Sentence: i would like a list of round trip flights between indianapolis and orlando florida for the twenty seventh and the twenty eighth of december

True tags: PRON AUX VERB DET NOUN ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET NUM ADJ CCONJ DET NUM ADJ ADP NOUN Predicted tags: PRON AUX VERB DET NOUN ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET NUM ADJ CCONJ DET NUM ADJ ADP NOUN

Classification Report:

	precisior	n reca	II f1-so	core s	upport
1	1.00	1.00	) 1.(	00	3
2	1.00	1.00			4
3	1.00	1.00	) 1.0	00	5
4	1.00	1.00	) 1.0	00	1
5	1.00	1.00	1.0	00	3
6	1.00	1.00	) 1.0	)0	1
7	1.00	1.00	) 1.0	)0	2
8	1.00	1.00	) 1.0	)0	1
9	1.00	1.00	) 1.0	)0	2
10	1.00	1.0	0 1.	.00	2
accura	acv		1.0	00 :	24
macro	•	1.00	1.00	1.00	24
veighted	0	1.00	1.00	1.00	

Sentence: may i have a listing of flights on monday from minneapolis to long beach california please

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP NOUN ADP PROPN ADP PROPN PROPN INTJ

Predicted tags: NOUN PRON VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN PROPN INTJ

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	0.75	1.00	0.86	3
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	0.00	0.00	1
13	1.00	1.00	1.00	1

accuracy		0.9	4 16	6
macro avg	0.97	0.88	0.86	16
weighted avg	0.95	0.94	0.91	16

Sentence: please give all flights from dallas to oakland california monday

True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN Predicted tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN

Classification Report:

	prec	ision	rec	all	t1-sc	ore	supp	ort
4		4 00			4.0		0	
1		1.00	1.0		1.0		3	
2		1.00	1.0	00	1.0	0	2	
3		1.00	1.0	00	1.0	0	2	
4		1.00	1.0	00	1.0	0	1	
5		1.00	1.0	00	1.0	0	1	
13	3	1.00	1.	00	1.0	00	1	
accur	acy				1.0	0	10	
macro	avg	1.	.00	1	.00	1.0	0	10
weighte	d avg	, 1	1.00	•	1.00	1.	00	10

Sentence: on tuesday the twenty third flights from philadelphia to san francisco on american airlines

True tags: ADP NOUN DET NUM ADJ NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

Predicted tags: ADP NOUN DET NUM ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN

Classification Report:

Olacollica	•				
p	recision	recall	f1-score	supp	ort
				1- 1-	
1	1.00	1.00	1.00	5	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
accurac	су		1.00	14	
macro a	vg 1.0	00 1	.00 1.0	00	14
weighted	avg 1	.00	1.00 1.	00	14

Sentence: what is the cheapest first class fare from cleveland to miami on us air on february twenty fourth

True tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NUM ADJ

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM PROPN

Classification Report:

precision recall f1-score support

1	0.80	1.0	0	0.89	4	
2	1.00	1.0	0	1.00	4	
3	1.00	1.0	0	1.00	3	
5	1.00	1.0	0	1.00	1	
6	1.00	1.0	0	1.00	1	
7	1.00	0.6	7	08.0	3	
8	1.00	1.0	0	1.00	1	
9	1.00	1.0	0	1.00	1	
accuracy	•			0.94	18	}
macro av	g (	0.97	0.96	6 (	0.96	18
weighted av	/g	0.96	0.9	)4	0.94	18

Sentence: cheapest round trip fare from or indianapolis to orlando on december twenty fifth

True tags: ADJ NOUN NOUN NOUN ADP CCONJ PROPN ADP PROPN ADP NOUN NUM ADJ

Predicted tags: ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ

Classification Report:

	preci	sion	recal	l f1-s	core	supp	ort
1	0	.67	1.00	0	80	2	
2		.00	1.00		00	3	
3	1	.00	1.00	1.	00	4	
7	1	.00	1.00	1.	00	2	
9	1	.00	1.00	1.	00	1	
10	) ,	1.00	0.00	0	.00	1	
						4.0	
accur	acy			0.9	92	13	
macro	avg	0.9	94	0.83	0.8	0	13
weighte	d avg	0.	.95	0.92	0.0	39	13

Sentence: i would like to fly from dallas to denver on the morning of august twenty seventh leaving at <unk>

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN NUM ADJ VERB ADP NUM

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN ADP NOUN NUM ADJ VERB ADP PROPN

Classification Report:

precision recall f1-score support 1 0.67 1.00 0.80 2 2 5 1.00 1.00 1.00 3 1.00 1.00 2 1.00 4 1.00 1.00 3 1.00 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 1.00 1.00 1.00 1

8	1.00	1.	00	1.00	)	1	
9	1.00	0.	50	0.6	7	2	
12	1.00	) 1	.00	1.0	0	1	
accuracy				0.95	5 1	19	
macro avo	g (	0.97	0.	95	0.95		19
weighted av	g	0.96	0	.95	0.94		19

Sentence: give me the flights from indianapolis to orlando on december twenty seventh and twenty eighth

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ CCONJ NUM ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ CCONJ NUM ADJ

Classification Report:

		-				
	precisio	on re	call f1	-score	suppo	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	2	
9			00	1.00	2	
10	1.0	0 1	.00	1.00	1	
accur	асу			1.00	15	
macro weighted	•	1.00 1.00	1.00 1.0		00 .00	15 15

Sentence: i would like to book a flight going from tampa to seattle on may twenty sixth i would like to stop in milwaukee on the way

True tags: PRON AUX VERB PART VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN NUM ADJ PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB PART VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN NUM ADJ PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	5
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	5
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	2
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	2

9	1.00		00	1.00	1	
12	1.00	) 1.	.00	1.00	) 2	
accuracy				1.00	26	
macro avg	٠	1.00	1.0	0 '	1.00	26
weighted av	g	1.00	1.	00	1.00	26

Sentence: what is the cheapest one way fare from san francisco to boston on wednesday august twenty first

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM ADJ

Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM ADJ

Classification Report:

		-				
	precision	on re	call	f1-sco	re supp	oort
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	4	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	2	
8	1.0	0 1.	.00	1.00	1	
9	1.0	0 1.	.00	1.00	2	
accura	асу			1.00	17	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	17 17

Sentence: which flights are available from tacoma to san jose in the morning on april twenty second

True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP NOUN NUM ADJ

Predicted tags: DET NOUN VERB ADJ ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP NOUN NUM ADJ

precisi	on re	call f1-	-score	suppo	ort
1.0	0 1.	00	1.00	3	
1.0	0 1.	00	1.00	4	
1.0	0 1.	00	1.00	3	
0.0	0 1.	00 (	0.00	0	
1.0	0 1.	00	1.00	2	
1.0	0 1.	00	1.00	2	
1.0	0.	00 (	0.00	1	
1.0	0 1.	00	1.00	1	
асу		C	).94	16	
avg d avg	0.88 1.00		_	_	16 16
	1.0 1.0 1.0 0.0 1.0 1.0 1.0 acy avg	1.00 1. 1.00 1. 1.00 1. 0.00 1. 1.00 1. 1.00 0. 1.00 1.	1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 4 1.00 1.00 1.00 3 0.00 1.00 0.00 0 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 0.00 0.00 1 1.00 1.00 1.00 1 2 2 3 3 4 4 5 5 6 7 8 7 8 8 9 8 9 8 9 8 9 8 9 8 9 8 9 8 9

Sentence: list all round trip flights between indianapolis and orlando on the twenty

seventh of december

True tags: VERB DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN ADP DET

NUM ADJ ADP NOUN

Predicted tags: VERB DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN ADP

DET NUM ADJ ADP NOUN

Classification Report:

	pred	cision	red	call	f1-sco	ore	supp	ort
1		1.00	1.	00	1.00	0	2	
2		1.00	1.	00	1.00	0	3	
3		1.00	1.	00	1.0	0	4	
4		1.00	1.	00	1.0	0	1	
5		1.00	1.	00	1.0	0	2	
7		1.00	1.	00	1.0	0	1	
9		1.00	1.	00	1.0	0	1	
10	)	1.00	1	.00	1.0	0	1	
accur	асу				1.00	)	15	
macro	avg	1	00.1	1	.00	1.0	0	15
weighte	d avg	9	1.00	•	1.00	1.0	00	15

Sentence: what is hp

True tags: PRON AUX PROPN Predicted tags: PRON AUX PROPN

Classification Report:

precisi	on reca	all f1-scor	e supp	ort
1 1.0	00 1.0	0 1.00	1	
6 1.0	00 1.0	0 1.00	1	
8 1.0	00 1.0	0 1.00	1	
accuracy		1.00	3	
macro avg	1.00	1.00 1	.00	3
weighted avg	1.00	1.00	1.00	3

Sentence: define airline us

True tags: VERB NOUN PROPN Predicted tags: VERB NOUN PROPN

p	recisio	n re	call	f1-sco	ore s	uppo	rt
1	1.00	1.	00	1.00	)	1	
3	1.00	1.	00	1.00	)	1	
4	1.00	1.	00	1.00	)	1	
accura	СУ			1.00	)	3	
macro a	ıvg	1.00	1	.00	1.00		3
weighted	avg	1.00		1.00	1.00	)	3

Sentence: code ff

True tags: NOUN PROPN Predicted tags: NOUN PROPN

Classification Report:

	precision			l f1-s	core	supp	ort
1	1.	00	1.00	1.	00	1	
3	1.	00	1.00	1.	00	1	
accur macro weighted	avg	1.0 1.	00 00	1.0 1.00 1.00	00 1.00 1.0		2 2

Sentence: from las vegas to new york a nonstop twa and fare

True tags: ADP PROPN PROPN ADP PROPN PROPN DET NOUN PROPN CCONJ

NOUN

Predicted tags: ADP PROPN PROPN ADP PROPN DET NOUN PROPN

**CCONJ NOUN** 

Classification Report:

1	precision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00 1.00	1.00 1.00	1.00 1.00	2 2
5	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accura	су		1.00	11
macro a	avg 1	.00 1	.00 1.0	00 11
weighted	avg ´	1.00	1.00 1.	.00 11

Sentence: airline that stands for dl

True tags: NOUN ADP VERB ADP PROPN Predicted tags: NOUN ADP VERB ADP PROPN

Classification Report:

	precision			f1-sc	ore sup	port
1		.00	1.00	1.00		
2		.00 .00	1.00 1.00	1.00 1.00		=
4		.00	1.00	1.0		
accur	•			1.00		
•		1.0 1.		.00 1.00	1.00 1.00	5 5

Sentence: list round trip flights between boston and oakland using twa

True tags: VERB NOUN NOUN NOUN ADP PROPN CCONJ PROPN VERB

**PROPN** 

Predicted tags: VERB NOUN NOUN NOUN ADP PROPN CCONJ PROPN VERB

**PROPN** 

Classification Report:

	pred	cisior	n re	call	f1-s	core	supp	ort
1		1.00	1	.00	1.0	00	3	
2		1.00	1	.00	1.0	00	1	
3	•	1.00	1	.00	1.0	00	3	
4	ı	1.00	1	.00	1.0	00	2	
10	)	1.00	) 1	.00	1.	.00	1	
accur	асу				1.0	00	10	
macro	avg	•	1.00	1	.00	1.0	00	10
•		1.00		1.00	1.	00	10	

Sentence: i <unk> like a twa flight from las vegas to new york nonstop

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN

Predicted tags: PRON AUX VERB DET PROPN NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN Classification Report:

13 13

Sentence: what airline is <unk>
True tags: DET NOUN AUX PROPN
Predicted tags: PRON NOUN AUX AUX

	pre	cision	recall	f1-sco	re supp	ort
	1	1 00	0.00	0.00	. 1	
	-	1.00				
	3	1.00	1.00	1.00		
;	5	1.00	0.00	0.00	1	
(	6	0.00	1.00	0.00	0	
	8	0.50	1.00	0.67	1	
accu	ıracv			0.50	4	
macr	•	0	.70 0	.60	0.33	4
weighted avg 0		0.88	0.50	0.42	4	

Sentence: what airline is dl

True tags: DET NOUN AUX PROPN

Predicted tags: PRON NOUN AUX PROPN

Classification Report:

	precisi	on re	call f	1-scor	e suppor	t
1	1.0	0 1.	00	1.00	1	
5 6			00 00	0.00	1 0	
8	1.0	0 1.	00	1.00	1	
accur	acy			0.75	4	
macro weighted		0.80 1.00	0.8 0.		0.60 4 0.75	1 4

Sentence: find a flight between denver and oakland the flight should leave in the

afternoon and arrive near 5 pm the flight should also be nonstop

True tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN AUX VERB ADP DET NOUN CCONJ VERB ADP NUM NOUN DET NOUN AUX ADV AUX NOUN

Predicted tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN NOUN VERB ADP DET NOUN CCONJ VERB PROPN NUM NOUN DET NOUN NOUN ADJ NUM NOUN

Classification Report:

	nro	oioio	n o	rooc	JI 4	1 0	oro	011	nn	ort
	pre	cisio	11	reca	111 1	1-50	Jore	Su	pp	Οιι
1		0.67	,	1.00	)	0.8	30	:	2	
2	<u> </u>	1.00	)	0.67	7	0.8	30	;	3	
3	}	0.75	5	1.00	)	0.8	36	(	3	
4	ļ	1.00	)	1.00	)	1.0	00	;	3	
5	<del>,</del>	1.00	)	1.00	)	1.0	00	4	4	
7	,	0.00	)	1.00	)	0.0	00	(	С	
8	3	1.00	)	0.00	)	0.0	00	,	3	
9	)	0.50	)	1.00	)	0.0	67		1	
10	0	1.0	0	1.0	0	1.	00		2	
11	1	1.00	0	0.0	0	0.	00		1	
accur	асу					3.0	30	2	5	
macro	avg		0.7	9	0.7	77	0.0	61		25
weighte	d av	g	3.0	39	0	.80	0	.75		25

Sentence: i need a flight on american airlines from miami to chicago that arrives around 5 pm

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

PROPN ADP VERB ADP NUM NOUN

1	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
accura	су		1.00	16	
macro a	avg 1.	00 1	.00 1.	00	16
weighted	avg 1	.00	1.00 1	.00	16

Sentence: flights from kansas city to cleveland on wednesday arriving before 5 pm True tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Predicted tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Classification Report:

	precis	ion	reca	ıll f1	-scc	ore si	uppo	ort
1	1.0	00	1.00	)	1.00	)	3	
2	1.0	00	1.00	)	1.00	)	4	
3	1.0	00	1.00	)	1.00	)	3	
4	1.0	00	1.00	)	1.00	)	1	
9	1.0	00	1.00	)	1.00	)	1	
accur	acv				1.00	,	12	
macro	•	1.0	00	1.00	)	1.00		12
weighted	d avg	1.	00	1.0	00	1.00		12

Sentence: what flights depart baltimore on friday and arrive in san francisco by 8 pm True tags: DET NOUN VERB PROPN ADP NOUN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB PROPN ADP NOUN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN

pro	ecision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	2
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
9	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accuracy	/		0.93	14

macro avg	0.88	0.88	0.75	14
weighted avg	1.00	0.93	0.93	14

Sentence: i <unk> like a nonstop flight from atlanta to baltimore that <unk> in around 7 pm

True tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP VERB ADP ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP AUX ADP ADP NUM NOUN

Classification Report:

Olacollic	anon i te	, p U				
	precisio	n red	call 1	f1-sco	re supp	ort
1	1.00	) 1.	00	1.00	2	
2	1.00	) 1.	00	1.00	5	
3	1.00	1.0	00	1.00	3	
4	1.00	0.	50	0.67	2	
5	1.00	1.0	00	1.00	1	
6	1.00	1.0	00	1.00	1	
8	0.50	1.0	00	0.67	1	
9	1.00	) 1.	00	1.00	1	
accur	acv			0.94	16	
macro	avg	0.94 0.97	0.9		0.92 0.94	16 16
weighted	u avy	0.97	U	.54	0.54	10

Sentence: what nonstop flights between boston and washington arrive after 5 < unk> pm

True tags: DET NOUN NOUN ADP PROPN CCONJ PROPN VERB ADP NUM ADV NOUN

Predicted tags: PRON NOUN NOUN ADP PROPN CCONJ PROPN VERB ADP NUM ADV NOUN

Classification Report:

	ecision	recall	f1-score	supp	ort
•					
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
9	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
11	1.00	1.00	1.00	1	
accuracy	/		0.92	12	
macro av	g 0.8	89 0	.89 0.7	'8	12
weighted a	vg 1	.00 (	0.92 0.	92	12

Sentence: all flights pittsburgh to baltimore on thursday arrival by 10 am

True tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP NUM NOUN

Predicted tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP NUM

NOUN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	2	
2	1.0	0 1	.00	1.00	3	
3	1.0	0 1	.00	1.00	4	
5	1.0	0 1	.00	1.00	) 1	
9	1.0	0 1	.00	1.00	1	
accur	асу			1.00	11	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	11 11

Sentence: show me all flights direct and connecting from boston to pittsburgh that arrive in pittsburgh before 10 am

True tags: VERB PRON DET NOUN ADJ CCONJ VERB ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN ADJ CCONJ VERB ADP PROPN ADP PROPN ADP NUM NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore	suppo	ort
1	1.	00	1.00	1.0	0	3	
2	1.	00	1.00	1.0	0	5	
3	1.	00	1.00	1.0	0	2	
4	1.	00	1.00	1.0	0	3	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
7	1.	00	1.00	1.0	0	1	
9	1.	00	1.00	1.0	0	1	
10	) 1	.00	1.00	1.0	00	1	
accur macro	•	1.0	0 1	1.00 .00	) 1.00	18 )	18
weighte	d avg	1.0	00	1.00	1.0	00	18

Sentence: cleveland to miami on wednesday arriving before 4 pm True tags: PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN Predicted tags: NOUN ADP PROPN ADP NOUN VERB ADP NUM NOUN Classification Report:

	precision	recall	f1-score	support
1	1.00	0.50	0.67	2
2	1.00	1.00	1.00	3
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	1
9	1.00	1.00	1.00	1

accuracy		0.8	9 9	1
macro avg	0.93	0.90	0.89	9
weighted avg	0.93	0.89	0.88	9

Sentence: show me airlines between boston and san francisco

............

True tags: VERB PRON NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB PRON NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

	preci	sion	recall	f1-sco	ore su	ipport	
1	1	.00	1.00	1.00	)	3	
2	1	.00	1.00	1.00	)	1	
3	1	.00	1.00	1.00	)	1	
4	1	.00	1.00	1.00	)	1	
6	1	.00	1.00	1.00	)	1	
10	)	1.00	1.00	1.0	0	1	
accur	acy			1.00	) (	3	
macro	avg	1.0	00 1	.00	1.00	8	
weighte	d avg	1.	.00	1.00	1.00	8	

Sentence: show me the airlines that fly from san francisco to boston

True tags: VERB PRON DET NOUN ADP VERB ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP VERB ADP PROPN PROPN ADP

PROPN

Classification Report:

	precis	ion re	call	f1-scc	re sup	port
1	1.0	00 1	.00	1.00	) 3	
2	1.0	00 1	.00	1.00	) 3	
3	1.0	00 1	.00	1.00	) 1	
4	1.0	00 1	.00	1.00	) 2	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00	1.00	11
weighte	d avg	1.00	•	1.00	1.00	11

Sentence: what airlines fly from boston to denver

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	0.00	0.00	1

	6	0.0	0 1	.00	0.0	00	0	
ac	curac	y			8.0	86	7	
ma	cro av	/g	0.83	0.	83	0.6	7	7
weigh	nted a	vg	1.00	C	0.86	0.8	36	7

Sentence: what airlines have flights from baltimore to seattle True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 4 1 1.00 1.00 1.00 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 88.0 8 accuracy 0.83 0.83 0.67 8 macro avg weighted avg 1.00 88.0 88.0 8

Sentence: what airlines have flights from boston to philadelphia that leave before 630 am

True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Classification Report:

	precision	on re	call f	1-score	e suppo	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	3	
4	1.0	0 1.	00	1.00	2	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
9	1.0	0 1.	00	1.00	1	
accura macro	avg	0.86	0.8	-		13
weighted	d avg	1.00	0.	92 (	0.92	13

Sentence: are there any airlines that have flights from boston to philadelphia that leave before 630 am

True tags: VERB PRON DET NOUN ADP VERB NOUN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: AUX PRON DET NOUN ADP VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

#### Classification Report:

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	3	
4	1.00	0.67	0.80	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	0.00	1.00	0.00	0	
9	1.00	1.00	1.00	1	
accurac	СУ		0.94	16	
macro a	vg 0.8	38 0	.96 0.8	35	16
weighted	avg 1	.00 (	0.94	96	16

Sentence: show me airlines that have flights between toronto and detroit between detroit and <unk> louis and between <unk> louis and toronto

True tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ PROPN CCONJ ADP PROPN PROPN CCONJ PROPN PROPN

Predicted tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ PROPN PROPN CCONJ ADP PROPN PROPN CCONJ PROPN

Classification Report:

auon	i (CpOi	ι.			
precis	sion	recall	f1-scor	e supp	ort
4	00	4.00	4.00	0	
1.	.00	1.00	1.00	8	
1.	.00	1.00	1.00	4	
1.	.00	1.00	1.00	2	
1.	.00	1.00	1.00	2	
1.	.00	1.00	1.00	1	
) 1	.00	1.00	1.00	4	
acy			1.00	21	
avg	1.0	0 1	.00 ′	1.00	21
d avg	1.0	00	1.00	1.00	21
	precision 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 acy avg 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 8 1.00 1.00 1.00 4 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 0 1.00 1.00 4 acy 1.00 21 avg 1.00 1.00 1.00

Sentence: which airlines fly between boston and baltimore True tags: DET NOUN VERB ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB ADP PROPN CCONJ PROPN

ı	orecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1

accuracy		1.0	0 7	
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: does any airline have an early afternoon flight from boston to pittsburgh True tags: AUX DET NOUN VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: AUX DET NOUN VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

0.0000	G. C. C	· OP O					
	precis	ion	recal	l f1-s	core	supp	ort
1	1.	00	1.00	1.	00	2	
2	1.	00	1.00	1.	00	2	
3	1.	00	1.00	1.	00	3	
4	1.	00	1.00	1.	00	1	
5	1.	00	1.00	1.	00	2	
7	1.	00	1.00	1.	00	1	
8	1.	00	1.00	1.	00	1	
accur	acy			1.0	00	12	
macro	•	1.0		1.00	1.0	-	12
weighted	d avg	1.	.00	1.00	1.	00	12

Sentence: please show me airlines with flights from philadelphia to dallas True tags: INTJ VERB PRON NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: INTJ VERB PRON NOUN ADP NOUN ADP PROPN Classification Report:

precision	recall	f1-score	suppo	ort
1.00	1.00	1.00	2	
1.00	1.00	1.00	3	
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
су		1.00	10	
U				10 10
	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 2 1.00 1.00 1.00 3 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: which airlines fly from boston to san francisco

True tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN Predicted tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1 00	1 00	1 00	2

3	1.0	0 1.	.00	1.00	1	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	1	
accura	ісу			1.00	8	
macro	avg	1.00	1.00	) 1.	00	8
weighted	avg	1.00	1.0	0 1	.00	8

Sentence: which airlines have flights between charlotte and newark True tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN

Classification Report:

	precis	sion	recall	f1-scc	ore su	ppor	t
1	1.	.00	1.00	1.00	) :	2	
2	1.	.00	1.00	1.00	)	1	
3	1.	.00	1.00	1.00	) :	2	
4	1.	.00	1.00	1.00	)	1	
5	1.	.00	1.00	1.00	)	1	
10	) 1	.00	1.00	1.0	0	1	
accur	acy			1.00	) (	3	
macro	avg	1.0	0 1	.00	1.00	8	3
weighted	d avg	1.	00 ′	1.00	1.00		8

Sentence: show me all flights from san francisco to new york nonstop

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

PROPN NOUN

Classification Report:

	preci	sion	recall	f1-sc	ore su	ipport
1	1	.00	1.00	1.0	0	4
2	1	.00	1.00	1.0	0	2
3	1	.00	1.00	1.0	0	2
4	1	.00	1.00	1.0	0	1
5	1	.00	1.00	1.0	0	1
6	1	.00	1.00	1.0	0	1
accur	acy			1.00	) 1	1
macro weighte	_	1.0 1.	00 1 00	1.00 1.00	1.00 1.00	11 11

Sentence: show me nonstop flights from toronto to <unk> petersburg True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.	·UU	1.0	JU	3	
2	1.00	1.	.00	1.0	00	2	
3	1.00	1.	.00	1.0	00	2	
4	1.00	1.	.00	1.0	00	1	
6	1.00	1.	.00	1.0	00	1	
accuracy				1.0	00	9	
macro avg	l	1.00	1.0	00	1.00	)	9
weighted av	g	1.00	1	.00	1.0	0	9

Sentence: show me all round trip flights from miami to new york nonstop

True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.	00	1.00	1.00	) 3	
2	1.	00	1.00	1.00	) 2	
3	1.	00	1.00	1.00	) 4	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
				4 00	4.0	
accur	acy			1.00	12	
macro	avg	1.0	00 1	.00	1.00	12
weighted	d avg	1.	.00	1.00	1.00	12

Sentence: nonstop flights seattle to kansas city

True tags: NOUN NOUN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

pre	cision	recall	t1-scc	re supp	ort
1	1.00	1.00	1.00	) 3	
2	1.00	1.00	1.00	) 1	
3	1.00	1.00	1.00	) 2	
accuracy			1.00	6	
macro avg	1.0	00 1	.00	1.00	6
weighted av	g 1	.00	1.00	1.00	6

Sentence: i want to fly from atlanta to philadelphia nonstop

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 2

-							-	_	
,	3	1.00	)	1.00	)	1.00	)	1	
4	4	1.00	)	1.00	)	1.00	)	2	
(	6	1.00	)	1.00	)	1.00	)	1	
1	12	1.0	0	1.0	0	1.0	0	1	
accu	racy					1.00	)	9	
macr	o avg		1.00	)	1.0	0	1.00		9
weighte	ed av	g	1.0	00	1.0	00	1.00		9
_		_							

1.00 1.00 1.00

Sentence: what is the earliest nonstop flight from washington to san francisco True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

2

Classification Report:

2

	precisi	on re	ecall	f1-sc	ore sup	oport
1	1.0	00 1	.00	1.0	0 3	3
2	1.0	00 1	.00	1.0	0 2	<u>)</u>
3	1.0	00 1	.00	1.0	0 2	<u>)</u>
5	1.0	00 1	.00	1.0	0 1	
6	1.0	00 1	.00	1.0	0 1	
7	1.0	00 1	.00	1.0	0 1	
8	1.0	00 1	.00	1.0	0 1	
accura	асу			1.00	) 11	
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	, ,	1.00	1.00	11

Sentence: please list nonstop flights from las vegas to new york on america west True tags: INTJ VERB NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP PROPN PROPN

Predicted tags: INTJ VERB NOUN NOUN ADP PROPN PROPN ADP PROPN NOUN

Classification Report:

	precision		n	reca	recall f		core	supp	ort
	1	1.00	)	0.8	3	0.9	91	6	
	2	1.00		1.00		1.00		3	
;	3	0.67	7	1.0	0	0.	80	2	
4	4	1.00	)	1.0	0	1.	00	1	
1	3	1.0	0	1.0	0	1	.00	1	
accu	racy					0.9	92	13	
macro	_		0.9		0.	.97	0.9	94	13
weighte	ed av	g	0.9	95	(	0.92	0.	93	13

Sentence: show me first class round trip flights from new york to miami i want the cheapest first class fare please

True tags: VERB PRON ADJ NOUN NOUN NOUN ADP PROPN PROPN

ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN INTJ

Predicted tags: VERB PRON ADJ NOUN NOUN NOUN ADP PROPN

PROPN ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN INTJ

Classification Report:

	pred	ision	rec	call	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	3	
2		1.00	1.0	00	1.0	0	2	
3		1.00	1.0	00	1.0	0	6	
4		1.00	1.0	00	1.0	0	2	
5		1.00	1.0	00	1.0	0	1	
6		1.00	1.0	00	1.0	0	2	
7		1.00	1.0	00	1.0	0	3	
13	3	1.00	1.	00	1.0	00	1	
accur	асу				1.00	)	20	
macro	avg	1	.00	1	.00	1.0	0	20
weighted	d avg		1.00	•	1.00	1.	00	20

Sentence: show me which flights from san francisco to pittsburgh on a monday are first class

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN AUX ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN VERB ADJ NOUN

Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	0.00	0.00	1	
accuracy	,		0.93	15	
macro av weighted a	_	-		83 ).91	15 15
	. 9				. •

Sentence: give me flights from baltimore to denver on united that offer first class True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP

**NOUN ADJ NOUN** 

Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP PROPN ADP

NOUN ADJ NOUN Classification Report:

precision recall f1-score support

	1	1.00	1.	00	1.0	00	3	
	2	1.00	1.	00	1.0	00	4	
	3	1.00	1.	00	1.0	00	3	
	4	1.00	1.	00	1.0	00	1	
	6	1.00	1.	00	1.0	00	1	
	7	1.00	1.	00	1.0	00	1	
acc	uracy				1.0	00	13	
mac	ro avg	J	1.00	1.	00	1.0	00	13
weight	ted av	g	1.00	1	.00	1	.00	13

Sentence: first class flights pittsburgh to newark monday morning True tags: ADJ NOUN NOUN PROPN ADP PROPN NOUN NOUN Predicted tags: ADJ NOUN NOUN PROPN ADP PROPN NOUN NOUN Classification Report:

	precis	ion re	call	t1-scoi	e suppo	rt
1	1.0	00 1	.00	1.00	2	
2			.00	1.00	1	
3	1.0	00 1	.00	1.00	4	
7	1.0	00 1	.00	1.00	1	
					_	
accur	acy			1.00	8	
macro	avg	1.00	1.0	00	1.00	8
weighte	d avg	1.00	1	.00	1.00	8

Sentence: first class fares from dallas to baltimore please True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN INTJ Predicted tags: ADJ NOUN NOUN ADP PROPN ADP PROPN INTJ Classification Report:

	preci	sion	recall	t1-scc	ore su	upport	
1	1	.00	1.00	1.00	)	2	
2	1	.00	1.00	1.00	)	2	
3	1	.00	1.00	1.00	)	2	
7	1	.00	1.00	1.00	)	1	
13	3 <i>'</i>	1.00	1.00	1.0	0	1	
accur	асу			1.00	) {	8	
macro weighte	_	1.0 1.0		.00 1.00	1.00 1.00	8	3

Sentence: show me all united airlines first class flights

True tags: VERB PRON DET PROPN PROPN ADJ NOUN NOUN Predicted tags: VERB PRON DET PROPN PROPN ADJ NOUN NOUN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
3	1.00	1 00	1.00	2

8
8

Sentence: first class price san francisco pittsburgh round trip

True tags: ADJ NOUN NOUN PROPN PROPN NOUN NOUN Predicted tags: ADJ NOUN NOUN PROPN PROPN NOUN NOUN

Classification Report:

precision recall f1-score support 3 1.00 1.00 1.00 3 1.00 1.00 1.00 4 7 1.00 1.00 1.00 1 accuracy 1.00 1.00 1.00 1.00 8 macro avg weighted avg 1.00 1.00 1.00 8

Sentence: how much is a first class ticket from baltimore to san francisco True tags: ADV ADV AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: ADV ADV AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 2 1.00 1.00 1.00 3 2 1.00 1.00 1.00 5 1.00 1.00 1.00 1 7 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 11 2 1.00 1.00 1.00 1.00 12 accuracy macro avq 1.00 1.00 1.00 12 weighted avg 1.00 1.00 1.00 12

Sentence: first class american flight from philadelphia to dallas on wednesday True tags: ADJ NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: ADJ NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 3

Sentence: show flights first class on american airlines between dallas and philadelphia

True tags: VERB NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN CCONJ

Predicted tags: VERB NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN CCONJ PROPN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accurac	y		1.00	11	
macro av	/g 1.0	00 1	.00 1.0	00	11
weighted a	vg 1	.00	1.00 1.	.00	11

Sentence: what are the first class fares from dallas to baltimore

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Classification Report:

	precisio	on red	call f1-s	score s	upport
1	1.0	0 1.0	00 1	.00	2
2	1.0	0 1.0	00 1	.00	2
3	1.0	0 1.0	00 1	.00	2
5	1.0	0 1.0	00 1	.00	1
6	1.0	0 1.0	00 1	.00	1
7	1.0	0 1.0	00 1	.00	1
8	1.0	0 1.0	00 1	.00	1
accur	•	4.00			10
macro weighted	_	1.00 1.00	1.00 1.00	1.00 1.00	10 10

Sentence: show me one way flights from tampa to <unk> louis departing before 10 am first class

True tags: VERB PRON NUM NOUN NOUN ADP PROPN ADP PROPN PROPN VERB ADP NUM NOUN ADJ NOUN

Predicted tags: VERB PRON NUM NOUN NOUN ADP PROPN ADP PROPN

PROPN VERB ADP NUM NOUN ADJ NOUN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1	.00	1.00	3	
2	1.0	0 1	.00	1.00	3	
3	1.0	0 1	.00	1.00	4	
4	1.0	0 1	.00	1.00	2	
6	1.0	0 1	.00	1.00	1	
7	1.0	0 1	.00	1.00	1	
9	1.0	0 1	.00	1.00	2	
accur	acy			1.00	16	
macro weighted	avg	1.00 1.00		.00 1.00	1.00 1.00	16 16

Sentence: what flights leave san francisco on monday night and arrive at atlanta later in the evening

True tags: DET NOUN VERB PROPN PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN ADJ ADP DET NOUN

Predicted tags: PRON NOUN VERB PROPN PROPN ADP NOUN PROPN CCONJ VERB ADP PROPN PROPN ADP DET NOUN

Classification Report:

	precisio	n reca	ıll f1-sco	ore supp	ort
1	0.60	1.00	0.7	5 3	
2	1.00	1.00	1.00	3	
3	1.00	0.75	5 0.86	6 4	
4	1.00	1.00	1.00	2	
5	1.00	0.50	0.6	7 2	
6	0.00	1.00	0.00	0 0	
7	1.00	0.00	0.00	0 1	
10	1.0	0 1.0	0 1.0	0 1	
accura	асу		0.81	16	
macro weighted	_	0.82 0.93	0.78 0.81	0.66 0.81	16 16

Sentence: please list all flights into denver before noon on united airlines and northwest airlines

True tags: INTJ VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN CCONJ PROPN PROPN

Predicted tags: INTJ VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 5
2 1.00 1.00 3

3	1.00	1.	00	1.00	)	2	
4	1.00	1.	00	1.00	)	1	
5	1.00	1.	00	1.00	)	1	
10	1.00	) 1	.00	1.0	0	1	
13	1.00	) 1	.00	1.0	0	1	
accurac	y			1.00	)	14	
macro av	/g	1.00	1.	00	1.00		14
weighted a	vg	1.00	1	.00	1.00	0	14

Sentence: what are the coach fares for flights from pittsburgh to denver

True tags: PRON AUX DET PROPN NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET PROPN NOUN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 3 1.00 1.00 1.00 2 1.00 1.00 1.00 3 3 2 1.00 1.00 1.00 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 1.00 11 accuracy macro avg 1.00 1.00 1.00 11 1.00 weighted avg 1.00 11 1.00

Sentence: what are the flights on tuesday october first from atlanta to baltimore True tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP PROPN

Classification Report:

	precis	ion	reca	ıll f	1-scc	ore s	suppo	ort
1	1.0	00	1.00	)	1.00	)	3	
2	1.0	00	1.00	)	1.00	)	3	
3	1.0	00	1.00	)	1.00	)	2	
5	1.0	00	1.00	)	1.00	)	1	
6	1.0	00	1.00	)	1.00	)	1	
7	1.0	00	1.00	)	1.00	)	1	
8	1.0	00	1.00	)	1.00	)	1	
					4.00		40	
accur	•				1.00		12	
macro	•	1.0		1.0		1.00		12
weighte	d avg	1.	.00	1.	00	1.0	)	12

Sentence: what are the coach fares from la to charlotte monday morning

True tags: PRON AUX DET PROPN NOUN ADP PROPN ADP PROPN NOUN

NOUN

Predicted tags: PRON AUX DET PROPN NOUN ADP PROPN ADP PROPN NOUN

NOUN

Classification Report:

	precis	ion re	ecall	f1-sc	ore s	upport	t
1	1.	00 1	.00	1.0	0	3	
2	1.	00 1	.00	1.0	0	2	
3	1.	00 1	.00	1.0	0	3	
5	1.	00 1	.00	1.0	0	1	
6	1.	00 1	.00	1.0	0	1	
8	1.	00 1	.00	1.0	0	1	
accur	acy			1.0	) ·	11	
macro	avg	1.00	1	.00	1.00	11	l
weighted	d avg	1.00	)	1.00	1.00	. 1	1

Sentence: show me dallas ground transport True tags: VERB PRON PROPN NOUN NOUN Predicted tags: VERB PRON PROPN NOUN NOUN

Classification Report:

Ciaconio	auoni	oport.				
	precisi	on re	call	f1-scc	re su	pport
1	1.0		00	1.00		1
3	1.0	0 1.	00	1.00	) 2	2
4	1.0	0 1.	00	1.00	) '	1
6	1.0	0 1.	00	1.00	) '	1
accur	асу			1.00	5	5
macro	avg	1.00	1.	.00	1.00	5
weighted	d avg	1.00	1	1.00	1.00	5

Sentence: show me ground transportation in denver True tags: VERB PRON NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN

Classification Report:

	precis	ion	reca	II f1-	-scor	e su	ppoi	rt
1 2		00	1.00 1.00	)	1.00 1.00	,	1 1	
3	1.0	00	1.00	) .	1.00	2	2	
4	1.0	00	1.00	) .	1.00		1	
6	1.0	00	1.00	) .	1.00		1	
accur	асу			1	1.00	6	6	
macro weighted	_	1.0 1.	00 00	1.00 1.0		.00 1.00	(	6 6

Sentence: what ground transport is available in minneapolis

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

	precis	ion re	ecall	f1-sco	ore su	ıpport
1	1.0	00 1	.00	1.00	)	1
2	1.0	00 1	.00	1.00	)	1
3	1.0	00 1	.00	1.00	)	2
5	1.0	0 00	.00	0.0	)	1
6	0.0	00 1	.00	0.0	)	0
7	1.0	00 1	.00	1.00	)	1
8	1.0	00 1	.00	1.00	)	1
accur	acy			0.86	3	7
macro	avg	0.86	_	.86	0.71	7
weighte	d avg	1.00	) (	0.86	0.86	7

Sentence: please show me ground transportation in denver True tags: INTJ VERB PRON NOUN NOUN ADP PROPN Predicted tags: INTJ VERB PRON NOUN NOUN ADP PROPN

Classification Report:

precision recall f1-score support

	μ. σ			•			99.66	• • •
•	1	1.00	1.0	00	1.00	)	1	
2	2	1.00	1.0	00	1.00	C	1	
3	3	1.00	1.0	00	1.00	C	2	
4	4	1.00	1.0	00	1.00	C	1	
(	3	1.00	1.0	00	1.00	C	1	
1	3	1.00	1.	00	1.0	0	1	
accu	racy				1.00	)	7	
macro	o avg	, 1	.00	1.	00	1.0	0	7
weighte	ed av	g	1.00	1	.00	1.0	00	7

Sentence: what kind of ground transportation is there in dallas

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN

Predicted tags: PRON NOUN ADP NOUN NOUN AUX PRON ADP PROPN

	precisio	n recall	f1-score	support
1 2	1.00 1.00		1.00 1.00	1 2
3	1.00		1.00	3
4	1.00	0.00	0.00	1
5	1.00	0.00	0.00	1
6	0.50	1.00	0.67	1
8	0.00	1.00	0.00	0
accura	асу		0.78	9
macro	avg	0.79 0	0.71 0.	52 9

weighted avg 0.94 0.78 0.74 9

Sentence: what ground transportation is available in charlotte

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

Ciaconic	auoni	topoit.				
	precis	ion re	ecall	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	) 1	
2			.00	1.00		
3	1.0	00 1	.00	1.00	) 2	
5	1.0	00 0	00.0	0.00	) 1	
6	0.0	00 1	.00	0.00	0	
7	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accur	acy			0.86	7	
macro	_	0.86	0	.86	0.71	7
weighted	d avg	1.00	) (	0.86	0.86	7

Sentence: what <unk> the ground transportation like at pittsburgh True tags: PRON AUX DET NOUN NOUN VERB ADP PROPN Predicted tags: PRON AUX DET NOUN NOUN ADJ ADP PROPN Classification Report:

	precis	ion re	call	f1-scc	re su	ipport
1	1.0	00 1	.00	1.00	)	1
2	1.0	00 1	.00	1.00	)	1
3	1.0	00 1	.00	1.00	)	2
4	1.0	0 0	.00	0.00	)	1
5	1.0	00 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
7	0.0	00 1	.00	0.00	)	0
8	1.0	00 1	.00	1.00	)	1
accur	acy			0.88		3
macro weighte	_	0.88 1.00	_	.88 ).88	0.75 0.88	8 8
_	_					

Sentence: ground transportation in baltimore

True tags: NOUN NOUN ADP PROPN

Predicted tags: NOUN NOUN ADP PROPN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
accurac	у		1.00	4

macro avg	1.00	1.00	1.00	4
weighted avg	1.00	1.00	1.00	4

Sentence: what ground transportation is there in dallas True tags: DET NOUN NOUN AUX PRON ADP PROPN

Predicted tags: PRON NOUN NOUN AUX PRON ADP PROPN

Classification Report:

	precision	on rec	call f1-s	score s	upport
1	1.0	0 1.0	00 1	.00	1
2	1.0	0 1.0	00 1	.00	1
3	1.0	0 1.0	00 1	.00	2
5	1.0	0.0	0 00	.00	1
6	0.5	0 1.0	0 00	.67	1
8	1.0	0 1.0	00 1	.00	1
accur	acy		0.	.86	7
macro	avg	0.92	0.83	0.78	7
weighte	d avg	0.93	0.86	0.81	7

Sentence: what ground transportation is available in baltimore

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	0 1.	.00	1.00	1	1
2	1.0	0 1.	.00	1.00	1	l
3	1.0	0 1.	.00	1.00	2	2
5	1.0	0 0.	.00	0.00	1	l
6	0.0	0 1.	.00	0.00	(	)
7	1.0	0 1.	.00	1.00	1	l
8	1.0	0 1.	.00	1.00	1	
accur	асу			0.86	7	•
macro weighted	_	0.86 1.00	_	.86 ).86	0.71 0.86	7 7

Sentence: ground transport phoenix True tags: NOUN NOUN PROPN Predicted tags: NOUN NOUN NOUN

pre	ecision	recall	f1-sco	ore sup	port
1	1.00	0.00	0.00	) 1	
3	0.67	1.00	0.80	) 2	
accuracy	<i>'</i>		0.67	3	
macro av		83 0	.50	0.40	3
weighted a	va 0	.78	0.67	0.53	3

Sentence: show me information on ground transportation for dallas True tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN

Classification Report:

	precisi	on re	call	t1-sco	re su	pport
1	1.0	00 1	.00	1.00	) 1	
2	1.0	00 1	.00	1.00	) 2	<u> </u>
3	1.0	00 1	.00	1.00	) 3	}
4	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
accur	acy			1.00	8	
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00	•	1.00	1.00	8

Sentence: i would like an american flight from toronto to san diego with a stopover in denver please

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN INTJ

Predicted tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN

PROPN ADP DET NOUN ADP PROPN INTJ

Classification Report:

precision		recall f1-score		ort
1.00	1.00	1.00	5	
1.00	1.00	1.00	4	
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
		1.00	17	
•				17 17
	1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00	1.00	1.00

Sentence: can i go from boston to san francisco with a stopover in denver

True tags: AUX PRON VERB ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN

Predicted tags: AUX PRON VERB ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	1 00	1 00	1 00	1

4	1.0	0 1	.00	1.0	0	1	
5	1.0	0 1	.00	1.0	0	1	
6	1.0	0 1	.00	1.0	0	1	
8	1.0	0 1	.00	1.0	0	1	
accuracy	y			1.0	0	13	
macro av	/g	1.00	1.	.00	1.00		13
weighted a	vg	1.00	) 1	1.00	1.00	)	13

Sentence: please show me flights from boston to denver with a stopover in philadelphia

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Classification Report:

	precision		call	f1-sco	re supp	ort
1	1.0	0 1	.00	1.00	3	
2	1.0	0 1	.00	1.00	4	
3	1.0	0 1	.00	1.00	2	
4	1.0	0 1	.00	1.00	1	
5	1.0	0 1	.00	1.00	1	
6	1.0	0 1	.00	1.00	1	
13	3 1.0	00 1	00.1	1.00	) 1	
accura	асу			1.00	13	
macro	avg	1.00	1	.00	1.00	13
weighted	avg	1.00	•	1.00	1.00	13

Sentence: show me the flights from new york to los angeles with stop in milwaukee True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP VERB ADP PROPN

Classification Report:

	precis	sion	recall	f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	5	
2		.00	1.00	1.0		4	
3	1	.00	0.50	0.6	37	2	
4	. 0	.50	1.00	0.6	37	1	
5	5 1	.00	1.00	1.0	00	1	
6	5 1	.00	1.00	1.0	00	1	
accur	асу			0.9	3	14	
macro	_	0.9		0.92	8.0		14
weighte	d avg	0.	.96	0.93	0.	93	14

Sentence: are there any flights from denver to pittsburgh with stops in atlanta

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP

**PROPN** 

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP

**PROPN** 

Classification Report:

	precision	on re	call	f1-sc	ore su	upport	
4	4.0	^ 4	00	4.0	^	^	
1	1.0		.00	1.0	U	3	
2	1.0	0 1.	.00	1.0	0	4	
3	1.0	0 1.	.00	1.0	0	2	
4	1.0	0 0	.00	0.0	0	1	
5	1.0	0 1.	.00	1.0	0	1	
6	1.0	0 1.	.00	1.0	0	1	
8	0.0	0 1.	.00	0.0	0	0	
accura	acy			0.92	2 1	2	
macro	avg	0.86	0	.86	0.71	12	2
weighted	d avg	1.00	(	0.92	0.92	1	2
_	•						

Sentence: are there any flights from boston to san francisco which stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN PROPN DET VERB ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	00 1.	.00	1.00	4	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	1	
4	1.0	0 0.	50	0.67	2	
5	0.5	50 1.	.00	0.67	1	
6	1.0	0 0.	50	0.67	2	
8	0.0	00 1.	.00	0.00	0	
accur	•	0.70	•	0.85	13	40
macro weighte	_	0.79 0.96	_	.86 ).85	0.71 0.87	13 13

Sentence: all do you have a flight from washington to boston that stops in philadelphia

True tags: DET AUX PRON VERB DET NOUN ADP PROPN ADP VERB ADP PROPN

Predicted tags: DET AUX PRON VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4

```
4
           1.00
                  0.50
                          0.67
                                   2
      5
                                   2
           1.00
                  1.00
                          1.00
      6
           1.00
                  1.00
                          1.00
                                   1
      8
           1.00
                  1.00
                          1.00
                                   1
                         0.93
                               14
  accuracy
                      0.93
               0.93
                              0.90
                                      14
 macro avg
weighted avg
                0.96
                       0.93
                              0.93
                                       14
```

1.00

0.67

Sentence: show me the flights from san diego to newark by way of houston True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

1

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN ADP NOUN Classification Report:

3

0.50

	precisi	on re	call	f1-sco	re supp	oort
1	1.0	0 0.	75	0.86	4	
2	1.0	0 1.	.00	1.00	4	
3	0.6	7 1.	.00	0.80	2	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
accur	acy			0.92	13	
macro	avg	0.94	0.	96	0.94	13
weighted	d avg	0.95	0	.92	0.93	13

Sentence: find a flight on american airlines from boston to san francisco that makes a stopover in denver

True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN ADP VERB DET NOUN ADP PROPN

Classification Report:

	preci	sion	rec	all	†1-sc	core	supp	ort
1	1	.00	1.0	00	1.0	00	6	
2	1	.00	1.0	00	1.0	00	5	
3	1	.00	1.0	00	1.0	00	2	
4	1	.00	1.0	00	1.0	00	2	
5	1	.00	1.0	00	1.0	00	2	
accur	acy				1.0	0	17	
macro	avg	1	.00	1	.00	1.0	00	17
weighte	d avg	•	1.00	•	1.00	1.	00	17

Sentence: i <unk> looking for a flight that goes from ontario to westchester and stops in chicago

True tags: PRON AUX VERB ADP DET NOUN ADP VERB ADP PROPN ADP

PROPN CCONJ VERB ADP PROPN

Predicted tags: PRON AUX VERB ADP DET NOUN ADP VERB ADP PROPN ADP

PROPN CCONJ PROPN ADP PROPN

Classification Report:

precis	sion	recall	t1-sco	ore sup	port
0.	75	1.00	0.86	3	
1.	.00	1.00	1.00	5	
1.	.00	1.00	1.00	) 1	
1.	.00	0.67	0.80	3	
1.	.00	1.00	1.00	) 1	
1.	.00	1.00	1.00	) 1	
1.	.00	1.00	1.00	) 1	
) 1	.00	1.00	1.0	0 1	
acy			0.94	16	
avg	0.9	97 0	.96	0.96	16
d avg	0.	95	0.94	0.94	16
	0. 1. 1. 1. 1. 1. ) 1 acy avg	1.00 1.00 1.00 1.00 1.00 0 1.00 acy avg 0.9	0.75 1.00 1.00 1.00 1.00 1.00 1.00 0.67 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.0	0.75 1.00 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.67 0.80 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	0.75

Sentence: list the flights from philadelphia to san francisco via dallas

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN PROPN VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

PROPN

Classification Report:

	precis	sion	rec	all	f1-sc	ore	supp	ort
1	1.	00	1.0	0	1.0	0	4	
2	1.	00	0.6	7	0.8	0	3	
3	1.	00	1.0	0	1.0	0	1	
4	0.	50	1.0	0	0.6	7	1	
5	1.	00	1.0	0	1.0	0	1	
					0.0	^	40	
accur	acy				0.90	J	10	
macro	avg	0.9	90	0	.93	0.8	9	10
weighte	d avg	0	.95	(	0.90	0.9	91	10

Sentence: are there any flights from denver to atlanta with stops in pittsburgh True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	1.00	0.00	0.00	1
5	1.00	1.00	1.00	1

Sentence: i need a flight from baltimore to seattle that stops in minneapolis

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP

**PROPN** 

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN

ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1	1.0	00	1.00	1.00	0 3	3
2	1.0	00	1.00	1.0	0 4	ļ
3	0.5	50	1.00	0.6	7 1	
4	1.0	00	0.50	0.6	7 2	2
5	1.0	00	1.00	1.0	0 1	
6	1.0	00	1.00	1.0	0 1	
accur	acy			0.92	2 12	2
macro	avg	0.9	2 0	.92	0.89	12
weighted	d avg	0.9	96 (	0.92	0.92	12

Sentence: i would like a flight that leaves on friday from philadelphia to dallas that makes a stop in atlanta

True tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN

ADP PROPN ADP NOUN DET NOUN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	6	
3	0.7	5 1.	00	0.86	3	
4	1.0	0 0.	67	0.80	3	
5	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	•			0.95	19	
macro weighted	•	0.96 0.96	_	.95 ( ).95	0.95 0.95	19 19

Sentence: list flights from philadelphia to dallas that stop in atlanta

True tags: VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN

### Classification Report:

	precision	on re	call	f1-scc	re sup	port
1	1.0	0 1.	00	1.00	) 3	
2	1.0	0 1.	00	1.00	) 4	
3	1.0	0 1.	00	1.00	) 1	
4	1.0	0 1.	00	1.00	) 2	
accur	acy			1.00	10	
macro	avg	1.00	1.	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: what is the available ground transportation between san francisco and downtown

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN

### Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.	00	1.00	1.00	) 2	
2	1.	00	1.00	1.00	) 1	
3	1.	00	1.00	1.00	) 3	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
7	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	) 1	
10	) 1	.00	1.00	1.0	0 1	
accura	асу			1.00	11	
macro	avg	1.00	) 1	.00	1.00	11
weighted	d avg	1.0	00 ′	1.00	1.00	11

Sentence: what ground transportation is there from the airport in atlanta to downtown True tags: DET NOUN NOUN VERB PRON ADP DET NOUN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN NOUN AUX PRON ADP DET NOUN ADP PROPN ADP NOUN

pre	cision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	4
4	1.00	0.00	0.00	1
5	1.00	0.50	0.67	2
6	0.50	1.00	0.67	1
8	0.00	1.00	0.00	0
accuracy			0.83	12

macro avg	0.79	0.79	0.62	12
weighted avg	0.96	0.83	0.83	12

Sentence: what flights go from dallas to denver leaving after 3 pm

True tags: DET NOUN VERB ADP PROPN ADP PROPN VERB ADP NUM NOUN Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN VERB ADP NUM NOUN

Classification Report:

	precis	sion	reca	III f1-s	core	supp	ort
1	1.	.00	1.00	) 1	.00	2	
2		00	1.00		.00	3	
3	1.	.00	1.00	) 1	.00	2	
4	1.	.00	1.00	) 1	.00	2	
5	1.	.00	0.00	0 (	.00	1	
6	0.	.00	1.00	0 (	.00	0	
9	1.	.00	1.00	) 1	.00	1	
accur	acy			0.	91	11	
macro	avg	9.0	36	0.86	0.7	'1	11
weighte	d avg	1.	.00	0.91	0.	91	11

Sentence: can you list all flights from chicago to <unk> louis that depart after 12

True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB ADP NUM NOUN

Predicted tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB ADP NUM NOUN

Classification Report:

				_11 4	:4			4
	prec	isior	ı reca	all 1	1-sco	ore :	supp	ort
1		1.00	1.0	0	1.00	)	3	
2		1.00	1.0	0	1.00	)	4	
3	}	1.00	1.0	0	1.00	)	2	
4		1.00	1.0	0	1.00	)	2	
5	,	1.00	1.0	0	1.00	)	1	
6	<b>)</b>	1.00	1.0	0	1.00	)	1	
8	}	1.00	1.0	0	1.00	)	1	
9	)	1.00	1.0	0	1.00	)	1	
accur	acv				1.00	)	15	
macro	•		1.00	1.0		1.00	_	15
veighte	_		1.00		.00	1.0		15
voigino	aave	,	1.00	•	.00	1.0	•	.0

Sentence: is there a flight between philadelphia and denver that leaves philadelphia around 2 <unk> in the afternoon

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP VERB PROPN ADP NUM ADV ADP DET NOUN

Predicted tags: AUX PRON DET NOUN ADP PROPN CCONJ PROPN ADP VERB PROPN ADP NOUN ADV ADP DET NOUN

## Classification Report:

	precis	sion	recall	f1-scc	re su	oport
1	1.	00	1.00	1.00	) 3	3
2	1.	00	1.00	1.00	) 4	Ļ
3	0.	67	1.00	0.80	) 2	<u>-</u>
4	1.	00	0.50	0.67	7 2	<u> </u>
5	1.	00	1.00	1.00	) 2	<u> </u>
6	1.	00	1.00	1.00	) 1	
8	0.	00	1.00	0.00	) (	)
9	1.	00	0.00	0.00	) 1	
10	) 1	.00	1.00	1.0	0	1
11	1	.00	1.00	1.0	) ·	1
accur macro	•	0.8	7 0	0.88 .85	17 0.75	7 17
weighted	•	0.9		0.88	0.88	17

Sentence: what flights leaving pittsburgh arrive in denver and leave after say 6 <unk> at night

True tags: DET NOUN VERB PROPN VERB ADP PROPN CCONJ VERB ADP VERB NUM ADV ADP NOUN

Predicted tags: PRON NOUN VERB PROPN VERB ADP PROPN CCONJ VERB ADP NOUN NUM ADV ADP PROPN

Classification Report:

precision recall f1-score support

	p. 00		.00	<i>-</i>	00	0.0	очрр	0
1	(	0.67	1.0	00	0.8	0	2	
2		1.00	1.0	00	1.0	0	3	
3	(	0.50	0.5	50	0.5	0	2	
4	•	1.00	0.7	75	0.8	6	4	
5	•	1.00	0.0	00	0.0	0	1	
6	(	0.00	1.0	00	0.0	0	0	
9	•	1.00	1.0	00	1.0	0	1	
10	)	1.00	1.	00	1.0	00	1	
11		1.00	1.	00	1.0	00	1	
accur	acy				8.0	0	15	
macro	avg	C	08.0	0	.81	0.6	8	15
veighte	d avg	l	0.89	(	08.0	0.	80	15

Sentence: dallas to houston after <unk> am

True tags: PROPN ADP PROPN ADP NUM NOUN Predicted tags: PROPN ADP PROPN ADP ADV NOUN

Classification Report:

precision recall f1-score support 1.00 1 1.00 1.00 2 2 1.00 1.00 2 1.00 3 1.00 1.00 1.00 1

9 1	.00 0	.00	0.00	1	
11 0	.00 ′	1.00	0.00	0	
accuracy		(	0.83	6	
macro avg	0.80	0.80	0.6	30	6
weighted avg	1.00	0.8	3 0	.83	6

Sentence: is there a flight around 3 pm from charlotte to minneapolis

True tags: VERB PRON DET NOUN ADP NUM NOUN ADP PROPN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP NUM NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precisio	n re	call	f1-sco	re sup	port
1	1.00	) 1.	00	1.00	2	
2	1.00	) 1.	00	1.00	3	
3	1.00	) 1.	00	1.00	) 2	
4	1.00	0.	00	0.00	1	
5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
8	0.00	) 1.	00	0.00	0	
9	1.00	) 1.	00	1.00	) 1	
accur	асу			0.91	11	
macro	avg	0.88	0.	.88	0.75	11
weighted	d avg	1.00	C	).91	0.91	11

Sentence: i like to see the information for flights from pittsburgh to san francisco leaving pittsburgh after 12 pm

True tags: PRON VERB PART VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: PRON VERB PART VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Classification Report:

	precision		call	f1-sco	re sup	port
1	1.0	00 1.	.00	1.00	) 4	
2			.00	1.00		
3	1.0	00 1.	.00	1.00	3	
4	1.0	00 1.	.00	1.00	3	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
9	1.0	00 1.	.00	1.00	1	
12	2 1.	00 1	.00	1.00	) 1	
accura	асу			1.00	18	
macro	_	1.00	1	.00	1.00	18
weighted	d avg	1.00	•	1.00	1.00	18

Sentence: a listing of all flights from boston to baltimore before 10 am on thursday

True tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP NUM

**NOUN ADP NOUN** 

Predicted tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP NUM

NOUN ADP NOUN Classification Report:

	precision	on re	call	f1-scor	e suppo	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	5	
3	1.0	0 1.	00	1.00	4	
5	1.0	0 1.	00	1.00	2	
9	1.0	0 1.	00	1.00	1	
accur	acy			1.00	14	
macro	avg	1.00	1.	00	1.00	14
weighted	d avg	1.00	1	.00	1.00	14

Sentence: i <unk> like a flight from san diego to toronto on alaska airlines leaving around 1 pm

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NUM NOUN

Classification Report:

	precisio	n reca	all f1-s	core s	suppo	rt
1	1.00	1.00	0 1.	00	5	
2	1.00	1.00	0 1.	00	4	
3	1.00	1.00	0 1.	00	2	
4	1.00	1.00	0 1.	00	2	
5	1.00	1.00	0 1.	00	1	
6	1.00	1.00	0 1.	00	1	
8	1.00	1.00	0 1.	00	1	
9	1.00	1.00	0 1.	00	1	
accura	асу		1.0	00	17	
macro weighted	0	1.00 1.00	1.00 1.00	1.00 1.00		17 17
9	9					

Sentence: i want a flight from atlanta to washington that leaves after 3 pm

True tags: PRON VERB DET NOUN ADP PROPN ADP VERB ADP

NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB

ADP NUM NOUN
Classification Report:

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	1 00	1 00	1 00	2

4	1.00	0 1	.00	1.0	0	2	
5	1.0	0 1	.00	1.0	0	1	
6	1.0	0 1	.00	1.0	0	1	
9	1.0	0 1	.00	1.0	0	1	
accuracy	/			1.00	0	13	
macro av	g	1.00	1.	.00	1.00		13
weighted a	vg	1.00	1	1.00	1.00	)	13

Sentence: list all flights going from boston to atlanta on wednesday after 6 <unk> pm on wednesday

True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN

ADP NUM ADV NOUN ADP NOUN

Classification Report:

	precis	sion	recall	f1-sc	core	supp	ort
1	1.	.00	1.00	1.0	00	2	
2	1.	.00	1.00	1.0	00	5	
3	1.	.00	1.00	1.0	00	4	
4	1.	.00	1.00	1.0	00	2	
5	1.	.00	1.00	1.0	00	1	
9	1.	.00	1.00	1.0	00	1	
11	l 1	.00	1.00	1.	00	1	
accur	acy			1.0	0	16	
macro weighte	avg		00 ´ .00	1.00 1.00	1.0 1.0	-	16 16

Sentence: i need flight information for a flight departing from cleveland to milwaukee wednesday after 6 pm

True tags: PRON VERB NOUN NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN NOUN ADP NUM NOUN

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.	00	1.00	1.0	00	2	
2		00	1.00	1.0		4	
3	1.	00	1.00	1.0	00	5	
4	1.	00	1.00	1.0	00	2	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
9	1.	00	1.00	1.0	00	1	
accura	acy			1.0	0	16	
macro	avg	1.0	0 1	1.00	1.0	0	16
veighted	d avg	1.	00	1.00	1.0	00	16

Sentence: what flights go from boston to denver before 10 am

True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN

Classification Report:

	precis	sion	reca	all	f1-sc	ore	supp	ort
1	1	.00	1.0	n	1.0	0	2	
2		.00	1.0		1.0		3	
3	1.	.00	1.0	0	1.0	0	2	
4	1.	.00	1.0	0	1.0	0	1	
5	1.	.00	0.0	0	0.0	0	1	
6	0	.00	1.0	0	0.0	0	0	
9	1.	.00	1.0	0	1.0	0	1	
						_		
accur	acy				0.90	)	10	
macro	avg	0.8	86	0.	86	0.7	1	10
weighte	d avg	1	.00	C	.90	0.9	90	10

Sentence: list all flights from boston to atlanta after 6 <unk> pm on wednesday True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Classification Report:

	precis	sion	recall	f1-sco	re supp	ort
1	1.	.00	1.00	1.00	2	
2	1.	.00	1.00	1.00	4	
3	1.	.00	1.00	1.00	3	
4	1.	.00	1.00	1.00	1	
5	1.	.00	1.00	1.00	1	
9	1.	.00	1.00	1.00	1	
11	1	.00	1.00	1.00	) 1	
accur	acy			1.00	13	
macro weighted	•	1.0 1.	00 1 .00	.00 1.00	1.00 1.00	13 13

Sentence: i <unk> looking for flights from pittsburgh to philadelphia leaving before 9

True tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4

```
3
                   1.00
                          1.00
      4
           1.00
                   1.00
                          1.00
                                   2
      6
                                    1
           1.00
                   1.00
                          1.00
      8
           1.00
                   1.00
                          1.00
                                    1
      9
           1.00
                   1.00
                          1.00
                                    1
                          1.00
                                13
  accuracy
               1.00
                       1.00
                              1.00
                                       13
 macro avg
weighted avg
                1.00
                       1.00
                               1.00
                                        13
```

1.00

Sentence: list all flights going from boston to atlanta before 7 am on thursday True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

2

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM **NOUN ADP NOUN** 

Classification Report:

	precision	on re	call	f1-scc	re sup	oort
1	1.0	0 1.	00	1.00	) 2	
2	1.0	0 1.	00	1.00	) 4	
3	1.0	0 1.	00	1.00	) 3	
4	1.0	0 1.	00	1.00	) 2	
5	1.0	0 1.	00	1.00	) 1	
9	1.0	0 1.	00	1.00	) 1	
accura	асу			1.00	13	
macro	avg	1.00	1	.00	1.00	13
weighted	d avg	1.00	•	1.00	1.00	13

Sentence: i need flight information for flights departing from cleveland to milwaukee on wednesday after 5 pm

True tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

	precis	ion	recall	f1-sc	ore s	uppoi	rt
1	1	00	1.00	1.0	Λ	2	
2		00	1.00	1.0		5	
3		00	1.00	1.0		5	
4		00	1.00	1.0		2	
6		00	1.00	1.0		1	
9	1.	00	1.00	1.0	0	1	
accur	асу			1.0	0	16	
macro	_	1.0		.00	1.00		6
weighte	d avg	1.0	00	1.00	1.00		16

Sentence: can you find me another flight from cincinnati to new york on saturday before 6 pm

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADP NUM NOUN

Predicted tags: AUX PRON VERB PRON PRON NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN

Classification Report:

	precision		rec	recall f1-score		ore	supp	ort
1		1.00	1.0	0	1.0	00	3	
2		1.00	1.0	0	1.0	00	4	
3	,	1.00	1.0	0	1.0	0	3	
4		1.00	1.0	0	1.0	0	1	
5	; ·	1.00	0.0	0	0.0	0	1	
6	6 (	0.67	1.0	0	3.0	30	2	
8	,	1.00	1.0	0	1.0	00	1	
9	, ,	1.00	1.0	0	1.0	00	1	
accur	acy				0.9	4	16	
macro	avg	0	.96	0	.88	8.0	5	16
weighted avg		) (	0.96	(	0.94	0.	91	16

Sentence: i would like a flight from san francisco to pittsburgh on friday morning after 10 <unk>

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADP NUM ADV

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP NOUN NOUN ADP NUM ADV

Classification Report:

р	precision		f1-score	support	
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
11	1.00	1.00	1.00	1	
accurac	у		1.00	16	
macro avg 1.0 weighted avg 1				1.00 1.00	
					16

Sentence: list all flights going from boston to atlanta before 5 <unk> am on thursday True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

## Classification Report:

	precision		ecall	t1-scor	e supp	ort
1	1.0	0 1	.00	1.00	2	
2	1.0	0 1	.00	1.00	4	
3	1.0	0 1	.00	1.00	3	
4	1.0	0 1	.00	1.00	2	
5	1.0	0 1	.00	1.00	1	
9	1.0	0 1	.00	1.00	1	
11	1.0	00 1	.00	1.00	1	
accura	acy			1.00	14	
macro	avg	1.00	1	.00 1	.00	14
weighted	d avg	1.00		1.00	1.00	14

Sentence: what is the last flight from baltimore to boston

precision recall f1-score support

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	μ						-	
1		1.00	1.	00	1.0	0	2	
2	2	1.00	1.	00	1.0	0	2	
3	3	1.00	1.	00	1.0	0	1	
5	5	1.00	1.	00	1.0	0	1	
6	3	1.00	1.	00	1.0	0	1	
7	7	1.00	1.	00	1.0	0	1	
8	3	1.00	1.	00	1.0	0	1	
accur	racy				1.00	)	9	
macro	_		.00	1	.00	1.00	0	9
weighte	d avo	9	1.00	•	1.00	1.0	00	9

Sentence: what <unk> the latest flight from san jose to houston

True tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN

Oldoomic	precisi	•	call	f1-scor	e supp	ort
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	1	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
accur	acy			1.00	10	
macro	•	1.00			1.00	10
weighte	d avg	1.00	•	1.00	1.00	10

Sentence: what is the earliest flight from pittsburgh to san francisco

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recal	l †1-so	core	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
7	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	10	
macro	avg	1.0	00	1.00	1.0	0	10
weighted	d avg	1	.00	1.00	1.	00	10

Sentence: show first flight from philadelphia to dallas True tags: VERB ADJ NOUN ADP PROPN ADP PROPN Predicted tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	recall		ore su	ıppor	t
1	1.00	) 1.	00	1.00	)	2	
2	1.00	) 1.	00	1.00	)	2	
3	1.00	) 1.	00	1.00	)	1	
4	1.00	) 1.	00	1.00	)	1	
7	1.00	) 1.	00	1.00	)	1	
accura	асу			1.00	) .	7	
macro	avg	1.00	1	.00	1.00	7	7
weighted	d avg	1.00	•	1.00	1.00		7

Sentence: what <unk> the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accura	асу		1.00	9

macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: what is the shortest flight from milwaukee to <unk> petersburg
True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN
Classification Report:

	precis	ion re	call	t1-sco	re supp	oort
1	1.0	00 1.	.00	1.00	3	
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	1	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
accur	асу			1.00	10	
macro	avg	1.00	1.	00	1.00	10
weighte	d avg	1.00	1	.00	1.00	10

Sentence: shortest evening flight from tampa to cincinnati True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		reca	II f1-	score	e supp	oort
1	1	00	1.00	٠ ١	1.00	2	
2		00	1.00		1.00	2	
3		00	1.00		1.00	2	
4		00	1.00		0.00	0	
7	1.	00	0.00	) (	0.00	1	
				_		_	
accur	acy			C	0.86	7	
macro	avg	3.0	30	0.80	0	.60	7
weighte	d avg	1.	.00	0.8	6 (	0.86	7

Sentence: what is the earliest flight you have leaving boston heading to philadelphia True tags: PRON AUX DET ADJ NOUN PRON VERB VERB PROPN VERB ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN PRON VERB VERB PROPN NOUN ADP PROPN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	1
3	0.50	1.00	0.67	1
4	1.00	0.67	0.80	3
5	1.00	1.00	1.00	1

6	1.0	0 1	.00	1.00	)	2
7	1.0	0 1	.00	1.00	)	1
8	1.0	0 1	.00	1.00	)	1
accura	су			0.92	: 1	2
macro a	avg	0.94	0.9	96	0.93	12
weighted	avg	0.96	0.	.92	0.92	12

Sentence: what is the earliest flight from boston to san francisco

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore supp	port
1	1.	00	1.00	1.00	3	
2	1.	00	1.00	1.00	) 2	
3	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
7	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	) 1	
accur	асу			1.00	10	
macro	avg	1.0	0 1	.00	1.00	10
weighted	d avg	1.	00	1.00	1.00	10

Sentence: flights from denver to westchester county new york weekdays True tags: NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN NOUN Predicted tags: NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADJ Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	0	5	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	0.50	0.6	57	2	
7	0.0	00	1.00	0.0	0	0	
accur	acy			0.8	9	9	
macro	avg	0.7	5 0	.88	0.6	7	9
weighted	d avg	1.0	00 (	0.89	0.9	93	9

Sentence: what is the last flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 2 1.00 1.00 3 1.00 1.00 1.00 1

5	1.0	0	1.00	1.	00	1	
6	1.0	0	1.00	1.	00	1	
7	1.0	0	1.00	1.	00	1	
8	1.0	0	1.00	1.	00	1	
accura	су			1.0	00	9	
macro a	avg	1.00	)	1.00	1.0	0	9
weighted	avg	1.0	0	1.00	1.0	00	9

Sentence: what is the earliest flight leaving denver going to boston

True tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN

Classification Report:

	precisior	n rec	all f	1-scor	e supp	ort
1	1.00	1.0	0	1.00	2	
2	1.00	1.0	0	1.00	1	
3	1.00	1.0	0	1.00	1	
4	1.00	1.0	0	1.00	2	
5	1.00	1.0	0	1.00	1	
6	1.00	1.0	0	1.00	1	
7	1.00	1.0	0	1.00	1	
8	1.00	1.0	0	1.00	1	
accura	асу			1.00	10	
macro	avg '	1.00	1.0	00 ′	1.00	10
weighted	l avg	1.00	1.	.00	1.00	10

Sentence: what is the earliest flight from ontario to memphis

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recal	l f1-so	core	supp	ort
1	1.	.00	1.00	1.0	00	2	
2	1.	.00	1.00	1.0	00	2	
3	1.	.00	1.00	1.0	00	1	
5	1.	.00	1.00	1.0	00	1	
6	1.	.00	1.00	1.0	00	1	
7	1.	.00	1.00	1.0	00	1	
8	1.	.00	1.00	1.0	00	1	
accur	acy			1.0	0	9	
macro	_	1.0		1.00	1.0	0	9
weighted	d avg	1.	.00	1.00	1.	00	9

Sentence: what is the earliest flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

	precisi	on re	call	f1-sc	ore su	ıpport
1	1.0	0 1	.00	1.0	0	2
2	1.0	0 1	.00	1.0	0	2
3	1.0	0 1	.00	1.0	0	1
5	1.0	0 1	.00	1.0	0	1
6	1.0	0 1	.00	1.0	0	1
7	1.0	0 1	.00	1.0	0	1
8	1.0	0 1	.00	1.0	0	1
accura	асу			1.00	) !	9
macro	avg	1.00	1	.00	1.00	9
weighted	l avg	1.00	•	1.00	1.00	9

Sentence: what is the last flight leaving san francisco going to washington on friday True tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP PROPN ADP NOUN

Classification Report:

precis	sion	recal	l f1-s	core	supp	ort
1.	.00	1.00	1.	00	3	
1.	.00	1.00	1.	00	2	
1.	.00	1.00	1.	00	2	
1.	.00	1.00	1.	00	2	
1.	.00	1.00	1.	00	1	
1.	.00	1.00	1.	00	1	
1.	.00	1.00	1.	00	1	
1.	.00	1.00	1.	00	1	
асу			1.0	00	13	
avg	1.0	00	1.00	1.0	00	13
d avg	1	.00	1.00	1.	00	13
	1. 1. 1. 1. 1. 1.	avg 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1. 1.00 1.00 1. 2.00 1.00 1.	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: what is the earliest morning flight from san francisco to boston True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3		1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		1.0	0 11	
macro avg	1.00	1.00	1.00	11
weighted avg	1.00	1.00	1.00	11

Sentence: what <unk> the earliest flight from dallas to houston
True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	ion re	ecall	f1-sc	ore s	uppo	rt
1	1.0	00 1	.00	1.0	0	2	
2	1.0	00 1	.00	1.0	0	2	
3	1.0	00 1	.00	1.0	0	1	
5	1.0	00 1	.00	1.0	0	1	
6	1.0	00 1	.00	1.0	0	1	
7	1.0	00 1	.00	1.0	0	1	
8	1.0	00 1	.00	1.0	0	1	
accur	acy			1.00	)	9	
macro	avg	1.00	1	.00	1.00		9
weighted	d avg	1.00	) '	1.00	1.00	1	9

Sentence: i <unk> like to find the earliest flight possible from san francisco to atlanta True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADJ ADP PROPN PROPN

Predicted tags: PRON AUX VERB PART VERB DET ADJ NOUN ADJ ADP PROPN

PROPN ADP PROPN Classification Report:

	pre	cision	recall	f1-score	suppo	ort
	1	1.00	1.00	1.00	3	
	2	1.00	1.00	1.00	2	
	3	1.00	1.00	1.00	1	
	4	1.00	1.00	1.00	2	
	5	1.00	1.00	1.00	1	
	6	1.00	1.00	1.00	1	
	7	1.00	1.00	1.00	2	
	8	1.00	1.00	1.00	1	
1	12	1.00	1.00	1.00	1	
	iracy o avg ed av			1.00 .00 1.0 1.00 1.	14 00 00	14 14
weigitt	cu av	y 1.0	,,	1.00 1.	00	'7

Sentence: what is the latest evening flight leaving san francisco for washington True tags: PRON AUX DET ADJ NOUN NOUN VERB PROPN PROPN ADP Predicted tags: PRON AUX DET ADJ NOUN NOUN VERB PROPN PROPN ADP

**PROPN** 

Classification Report:

precision recall f1-score support

	1	1.0	0	1.0	0	1.0	00	3	
	2	1.0	0	1.0	0	1.0	00	1	
	3	1.0	0	1.0	0	1.0	00	2	
	4	1.0	0	1.0	0	1.0	00	1	
	5	1.0	0	1.0	0	1.0	00	1	
	6	1.0	0	1.0	0	1.0	00	1	
	7	1.0	0	1.0	0	1.0	00	1	
	8	1.0	0	1.0	0	1.0	00	1	
ac	curac	y				1.0	0	11	
ma	icro a	vg	1.0	00	1.	00	1.0	0	11
weig	hted a	avg	1	.00	1	.00	1.	00	11

Sentence: what is the first flight from boston to atlanta and what is the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ

PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion I	recall	f1-scc	re supp	oort
1	1.0	00	1.00	1.00	) 4	
2	1.0	00	1.00	1.00	) 4	
3	1.0	00	1.00	1.00	2	
5	1.0	00	1.00	1.00	2	
6	1.0	00	1.00	1.00	2	
7	1.0	00	1.00	1.00	) 2	
8	1.0	00	1.00	1.00	2	
10	) 1.	00	1.00	1.0	0 1	
accura	асу			1.00	19	
macro	avg	1.00	) 1	.00	1.00	19
weighted	d avg	1.0	0	1.00	1.00	19

Sentence: what <unk> the cheapest one way ticket from baltimore to atlanta True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

9 1.00 1.00 1.00 1

accuracy 1.00 11

macro avg 1.00 1.00 1.00 11

weighted avg 1.00 1.00 1.00 11

Sentence: what <unk> the cheapest round trip fare between boston and washington True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN

Classification Report:

	precis	ion r	ecall	f1-sco	ore su	upport
1	1.0	00 -	1.00	1.00	)	2
2	1.0	00 -	1.00	1.00	)	1
3	1.0	00 1	1.00	1.00	)	3
5	1.0	00 1	1.00	1.00	)	1
6	1.0	00 1	1.00	1.00	)	1
7	1.0	00 1	1.00	1.00	)	1
8	1.0	00 2	1.00	1.00	)	1
10	) 1.	.00	1.00	1.0	0	1
accura	асу			1.00	) 1	11
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	11 11

Sentence: what is the cheapest round trip fare between boston and san francisco True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

	precisi	on red	call f1-s	core su	ipport
1	1.0	0 1.0	00 1.	00	3
2	1.0	0 1.0	00 1.	00	1
3	1.0	0 1.0	00 1.	00	3
5	1.0	0 1.0	00 1.	00	1
6	1.0	0 1.0	00 1.	00	1
7	1.0	0 1.0	00 1.	00	1
8	1.0	0 1.0	00 1.	00	1
10	) 1.0	00 1.	.00 1	.00	1
accur	асу		1.0	00 1	2
macro weighted	avg	1.00 1.00	1.00 1.00	1.00 1.00	12 12

Sentence: what is the cheapest round trip fare from atlanta to pittsburgh

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precision	on re	call	f1-scc	ore sup	oport
1	1.0	0 1.	00	1.00	) 2	<u>)</u>
2	1.0	0 1.	00	1.00	) 2	<u>)</u>
3	1.0	0 1.	00	1.00	) 3	3
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	
7	1.0	0 1.	00	1.00	) 1	
8	1.0	0 1.	00	1.00	) 1	
accur	acy			1.00	11	
macro	avg	1.00	1.	.00	1.00	11
weighted	d avg	1.00	1	1.00	1.00	11

Sentence: what is the cheapest fare from baltimore to dallas in any class

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP DET

NOUN

Classification Report:

	precisi	on re	ecall	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	) 2	
2	1.0	00 1	.00	1.00	3	
3	1.0	00 1	.00	1.00	2	
5	1.0	00 1	.00	1.00	2	
6	1.0	00 1	.00	1.00	) 1	
7	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accura	асу			1.00	12	
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	12 12

Sentence: what is the cheapest one way fare from boston to washington

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP

**PROPN** 

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

9 1.00 1.00 1.00 1

accuracy 1.00 11

macro avg 1.00 1.00 1.00 11

weighted avg 1.00 1.00 1.00 11

Sentence: i <unk> interested in the cheapest fare from washington to fort worth True tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN PROPN PROPN

Predicted tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precisi	on re	ecall	f1-sco	ore sup	port
1	1.0	00 1	.00	1.00	) 3	<b>,</b>
2	1.0	00 1	.00	1.00	) 3	1
3	1.0	00 1	.00	1.00	) 1	
4	1.0	00 1	.00	1.00	) 1	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
7	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accur	асу			1.00	) 12	2
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00	)	1.00	1.00	12

Sentence: i would like to book a flight from denver to pittsburgh on july fifteenth i <unk> like it to be the cheapest flight

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN ADJ PRON AUX VERB PRON PART AUX DET ADJ NOUN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN ADJ PRON AUX VERB VERB PART VERB DET ADJ NOUN Classification Report:

	prec	ision	recall	f1-scc	re supp	oort
1		1.00	1.00	1.00	) 2	
2		1.00	1.00	1.00	3	
3	,	1.00	1.00	1.00	) 3	
4	. (	0.60	1.00	0.75	5 3	
5	;	1.00	1.00	1.00	) 2	
6	;	1.00	0.67	0.80	) 3	
7	•	1.00	1.00	1.00	) 2	
8	,	1.00	0.67	0.80	) 3	
12	2	1.00	1.00	1.0	0 2	
accur	acy			0.91	23	
macro	_			0.93	0.93	23
weighte	d avg	0	.95	0.91	0.92	23

Sentence: what is the cheapest fare from dallas to denver on delta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

	precision	recall	f1-score	suppoi	rt
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	acy		1.00	11	
macro	avg 1	.00 1	.00 1.0	00 1	1
weighted	d avg	1.00	1.00 1.	00	11

Sentence: can you show me the cheapest round trip flights between denver and pittsburgh

True tags: AUX PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

Predicted tags: AUX PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

Classification Report:

ķ	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	2	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	су		1.00	13	
macro a	avg 1.0	00 1	.00 1.0	0	13
weighted	avg 1	.00	1.00 1.	00	13

Sentence: what <unk> the lowest round trip fare from denver to atlanta

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

1

precision recall f1-score support

Sentence: what is the cheapest flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-scc	re su	pport
1	1.0	0 1.	00	1.00	) 2	2
2	1.0	0 1.	00	1.00	) 2	2
3	1.0	0 1.	00	1.00	) 1	
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	
7	1.0	0 1.	00	1.00	) 1	
8	1.0	0 1.	00	1.00	) 1	
accura	асу			1.00	9	
macro	avg	1.00	1.	.00	1.00	9
weighted	d avg	1.00	1	1.00	1.00	9

Sentence: i <unk> like to find the cheapest fare from atlanta to dallas

True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADP PROPN ADP

PROPN

Predicted tags: PRON AUX VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

0.0.000	precisio	on red	call f1-s	score s	support
1	1.0	0 1.	00 1	.00	2
2	1.0	0 1.	00 1	.00	2
3	1.0	0 1.	00 1	.00	1
4	1.0	0 1.	00 1	.00	2
5	1.0	0 1.	00 1	.00	1
6	1.0	0 1.	00 1	.00	1
7	1.0	0 1.	00 1	.00	1
8	1.0	0 1.	00 1	.00	1
12	2 1.0	0 1	.00 1	1.00	1
accura	асу		1.	.00	12
macro	avg	1.00	1.00	1.00	12
weighted	d avg	1.00	1.00	1.0	0 12

Sentence: lowest fare from san francisco to los angeles

True tags: ADJ NOUN ADP PROPN PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore su	ıpport
1	1.0	00	1.00	1.00	)	4
2		00	1.00	1.00		2
3	1.0	00	1.00	1.00	)	1
7	1.0	00	1.00	1.00	)	1
accur	acy			1.00	) {	3
macro	avg	1.0	0 1	.00	1.00	8
weighted	d avg	1.0	00	1.00	1.00	8

Sentence: i <unk> like the lowest fare from denver to pittsburgh

True tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	1.	00	2	
2	1.	00	1.00	1.	00	2	
3	1.	00	1.00	1.	00	1	
4	1.	00	1.00	1.	00	1	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
7	1.	00	1.00	1.	00	1	
8	1.	00	1.00	1.	00	1	
accur	асу			1.0	00	10	
macro	avg	1.	00	1.00	1.0	00	10
weighted	d avg	1	.00	1.00	1.	.00	10

Sentence: okay i <unk> want to know the cheapest fare from atlanta to boston True tags: INTJ PRON ADV VERB PART VERB DET ADJ NOUN ADP PROPN ADP

PROPN

Predicted tags: PROPN PRON AUX VERB PART VERB DET ADJ NOUN ADP

PROPN ADP PROPN Classification Report:

precision recall f1-score support 1 0.67 1.00 0.80 2 2 2 1.00 1.00 1.00 1.00 1.00 3 1 1.00 1.00 4 1.00 2 1.00 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 1.00 1.00 1.00 1

8	0.00	1.0	0	0.00	)	0	
11	1.00	0.0	00	0.0	0	1	
12	1.00	1.0	00	1.0	0	1	
13	1.00	0.0	00	0.0	0	1	
accuracy				0.85	5	13	
macro av	g 0.8	88	8.0	32	0.71		13
weighted av	/g 0	.95	0.	85	0.82	2	13

Sentence: what are the lowest one way fares from atlanta to denver

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precis	ion r	ecall	f1-sco	ore su	ipport
1	1.0	00 -	1.00	1.00	)	2
2	1.0	00 1	1.00	1.00	)	2
3	1.0	00 1	1.00	1.00	)	2
5	1.0	00 1	1.00	1.00	)	1
6	1.0	00 1	1.00	1.00	)	1
7	1.0	00 1	1.00	1.00	)	1
8	1.0	00 1	1.00	1.00	)	1
9	1.0	00 1	1.00	1.00	)	1
accura	асу			1.00	) 1	1
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	)	1.00	1.00	11

Sentence: what is the cheapest one way fare from any city to another

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP DET PROPN ADP DET Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 0.33 1.00 0.50 1 2 2 1.00 1.00 1.00 3 2 1.00 1.00 1.00 5 1.00 0.33 0.50 3 1 6 1.00 1.00 1.00 7 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 9 1.00 1.00 1.00 1 12 accuracy 0.83 macro avg 0.92 0.92 88.0 12 weighted avg 0.94 0.83 0.83 12

Sentence: i <unk> like the cheapest cost fare to fort worth from boston

True tags: PRON AUX VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB DET ADJ ADJ NOUN ADP PROPN PROPN ADP

**PROPN** 

Classification Report:

	precis	on r	ecall	†1-sc	ore s	uppor	t
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	0.50	0.6	7	2	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
7	0.5	50	1.00	0.6	7	1	
8	1.0	00	1.00	1.0	0	1	
accur	асу			0.92	2	12	
macro	avg	0.94	1 0	.94	0.92	12	2
weighted	d avg	0.9	6 (	0.92	0.92	. 1	12

Sentence: show me the cheapest one way fares from san diego to miami

True tags: VERB PRON DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB PRON DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score	support
1 1.00 1.00 1.00	3
2 1.00 1.00 1.00	2
3 1.00 1.00 1.00	2
4 1.00 1.00 1.00	1
5 1.00 1.00 1.00	1
6 1.00 1.00 1.00	1
7 1.00 1.00 1.00	1
9 1.00 1.00 1.00	1
accuracy 1.00	12
macro avg 1.00 1.00 1.0	00 12
weighted avg 1.00 1.00 1.	00 12

Sentence: what flights leave philadelphia for dallas and depart before noon on

american airlines

True tags: DET NOUN VERB PROPN ADP PROPN CCONJ VERB ADP NOUN ADP PROPN PROPN

Predicted tags: PRON NOUN VERB PROPN ADP PROPN CCONJ VERB ADP

NOUN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
10	1.00	1.00	1.00	1	
accuracy	/		0.92	13	
macro av	g 0.8	36 0.	.86 0.	.71	13
weighted a	vg 1	.00 0	).92 (	0.92	13

Sentence: i need a flight from cleveland to dallas that leaves before noon see if too much information

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN VERB ADP ADV ADV NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN VERB VERB VERB NOUN

Classification Report:

	precisio	on re	recall f1		re supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 0.	80	0.89	5	
3	0.7	5 1.	00	0.86	3	
4	0.4	0 0.	67	0.50	3	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
11	1.0	0 0	.00	0.00	) 2	
accur	асу			0.76	17	
macro weighted	_	0.88 0.85	_	.78 ).76	0.75 0.74	17 17

Sentence: list all flights leaving denver on continental on sunday after 2134 True tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP NUM Predicted tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP NOUN

			J		64			
	pred	CISIO	n re	call	11-S	core	supp	ort
1		1.00	1	.00	1.	00	2	
2	<u> </u>	1.00	1	.00	1.	00	3	
3	3	0.67	1	.00	0.	80	2	
4	ļ	1.00	1	.00	1.	00	2	
5	5	1.00	1	.00	1.	00	1	
9	)	1.00	0	.00	0.	00	1	
accur	асу				0.9	91	11	
macro	avg		0.94	0	.83	8.0	0	11
weighte	d avo	9	0.94	(	0.91	0.	87	11

Sentence: all flights from san francisco to boston leaving before noon

True tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN Predicted tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Classification Report:

	precision		recall	f1-sc	ore su	pport
1	1.	00	1.00	1.00	) 3	3
2	1.	00	1.00	1.0	0 3	}
3	1.	00	1.00	1.0	) 2	2
4	1.	00	1.00	1.0	) 1	
5	1.	00	1.00	1.0	) 1	
accur	асу			1.00	) 1(	)
macro weighted		1.00 1.0		.00 1.00	1.00 1.00	10 10

Sentence: i need a flight from cincinnati to san jose leaving after 6 in the evening True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP

NUM ADP DET NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADP NUM ADP DET NOUN

Classification Report:

	precis	sion	recal	l f1-so	core	supp	ort
1	1.	.00	1.00	1.0	00	3	
2	1.	.00	1.00	1.0	00	4	
3	1.	.00	1.00	1.0	00	2	
4	1.	.00	1.00	1.0	00	2	
5	1.	.00	1.00	1.0	00	2	
6	1.	.00	1.00	1.0	00	1	
9	1.	.00	1.00	1.0	00	1	
accur	асу			1.0	00	15	
macro weighted	_	1.0 1.	.00 °	1.00 1.00	1.0 1.0		15 15

Sentence: flights from milwaukee to orlando one way True tags: NOUN ADP PROPN ADP PROPN NUM NOUN Predicted tags: NOUN ADP PROPN ADP PROPN NUM NOUN

pre	cision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
9	1.00	1.00	1.00	1	
accuracy			1.00	7	_
macro avo	j 1.(	JU 1	.00 1.0	)()	1

weighted avg 1.00 1.00 7

Sentence: i want to fly from baltimore to dallas round trip

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	асу		1.00	10	
macro	avg 1	.00 1	.00 1.0	00	10
weighted	avg '	1.00	1.00 1.	.00	10

Sentence: hi i want a round trip ticket to dallas

True tags: INTJ PRON VERB DET NOUN NOUN NOUN ADP PROPN

Predicted tags: VERB PRON VERB DET NOUN NOUN NOUN ADP PROPN

Classification Report:

	precis	ion re	ecall	f1-scc	re su	pport
1	1.0	00 1	.00	1.00	)	1
2	1.0	00 1	.00	1.00	)	1
3	1.0	00 1	.00	1.00	) :	3
4	0.5	50 1	.00	0.67	7	1
5	1.0	00 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
13	3 1.	00 (	0.00	0.0	0	1
accur	acy			0.89		)
macro	avg	0.93	0	.86	0.81	9
weighted	d avg	0.94	. (	0.89	0.85	9

Sentence: what would be cost of a round trip from pittsburgh to san francisco True tags: PRON AUX AUX NOUN ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX AUX VERB ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	0.67	0.80	3
4	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1

Sentence: show me round trip fares from toronto to detroit on delta northwest us air and united airlines

True tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP PROPN ADP

PROPN PROPN PROPN CCONJ PROPN PROPN

Predicted tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP

PROPN PROPN PROPN CCONJ PROPN PROPN

Classification Report:

p	precision		f1-score	suppo	ort
1	1.00	1.00	1.00	8	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	СУ		1.00	17	
macro a	ıvg 1.	00 1	.00 1.0	00	17
weighted	avg 1	.00	1.00 1.	00	17

Sentence: give me all the flights from new york to miami round trip

True tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Classification Report:

	precision		recall f1-score		core	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	3	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	2	
6	1.	00	1.00	1.0	00	1	
accur	асу			1.0	0	12	
macro	avg	1.00	) 1	.00	1.00	)	12
weighte	d avg	1.0	0	1.00	1.0	00	12

Sentence: how much is a round trip fare from nashville to seattle

True tags: ADV ADV AUX DET NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: ADV ADV AUX DET NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

## Classification Report:

	precisi	on	recall	f1-sc	ore s	uppo	ort
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	3	
5	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
11	1.	00	1.00	1.0	0	2	
accur	acy			1.00	)	11	
macro	avg	1.00	0 1	.00	1.00		11
weighted	d avg	1.0	00	1.00	1.00	)	11

Sentence: what is the fare going from baltimore to boston one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Classification Report:

	precisio	n red	call	f1-sco	re sup	port
1	1.00	) 1.	00	1.00	2	
2	1.00	) 1.	00	1.00	3	
3	1.00	) 1.	00	1.00	3	
4	1.00	) 1.	00	1.00	1	
5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
7	1.00	) 1.	00	1.00	1	
8	1.00	) 1.	00	1.00	1	
9	1.00	) 1.	00	1.00	1	
accur	асу			1.00	14	
macro	avg	1.00	1.	.00	1.00	14
weighted	d avg	1.00	1	1.00	1.00	14

Sentence: show me the round trip flights between phoenix and salt lake city

True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN

PROPN PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 3 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00

Sentence: what is the fare going from baltimore to atlanta one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Classification Report:

	nroc	icion	rod	المد	f1-sc	oro c	nn	ort.
	prec	ision	160	Jan	11-50	ole s	suppo	JIL
1		1.00	1.0	00	1.0	0	2	
2	<u>)</u>	1.00	1.0	00	1.0	0	3	
3	3	1.00	1.0	00	1.0	0	3	
4		1.00	1.0	00	1.0	0	1	
5	;	1.00	1.0	00	1.0	0	1	
6	;	1.00	1.0	00	1.0	0	1	
7	•	1.00	1.0	00	1.0	0	1	
8	}	1.00	1.0	00	1.0	0	1	
9	•	1.00	1.0	00	1.0	0	1	
accur	acy				1.00	)	14	
macro	avg	1	.00	1	.00	1.00		14
weighte	d avg	]	1.00	•	1.00	1.00	)	14

Sentence: now i want to see return flights from miami to new york

True tags: ADV PRON VERB PART VERB NOUN NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: ADV PRON VERB PART VERB NOUN NOUN ADP PROPN ADP PROPN PROPN

	precisi	on re	ecall	f1-sco	re supp	ort
1	1.0	0 1	.00	1.00	3	
2	1.0	0 1	.00	1.00	2	
3	1.0	0 1	.00	1.00	2	
4	1.0	0 1	.00	1.00	2	
6	1.0	0 1	.00	1.00	1	
11	1.0	00 1	.00	1.00	1	
12	2 1.	00 ′	1.00	1.00	) 1	
accur	acy			1.00	12	
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00		1.00	1.00	12

Sentence: do you have an <unk> flight from denver to san francisco

True tags: AUX PRON VERB DET NUM NOUN ADP PROPN ADP PROPN PROPN Predicted tags: AUX PRON VERB DET AUX NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precisio	on re	call	f1-sc	ore	suppo	ort
1	1.0	0 1.	.00	1.0	0	3	
2	1.0	0 1.	.00	1.0	0	2	
3	1.0	0 1.	.00	1.0	0	1	
4	1.0	0 1.	.00	1.0	0	1	
5	1.0	0 1.	.00	1.0	0	1	
6	1.0	0 1.	.00	1.0	0	1	
8	0.5	0 1.	.00	0.6	7	1	
9	1.0	0 0.	.00	0.0	0	1	
accura	acy			0.9		11	
macro	avg	0.94	0	.88	0.83	3	11
weighted	d avg	0.95	(	0.91	0.8	8	11

Sentence: i would like to book a flight from chicago to seattle on june fourth

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN ADJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN PROPN

Classification Report:

	precision		recall	f1-score	suppo	ort
1		0.67	1.00	0.80	2	
2	<u> </u>	1.00	1.00	1.00	3	
3	3	1.00	1.00	1.00	2	
4	١ ٠	1.00	1.00	1.00	2	
5	5	1.00	1.00	1.00	1	
6	6	1.00	1.00	1.00	1	
7	,	1.00	0.00	0.00	1	
8	3	1.00	1.00	1.00	1	
1:	2	1.00	1.00	1.00	1	
accur	асу			0.93	14	
macro weighte	•	9.0 0 g			87 ).90	14 14

Sentence: are there any flights from long beach to columbus on wednesday april sixth

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADJ

Predicted tags: AUX PRON DET NOUN ADP PROPN PROPN ADP NOUN NOUN ADJ

Classification Report:

precision recall f1-score support

1	1.00	) 1.	00	1.0	0	3	
2	1.00	) 1.	00	1.0	0	3	
3	1.00	) 1.	00	1.0	0	3	
4	1.00	0.	00	0.0	0	1	
5	1.00	1.	00	1.0	0	1	
6	1.00	1.	00	1.0	0	1	
7	1.00	1.	00	1.0	0	1	
8	0.00	1.	00	0.0	0	0	
accura	СУ			0.92	2 1	3	
macro a	avg	88.0	0.	88	0.75		13
weighted	avg	1.00	(	).92	0.92		13

Sentence: i <unk> like flights going from boston to atlanta leaving on august sixth in the afternoon

True tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN ADJ ADP DET NOUN

Predicted tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN ADJ ADP DET NOUN

Classification Report:

	prec	131011	iccan	11-300	ie supp	JUIL
1	1	1.00	1.00	1.00	) 2	
2	. 1	1.00	1.00	1.00	) 4	
3	1	1.00	1.00	1.00	3	
4	. 1	1.00	1.00	1.00	3	
5	,	1.00	1.00	1.00	) 1	
6	;	1.00	1.00	1.00	) 1	
7	•	1.00	1.00	1.00	) 1	
8	1	1.00	1.00	1.00	) 1	
accur	acy			1.00	16	
macro	avg	1.	.00 1	.00	1.00	16
weighte	d avg	1	1.00	1.00	1.00	16
-	_					

precision recall f1-score support

Sentence: i would like to find out what flights there are on friday june eleventh from <unk> petersburg to milwaukee and then from milwaukee to tacoma thank you True tags: PRON AUX VERB PART VERB ADV DET NOUN PRON VERB ADP NOUN NOUN ADJ ADP PROPN PROPN ADP PROPN CCONJ ADV ADP PROPN ADP PROPN VERB PRON

Predicted tags: PRON AUX VERB PART VERB ADP DET NOUN PRON AUX ADP NOUN NOUN ADJ ADP PROPN PROPN ADP PROPN CCONJ VERB ADP PROPN ADP PROPN VERB PRON

precision		recall	f1-score	support
1	1.00	1.00	1.00	5
2	0.83	1.00	0.91	5
3	1.00	1.00	1.00	3

	4	0.75	0.75	0.75	4	
	5	1.00	1.00	1.00	1	
	6	1.00	1.00	1.00	3	
	7	1.00	1.00	1.00	1	
	8	0.50	1.00	0.67	1	
	10	1.00	1.00	1.00	1	
	11	1.00	0.00	0.00	2	
	12	1.00	1.00	1.00	1	
	accuracy			0.89	27	
ı	macro av	g 0.9	92 0.8	39 0.8	35	27

0.91

0.89

Sentence: i need a flight from chicago to dallas on continental on june fifth

0.86

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP

27

NOUN ADJ

weighted avg

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN

ADP NOUN ADJ

Classification Report:

precisi	ion	recall	f1-sc	ore s	uppor	t
1.0	00	1.00	1.0	0	3	
1.0	00	1.00	1.0	0	4	
1.0	00	1.00	1.0	0	2	
1.0	00	1.00	1.0	0	1	
1.0	00	1.00	1.0	0	1	
1.0	00	1.00	1.0	0	1	
1.0	00	1.00	1.0	0	1	
				_		
acy			1.0	0	13	
avg	1.00	) 1	.00	1.00	1	3
d avg	1.0	00	1.00	1.00	•	13
	1.0 1.0 1.0 1.0 1.0 1.0 acy avg	1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 2.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 4 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: i <unk> like a flight on july ninth from orlando to kansas city in the afternoon

True tags: PRON AUX VERB DET NOUN ADP NOUN ADJ ADP PROPN ADP

PROPN PROPN ADP DET NOUN
Predicted tags: PRON AUX VERB DET NOUN ADP NOUN ADJ ADP PROPN ADP

PROPN PROPN ADP DET NOUN

precision	recall	f1-score	support
1.00	1.00	1.00	3
	1.00	1.00	4
1.00	1.00	1.00	3
1.00	1.00	1.00	1
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00	1.00     1.00     1.00       1.00     1.00     1.00       1.00     1.00     1.00       1.00     1.00     1.00       1.00     1.00     1.00       1.00     1.00     1.00

accuracy		1.0	0 16	;
macro avg	1.00	1.00	1.00	16
weighted avg	1.00	1.00	1.00	16

Sentence: i <unk> like to arrange a trip to baltimore on january first

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN

ADJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

**NOUN ADJ** 

Classification Report:

	precis	ion	recall	f1-scor	e supp	ort
1	1.	00	1.00	1.00	1	
2	1.	00	1.00	1.00	2	
3	1.	00	1.00	1.00	2	
4	1.	00	1.00	1.00	2	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
7	1.	00	1.00	1.00	1	
8	1.	00	1.00	1.00	1	
12	2 1	.00	1.00	1.00	1	
accur	асу			1.00	12	
macro	avg	1.0	0 1	.00 ′	1.00	12
weighte	d avg	1.0	00	1.00	1.00	12

Sentence: okay and then from pittsburgh i <unk> like to travel to atlanta on

september fourth

True tags: INTJ CCONJ ADV ADP PROPN PRON AUX VERB PART VERB ADP

PROPN ADP NOUN ADJ

Predicted tags: PROPN CCONJ VERB ADP PROPN PRON AUX VERB PART VERB

ADP PROPN ADP NOUN PROPN

pre	cision	recall	f1-score	supp	ort
1	0.50	1.00	0.67	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	1	
4	0.67	1.00	0.80	2	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
12	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accuracy			0.80	15	
macro avo	j 0.9	92 0	.73 0.6	8	15

weighted avg 0.89 0.80 0.73 15

Sentence: list the flights from westchester county to denver on june seventh True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ

Classification Report:

0.0000		. o p o					
	precisi	ion r	ecall	f1-sc	ore	supp	ort
1	1.0	00 '	1.00	1.0	00	3	
2	1.0	00 ′	1.00	1.0	00	3	
3	1.0	00 ′	1.00	1.0	00	2	
4	1.0	00 ′	1.00	1.0	00	1	
5	1.0	00 ′	1.00	1.0	00	1	
7	1.0	00 ′	1.00	1.0	00	1	
accur	acy			1.0	0	11	
macro	avg	1.00	1	.00	1.0	0	11
weighted	d avg	1.00	0	1.00	1.0	00	11

Sentence: flights from atlanta august second True tags: NOUN ADP PROPN NOUN ADJ Predicted tags: NOUN ADP PROPN NOUN ADJ

Classification Report:

	precis	sion	reca	ll f1-so	core	supp	ort
1	1.	00	1.00	1.0	00	1	
2	1.	00	1.00	1.0	00	1	
3	1.	00	1.00	1.0	00	2	
7	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	5	
macro	avg	1.0	OC	1.00	1.0	0	5
weighted	d avg	1	.00	1.00	1.0	00	5

Sentence: what are the flights between pittsburgh and baltimore on august tenth True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN ADJ Predicted tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN ADJ

ķ	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1

accuracy	1.0	0 11		
macro avg	1.00	1.00	1.00	11
weighted avg	1.00	1.00	1.00	11

Sentence: on april first i need a flight going from phoenix to san diego

True tags: ADP NOUN ADJ PRON VERB DET NOUN VERB ADP PROPN ADP

PROPN PROPN

Predicted tags: ADP NOUN ADJ PRON VERB DET NOUN VERB ADP PROPN ADP

PROPN PROPN

Classification Report:

	precis	ion r	ecall	f1-sco	ore sup	port
1	1.0	00	1.00	1.00	) 3	
2	1.0	00	1.00	1.00	3 3	
3	1.0	00	1.00	1.00	) 2	
4	1.0	00 ′	1.00	1.00	) 2	
5	1.0	00 ′	1.00	1.00	<b>)</b> 1	
6	1.0	00 ′	1.00	1.00	<b>)</b> 1	
7	1.0	00 ′	1.00	1.00	0 1	
accur	асу			1.00	) 13	}
macro	avg	1.00	1	.00	1.00	13
weighte	d avg	1.00	0	1.00	1.00	13

Sentence: show me a list of flights from denver to baltimore on united for august third True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP PROPN ADD

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP NOUN ADJ

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1	1.	00	1.00	1.0	0 :	3
2	1.	00	1.00	1.0	0 :	5
3	1.	00	1.00	1.0	0 3	3
4	1.	00	1.00	1.0	0 ′	1
5	1.	00	1.00	1.0	0 ′	1
6	1.	00	1.00	1.0	0 ′	1
7	1.	00	1.00	1.0	0	1
accur	acy			1.00	) 1:	5
macro weighted	_	1.0 1.	00 1 00	.00 1.00	1.00 1.00	15 15

Sentence: what are the flights from san jose to nashville on thursday the twentieth True tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET NOUN

## Classification Report:

	precis	ion	reca	all	f1-sc	ore	supp	ort
1	1.	00	1.0	0	1.0	0	3	
2	1.	00	1.0	0	1.0	0	3	
3	0.	67	1.0	0	0.8	0	2	
5	1.	00	1.0	0	1.0	0	2	
6	1.	00	1.0	0	1.0	0	1	
7	1.	00	0.0	0	0.0	0	1	
8	1.	00	1.0	0	1.0	0	1	
accur	acy				0.9	2	13	
macro	avg	0.	95	0	.86	8.0	3	13
weighted	d avg	0	.95	(	0.92	0.	89	13

Sentence: i need a ticket from nashville to seattle

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-so	core	supp	ort
1	1.0	0 1	.00	1.0	00	2	
2	1.0	0 1.	.00	1.0	00	2	
3	1.0	0 1.	.00	1.0	00	1	
4	1.0	0 1.	.00	1.0	00	1	
5	1.0	0 1.	.00	1.0	00	1	
6	1.0	0 1	.00	1.0	00	1	
accura	асу			1.0	00	8	
macro	avg	1.00	1	.00	1.0	0	8
weighted	d avg	1.00		1.00	1.0	00	8

Sentence: how much does it cost to fly on delta from dallas to baltimore

True tags: ADV ADV AUX PRON VERB PART VERB ADP PROPN ADP PROPN ADP PROPN

Predicted tags: ADV ADV AUX PRON VERB PART VERB ADP PROPN ADP

PROPN ADP PROPN Classification Report:

	preci	sion	recall	f1-score	supp	ort
1	1	.00	1.00	1.00	3	
2		.00	1.00	1.00	3	
4	1	.00	1.00	1.00	2	
6	1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
11	•	1.00	1.00	1.00	2	
12	<u> </u>	1.00	1.00	1.00	1	
accura	асу			1.00	13	
macro	avg	1.	00 1	.00 1.0	00	13

weighted avg 1.00 1.00 1.00 13

Sentence: what are the fares for flights from charlotte to newark on tuesday and wednesday

True tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP

NOUN CCONJ NOUN Classification Report:

	precis	sion	recall	f1-scor	e supp	ort
1	1	.00	1.00	1.00	2	
2	1	.00	1.00	1.00	4	
3	1	.00	1.00	1.00	4	
5	1	.00	1.00	1.00	1	
6	1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
10	) 1	.00	1.00	1.00	1	
accur	асу			1.00	14	
macro	avg	1.0	0 1	.00 1	1.00	14
weighted	d avg	1.0	00	1.00	1.00	14

Sentence: show fares and flights from denver to oakland

True tags: VERB NOUN CCONJ NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN CCONJ NOUN ADP PROPN ADP PROPN

Classification Report:

	pred	ision	recal	l f1-so	core	supp	ort
1		1.00	1.00	1.0	00	2	
2	l	1.00	1.00	1.0	00	2	
3		1.00	1.00	1.0	00	2	
4	•	1.00	1.00	1.0	00	1	
10	)	1.00	1.00	) 1.	00	1	
					_	_	
accur	acy			1.0	0	8	
macro	avg	1.	00	1.00	1.0	0	8
weighte	d avo	j 1	.00	1.00	1.	00	8

Sentence: what is the airfare between denver and pittsburgh True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2		1.00	1.00	1
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

8	1.00	1.00	) 1.	00	1	
10	1.00	1.0	0 1	.00	1	
accuracy			1.0	00	8	
macro avg	ı 1.	00	1.00	1.00	)	8
weighted av	g 1	.00	1.00	1.0	0	8

Sentence: what does it cost to fly from boston to oakland on united airlines

True tags: PRON AUX PRON VERB PART VERB ADP PROPN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX PRON VERB ADP VERB ADP PROPN ADP PROPN

ADP PROPN PROPN Classification Report:

precis	ion	recal	l f1-s	score	supp	ort
1.	00	1.00	1	.00	4	
0.	75	1.00	0	.86	3	
1.	00	1.00	1	.00	2	
1.	00	1.00	1	.00	2	
1.	00	1.00	1	.00	1	
2 1	.00	0.00	(	0.00	1	
acy			0.	92	13	
avg d avg						13 13
	1. 0. 1. 1. 1. 2. 1 acy avg	1.00 0.75 1.00 1.00 1.00 2 1.00 acy avg 0.9	1.00 1.00 0.75 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 0.00	1.00 1.00 1 0.75 1.00 0 1.00 1.00 1 1.00 1.00 1 1.00 1.00	1.00 1.00 1.00 0.75 1.00 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 0.00 0.00 acy 0.92 avg 0.96 0.83 0.8	1.00 1.00 1.00 4 0.75 1.00 0.86 3 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 2 1.00 0.00 0.00 1 2 2 1.00 0.00 0.00 1

Sentence: get saturday fares from washington to montreal True tags: VERB NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-sco	re su	pport
1	1.00	) 1.	00	1.00	) ;	2
2	1.00	) 1.	00	1.00	) :	2
3	1.00	) 1.	00	1.00	) :	2
4	1.00	) 1.	00	1.00	)	1
accura	асу			1.00	7	7
macro	avg	1.00	1.	.00	1.00	7
weighted	d avg	1.00	•	1.00	1.00	7

Sentence: give me fares from atlanta to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 2 1.00 1.00 3 1.00 1.00 1.00 1

4 1.00 1.00 1.00 1	
6 1.00 1.00 1.00 1	
accuracy 1.00 7	
accuracy 1.00 7	
macro avg 1.00 1.00 1.00	7
weighted avg 1.00 1.00 1.00	7

Sentence: continental airlines on saturday from chicago to seattle True tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN Predicted tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore su	uppo	rt
1	1.0	00	1.00	1.00	)	4	
2	1.0	00	1.00	1.00	)	3	
3	1.0	00	1.00	1.00	)	1	
accur	асу			1.00	)	8	
macro weighted	_	1.00 1.0		.00 1.00	1.00 1.00		8 8

Sentence: does eastern airlines fly between boston and washington True tags: AUX PROPN PROPN VERB ADP PROPN CCONJ PROPN Predicted tags: AUX PROPN PROPN VERB ADP PROPN CCONJ PROPN Classification Report:

		- p					
	precisio	on re	call	f1-sco	re su	ppoi	rt
4	4.0	0 4	00	4.00			
1	1.0	U 1.	00	1.00		4	
2	1.0	0 1.	00	1.00	)	1	
4	1.0	0 1.	00	1.00	)	1	
8	1.0	0 1.	00	1.00	)	1	
10	1.0	0 1	.00	1.00	)	1	
accura	асу			1.00	3	3	
macro	avg	1.00	1.	.00	1.00	8	8
weighted	l avg	1.00	-	1.00	1.00		8

Sentence: i would like some information on a flight from denver to san francisco on united airlines

True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN

Predicted tags: PRON AUX VERB VERB NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	0.50	1 00	0.67	1

5	1.0	0 0	.50	0.6	67	2	
6	1.0	0 1	.00	1.0	00	1	
8	1.0	0 1	.00	1.0	00	1	
accuracy	/			0.9	4	16	
macro av	g	0.93	0.	.93	0.90		16
weighted a	vg	0.97	(	).94	0.94	ļ	16

Sentence: american airlines from denver to milwaukee True tags: PROPN PROPN ADP PROPN Predicted tags: PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 1 2 1.00 2 1.00 1.00 1.00 accuracy macro avg 1.00 1.00 1.00 6 weighted avg 1.00 1.00 1.00 6

Sentence: i need a flight delta airlines kansas city to salt lake

True tags: PRON VERB DET NOUN PROPN PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: PRON VERB DET NOUN PROPN PROPN PROPN ADP

PROPN PROPN Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	.00	6	
2	1	.00	1.00	1.	.00	1	
3	1	.00	1.00	1.	.00	1	
4	1	.00	1.00	1.	.00	1	
5	1	.00	1.00	1.	.00	1	
6	1	.00	1.00	1.	.00	1	
accur	acy			1.	00	11	
macro	_	1.0	00	1.00	1.0	0	11
weighte	d avg	1	.00	1.00	1.	00	11

Sentence: list the alaska airlines flights a departing from burbank

True tags: VERB DET PROPN PROPN NOUN DET VERB ADP PROPN

Predicted tags: VERB DET PROPN PROPN NOUN DET PROPN ADP PROPN

р	recision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1.00	0.50	0.67	2

5	1.0	00 1	.00 ′	1.00	2	
accur	acy		0	.89	9	
macro	avg	0.95	0.90	0.90		9
weighte	d avg	0.92	0.89	9 0.88	3	9

Sentence: give me all the flights from miami to chicago on american airlines

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sco	e supp	ort
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
accura	асу			1.00	12	
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: i <unk> like united airlines flights from denver to baltimore

True tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	1.0	<b>1</b> 0	1.00	1	00	4	
2			1.00		00	2	
3		-	1.00		00	1	
4			1.00		00	1	
6			1.00		00	1	
8	1.0	)0	1.00	1.	00	1	
accur	acy			1.0	00	10	
macro weighte	_	1.0	00 .00	1.00 1.00	1.0	)0 00	10 10
weignie	u avy	1.	.00	1.00	١.	00	10

Sentence: i <unk> like a flight from new york to los angeles on saturday morning on us air

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN

PROPN ADP NOUN NOUN ADP PROPN PROPN

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	6	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	су		1.00	17	
macro	avg 1.	00 1.	.00 1.0	00	17
weighted	avg 1	.00 1	1.00 1	.00	17

Sentence: show me the southwest airlines flights from san diego to san francisco True tags: VERB PRON DET PROPN PROPN NOUN ADP PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB PRON DET ADJ PROPN NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

	pre	cisio	n re	call	f1-sc	ore	supp	ort
•	1	1.00	0.	83	0.9	1	6	
2	2	1.00	1.	00	1.0	0	2	
3	3	1.00	1.	00	1.0	0	1	
4	1	1.00	1.	00	1.0	0	1	
Ę	5	1.00	1.	00	1.0	0	1	
6	3	1.00	1.	00	1.0	0	1	
-	7	0.00	1.	00	0.0	0	0	
accu	racv				0.9	2	12	
macro	•		0.86	0	.98	0.84		12
weighte	_	'	1.00		0.92	0.9		12
		J		•		5.0	_	. –

Sentence: what flights does american airlines have from boston to dallas True tags: DET NOUN AUX PROPN PROPN VERB ADP PROPN ADP PROPN PROPN VERB ADP PROPN ADP PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
8	1.00	1.00	1.00	1
accur	асу		0.90	10

macro avg	0.86	0.86	0.71	10
weighted ava	1.00	0.90	0.90	10

Sentence: what flights go from chicago to seattle on continental airlines on saturday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP PROPN

PROPN ADP NOUN Classification Report:

	precis	sion	recal	f1-sc	core s	suppo	ort
1	1.	00	1.00	1.0	00	4	
2	1.	00	1.00	1.0	00	4	
3	1.	00	1.00	1.0	00	2	
4	. 1.	00	1.00	1.0	00	1	
5	1.	00	0.00	0.0	00	1	
6	0.	00	1.00	0.0	00	0	
accur	acy			0.9	2	12	
macro	avg	0.8	33 (	0.83	0.67		12
weighte	d avg	1	.00	0.92	0.92	2	12

Sentence: list the flights from dallas to san francisco on american airlines

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

**PROPN** 

Classification Report:

	precis	on re	call	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	5	
2	1.0	00 1	.00	1.00	3	
3	1.0	00 1	.00	1.00	1	
4	1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	1	
accur	асу			1.00	11	
macro weighte	_	1.00 1.00		.00 1.00	1.00 1.00	11 11

Sentence: what flights go from chicago to seattle on saturday on continental airlines True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP PROPN PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP PROPN PROPN

р	recision	ion recall f1-score		support	
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	4	

3	1.00	1.0	0	1.00	)	2	
4	1.00	1.0	0	1.00	)	1	
5	1.00	0.0	0	0.00	)	1	
6	0.00	1.0	0	0.00	)	0	
accuracy	,			0.92	•	12	
macro av	g (	0.83	0.8	3	0.67		12
weighted av	<b>v</b> a	1.00	0.9	92	0.92		12

Sentence: show me the flight classes for delta airlines

True tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN

Classification Report:

	preci	sion	recall	f1-sco	re su	pport
1	1	.00	1.00	1.00	2	2
2	. 1	.00	1.00	1.00	1	
3	3 1	.00	1.00	1.00	2	<u> </u>
4	. 1	.00	1.00	1.00	1	
5	5 1	.00	1.00	1.00	1	
6	5 1	.00	1.00	1.00	1	
accur	acy			1.00	8	
macro	avg	1.0	0 1	.00	1.00	8
weighte	d avg	1.	00	1.00	1.00	8

Sentence: please list the flights from cincinnati to burbank on american airlines True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN Predicted tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 4	
2	1.	00	1.00	1.00	) 3	
3	1.	00	1.00	1.00	) 1	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
13	3 1	.00	1.00	1.0	0 ′	1
accur	acy			1.00	11	
macro	avg	1.00	0 1	.00	1.00	11
weighted	d avg	1.0	00	1.00	1.00	11

Sentence: show me all the flights from indianapolis to san diego on us air

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN ADP

PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN

ADP PROPN PROPN Classification Report:

	precis	ion re	ecall	f1-sc	ore s	upport	
1	1.0	00 1	.00	1.0	0	5	
2	1.0	00 1	.00	1.0	0	3	
3	1.0	00 1	.00	1.0	0	1	
4	1.0	00 1	.00	1.0	0	1	
5	1.0	00 1	.00	1.0	0	2	
6	1.0	00 1	.00	1.0	0	1	
accur	acy			1.0	0 1	13	
macro	avg	1.00	1	.00	1.00	13	•
weighted	d avg	1.00		1.00	1.00	1:	3

Sentence: i would like to fly delta airlines from atlanta to pittsburgh

True tags: PRON AUX VERB PART VERB PROPN PROPN ADP PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB PART VERB PROPN PROPN ADP PROPN ADP

PROPN

Classification Report:

	precisio	n recal	l f1-score	e suppo	rt
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	асу		1.00	11	
macro	avg	1.00	1.00 1	.00 1	11
weighted	l avg	1.00	1.00	1.00	11

Sentence: what flights are available wednesday afternoon from denver to san francisco

True tags: DET NOUN AUX ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN PROPN

	prec	ision	reca	ıll f1-s	core	supp	ort
1	1	.00	1.00	) 1.	.00	3	
2	: 1	.00	1.00	) 1.	.00	2	
3	1	.00	1.00	) 1.	.00	3	
5	, 1	.00	0.00	0.	.00	1	
6	C	00.0	1.00	0.	.00	0	
7	<sup>'</sup> 1	.00	1.00	) 1.	.00	1	
8	1	.00	1.00	) 1.	.00	1	
accur	асу			0.	91	11	
macro	avg	0	.86	0.86	0.7	71	11

weighted avg 1.00 0.91 0.91 11

Sentence: show me all flights to philadelphia in the evening

True tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN

Classification Report:

	precis	sion	recall	f1-sco	ore su	ıppor	t
1	1.	.00	1.00	1.00	)	1	
2	1.	.00	1.00	1.00	)	2	
3	1.	.00	1.00	1.00	)	2	
4	1.	.00	1.00	1.00	)	1	
5	1.	.00	1.00	1.00	)	2	
6	1.	.00	1.00	1.00	)	1	
accur	acy			1.00	) (	9	
macro	avg	1.0	0 1	.00	1.00	ξ	9
weighte	d avg	1.0	00	1.00	1.00		9

Sentence: flights from chicago to denver on continental on saturday morning True tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 3	
2	1.0	00	1.00	1.00	) 4	
3	1.0	00	1.00	1.00	3	
accur	acy			1.00	10	
macro	avg	1.0	0 1	.00	1.00	10
weighte		1.0	00 .	1.00	1.00	10

Sentence: what flights from san jose to dallas on friday afternoon

True tags: DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

NOUN

Ciassilic	auoni	/eho	71 L.					
	precis	sion	reca	all	f1-sc	core	supp	ort
1	1.	00	1.0	0	1.0	00	3	
2	1.	00	1.0	0	1.0	00	3	
3	1.	00	1.0	0	1.0	00	3	
5	1.	00	0.0	0	0.0	00	1	
6	0.	00	1.0	0	0.0	00	0	
accur	acy				0.9	0	10	
macro	avg	0.8	30	0	.80	0.6	0	10
weighted	d avg	1	.00	(	0.90	0.	90	10

Sentence: what are the flights and prices from la to charlotte for monday morning True tags: PRON AUX DET NOUN CCONJ NOUN ADP PROPN ADP NOUN NOUN

Predicted tags: PRON AUX DET NOUN CCONJ NOUN ADP PROPN ADP NOUN NOUN

Classification Report:

	precis	ion	reca	l f1-s	score	supp	ort
1	1.0	00	1.00	1	.00	2	
2		00	1.00		.00	3	
3	1.0	00	1.00	1	.00	4	
5	1.0	00	1.00	1	.00	1	
6	1.0	00	1.00	1	.00	1	
8	1.0	00	1.00	1	.00	1	
10	) 1.	.00	1.00	) 1	00.1	1	
accur	acy			1.	00	13	
macro	avg	1.0	00	1.00	1.0	00	13
weighted	d avg	1.	00	1.00	1.	00	13

Sentence: on friday night i would like a flight from newark to los angeles

True tags: ADP NOUN NOUN PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: ADP NOUN PROPN PRON AUX VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	ion re	call	f1-sco	ore supp	oort
1	0.7	75 1	.00	0.86	3	
2	1.0	00 1	.00	1.00	3	
3	1.0	0 0	.67	0.80	3	
4	1.0	00 1	.00	1.00	) 1	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accur	acy			0.92	2 13	
macro	avg	0.96	0.	95	0.95	13
weighte	d avg	0.94	C	).92	0.92	13

Sentence: <unk> paul to kansas city friday night

True tags: PROPN PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: AUX PROPN ADP PROPN PROPN NOUN PROPN

р	recision	recall	f1-score	support
1	0.75	0.75	0.75	4
2	1.00	1.00	1.00	1
3	1.00	0.50	0.67	2
8	0.00	1 00	0.00	0

accuracy		0.7	1 7	,
macro avg	0.69	0.81	0.60	7
weighted avg	0.86	0.71	0.76	7

Sentence: show me the flights from philadelphia to baltimore in the morning True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precisi	on re	call	f1-sc	ore	supp	ort
	p. 0 0.0.					ОСРР	
1	1.0	00 1	.00	1.0	0	2	
2	1.0	00 1	.00	1.0	0	3	
3	1.0	00 1	.00	1.0	0	2	
4	1.0	00 1	.00	1.0	0	1	
5	1.0	00 1	.00	1.0	0	2	
6	1.0	00 1	.00	1.0	0	1	
accur	acy			1.0	0	11	
macro	avg	1.00	1	.00	1.0	0	11
weighted	d avg	1.00		1.00	1.0	)0	11

Sentence: what flights from chicago to denver in the morning

True tags: DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precisi	ion re	call	f1-scc	re sup	port
1	1.0	00 1	.00	1.00	) 2	
2	1.0	00 1	.00	1.00	) 3	
3	1.0	00 1	.00	1.00	) 2	
5	1.0	0 0	.50	0.67	7 2	
6	0.0	00 1	.00	0.00	) 0	
accur	acy			0.89	9	
macro weighte	_	0.80 1.00		.90 ).89	0.73 0.93	9 9

Sentence: now i need a flight from detroit to san diego leaving tuesday evening True tags: ADV PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB NOUN NOUN

Predicted tags: ADV PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB NOUN NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3

4	1.00	1.0	00	1.0	0	2	
5	1.00	1.0	00	1.0	0	1	
6	1.00	1.0	00	1.0	0	1	
11	1.00	) 1.	00	1.0	0	1	
accuracy	/			1.00	)	13	
macro av	g	1.00	1.0	00	1.00	)	13
weighted a	vg	1.00	1	.00	1.0	0	13

Sentence: how about flights from dallas to atlanta on wednesday morning True tags: ADV ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: ADV ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precision	on re	call	f1-score	e supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	3	
11	1.0	0 1	.00	1.00	1	
accura	•			1.00	10	
macro weighted	_	1.00 1.00	1.0 1		.00 1.00	10 10

Sentence: show me the evening flights from baltimore to atlanta True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Classification Report:

	preci	sion	recall	f1-sco	ore su	pport
1		.00	1.00	1.00		2
2	1	.00	1.00	1.00		2
3	1	.00	1.00	1.00	) :	2
4	. 1	.00	1.00	1.00	)	1
5	1	.00	1.00	1.00	)	1
6	1	.00	1.00	1.00	)	1
accur	асу			1.00	) 9	)
macro	avg	1.0	0 1	.00	1.00	9
weighte	d avg	1.0	00	1.00	1.00	9

Sentence: which flights go from pittsburgh to atlanta in the evening True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2

4 1.0	00 1.0	00 1.0	00	1
5 1.0	00 1.0	00 1.0	00	2
				_
accuracy		1.0	0 1	0
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: from toronto to atlanta in the afternoon

True tags: ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

recall f1-score support precision 1 1.00 2 1.00 1.00 2 1.00 1.00 1.00 3 3 1 1.00 1.00 1.00 5 1.00 1.00 1.00 1 1.00 7 accuracy 1.00 macro avg 1.00 1.00 7 weighted avg 1.00 1.00 1.00 7

Sentence: i need to fly from pittsburgh to oakland and depart in the afternoon True tags: PRON VERB PART VERB ADP PROPN ADP PROPN CCONJ VERB

**ADP DET NOUN** 

Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN CCONJ VERB

ADP DET NOUN Classification Report:

	preci	sion	recall	f1-scc	ore supp	ort
1	1	.00	1.00	1.00	) 2	
2	1	.00	1.00	1.00	3	
3	1	.00	1.00	1.00	) 1	
4	1	.00	1.00	1.00	3	
5	1	.00	1.00	1.00	) 1	
6	1	.00	1.00	1.00	) 1	
10	) ′	1.00	1.00	1.0	0 1	
12	2 ′	1.00	1.00	1.0	0 1	
accur	acy			1.00	13	
macro weighte	avg	1.0 1.	00 1 .00	1.00 1.00	1.00 1.00	13 13

Sentence: i need a flight from los angeles to pittsburgh on monday afternoon True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN NOUN** 

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN NOUN** 

Classification Report:

precision recall f1-score support

Sentence: show me the evening flights from atlanta to boston

True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

		- J				
	precisio	n re	call	f1-scc	re su	oport
1	1.0	ປ 1.	.00	1.00		
2	1.0	0 1.	.00	1.00		
3	1.0	0 1.	.00	1.00	) 2	<u> </u>
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
accura	асу			1.00	9	
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: i need to know what flights leave atlanta on sunday evening and arrive in baltimore

True tags: PRON VERB PART VERB DET NOUN VERB PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN

Predicted tags: PRON VERB PART VERB DET NOUN VERB PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN

p	recision	recall	f1-score	suppo	rt
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	4	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	су		1.00	15	
macro a	0		.00 1.0	-	5
weighted	avg 1	.00	1.00 1.	00	15

Sentence: what flights are there from boston to denver on monday morning

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN ADP NOUN

NOUN

Classification Report:

	precisio	n re	call	f1-sc	ore su	upport
1	1.00	) 1.	00	1.0	0	2
2	1.00	) 1.	00	1.0	0	3
3	1.00	) 1.	00	1.0	0	3
4	1.00	0.	00	0.0	0	1
5	1.00	0.	00	0.0	0	1
6	0.50	) 1.	00	0.6	7	1
8	0.00	) 1.	00	0.0	0	0
accura	асу			0.82	2 1	1
macro	avg	0.79	0	.71	0.52	11
weighted	d avg	0.95	(	0.82	0.79	11

Sentence: give me morning flights from atlanta to baltimore

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		recall	f1-sc	ore su	pport
1	1.	00	1.00	1.0	0 :	2
2	1.	00	1.00	1.0	0 :	2
3	1.	00	1.00	1.0	0 :	2
4	1.	00	1.00	1.0	0	1
6	1.	00	1.00	1.0	0	1
accur	асу			1.00	) (	3
macro	avg	1.0	0 1	.00	1.00	8
weighted	d avg	1.	00	1.00	1.00	8

Sentence: flights from atlanta to dallas in the afternoon

True tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	2	
5	1.0	00	1.00	1.0	0	1	
accur	асу			1.00		8	
macro weighted	_	1.00 1.0		.00 1.00	1.00 1.00	)	8 8

Sentence: morning flights from pittsburgh to atlanta on wednesday True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precisi	ion re	call	f1-sco	re sup	oort
1	1.0	00 1	.00	1.00	) 2	
2	1.0	00 1	.00	1.00	3	
3	1.0	00 1	.00	1.00	3	
accur	acy			1.00	8	
macro	avg	1.00	1.	00	1.00	8
weighte		1.00	1	.00	1.00	8

Sentence: what are the flights dallas to boston on monday morning

True tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN

Classification Report:

	precisi	on re	call	f1-sco	ore sup	port
1	1.0	0 1.	.00	1.00	) 2	)
2	1.0	0 1.	.00	1.00	) 2	1
3	1.0	0 1.	.00	1.00	) 3	1
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 1.	.00	1.00	) 1	
accura	асу			1.00	) 10	)
macro	avg	1.00	1	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: am flights from atlanta to philadelphia True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	00	2	
3	1.0	00	1.00	1.0	00	2	
accur	асу			1.0	0	6	
macro weighted	_	1.0 1.	00 ´	1.00 1.00	1.0 1.0		6 6

Sentence: tampa to charlotte sunday morning True tags: PROPN ADP PROPN NOUN NOUN Predicted tags: VERB ADP PROPN NOUN NOUN

	precision		recall f1-score			support	
1	1	.00	0.50	0.6	57	2	
2	1	.00	1.00	1.0	0	1	
3	1	.00	1.00	1.0	0	2	
4	. 0	.00	1.00	0.0	0	0	
accur	acy			0.8	0	5	
macro	avg	0.7	5 (	0.88	0.67	,	5
weighte	d avg	1.0	00	0.80	0.8	7	5

Sentence: show flights saturday evening from <unk> louis to burbank
True tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Classification Report:

	precis	ion r	ecall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	3	
4	1.0	00	1.00	1.0	0	1	
accur	асу			1.0	0	9	
macro	avg	1.00	) 1	.00	1.00	,	9
weighted	d avg	1.0	0	1.00	1.00	)	9

Sentence: what pm flights are available from philadelphia to pittsburgh True tags: DET NOUN NOUN AUX ADJ ADP PROPN ADP PROPN Predicted tags: PRON NOUN NOUN VERB ADJ ADP PROPN ADP PROPN Classification Report:

р	recision	recall f1-scor		e support	
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	0.00	1.00	0.00	0	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
7	1.00	1.00	1.00	1	
8	1.00	0.00	0.00	1	
accurac	СУ		0.78	9	
macro a weighted	•		.75 0.9 0.78 0	50 .78	9 9
-	-				

Sentence: what are the flights from milwaukee to orlando on wednesday night True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN PROPN ADP PROPN ADP NOUN PROPN

PROPN

	1							- 1	
	1	0.6	67	1.0	0	0.8	0	2	
	2	1.0	00	1.0	0	1.0	0	3	
	3	1.0	00	0.6	7	8.0	0	3	
	5	1.0	00	1.0	0	1.0	0	1	
	6	1.0	00	1.0	0	1.0	0	1	
	8	1.0	00	1.0	0	1.0	0	1	
aco	curac	у				$0.9^{\circ}$	1	11	
ma	cro a	vg	0.	94	0.	94	0.9	3	11
weigh	nted a	avg	0	.94	0	.91	0.9	91	11

precision recall f1-score support

Sentence: show me the flights from san francisco to dallas

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	preci	sion	recall	f1-sco	ore su	ıpport
1	1	.00	1.00	1.00	)	3
2	. 1	.00	1.00	1.00	)	2
3	1	.00	1.00	1.00	)	1
4	. 1	.00	1.00	1.00	)	1
5	1	.00	1.00	1.00	)	1
6	1	.00	1.00	1.00	)	1
						_
accur	acy			1.00	) (	9
macro	avg	1.0	00 1	.00	1.00	9
weighte	d avg	1	.00	1.00	1.00	9

Sentence: show flights from san francisco to denver on a thursday

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN Classification Report:

	precisi	on	recal	l f1-s	score	supp	ort
1	1.0	00	1.00	1	.00	3	
2			1.00		.00	3	
3	1.0	00	1.00	1	.00	2	
4	1.0	00	1.00	1	.00	1	
5	1.0	00	1.00	1	.00	1	
accur	acy			1.	.00	10	
macro	avg	1.0	0	1.00	1.0	00	10
weighte	d avg	1.0	00	1.00	1.	00	10

Sentence: from las vegas to phoenix

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

	precisi	on re	call f1	-score	supp	ort
1	1.0	0 1	.00	1.00	3	
2	1.0	0 1	.00	1.00	2	
accur	acv			1.00	5	
macro	•	1.00	1.00	) 1.0	00	5
weighte	d avg	1.00	1.0	00 1.	00	5

Sentence: show me all flights from san diego to los angeles

precision recall f1-score support

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	proc	,,,,,,	0	oun		,0010	очрр	011
1		1.00	1.	.00	1.	.00	4	
2		1.00	1.	.00	1.	.00	2	
3		1.00	1.	.00	1.	.00	1	
4		1.00	1.	.00	1.	.00	1	
5		1.00	1.	.00	1.	.00	1	
6		1.00	1.	.00	1.	.00	1	
accur	acy				1.	00	10	
macro weighte	_		1.00 1.00		.00 1.00		00 .00	10 10

Sentence: show flights from kansas city to minneapolis
True tags: VERB NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

pı	recision	recall	f1-score	supp	ort
1 2 3 4	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	3 2 1 1	
accurac macro av weighted a	vg 1.0		1.00 .00 1.0 1.00 1.	7 00 .00	7 7

Sentence: list flights from las vegas to phoenix

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

р	recision	recall	f1-score	support	
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	

3 1.0	0 1.0	00 1.0	0 1	
4 1.0	0 1.0	00 1.0	0 1	
accuracy		1.0	0 7	
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: flights from las vegas to montreal

True tags: NOUN ADP PROPN PROPN ADP PROPN Predicted tags: NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 3 1.00 1.00 2 1.00 1.00 1.00 2 3 1 1.00 1.00 1.00 1.00 6 accuracy 1.00 macro avg 1.00 1.00 6 weighted avg 1.00 1.00 1.00 6

Sentence: i am also interested in a flight that <unk> from <unk> louis to las vegas True tags: PRON AUX ADV VERB ADP DET NOUN ADP VERB ADP PROPN PROPN ADP PROPN

Predicted tags: PRON NOUN VERB VERB ADP DET NOUN ADP AUX ADP PROPN

PROPN ADP PROPN PROPN

Classification Report:

recision	recall	f1-score	supp	ort
1.00	1.00	1.00	4	
1.00	1.00	1.00	4	
0.50	1.00	0.67	1	
0.50	0.50	0.50	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
0.00	0.00	0.00	1	
1.00	0.00	0.00	1	
:y		0.80	15	
J			-	15 15
	1.00 0.50 0.50 1.00 1.00 0.00 1.00	1.00 1.00 1.00 1.00 0.50 1.00 0.50 0.50 1.00 1.00 1.00 1.00 0.00 0.00 1.00 0.00	1.00 1.00 1.00 1.00 1.00 1.00 0.50 1.00 0.67 0.50 0.50 0.50 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.00 1.00 0.00 0.00 1.00 0.00 0.00	1.00 1.00 1.00 4 1.00 1.00 1.00 4 0.50 1.00 0.67 1 0.50 0.50 0.50 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 0.00 0.00

Sentence: <unk> petersburg to detroit True tags: PROPN PROPN ADP PROPN Predicted tags: AUX PROPN ADP PROPN

p	recision	recall	f1-score	support
1	1.00	0.67	0.80	3
2	1.00	1.00	1.00	1

8 0.	00 1.0	0.0	0 0	1
accuracy		0.7	5 4	
macro avg	0.67	0.89	0.60	4
weighted avg	1.00	0.75	0.85	4

Sentence: show me flights from san francisco to minneapolis

True tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore s	suppo	ort
1	1.	00	1.00	1.0	0	3	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	8	
macro	avg	1.0	0 1	.00	1.00		8
weighted	d avg	1.	00	1.00	1.00	)	8

Sentence: what flights from salt lake city to las vegas

True tags: DET NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

	precisio	n re	call	t1-scc	re su	ipport	
1	1.00	) 1.	.00	1.00	) :	5	
2	1.00	) 1.	.00	1.00	) :	2	
3	1.00	) 1.	.00	1.00	)	1	
5	1.00	0.	.00	0.00	)	1	
6	0.00	) 1.	.00	0.00	)	0	
accura	асу			0.89	(	9	
macro	•	0.80		.80	0.60	9	
weighted	l avg	1.00	(	0.89	0.89	Ĝ	)

Sentence: show me all flights from san francisco to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 3 1 1.00 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 1.00 1.00 1.00 1

accuracy		1.0	0 9	
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: do you have flights from <unk> petersburg to toronto on monday True tags: AUX PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: AUX PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Classification Report:

	precisio	n re	call f	1-scoı	e supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	acy			1.00	11	
macro	avg	1.00	1.0	00 .	1.00	11
weighted	d avg	1.00	1.	.00	1.00	11

Sentence: what are all the flights on delta in and out of fort worth

True tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ ADP ADP

PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ ADP ADP

PROPN PROPN Classification Report:

	precis	ion	recall	f1-sco	ore su	ipport
1	1.	00	1.00	1.00	)	3
2	1.	00	1.00	1.00	)	4
3	1.	00	1.00	1.00	)	1
5	1.	00	1.00	1.00	)	2
6	1.	00	1.00	1.00	)	1
8	1.	00	1.00	1.00	)	1
10	) 1	.00	1.00	1.0	0	1
accura	•	4.0		1.00		3
macro weighted	•	1.0 1.0		.00 1.00	1.00 1.00	13 13

Sentence: show flights from <unk> petersburg to charlotte
True tags: VERB NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1	1.0	00	1.00	) 1	1.00	3	3
2	1.0	00	1.00	) 1	1.00	2	2
3	1.0	00	1.00	) 1	1.00	1	
4	1.0	00	1.00	) 1	1.00	1	
accur	acy			1	.00	7	
macro	avg	1.0	0	1.00	1	.00	7
weighte	d avg	1.0	00	1.00	) .	1.00	7

Sentence: i <unk> like flight information from dallas fort worth to boston on tuesday True tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP

PROPN ADP NOUN

Predicted tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP

PROPN ADP NOUN Classification Report:

		- 1						
	pred	cision	n red	call	f1-sc	ore	supp	ort
4	ı	4 00	4	00	4.0	^	4	
1		1.00	1.0	00	1.0	U	4	
2	<u>-</u>	1.00	1.0	00	1.0	0	3	
3	}	1.00	1.0	00	1.0	0	3	
4	ļ	1.00	1.0	00	1.0	0	1	
6	6	1.00	1.0	00	1.0	0	1	
8	3	1.00	1.0	00	1.0	0	1	
accur	acy				1.00	)	13	
macro	avg	•	1.00	1	.00	1.00	)	13
weighte	d avg	3	1.00	•	1.00	1.0	0	13
_	•	-						

Sentence: show me all flights from san francisco to pittsburgh on friday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Classification Report:

	precis	sion	recall f1-sc		core	supp	ort
1	1.	.00	1.00	) 1	.00	3	
2	1.	.00	1.00	) 1	.00	3	
3	1.	.00	1.00	) 1	.00	2	
4	1.	.00	1.00	) 1	.00	1	
5	1.	.00	1.00	) 1	.00	1	
6	1.	.00	1.00	) 1	.00	1	
accur	acy			1.	00	11	
macro	avg	1.0	00	1.00	1.0	00	11
weighte	d avg	1.	.00	1.00	1.	.00	11

Sentence: from las vegas to montreal

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

## Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 2 1.00 1.00 1.00 accuracy 1.00 5 macro avg 1.00 1.00 1.00 5 weighted avg 1.00 1.00 1.00 5

Sentence: sunday flights from new york city to las vegas

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN P

Classification Report:

	precisio	n re	call	T1-SCC	ore su	ipport
1	1.00	) 1.	00	1.00	)	5
2	1.00	) 1.	00	1.00	)	2
3	1.00	) 1.	00	1.00	)	2
accura	асу			1.00	) (	9
macro	avg	1.00	1.	.00	1.00	9
weighted	d avg	1.00	1	1.00	1.00	9

Sentence: please find a flight from kansas city to newark

True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN
OF THE PROPN ADP PROPN

Classification Report:

	pred	ision	red	call	f1-sc	core	supp	ort
1		1.00	1.	00	1.0	00	3	
2		1.00	1.	00	1.0	00	2	
3		1.00	1.	00	1.0	00	1	
4		1.00	1.	00	1.0	00	1	
5		1.00	1.	00	1.0	00	1	
13	3	1.00	1	.00	1.	00	1	
accur	acy				1.0	0	9	
macro	avg	1	.00	1	.00	1.0	0	9
weighte	d avg	]	1.00	•	1.00	1.	00	9

Sentence: i want to go from san francisco to denver

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2

6	1.00	1.00	1.00	) 1	
12	1.00	1.00	1.00	0 1	1
accuracy			1.00	9	
macro avg	1.0	00 1	.00	1.00	9
weighted av	g 1.	00	1.00	1.00	9

Sentence: list all flights on continental leaving denver on monday

True tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	2	
4	1.	00	1.00	1.0	0	2	
5	1.	00	1.00	1.0	0	1	
accur	acy			1.00	0	9	
macro	avg	1.0	0 1	.00	1.00		9
weighted	d avg	1.	00	1.00	1.00	)	9

Sentence: only show continental flights True tags: ADV VERB PROPN NOUN

Predicted tags: NOUN VERB PROPN NOUN

Classification Report:

	precision		recall f1-score		re supp	oort
1	1.0	00 1	.00	1.00	1	
3	0.	50 1	.00	0.67	1	
4	1.0	00 1	.00	1.00	1	
11	l 1.	00 (	0.00	0.00	) 1	
accur	acy			0.75	4	
macro	avg	0.88	0	.75	0.67	4
weighted	d avg	0.88	3 (	0.75	0.67	4

Sentence: find a flight on delta from philadelphia to san francisco

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN PROPN PROPN

precision	recall	f1-score	support
1.00	1.00	1.00	4
1.00	1.00	1.00	3
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

accuracy		1.0	0 10	)
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: all delta flights to <unk> if you can

True tags: DET PROPN NOUN ADP NOUN ADP PRON AUX

Predicted tags: DET PROPN NOUN ADP PROPN VERB PRON AUX

Classification Report:

I	precision	recall	f1-score	supp	ort
1	0.50	1.00	0.67	1	
2	1.00	0.50	0.67	2	
3	1.00	0.50	0.67	2	
4	0.00	1.00	0.00	0	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	су		0.75	8	
macro a	avg 0.	79 0	.86 0.	71	8
weighted	avg 0	.94 (	0.75 0	.79	8
weignted	avy 0	.5-	5.10	. 1 5	

Sentence: show me all the flights from toronto on nationair

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-sco	re su	pport
1	1.00	) 1.	.00	1.00	2	2
2	1.00	) 1.	.00	1.00	2	2
3	1.00	) 1.	.00	1.00		1
4	1.00	) 1.	.00	1.00	•	1
5	1.00	) 1.	.00	1.00	2	2
6	1.00	) 1.	.00	1.00	•	1
accur	асу			1.00	g	)
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	9 9

Sentence: show me all the united flights from boston to denver

True tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	2

6 1	.00	1.00	1.00	)	1
accuracy			1.00	,	10
macro avg	1.0	00 1	1.00	1.00	10
weighted avg	1.	00	1.00	1.00	10

Sentence: show me all the flights on united leaving from boston

True tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	1	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	2	
6	1.0	0 1.	.00	1.00	1	
accura	acv			1.00	10	
macro	•	1.00	1		1.00	10
weighted	_	1.00		1.00	1.00	10

Sentence: when are the american flights from phoenix to milwaukee True tags: ADV AUX DET PROPN NOUN ADP PROPN ADP PROPN Predicted tags: VERB VERB DET PROPN NOUN ADP PROPN ADP PROPN Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	1.0	0 1.	.00	1.00	) 3	
2	1.0	0 1.	.00	1.00	) 2	
3	1.0	0 1.	.00	1.00	) 1	
4	0.0	0 1.	.00	0.00	0 0	
5	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 0.	.00	0.00	) 1	
11	1.0	0 00	.00	0.0	0 1	
accur	асу			0.78	9	
macro weighte	_	0.86 1.00	_	.71 ).78	0.57 0.78	9 9

Sentence: please list all united flights between pittsburgh and baltimore True tags: INTJ VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Predicted tags: INTJ VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1

4	1.00	1.0	0 1	.00	1	
5	1.00	1.0	0 1	.00	1	
10	1.00	1.0	00 1	.00	1	
13	1.00	1.0	00 1	.00	1	
accuracy			1.	00	9	
macro avo	<b>)</b> 1.	00	1.00	1.0	00	9
weighted av	g 1	.00	1.00	1	.00	9

Sentence: please list all flights between boston and philadelphia <unk> on sundays True tags: INTJ VERB DET NOUN ADP PROPN CCONJ PROPN VERB ADP

PROPN

Predicted tags: INTJ VERB DET NOUN ADP PROPN CCONJ PROPN PROPN ADP PROPN

Classification Report:

	precision	n recal	f1-score	suppor	t
1	0.75	1.00	0.86	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	0.50	0.67	2	
5	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accura	асу		0.91	11	
macro weighted	avg (	0.96 ( 0.93		.93 1 ).90	1 11

Sentence: list all flights from baltimore to san francisco on friday
True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN
Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

precision recall f1-score support 3 1 1.00 1.00 1.00 2 1.00 1.00 1.00 3 3 2 1.00 1.00 1.00 1.00 4 1.00 1.00 1 5 1.00 1.00 1.00 1.00 10 accuracy 1.00 10 1.00 1.00 macro avg 1.00 10 weighted avg 1.00 1.00

Sentence: show me flights from philadelphia to denver on a monday

True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Classification Report:

precision recall f1-score support

1	1.00	1.0	00	1.0	0	2	
2	1.00	1.0	00	1.0	0	3	
3	1.00	1.0	00	1.0	0	2	
4	1.00	1.0	00	1.0	0	1	
5	1.00	1.0	00	1.0	0	1	
6	1.00	1.0	00	1.0	0	1	
accuracy	/			1.0	0	10	
macro av	'g	1.00	1.	00	1.00	)	10
weighted a	vq	1.00	1	.00	1.0	0	10

Sentence: show me the flights from denver to atlanta on friday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	preci	sion	recal	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	2	
2	2 1	.00	1.00	1.0	00	3	
3	3 1	.00	1.00	1.0	00	2	
4	1	.00	1.00	1.0	00	1	
5	5 1	.00	1.00	1.0	00	1	
6	3 1	.00	1.00	1.0	00	1	
accui	racy			1.0	0	10	
macro	avg	1.	00	1.00	1.0	0	10
weighte	d avg	1	.00	1.00	1.0	00	10

Sentence: flights that go from oakland to philadelphia on friday

True tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN Predicted tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precisi	on r	ecall	f1-so	core	supp	ort
1	1.0	00 -	1.00	1.0	00	2	
2	1.0	00 1	1.00	1.0	00	4	
3	1.0	00 1	1.00	1.0	00	2	
4	1.0	00 1	1.00	1.0	00	1	
accur	acy			1.0	0	9	
macro	avg	1.00	1	.00	1.00	)	9
weighted	d avg	1.00	)	1.00	1.0	0	9

Sentence: baltimore to philadelphia wednesday

True tags: PROPN ADP PROPN NOUN
Predicted tags: PROPN ADP PROPN NOUN

Classification Report:

precision recall f1-score support

1	1.00	1.0	0 1.	.00	2	
2	1.00	1.0	0 1.	.00	1	
3	1.00	1.0	00 1.	.00	1	
accuracy	,		1.	00	4	
macro av	g 1	00.1	1.00	1.0	00	4
weighted a	vg	1.00	1.00	1.	.00	4

Sentence: i <unk> like a flight from montreal to san diego for sunday

True tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN

ADP NOUN

Classification Report:

	prec	ision	rec	call	f1-s	core	supp	ort
1	1	.00	1.0	00	1.	00	3	
2	: 1	.00	1.0	00	1.	00	3	
3	. 1	.00	1.0	00	1.	00	2	
4	. 1	.00	1.0	00	1.	00	1	
5	1	.00	1.0	00	1.	00	1	
6	1	.00	1.0	00	1.	00	1	
8	1	.00	1.0	00	1.	00	1	
accur	acy				1.0	00	12	
macro	avg	1	.00	1	.00	1.0	00	12
weighte	d avg		1.00	•	1.00	1.	00	12

Sentence: what flights are available friday from philadelphia to oakland True tags: DET NOUN AUX ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	II f1-s	score	supp	ort
1	1	.00	1.00	) 1	.00	2	
2	: 1	.00	1.00	) 1	.00	2	
3	1	.00	1.00	) 1	.00	2	
5	5 1	.00	0.00	0	.00	1	
6	0	0.00	1.00	0	.00	0	
7	' 1	.00	1.00	) 1	.00	1	
8	1	.00	1.00	) 1	.00	1	
accur	acy			0.	89	9	
macro	avg	0.	86	0.86	0.7	'1	9
weighte	d avg	1	.00	0.89	0.	89	9

Sentence: i would like to see the flights available from pittsburgh to san francisco for monday

True tags: PRON AUX VERB PART VERB DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADJ ADP PROPN ADP

PROPN PROPN ADP NOUN

Classification Report:

	precision		call	f1-sco	re sup	port
1	1.0	00 1.	.00	1.00	3	
2	1.0	00 1.	.00	1.00	3	
3	1.0	00 1.	.00	1.00	2	
4	1.0	00 1.	.00	1.00	2	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
12	2 1.	00 1	.00	1.00	) 1	
accur	acy			1.00	15	
macro	avg	1.00	1	.00	1.00	15
weighted	d avg	1.00	•	1.00	1.00	15

Sentence: show me the flights on sunday from tampa to charlotte

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

t
)
0

Sentence: what are all flights from denver to philadelphia on saturday True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accura	асу		1.00	10

macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: what flights are available from denver to philadelphia on wednesday True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN Predicted tags: PRON NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precis	ion	reca	ll f	1-scc	ore	supp	ort
1	1.0	00	1.00	)	1.00	)	2	
2	1.0	00	1.00	)	1.00	)	3	
3	1.0	00	1.00	)	1.00	)	2	
5	1.0	00	0.00	)	0.00	)	1	
6	0.0	00	1.00	)	0.00	)	0	
7	1.0	00	1.00	)	1.00	)	1	
8	1.0	00	1.00	)	1.00	)	1	
accur	acy				0.90	)	10	
macro weighted	•	0.8 1	86 .00	8.0		0.7′		10 10
•	•							

Sentence: i want to go from boston to washington on a saturday

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN ADP DET

NOUN

Classification Report:

ŗ	precision		f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	СУ		1.00	11	
macro a		00 1	.00 1.0	00	11
weighted	•	.00	1.00 1	.00	11

Sentence: show flights from burbank to <unk> louis on monday

True tags: VERB NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

precision		recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

accuracy		1.0	0 9	
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: please show me flights from dallas to atlanta on monday

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN Classification Papartic

Classification Report:

Cidoomo	precis	•		f1-sco	re supp	oort
1	1.	00	1.00	1.00	2	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	2	
4	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
13	3 1	.00	1.00	1.00	1	
accura	асу			1.00	10	
macro	_	1.0		.00	1.00	10
weighted	d avg	1.0	00 '	1.00	1.00	10

Sentence: show me the flights from pittsburgh to los angeles on thursday
True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	preci	sion	reca	ll f1-s	score	supp	ort
1	1	.00	1.00	1	.00	3	
2	1	.00	1.00	1.	.00	3	
3	1	.00	1.00	1	.00	2	
4	. 1	.00	1.00	1	.00	1	
5	1	.00	1.00	1	.00	1	
6	1	.00	1.00	1	.00	1	
accur	асу			1.	00	11	
macro	avg	1.0	00	1.00	1.0	0	11
weighte	d avg	1.	.00	1.00	1.	00	11

Sentence: i <unk> like a list of the flights from oakland to dallas fort worth on sunday True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 4

2	1.00	1.0	00	1.0	0	4	
3	1.00	1.0	00	1.0	0	3	
4	1.00	1.0	00	1.0	0	1	
5	1.00	1.0	00	1.0	0	2	
6	1.00	1.0	00	1.0	0	1	
8	1.00	1.0	00	1.0	0	1	
accuracy	/			1.00	)	16	
macro av	g	1.00	1.0	00	1.00		16
weighted a	vg	1.00	1	.00	1.00	)	16

Sentence: show me the flights from boston to pittsburgh on wednesday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	pred	ision	reca	all	f1-scc	ore s	upp	ort
•	1 .	1.00	1.0	0	1.00	)	2	
2	2 '	1.00	1.0	0	1.00	)	3	
3	3 '	1.00	1.0	0	1.00	)	2	
4	1 ·	1.00	1.0	0	1.00	)	1	
į	5	1.00	1.0	0	1.00	)	1	
6	6 '	1.00	1.0	0	1.00	)	1	
accu	racy				1.00	)	10	
macro	o avg	1	.00	1	.00	1.00		10
weighte	ed avg	,	1.00	•	1.00	1.00	)	10

Sentence: list all flights from nashville to cleveland on sunday

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	prec	ision	rec	call	f1-s	core	supp	ort
1	1	.00	1.0	00	1.	00	2	
2	1	.00	1.0	00	1.	00	3	
3	1	.00	1.0	00	1.	00	2	
4	1	.00	1.0	00	1.	00	1	
5	1	.00	1.0	00	1.	00	1	
accur	acy				1.0	00	9	
macro	avg	1	.00	1	.00	1.0	00	9
weighte	d avg		1.00	•	1.00	1	.00	9

Sentence: give me a flight from tampa to charlotte on sunday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

precision recall f1-score support

1	1.0	01.	00	1.00	2	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
accura	асу			1.00	10	
macro	avg	1.00	1.0	00	1.00	10
weighted	d avg	1.00	1.	.00	1.00	10

Sentence: show flights from denver to san francisco

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

precision recall f1-score support 1 3 1.00 1.00 1.00 2 1.00 2 1.00 1.00 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 accuracy 1.00 1.00 7 macro avg 1.00 1.00 7 weighted avg 1.00 1.00 1.00

Sentence: what are all the flights available between pittsburgh and dallas fort worth True tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN

PROPN PROPN Classification Report:

	precision		ecall	f1-sco	re sup	port
1	1.	00	1.00	1.00	4	
2	1.	00	1.00	1.00	1	
3	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	2	
6	1.	00	1.00	1.00	1	
7	1.	00	1.00	1.00	1	
8	1.	00	1.00	1.00	1	
10	) 1	.00	1.00	1.00	) 1	
accur	асу			1.00	12	
macro	avg	1.00	) 1	.00	1.00	12
weighted	d avg	1.0	0	1.00	1.00	12

Sentence: what flights from seattle to salt lake city

True tags: DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN PROPN

## Classification Report:

	precision	on re	call	f1-scc	re su	pport
1	1.0	0 1.	00	1.00	) 4	4
2	1.0	0 1.	00	1.00	) 2	2
3	1.0	0 1.	00	1.00	) '	1
5	1.0	0 0.	00	0.00	) ′	1
6	0.0	0 1.	00	0.00	) (	)
accur	acy			0.88	8	3
macro	avg	0.80	0	.80	0.60	8
weighted	d avg	1.00	(	0.88	0.88	8

Sentence: what are the flights from memphis to las vegas

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precision	n recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accur	acy		1.00	9
macro	avg	1.00 1	.00 1.	00 9
weighted	d avg	1.00	1.00 1	.00 9

Sentence: what flights are there from pittsburgh to los angeles

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN PROPN

Classification Report:

		-				
	precisio	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	1	
4	1.0	0 0.	.00	0.00	1	
5	1.0	0 0.	.00	0.00	1	
6	0.5	0 1.	.00	0.67	1	
8	0.0	0 1.	.00	0.00	0	
accur	acy			0.78	9	
macro	avg	0.79	0	.71	0.52	9
weighted	d avg	0.94	(	0.78	0.74	9

Sentence: i <unk> looking for a flight from pittsburgh to san francisco

True tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN

PROPN

Classification Report:

	precisi	on re	call	f1-sco	ore su	oport
1	1.0	00 1.	.00	1.00	) 3	3
2	1.0	0 1.	.00	1.00	) 3	3
3	1.0	0 1.	.00	1.00	) 1	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 1.	.00	1.00	) 1	
accur	acy			1.00	) 11	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	11 11

Sentence: show me the flights from dallas to san francisco

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

		1					
	precis	ion	reca	II f1-s	score	supp	ort
						_	
1	1.	00	1.00	) 1	.00	3	
2		00	1.00	) 1	.00	2	
3	1.	00	1.00	) 1	.00	1	
4	1.	00	1.00	) 1	.00	1	
5	1.	00	1.00	) 1	.00	1	
6	1.	00	1.00	) 1	.00	1	
accur	acy			1.	00	9	
macro	avg	1.	00	1.00	1.0	00	9
weighted	d avg	1	.00	1.00	1.	00	9

Sentence: what are the flights from boston to san francisco

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN PROPN

		'						
	pre	cisior	n red	call	f1-scc	ore su	ıppor	t
	-							
	1	1.00	1.	00	1.00	)	3	
	2	1.00	1.	00	1.00	)	2	
	3	1.00	1.	00	1.00	)	1	
	5	1.00	1.	00	1.00	)	1	
	6	1.00	1.	00	1.00	)	1	
	8	1.00	1.	00	1.00	)	1	
accu	ıracy				1.00	) !	9	
macr	o avg	•	1.00	1	.00	1.00	9	)
weight	ed av	g	1.00	•	1.00	1.00		9

Sentence: what flights do you have leaving boston going to san francisco True tags: DET NOUN AUX PRON VERB VERB PROPN VERB ADP PROPN

**PROPN** 

Predicted tags: PRON NOUN AUX PRON VERB VERB PROPN VERB ADP PROPN

**PROPN** 

Classification Report:

Ciassiii	Janon	toport.				
	precis	ion re	ecall	f1-sco	re sup	port
4	4.4	20 4	00	4.00		
1	1.0	JU 1	.00	1.00	) 3	1
2	1.0	00 1	.00	1.00	) 1	
3	1.0	00 1	.00	1.00	) 1	
4	. 1.0	00 1	.00	1.00	) 3	j
5	1.0	0 00	.00	0.00	) 1	
6	0.	50 1	.00	0.67	' 1	
8	1.0	00 1	.00	1.00	) 1	
accur	acy			0.91	11	
macro	avg	0.93	0	.86	0.81	11
weighte	d avg	0.95	; (	0.91	0.88	11
_	_					

Sentence: list all flights please from washington to san francisco

True tags: VERB DET NOUN INTJ ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

Ciassilic	alion	itcpo	ı <b>.</b> .			
	precis	sion	recall	f1-scor	e suppo	rt
1	1	.00	1.00	1.00	3	
2		.00	1.00	1.00	2	
3	1	.00	1.00	1.00	1	
4	1	.00	1.00	1.00	1	
5	1	.00	1.00	1.00	1	
13	3 1	.00	1.00	1.00	1	
accur	асу			1.00	9	
macro	_	1.0			1.00	9
weighte	d avg	1.	.00	1.00	1.00	9

Sentence: list flights between oakland and san francisco

True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1

accuracy		1.0	0 7	
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: interested in a flight from washington to fort worth

True tags: VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	precisio	n re	call	f1-scc	re su	pport
1	1.0	0 1.	00	1.00	) ;	3
2	1.0	0 1.	00	1.00	) ;	3
3	1.0	0 1.	00	1.00	) .	1
4	1.0	0 1.	00	1.00	) .	1
5	1.0	0 1.	00	1.00	)	1
accura	асу			1.00	g	)
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: what flights are <unk> available between boston and dallas fort worth True tags: DET NOUN AUX ADV ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: PRON NOUN AUX AUX ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
7	1.00	1.00	1.00	1	
8	0.50	1.00	0.67	1	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accurac	y		0.82	11	
macro av	•		.78 0.6	_	11
weighted a	ıvg 0	.95 (	0.82 0.	79	11

Sentence: what about flights from boston to san diego

True tags: PRON ADP NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN PROPN

	auon riopo			
	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3

3 1.0	0 1.0	0 1.0	0 ′	1
6 1.0	0 1.0	0 1.0	0 ′	1
accuracy		1.00	8 C	}
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: flights from baltimore to san francisco True tags: NOUN ADP PROPN ADP PROPN PROPN Predicted tags: NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

o.acoc		•	recall	f1-sc	ore s	supp	ort
1	1.	00	1.00	1.0	0	3	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	6	
macro weighte		1.0 1.		.00 1.00	1.00 1.00	)	6 6

Sentence: i live in washington and i would like to make a trip to san francisco can you tell me which airlines connect with those two cities

True tags: PRON VERB ADP PROPN CCONJ PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN AUX PRON VERB PRON DET NOUN VERB ADP DET NUM NOUN

Predicted tags: PRON NOUN ADP PROPN CCONJ PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN AUX PRON VERB PRON DET NOUN PROPN ADP NOUN NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
1	0.75	1.00	0.86	3	
2	1.00	1.00	1.00	3	
3	0.50	1.00	0.67	3	
4	1.00	0.60	0.75	5	
5	1.00	0.67	0.80	3	
6	1.00	1.00	1.00	4	
8	1.00	1.00	1.00	2	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	_	. 02 0	0.85	26	26
macro weighted	9		0.83 0.8 0.85 0.	84	26 26

Sentence: show me the flights from detroit to las vegas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

## Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	0	3	
2		00	1.00	1.0		2	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
accur macro	•	1.0	n 1	1.0 .00	0 1.0	9	9
weighted	•	1.0		1.00	1.0		9

Sentence: what flights go from denver to atlanta

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

Classification Report:

		- 1				
	prec	ision	recall	f1-sc	ore sup	port
			4.00			
1	•	1.00	1.00	1.0	0 2	
2	<u> </u>	1.00	1.00	1.0	0 2	
3	} '	1.00	1.00	1.0	0 1	
4	ļ '	1.00	1.00	1.0	0 1	
5	; ·	1.00	0.00	0.0	0 1	
6	6 (	0.00	1.00	0.0	0 0	
accur	асу			0.86	5 7	
macro	avg	0.	83 C	.83	0.67	7
weighte	_	1	.00	0.86	0.86	7

Sentence: show me the flights from montreal to philly

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	all	†1-sc	core	supp	ort
4	4	00	4.0	^	4 (	20	0	
1	1	.00	1.0	U	1.0	JU	2	
2	1	.00	1.0	0	1.0	00	2	
3	1	.00	1.0	0	1.0	00	1	
4	1	.00	1.0	0	1.0	00	1	
5	1	.00	1.0	0	1.0	00	1	
6	1	.00	1.0	0	1.0	00	1	
accur	асу				1.0	0	8	
macro	avg	1.0	00	1.	.00	1.0	00	8
weighte	d avg	1	.00	1	1.00	1.	00	8

Sentence: flight from denver to philadelphia True tags: NOUN ADP PROPN ADP PROPN

Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	recall f1-score			upport	t
1	1.0	0 1	.00	1.00	)	2	
2	1.0	0 1	.00	1.00	)	2	
3	1.0	0 1	.00	1.00	)	1	
accur	асу			1.00	) :	5	
macro	avg	1.00	1	.00	1.00	5	)
weighted avg		1.00		1.00	1.00	;	5

Sentence: give me the flights from baltimore to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n red	call f1-s	score s	upport
1	1.0	-		.00	2
2	1.0	0 1.0	00 1	.00	2
3	1.0	0.1	00 1	.00	1
4	1.0	0.1	00 1	.00	1
5	1.0	0 1.0	00 1	.00	1
6	1.0	0 1.0	00 1	.00	1
accur	асу		1.	.00	8
macro weighted	•	1.00 1.00	1.00 1.00	1.00 1.00	8

Sentence: i would like to fly from boston to baltimore

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

Ciassilic	auon	i (CpOi	ι.					
	precis	sion	reca	ll f1	-sco	re s	uppo	rt
1	1.	.00	1.00	)	1.00	)	2	
2	1.	.00	1.00	)	1.00	)	2	
4	1.	.00	1.00	)	1.00	)	2	
6	1.	.00	1.00	)	1.00	)	1	
8	1.	.00	1.00	)	1.00	)	1	
12	2 1	.00	1.00	0	1.00	)	1	
accur	acy				1.00		9	
macro weighted	avg	1.0 1.	0 00	1.00 1.0		1.00 1.00	)	9 9

Sentence: tell me the flights that leave philadelphia and go to dallas

True tags: VERB PRON DET NOUN ADP VERB PROPN CCONJ VERB ADP

PROPN

Predicted tags: VERB PRON DET NOUN ADP VERB PROPN CCONJ VERB ADP

**PROPN** 

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	ісу		1.00	11	
macro	avg 1	.00 1	.00 1.0	00	11
weighted	avg ′	1.00	1.00 1.	00	11

Sentence: flight information from oakland to denver True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion r	ecall	f1-sc	ore s	suppo	ort
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	2	
accur	асу			1.0	0	6	
macro	avg	1.00	) 1	.00	1.00		6
weighted	d avg	1.0	0	1.00	1.00	)	6

Sentence: the flight will <unk> from boston

True tags: DET NOUN AUX VERB ADP PROPN

Predicted tags: DET NOUN NOUN ADV ADP PROPN

Classification Report:

	precisi	on re	call f	1-sco	re suppo	rt
1	1.0	00 1.	00	1.00	1	
2	1.0	0 1.	00	1.00	1	
3	0.5	50 1.	00	0.67	1	
4	1.0	0.	00	0.00	1	
5	1.0	0 1.	00	1.00	1	
8	1.0	0.	00	0.00	1	
11	0.0	00 1	.00	0.00	0	
accur	acy			0.67	6	
macro weighted	_	0.79 0.92	0.7 0.	'1 67	0.52 0.61	6 6

Sentence: what are the flights from pittsburgh to oakland

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

Olabbillo	au on i	opo				
	precisi	on re	call	f1-sco	re sui	poort
	p. 00.0.	00	<b>-</b>			000.0
1	1.0	0 1	.00	1.00	) 2	)
-						
2	1.0	0 1.	.00	1.00	) 2	<u>-</u>
3	1.0	10 1	.00	1.00	) 1	
		<i>i</i> .	UU	1.00	, ,	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	10 1.	.00	1.00	) 1	
8	1.0	0 1	.00	1.00	) 1	
U	1.0	,0 1.	00	1.00	' '	
accur	acv			1.00	8	
	•	1 00	1		1 00	0
macro	avy	1.00	ı	.00	1.00	8
weighted	nva h	1.00		1.00	1.00	8
o.gritot	. u.g					U

Sentence: what flights are there from baltimore to newark

precision recall f1-score support

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

Classification Report:

	•						
1	1.00	1.	00	1.0	0	2	
2	1.00	1.	00	1.0	0	2	
3	1.00	1.	00	1.0	0	1	
4	1.00	0.	00	0.0	0	1	
5	1.00	0.	00	0.0	0	1	
6	0.50	1.	00	0.6	7	1	
8	0.00	1.	00	0.0	0	0	
accura	ісу			0.7	5	8	
macro	avg	0.79	0.	71	0.52		8
weighted	avg	0.94	0	).75	0.71		8

Sentence: flights from columbus to milwaukee True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

ort
5 5

Sentence: i <unk> like information on boston to washington True tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore su	ıppor	t
1	1.	.00	1.00	1.0	0	2	
2	1.	.00	1.00	1.0	0	2	
3	1.	.00	1.00	1.0	0	1	
4	1.	.00	1.00	1.0	0	1	
6	1.	.00	1.00	1.0	0	1	
8	1.	.00	1.00	1.0	0	1	
accur	acy			1.00	) ;	8	
macro	avg	1.0	00 1	.00	1.00	3	3
weighted	d avg	1.	.00	1.00	1.00		8

Sentence: list flights from houston to phoenix

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	ipport
1	1.	00	1.00	1.00	)	2
2	1.	00	1.00	1.00	)	2
3	1.	00	1.00	1.00	)	1
4	1.	00	1.00	1.00	C	1
accur	асу			1.00	) (	3
macro	avg	1.0	0 1	.00	1.00	6
weighted	d avg	1.0	00	1.00	1.00	6

Sentence: information of a flight from atlanta to pittsburgh True tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	on re	call f	1-scor	e suppo	rt
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
5	1.0	0 1.	00	1.00	1	
accur	acy			1.00	8	
macro	avg	1.00	1.0	00 ′	1.00	8
weighted	d avg	1.00	1.	.00	1.00	8

Sentence: i need to go to pittsburgh and denver

True tags: PRON VERB PART VERB ADP PROPN CCONJ PROPN

Predicted tags: PRON VERB PART VERB PART PROPN CCONJ PROPN

Classification Report:

1	1.00	1.00	1.00	2
2	1.00	0.00	0.00	1
4	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
12	0.50	1.00	0.67	1

accuracy		0.8	8 8	
macro avg	0.92	0.83	0.78	8
weighted avg	0.94	0.88	0.83	8

Sentence: what flights from philadelphia to atlanta True tags: DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 2 1.00 1.00 1.00 3 1.00 1.00 1.00 1 5 1.00 0.00 1 0.00 6 0.00 1.00 0.00 0 0.83 6 accuracy macro avg 0.80 0.80 0.60 6 weighted avg 1.00 0.83 6 0.83

Sentence: flight from milwaukee to denver True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call f	1-sco	re sup	oort
1	1.0	0 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	1	
accur	асу			1.00	5	
macro weighted	_	1.00 1.00	1.0 1.	00 .00	1.00 1.00	5 5

Sentence: tell me the flights from baltimore to dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2

3 1.0	00 1.00	0 1.00	1	
4 1.0	0 1.00	1.00	1	
5 1.0	0 1.00	1.00	1	
6 1.0	0 1.00	1.00	1	
accuracy		1.00	8	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: i <unk> like to book a flight from atlanta to denver

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	preci	sion	recal	l f1-s	core	supp	ort
1	1	.00	1.00	1.	00	2	
2	1	.00	1.00	1.	00	2	
3	1	.00	1.00	1.	00	1	
4	1	.00	1.00	1.	00	2	
5	1	.00	1.00	1.	00	1	
6	1	.00	1.00	1.	00	1	
8	1	.00	1.00	1.	00	1	
12	2 '	1.00	1.00	) 1	.00	1	
accur	асу			1.0	00	11	
macro	avg	1.0	00	1.00	1.00	0	11
weighted	d avg	1.	.00	1.00	1.0	00	11

Sentence: now get me from pittsburgh to denver

True tags: ADV VERB PRON ADP PROPN ADP PROPN Predicted tags: ADV VERB PRON ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-sco	re su	pport
1	1.00	) 1.	00	1.00	2	2
2	1.00	) 1.	00	1.00	2	2
4	1.00	) 1.	00	1.00	•	1
6	1.00	) 1.	00	1.00	•	1
11	1.0	0 1	.00	1.00	)	1
accura	асу			1.00	7	,
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	7 7

Sentence: what flights are there from boston to dallas

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

Classification Report:

1	1.00	1.00	1.0	00	2	
2	1.00	1.00	1.0	00	2	
3	1.00	1.00	1.0	00	1	
4	1.00	0.00	0.0	00	1	
5	1.00	0.00	0.0	00	1	
6	0.50	1.00	0.6	67	1	
8	0.00	1.00	0.0	00	0	
accuracy	y		0.7	5	8	
macro av	رg 0.	79	0.71	0.52		8
weighted a	vg C	).94	0.75	0.71		8

Sentence: show me flights from pittsburgh to philadelphia True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	uppo	rt
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	7	
macro	avg	1.0	0 1	.00	1.00	,	7
weighted	d avg	1.	00	1.00	1.00		7

Sentence: show flights from philadelphia to boston True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	on re	call 1	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
accura	acy			1.00	6	
macro	avg	1.00	1.0	00	1.00	6
weighted	d avg	1.00	1.	.00	1.00	6

Sentence: i <unk> like to see flights from pittsburgh to philadelphia

True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP PROPN

Classification Report:

1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accuracy			1.00	10	
macro avo	g 1.(	00 1.0	00 1.0	00	10

1.00

Sentence: give me flights from pittsburgh to baltimore True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

1.00

10

1.00

Classification Report:

weighted avg

	precis	ion	recall	f1-sc	ore s	suppo	ort
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.00	)	7	
macro	avg	1.0	0 1	.00	1.00		7
weighted	d avg	1.	00	1.00	1.00	)	7

Sentence: i need to go from philadelphia to dallas

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

i	precision	recall	f1-score	suppo	rt
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	су		1.00	8	
macro a weighted	_		00 1.0 .00 1.	00 00	8 8

Sentence: show flights from pittsburgh to oakland True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

1 1.0	0 1.0	0 1.0	0 2	
2 1.0	0 1.0	0 1.0	0 2	
3 1.0	0 1.0	0 1.0	0 1	
4 1.0	0 1.0	0 1.0	0 1	
accuracy		1.00	0 6	
macro avg	1.00	1.00	1.00	6
weighted avg	1.00	1.00	1.00	6

Sentence: what are the flights from chicago to indianapolis True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion r	ecall	f1-sc	ore s	suppo	rt
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	00	2	
3	1.0	00	1.00	1.0	00	1	
5	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
8	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	0	8	
macro	avg	1.00	) 1	.00	1.00		8
weighted	d avg	1.0	0	1.00	1.00	)	8

Sentence: get flights from toronto to milwaukee True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-scc	ore su	pport
1	1.	00	1.00	1.00	) ;	2
2	1.	00	1.00	1.00	) ;	2
3	1.	00	1.00	1.00	) .	1
4	1.	00	1.00	1.00	) .	1
accur	асу			1.00	) 6	6
macro weighte	_	1.00 1.0		.00 1.00	1.00 1.00	6 6

Sentence: what are the different classes that an airline offers True tags: PRON AUX DET ADJ NOUN ADP DET NOUN VERB

Predicted tags: PRON AUX DET ADJ PROPN ADP DET NOUN PROPN

рі	recision	recall	f1-score	support
1	0.00	1.00	0.00	0
2	1.00	1.00	1.00	1
3	1 00	0.50	0.67	2

	4	1.00	0	.00	0.0	0	1	
	5	1.00	1.	.00	1.0	0	2	
	6	1.00	1.	.00	1.0	0	1	
	7	1.00	1.	.00	1.0	0	1	
	8	1.00	1.	.00	1.0	0	1	
accu	ıracy				0.78	3	9	
macr	o avg	g (	88.0	0	.81	0.71		9

1.00

Sentence: show flights between boston and denver True tags: VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN

0.78

0.81

9

Classification Report:

weighted avg

pr	ecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy	/		1.00	6	
macro av	g 1.0	00 1	.00 1.	00	6
weighted a	vg 1	.00 ′	1.00 1	.00	6

Sentence: show flights from dallas to oakland

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

Ciaconio	auoni	oport.				
	precisi	on re	call	f1-sco	re sup	oport
1	1.0	0 1.	00	1.00	2	) -
2	1.0	0 1.	00	1.00	) 2	<u>)</u>
3	1.0	0 1.	00	1.00	) 1	
4	1.0	0 1.	00	1.00	) 1	
accur	асу			1.00	6	
macro weighted		1.00 1.00		.00 1.00	1.00 1.00	6 6

Sentence: show me flights from baltimore to dallas

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1

4 1	.00 1.	00 1.0	00 1	
6 1	.00 1.	00 1.0	00 1	
accuracy		1.0	0 7	
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: give me all the flights from memphis to charlotte

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

precis	ion re	ecall	f1-sco	ore su	upport
1.	00 1	.00	1.00	)	2
1.	00 1	.00	1.00	)	2
1.	00 1	.00	1.00	)	1
1.	00 1	.00	1.00	)	1
1.	00 1	.00	1.00	)	2
1.	00 1	.00	1.00	)	1
acy			1.00	)	9
avg	1.00	1	.00	1.00	9
d avg	1.00	,	1.00	1.00	9
	1.0 1.0 1.0 1.0 1.0 acy avg	1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy 1.00

Sentence: i would like to see the flights from baltimore to philadelphia please True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN INTJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN INTJ

Classification Report:

	precis	ion r	ecall	f1-sco	re supp	ort
1	1.0	00	1.00	1.00	2	
2	1.0	00	1.00	1.00	2	
3	1.0	00	1.00	1.00	1	
4	1.0	00	1.00	1.00	2	
5	1.0	00	1.00	1.00	1	
6	1.0	00	1.00	1.00	1	
8	1.0	00	1.00	1.00	1	
12	2 1.	00	1.00	1.00	) 1	
13	3 1.	00	1.00	1.00	) 1	
accur	acy			1.00	12	
macro weighte	_	1.00 1.0		.00 1.00	1.00 1.00	12 12

Sentence: what flights are there from indianapolis to orlando True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

	precisio	n re	call	f1-scc	re su	pport
1	1.00	0 1.	00	1.00	) 2	2
2	1.00	0 1.	00	1.00	) 2	2
3	1.00	0 1.	00	1.00	) '	1
4	1.00	0.	00	0.00	) '	1
5	1.00	0.	00	0.00	) '	1
6	0.50	0 1.	00	0.67	7	1
8	0.00	) 1.	00	0.00	) (	)
accur	асу			0.75	5 8	3
macro	avg	0.79	0	.71	0.52	8
weighted	d avg	0.94	(	0.75	0.71	8

Sentence: no i want to go from denver to oakland

True tags: DET PRON VERB PART VERB ADP PROPN ADP PROPN

Predicted tags: NOUN PRON VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	ecall	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	) 2	
2	1.0	0 1	.00	1.00	2	
3	0.0	0 1	.00	0.00	0	
4	1.0	0 1	.00	1.00	2	
5	1.0	0 0	.00	0.00	) 1	
6	1.0	0 1	.00	1.00	) 1	
12	2 1.0	00	1.00	1.0	0 1	
accura	асу			0.89	9	
macro	avg	0.86	0	.86	0.71	9
weighted	d avg	1.00	) (	0.89	0.89	9

Sentence: show me flights from milwaukee to orlando

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	2	
2	. 1	.00	1.00	1.0	00	2	
3	1	.00	1.00	1.0	00	1	
4	. 1	.00	1.00	1.0	00	1	
6	1	.00	1.00	1.0	00	1	
				4.6		-	
accur	•	4		1.0		/	_
macro	•	1.0		1.00	1.0		1
weighte	d avg	1	.00	1.00	1.	00	7

Sentence: give me a list of flights between denver and oakland

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN

Classification Report:

1	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	су		1.00	10	
macro a	avg 1.	00 1	.00 1.0	00	10
weighted	avg 1	.00	1.00 1.	00	10

Sentence: show me all the flights from charlotte to cleveland

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re su	pport
1	1.0	0 1	.00	1.00	) :	2
2	1.0	0 1.	.00	1.00	)	2
3	1.0	0 1.	.00	1.00	)	1
4	1.0	0 1.	.00	1.00	)	1
5	1.0	0 1.	.00	1.00	) :	2
6	1.0	0 1.	.00	1.00	)	1
accur	acy			1.00	ç	)
macro	_	1.00		.00	1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: give me flights from denver to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	call f	1-score	suppo	ort
1	1.0	00 1.	.00	1.00	2	
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	1	
4	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
accur	acy			1.00	7	
macro	avg	1.00	1.0	0 1.	00	7
weighted	d avg	1.00	1.0	00 1	.00	7

Sentence: tell me about flights from indianapolis to houston

True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore si	nbbo	rt
1	1.0	00	1.00	1.0	0	2	
2		00	1.00	1.0		3	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	)	8	
macro	avg	1.0	0 1	.00	1.00		8
weighte	d avg	1.0	00	1.00	1.00		8

Sentence: oakland to philadelphia True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 1.00 1 1.00 accuracy macro avg 1.00 1.00 1.00 3 weighted avg 1.00 1.00 3 1.00

Sentence: what are your flights from denver to baltimore True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		recall f1-sco		re su	ıpport
1	1.0	00 1	.00	1.00	)	2
2	1.0	00 1	.00	1.00	)	2
3	1.0	00 1	.00	1.00	)	1
5	1.0	00 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
8	1.0	00 1	.00	1.00	)	1
accur	асу			1.00		3
macro	avg	1.00	1	.00	1.00	8
weighte	d avg	1.00	•	1.00	1.00	8

Sentence: list all flights from baltimore to philadelphia True tags: VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

Sentence: what flights are available from boston to dallas True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX ADJ ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 2 1.00 1.00 1.00 2 2 1.00 1.00 1.00 3 1 1.00 1.00 1.00 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 1.00 7 1.00 1.00 1 8 1.00 1.00 1.00 1 accuracy 0.88 8 0.71 8 0.86 0.86 macro avg 8 weighted avg 1.00 88.0 88.0

Sentence: i would like to see all flights from denver to philadelphia

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precision	n reca	all f1-s	core s	upport	
1	1.00	1.00	0 1.	00	2	
2	1.00	1.00	0 1.	00	2	
3	1.00	1.00	0 1.	00	1	
4	1.00	1.00	0 1.	00	2	
5	1.00	1.00	0 1.	00	1	
6	1.00	1.00	0 1.	00	1	
8	1.00	1.00	0 1.	00	1	
12	1.00	1.0	0 1	.00	1	
			4 4	00	44	
accura	•	1.00	1.0		11	
macro	0	1.00	1.00	1.00	11	
weighted	avy	1.00	1.00	1.00	) 11	

Sentence: atlanta to pittsburgh

True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	3	
macro		1.00	1.	00	1.00	3
weighte	d avg	1.00	1	.00	1.00	3

Sentence: give me a flight from baltimore to newark that arrives as early as possible True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP ADV ADP ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB

ADP ADJ ADP ADJ Classification Report:

	pre	cisio	n re	ecall	f1-so	core	supp	ort
1		1.00	) 1	.00	1.0	00	2	
2	)	1.00	1	.00	1.0	00	5	
3	}	1.00	1	.00	1.0	00	1	
4		1.00	1	.00	1.0	00	2	
5	,	1.00	1	.00	1.0	00	1	
6	;	1.00	1	.00	1.0	00	1	
7	•	0.50	1	.00	0.6	37	1	
11	1	1.00	) (	00.0	0.	00	1	
					0.0		4.4	
accur	acy				0.9	_	14	
macro	avg		0.94	0	.88	8.0	33	14
weighte	d av	g	0.96	(	0.93	0.	90	14

Sentence: what flights are there between atlanta and denver

True tags: DET NOUN VERB PRON ADP PROPN CCONJ PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN CCONJ PROPN

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	0.00	0.00	1	
5	1.00	0.00	0.00	1	
6	0.50	1.00	0.67	1	
8	0.00	1.00	0.00	0	
10	1.00	1.00	1.00	1	
			0.75	0	
accura	•		0.75	8	
macro	avg 0.8	81 0	.75 0.5	8	8

weighted avg 0.94 0.75 0.71 8

Sentence: i need a flight from phoenix to atlanta

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

Olacomo	auoni	topoit.					
	precisi	ion r	ecall	f1-sc	ore s	uppor	t
					_	_	
1	1.0	)()	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
accura	асу			1.00	0	8	
macro	avg	1.00	1	.00	1.00	3	3
weighted	d avg	1.0	0	1.00	1.00		8

Sentence: i want to fly from atlanta to philadelphia

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call 1	f1-scor	e sup	port
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
12	1.0	00 1	.00	1.00	) 1	
accura	асу			1.00	8	
macro	avg	1.00	1.0	00	1.00	8
weighted	l avg	1.00	1	.00	1.00	8

Sentence: also give me a list of flights between oakland and boston

True tags: ADV VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 1.00 2 3 2 1.00 1.00 1.00 4 0.50 1.00 0.67 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 1 10 1.00 1.00 1.00 11 1.00 1 0.00 0.00

accuracy		0.9	1 11	
macro avg	0.94	0.88	0.83	11
weighted avg	0.95	0.91	0.88	11

Average Loss: 0.1867 Average Accuracy: 94.55 %

Sentence: what are the coach flights between dallas and baltimore leaving august

tenth and returning august <unk>

True tags: PRON AUX DET NOUN NOUN ADP PROPN CCONJ PROPN VERB

NOUN ADJ CCONJ VERB NOUN NUM

Predicted tags: PRON AUX DET PROPN NOUN ADP PROPN CCONJ PROPN

VERB NOUN ADJ CCONJ ADP NOUN PROPN

Classification Report:

	precision	recall	f1-score	supp	ort
1	0.50	1.00	0.67	2	
2	0.50	1.00	0.67	1	
3	1.00	0.75	0.86	4	
4	1.00	0.50	0.67	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	2	
accura	•		0.81	16	
macro	0		.82 0.7	-	16
weighted	davg 0	).91	0.81 0.	80	16

Sentence: i want a flight from nashville to seattle that arrives no later than 3 pm True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB DET ADJ ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB

DET PROPN ADP NOUN NOUN

pre	ecision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	4	
3	0.67	1.00	0.80	2	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
9	1.00	0.00	0.00	1	
accuracy	•		0.87	15	
macro av	g 0.9	92 0	.75 0.7	'0	15

weighted avg 0.91 0.87 0.81 15

Sentence: i need a flight leaving kansas city to chicago leaving next wednesday and returning the following day

True tags: PRON VERB DET NOUN VERB PROPN PROPN ADP PROPN VERB ADJ NOUN CCONJ VERB DET VERB NOUN

Predicted tags: PRON VERB DET NOUN VERB VERB PROPN ADP PROPN VERB

ADJ NOUN CCONJ ADP DET NOUN NOUN

Classification Report:

1	orecision	recall	f1-score	suppo	ort
1	1.00	0.67	0.80	3	
2	0.50	1.00	0.67	1	
3	0.75	1.00	0.86	3	
4	0.75	0.60	0.67	5	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	су		0.82	17	
macro a	avg 0.8	88 0	.91 0.8	37	17
weighted	avg 0	.85 (	0.82 0.	82	17

Sentence: explain meal codes <unk> <unk> True tags: VERB NOUN NOUN PROPN PROPN Predicted tags: VERB NOUN NOUN AUX AUX

Classification Report:

	precision	on red	call f1-s	score :	suppo	rt
1	1.0	0 0.	00 0	.00	2	
3	1.0	0 1.	00 1	.00	2	
4	1.0	0 1.	00 1	.00	1	
8	0.0	0 1.	00 0	.00	0	
accura	асу		0.	.60	5	
macro	avg	0.75	0.75	0.50	) :	5
weighted	d avg	1.00	0.60	0.6	0	5

Sentence: show me all flights from atlanta to san francisco which leave the day after tomorrow after 5 <unk> pm

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PRON VERB DET NOUN ADP NOUN ADP NUM ADV NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN DET VERB DET NOUN ADP NOUN ADP NUM NUM NOUN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 3
2 1.00 1.00 4

Sentence: i need a flight from toronto to montreal reaching montreal early on friday True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN VERB PROPN ADJ ADP NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADJ ADP NOUN

Classification Report:

	pre	cisio	n re	call	f1-sc	ore	supp	ort
	•						• • •	
	1	1.00	1.	00	1.0	00	3	
	2	0.75	1.	00	3.0	36	3	
;	3	1.00	1.	00	1.0	00	2	
	4	1.00	0.	50	0.6	67	2	
:	5	1.00	1.	00	1.0	00	1	
(	6	1.00	1.	00	1.0	00	1	
•	7	1.00	1.	00	1.0	00	1	
accu	racy				0.9	2	13	
macr	o avg	l	0.96	0	.93	0.93	3	13
weighte	ed av	g	0.94	(	0.92	0.9	92	13

Sentence: are there any flights from new york to montreal canada leaving on thursday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	.00	1.00	4	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	13	
macro	-	1.00	1	.00	1.00	13
weighte	d avg	1.00	•	1.00	1.00	13

Sentence: show me ground transportation in philadelphia on monday morning True tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Classification Report:

	precision	recall	f1-score	suppo	rt
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	4	
4	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
accura	су		1.00	9	
macro	avg ´	1.00 1	1.00	.00	9
weighted	avg	1.00	1.00	1.00	9

Sentence: find a flight from toronto to san diego with a layover in dc on delta airlines True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precisio	n red	call f1	-score	supp	ort
1	1.00	) 1.0	00	1.00	6	
2	1.00	) 1.0	00	1.00	5	
3	1.00	) 1.0	00	1.00	2	
4	1.00	) 1.0	00	1.00	1	
5	1.00	) 1.0	00	1.00	2	
accura	асу			1.00	16	
macro	avg	1.00	1.00	) 1.0	00	16
weighted	d avg	1.00	1.0	00 1	.00	16

Sentence: what is restriction ap80
True tags: PRON AUX NOUN PROPN
Predicted tags: PRON AUX NOUN PROPN

rt
4
4
2

Sentence: list the arizona airport

True tags: VERB DET PROPN PROPN Predicted tags: VERB DET ADJ NOUN

Classification Report:

	precisi	ion r	ecall	f1-sc	ore su	upport
1	1.0	00 (	0.00	0.0	0	2
3	0.0	00 ′	1.00	0.0	0	0
4	1.0	00 1	1.00	1.0	0	1
5	1.0	00 1	1.00	1.0	0	1
7	0.0	00 ′	1.00	0.0	0	0
accur	acy			0.50	)	4
macro	avg	0.60	0	.80	0.40	4
weighted	d avg	1.00	) (	0.50	0.50	4

Sentence: what are the nonstop flights on america west or southwest air from kansas city to burbank on saturday may twenty two

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN CCONJ PROPN PROPN ADP PROPN ADP PROPN ADP NOUN NOUN NUM NUM Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN CCONJ VERB PROPN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM NUM Classification Report:

I	precision	recall	f1-score	support
1	1.00	0.86	0.92	7
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	4
4	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
9	1.00	1.00	1.00	2
10	1.00	1.00	1.00	1
accura macro	avg 0.		0.95 .98 0.8	_
weighted	avg 1	.00 (	0.95 0.	97 21

Sentence: what times does the late afternoon flight leave from washington for denver

True tags: DET NOUN AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP

PROPN

Predicted tags: PRON NOUN AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3

4	1.00	) 1.0	00	1.00	1	
5	1.00	0.5	50 (	0.67	2	
6	0.00	1.0	00 (	0.00	0	
7	1.00	1.0	00	1.00	1	
8	1.00	1.0	00	1.00	1	
accurac	y		C	0.92	12	
macro av	/g	0.88	0.94	0.	83	12
weighted a	vg	1.00	0.9	2 0	.94	12

Sentence: what does the meal code s stand for

True tags: PRON AUX DET NOUN NOUN PROPN VERB ADP Predicted tags: PRON AUX DET NOUN NOUN VERB VERB ADP

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	1.	.00	0.00	0.00	) 1	
2	1.	.00	1.00	1.00	) 1	
3	1.	.00	1.00	1.00	) 2	<u>)</u>
4	0	.50	1.00	0.67	7 1	
5	1.	.00	1.00	1.00	) 1	
6	1.	.00	1.00	1.00	) 1	
8	1.	.00	1.00	1.00	) 1	
accur	acy			0.88	8	
macro	avg	0.9	3 0	.86	0.81	8
weighte	d avg	0.9	94	88.0	0.83	8

Sentence: is there ground transportation from the memphis airport into town when if i arrive at <unk> in the morning

True tags: VERB PRON NOUN NOUN ADP DET PROPN PROPN ADV ADP PRON VERB ADP NUM ADP DET NOUN

Predicted tags: AUX PRON NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN PROPN VERB ADP PROPN ADP DET NOUN

	precision	recall	f1-score	supp	ort
1	0.40	0.67	0.50	3	
2	1.00	0.80	0.89	5	
3	0.75	1.00	0.86	3	
4	1.00	0.50	0.67	2	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
8	0.00	1.00	0.00	0	
9	1.00	0.00	0.00	1	
11	1.00	0.00	0.00	1	
accura macro weighted	avg 0.	-	0.74 .66 0.5 0.74 0.	19 5 73	19 19
· c.giiioc	aug 0		<i></i> . 0.	. •	. 0

Sentence: what flights between dfw and oakland arrive in oakland between <unk> am and <unk> pm

True tags: DET NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN ADP NUM NOUN CCONJ NUM NOUN

Predicted tags: PRON NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN ADP PROPN NOUN CCONJ AUX NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
1	0.75	1.00	0.86	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
8	0.00	1.00	0.00	0	
9	1.00	0.00	0.00	2	
10	1.00	1.00	1.00	2	
accura	асу		0.80	15	
macro	9		.78 0.5		15 15
weighted	ravg t	).95 (	0.80 0.	77	15

Sentence: what are the flights on mondays that travel from charlotte north carolina to phoenix arizona

True tags: PRON AUX DET NOUN ADP PROPN ADP VERB ADP PROPN ADV PROPN ADP PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN ADP PROPN PROPN

Classification Report:

	pre	cisio	n ı	recall	f1-s	core	supp	ort
1		0.83	3	1.00	0.	91	5	
2	)	1.00	)	1.00	1.	.00	4	
3	}	0.50	)	1.00	0.	67	1	
4	•	1.00	)	0.00	0.	.00	1	
5	,	1.00	)	1.00	1.	.00	1	
6	;	1.00	)	1.00	1.	.00	1	
8	}	1.00	)	1.00	1.	.00	1	
11	1	1.00	)	0.00	0	.00	1	
accur	асу				0.	87	15	
macro veighte	_		0.92		).75 0.87	0.7	70 .81	15 15
_		_						

Sentence: what kind of ground transportation is there in washington dc

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN PROPN Predicted tags: PRON NOUN ADP NOUN NOUN AUX PRON ADP PROPN PROPN Classification Report:

	precisio	n reca	all f1-s	core	supp	ort
1	1.00	1.0	0 1.	.00	2	
2	1.00	1.0	0 1.	00	2	
3	1.00	1.0	0 1.	00	3	
4	1.00	0.0	0 0.	00	1	
5	1.00	0.0	0 0.	.00	1	
6	0.50	1.0	0 0.	67	1	
8	0.00	1.0	0 0.	00	0	
accura	асу		0.	80	10	
macro	avg	0.79	0.71	0.5	2	10
weighted	l avg	0.95	0.80	0.7	77	10

Sentence: in economy class from dallas to baltimore arriving july seventh i <unk> like to know what <unk> the cheapest ticket possible

True tags: ADP NOUN NOUN ADP PROPN ADP PROPN VERB NOUN ADJ PRON AUX VERB PART VERB PRON AUX DET ADJ NOUN ADJ

Predicted tags: ADP NOUN NOUN ADP PROPN ADP PROPN VERB NOUN ADJ PRON AUX ADP PART VERB DET AUX DET ADJ NOUN ADJ

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	0.75	1.00	0.86	3	
3	1.00	1.00	1.00	4	
4	1.00	0.67	0.80	3	
5	0.50	1.00	0.67	1	
6	1.00	0.50	0.67	2	
7	1.00	1.00	1.00	3	
8	1.00	1.00	1.00	2	
12	1.00	1.00	1.00	1	
accurac	•		0.90	21	
macro a weighted	9	-	.91 0.8 0.90 0.	89 90	21 21
J	J				

Sentence: show flights from baltimore to san francisco between 6 pm and 8 pm on friday

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN CCONJ NUM NOUN ADP NOUN

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN CCONJ CCONJ NOUN ADP NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	4
4	1.00	1.00	1.00	1

9	1.00	0.	50	0.67	7	2	
10	0.50	) 1	.00	0.6	7	1	
accuracy				0.93		15	
-						10	
macro avo	)	0.92	0.9	92	0.89		15
weighted av	g	0.97	0.	93	0.93	3	15

Sentence: what meals are available on dl <unk> which <unk> arrives in san

francisco at <unk> am

True tags: DET NOUN AUX ADJ ADP PROPN NUM DET PROPN VERB ADP

PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN AUX ADJ ADP PROPN AUX DET AUX VERB ADP

PROPN PROPN ADP PROPN NOUN

Classification Report:

	precis	ion r	ecall	f1-sc	ore	supp	ort
1	0.7	75 (	0.75	0.7	5	4	
2	1.0	00 .	1.00	1.0	0	3	
3	1.0	00 '	1.00	1.0	0	2	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00 (	0.50	0.6	7	2	
6	0.0	00	1.00	0.0	0	0	
7	1.0	00	1.00	1.0	0	1	
8	0.3	33	1.00	0.5	0	1	
9	1.0	00 (	0.00	0.0	0	2	
accur	acy			0.7	5	16	
macro	avg	0.79	0	.81	0.66	;	16
weighted	d avg	0.9	) (	0.75	0.7	4	16

Sentence: i want to fly from kansas city to chicago next wednesday arriving in the evening and returning the next day

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ

NOUN VERB ADP DET NOUN CCONJ VERB DET ADJ NOUN

Predicted tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ

NOUN VERB ADP DET NOUN CCONJ ADP DET ADJ NOUN

pre	ecision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	0.75	1.00	0.86	3
3	1.00	1.00	1.00	3
4	1.00	0.75	0.86	4
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	2
10	1.00	1.00	1.00	1
12	1.00	1.00	1.00	1
accuracy			0.95	20

macro avg	0.97	0.97	0.97	20
weighted ava	0.96	0.95	0.95	20

Sentence: please book for me a flight on twa from washington dc to san francisco earliest possible time

True tags: INTJ VERB ADP PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN ADV ADJ NOUN

Predicted tags: INTJ VERB ADP PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN ADJ NUM NOUN

Classification Report:

O la Comoan	o				
pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	5	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	0.00	0.00	0.00	1	
9	0.00	1.00	0.00	0	
11	1.00	0.00	0.00	1	
13	1.00	1.00	1.00	1	
accurac	y		0.88	17	
macro av	_		.80 0.7	-	17
weighted a	vg 0	.94 (	0.88	88	17

Sentence: is there a red eye flight from san jose to nashville on wednesday the nineteenth of may

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ ADP NOUN

Predicted tags: AUX PRON DET NOUN PROPN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ ADP NOUN

	pred	ision	red	call	f1-sc	ore	supp	ort
1	(	0.75	1.0	00	0.8	6	3	
2		1.00	1.0	00	1.0	0	4	
3	6 (	0.75	0.	75	0.7	5	4	
4		1.00	0.0	00	0.0	0	1	
5	; .	1.00	1.0	00	1.0	0	2	
6	;	1.00	1.0	00	1.0	0	1	
7	•	1.00	0.	50	0.6	7	2	
8	(	0.00	1.0	00	0.0	0	0	
accur	acy				0.8	2	17	
macro	avg		0.81	0	.78	0.6	6	17
weighte	d avg	l	0.90	(	0.82	0.	82	17

Sentence: i <unk> like to arrange for two friends to fly into los angeles next saturday evening one of the people is coming from kansas city and the other is coming from las vegas

True tags: PRON AUX VERB PART VERB ADP NUM NOUN PART VERB ADP PROPN PROPN ADJ NOUN NOUN NUM ADP DET NOUN AUX VERB ADP PROPN PROPN CCONJ DET ADJ AUX VERB ADP PROPN PROPN Predicted tags: PRON AUX VERB PART VERB ADP NOUN NOUN ADP VERB ADP PROPN PROPN ADJ NOUN NOUN NUM ADP DET NOUN VERB VERB ADP PROPN PROPN CCONJ DET ADJ AUX ADJ ADP PROPN PROPN Classification Report:

	preci	sion	recal	l f1-s	core	supp	ort
1	1	.00	1.00	1.0	00	6	
2	0	.83	1.00	0.9	91	5	
3	0	.80	1.00	0.8	89	4	
4	0	.80	0.80	0.8	80	5	
5	1	.00	1.00	1.0	00	2	
6	1	.00	1.00	1.0	00	1	
7	0	.67	1.00	0.8	80	2	
8	1	.00	0.67	0.8	80	3	
9	1	.00	0.50	0.0	67	2	
10	) .	1.00	1.00	) 1.	.00	1	
12	2	1.00	0.50	0	.67	2	
accur	асу			3.0	38	33	
macro weighted	_		92 ( ).90	0.86	8.0 .0	87 87	33 33
5	9	_			_		_

Sentence: what is restriction ap <unk>

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	0.	50	1.00	0.	67	1	
3	1.	.00	1.00	1.	00	1	
6	1.	.00	1.00	1.	00	1	
8	1.	.00	1.00	1.	00	1	
9	1.	.00	0.00	0.	00	1	
accur	асу			0.8	80	5	
macro weighted	•	0.9 0.9	0 90	0.80 0.80	0.7 0.	'3 73	5 5

Sentence: what is restriction ap 80

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

Classification Report:

1	0.50	) 1.	00	0.6	7	1	
3	1.00	) 1.	00	1.0	0	1	
6	1.00	) 1.	00	1.0	0	1	
8	1.00	) 1.	00	1.0	0	1	
9	1.00	0.	00	0.0	0	1	
accuracy	/			0.80	)	5	
macro av	g	0.90	0.8	80	0.73		5
weighted a	vg	0.90	0	.80	0.73	3	5

Sentence: show me all flights from philadelphia to san francisco with one stop in dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Classification Report:

4

Sentence: show me the flights from miami to san diego with one stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Ciassilic	allonin	opoit.				
	precisi	on re	call	f1-score	e supp	ort
1	1.0	0 1.	.00	1.00	4	
2	1.0	0 1.	.00	1.00	4	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
9	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	14	
macro	avg	1.00	1	.00 1	.00	14
weighted	d avg	1.00		1.00	1.00	14

Sentence: do you have a flight from atlanta to charlotte north carolina next monday True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN ADV PROPN ADJ NOUN

Predicted tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN ADJ NOUN

Classification Report:

Ciassilic	alion	eport.				
	precision	on re	call	f1-sco	re sup	port
1	0.7	5 1.	00	0.86	3	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
11	1.0	0 0	.00	0.00	) 1	
accur	асу			0.92	13	
macro	avg	0.97	0.	89	0.87	13
weighted	d avg	0.94	C	).92	0.89	13

Sentence: i would like to book an early morning flight from tampa florida to charlotte north carolina on april sixth

True tags: PRON AUX VERB PART VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ

Predicted tags: PRON AUX VERB PART VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN ADJ Classification Report:

	precis	sion	recall	f1-sco	re supp	ort
1	0.	80	1.00	0.89	4	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	3	
4	1.	00	1.00	1.00	2	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
7	1.	00	1.00	1.00	2	
8	1.	00	1.00	1.00	1	
11	1	.00	0.00	0.00	1	
12	2 1	.00	1.00	1.00	) 1	
accur	асу			0.95	19	
macro weighted	_	0.9 0.		0.90 0.95	0.89 0.92	19 19

Sentence: now i <unk> like flights from philadelphia to pittsburgh leaving between 430 and 530 pm

True tags: ADV PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB ADP

NUM CCONJ NUM NOUN

Predicted tags: VERB PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB

ADP PROPN CCONJ NUM NOUN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	0.67	1.00	0.80	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.50	0.67	2	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accurac	у		0.87	15	
macro av weighted a	•		.83 0.8 0.87 0.	81 84	15 15

Sentence: from sfo to denver

True tags: ADP PROPN ADP PROPN Predicted tags: ADP PROPN ADP PROPN

Classification Report:

Ciassilica	uon ix	sport.					
ŗ	recisio	n re	call	f1-sc	ore s	uppo	ort
1	1.00	0 1.	00	1.0	0	2	
2	1.00	0 1.	00	1.0	0	2	
accura	су			1.00	)	4	
macro a	avg	1.00	1.	00	1.00		4
weighted	avg	1.00	1	.00	1.00	)	4

Sentence: what is the lowest fare from bwi to salt lake city

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

**PROPN** 

	auon nopo			
	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accur	асу		1.00	11

macro avg	1.00	1.00	1.00	11
weighted ava	1.00	1.00	1.00	11

Sentence: flight numbers from minneapolis to long beach on june twenty six

True tags: NOUN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NUM NUM Predicted tags: NOUN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NUM NUM

Classification Report:

	preci	sion	rec	all	f1-s	core	supp	ort
1	1	.00	1.0	0	1.0	00	3	
2	1	.00	1.0	0	1.0	00	3	
3	1	.00	1.0	0	1.0	00	3	
9	1	.00	1.0	0	1.0	00	2	
accur	acy				1.0	00	11	
macro	avg	1.	00	1.	.00	1.0	00	11
weighte	d avg	1	.00	1	1.00	1.	.00	11

Sentence: which is the flight number for the us air flight from philadelphia to boston is it <unk> or is it <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP PROPN ADP PROPN AUX PRON NUM CCONJ AUX PRON NUM

Predicted tags: DET AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP PROPN ADP PROPN VERB VERB AUX NUM AUX AUX AUX

Classification Report: precision recall f1-score support

	μ.σ.						- G P	• • •
1		1.00	1.0	0	1.00	)	4	
2		1.00	1.0	0	1.00	)	3	
3	}	1.00	1.0	0	1.00	)	3	
4		0.00	1.0	0	0.00	)	0	
5	,	0.67	1.0	0	0.80	)	2	
6	;	1.00	0.0	0	0.00	)	3	
8	}	0.40	0.6	7	0.50	)	3	
9	)	0.00	0.0	0	0.00	)	2	
10	0	1.00	0.0	00	0.0	0	1	
accur	асу				0.67		21	
macro	avg	0.	67	0.6	3	0.48		21
weighte	d avo	g C	).79	0.	67	0.62	2	21

Sentence: how much would car rental cost in atlanta

True tags: ADV ADV AUX NOUN ADJ VERB ADP PROPN

Predicted tags: ADJ ADJ AUX NOUN PROPN NOUN ADP PROPN

Classification Report:

precision recall f1-score support 1 0.50 1.00 0.67 1 2 1.00 1 1.00 1.00

3	0.50	1.00	0.67	1	
4	1.00	0.00	0.00	1	
7	0.00	0.00	0.00	1	
8	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	2	
accuracy	y		0.50	8	
macro av	/g 0.	71 0.	.57 (	0.48	8
weighted a	vg 0	.75 (	0.50	0.42	8

Sentence: please list the prices for a rental car in pittsburgh

True tags: INTJ VERB DET NOUN ADP DET ADJ NOUN ADP PROPN

Predicted tags: INTJ VERB DET NOUN ADP DET PROPN NOUN ADP PROPN

Classification Report:

	pred	ision	rec	all	f1-sc	ore	supp	ort
1		0.50	1.0	00	0.6	7	1	
2	<u>.</u>	1.00	1.0	00	1.0	0	2	
3	}	1.00	1.0	00	1.0	0	2	
4		1.00	1.0	00	1.0	0	1	
5	·	1.00	1.0	00	1.0	0	2	
7	•	1.00	0.0	00	0.0	0	1	
1;	3	1.00	1.	00	1.0	00	1	
accur	acy				0.90	0	10	
macro weighte	_		.93 ).95		.86 ).90	0.8 0.	81 87	10 10

Sentence: what does the restriction <unk> mean True tags: PRON AUX DET NOUN PROPN VERB Predicted tags: PRON AUX DET NOUN AUX VERB

Classification Report:

	prec	ision	rec	all	f1-sc	core	supp	ort
1		1.00	0.0	00	0.0	00	1	
3	•	1.00	1.0	00	1.0	00	1	
4		1.00	1.0	00	1.0	00	1	
5	,	1.00	1.0	00	1.0	00	1	
6	•	1.00	1.0	00	1.0	00	1	
8	(	0.50	1.0	00	0.6	67	1	
accur	acy				0.8	3	6	
macro	_		.92	0	.83	0.7	<b>'</b> 8	6
weighte	d avg	(	0.92	(	0.83	0.	78	6

Sentence: list nonstop flights from baltimore washington to oakland that arrive

between <unk> and <unk> pm

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP

NUM CCONJ NUM NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB

ADP PROPN CCONJ PROPN NOUN

Classification Report:

	prec	ision	reca	all '	f1-sc	ore	supp	ort
1	(	0.60	1.0	0	0.7	5	3	
2		1.00	1.0	С	1.0	0	4	
3		1.00	1.0	С	1.0	0	3	
4		1.00	1.0	С	1.0	0	2	
9	)	1.00	0.0	0	0.0	0	2	
10	)	1.00	1.0	0	1.0	00	1	
accur	acy				0.87	7	15	
macro	avg	0.	93	0.8	83	0.7	9	15
weighte	d avç	, 0	.92	0	.87	0.8	32	15

Sentence: list all of the daily flights arriving in denver from 8 to 9 pm

True tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP NUM ADP

**NUM NOUN** 

Predicted tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP PROPN

ADP PROPN NOUN Classification Report:

	precisi	ion r	ecall	f1-sc	ore su	pport
1	0.3	33	1.00	0.5	0 1	1
2	1.0	00 1	1.00	1.0	0 4	1
3	1.0	00 1	1.00	1.0	0 2	2
4	1.0	00 1	1.00	1.0	0 2	2
5	1.0	00 1	1.00	1.0	0 2	2
7	1.0	00 1	1.00	1.0	0 1	1
9	1.0	00 (	0.00	0.0	0 2	2
accura	асу			0.86	5 14	4
macro weighted	_	0.90 0.9	_	.86 0.86	0.79 0.82	14 14

Sentence: get flights from milwaukee to <unk>
True tags: VERB NOUN ADP PROPN ADP PROPN

Predicted tags: VERB NOUN ADP PROPN ADP PROPN

	precis	sion	reca	ıll f1	-sco	re s	uppo	ort
1	1.	.00	1.00	)	1.00	)	2	
2	1.	.00	1.00	)	1.00	)	2	
3	1.	.00	1.00	)	1.00	)	1	
4	1.	.00	1.00	)	1.00	)	1	
accur	acy				1.00		6	
macro weighted	_	1.0 1.	00 00	1.00 1.0		1.00 1.00	)	6 6

Sentence: what is the earliest flight from boston to bwi that serves a snack

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB

**DET PROPN** 

Classification Report:

Olacomoa	aon i topo				
p	recision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	1.00	0.50	0.67	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accurac	21/		0.92	13	
macro a	vg 0.9		.94 0.9	93	13
weighted	avg 0	.95 (	0.92 0.	.92	13

Sentence: is bwi washington True tags: VERB PROPN PROPN Predicted tags: AUX NOUN PROPN

Classification Report:

	preci	sion	reca	II f1	-scor	e su	ıppo	rt
1	1	.00	0.50	)	0.67		2	
3	0	.00	1.00	)	0.00		0	
4	. 1	.00	0.00	)	0.00		1	
8	0	.00	1.00	)	0.00		0	
accur	acy			(	0.33	;	3	
macro	avg	0.5	50	0.62	2 (	0.17		3
weighte	d avg	1.	00	0.3	3	0.44		3

Sentence: what are the cities that american airlines serves

True tags: PRON AUX DET NOUN ADP PROPN PROPN VERB Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN VERB

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1 1.00

accuracy		1.0	8 0	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: which cities are serviced by both american and delta airlines

True tags: DET NOUN AUX VERB ADP DET PROPN CCONJ PROPN PROPN Predicted tags: DET NOUN VERB NOUN ADP PROPN PROPN CCONJ PROPN

**PROPN** 

Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
1	0	.75	1.00	0.	86	3	
2	1	.00	1.00	) 1.	00	1	
3	0	.50	1.00	0.	67	1	
4	0	.00	0.00	0.	00	1	
5	1	.00	0.50	0.	67	2	
8	1	.00	0.00	0.	00	1	
10	) ′	1.00	1.0	0 1	.00	1	
accur	acy			0.	70	10	
macro	avg	0.7		0.64	0.60	)	10
weighte	d avg	0	.78	0.70	0.6	6	10

Sentence: show me all the us air flights to pittsburgh between 12 and 4 in the

afternoon

True tags: VERB PRON DET DET PROPN PROPN NOUN ADP PROPN ADP NUM

CCONJ NUM ADP DET NOUN

Predicted tags: VERB PRON DET DET PROPN PROPN NOUN ADP PROPN ADP

NUM CCONJ CCONJ ADP DET NOUN

Classification Report:

	prec	ision	red	call	†1-sc	ore	supp	ort
1		1.00	1.	00	1.0	0	3	
2	•	1.00	1.	00	1.0	0	3	
3	•	1.00	1.	00	1.0	0	2	
4	•	1.00	1.	00	1.0	0	1	
5	•	1.00	1.	00	1.0	0	3	
6	•	1.00	1.	00	1.0	0	1	
9	•	1.00	0.	50	0.6	67	2	
10	)	0.50	1	.00	0.0	67	1	
					0.0	4	40	
accur	•	_		_	0.9		16	
macro	_		).94		.94	0.9		16
weighted	d avg		0.97	(	0.94	0.	94	16

Sentence: what is the cost of limousine service in philadelphia

True tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN

	preci	sion	recall	f1-sco	ore supp	ort
1	1	.00	1.00	1.00	) 1	
2		.00	1.00	1.00		
3	1	.00	1.00	1.00	3	
5	1	.00	1.00	1.00	) 1	
6	1	.00	1.00	1.00	) 1	
8	1	.00	1.00	1.00	) 1	
accur	acy			1.00	) 9	
macro	avg	1.	00 1	.00	1.00	9
weighte	d avg	1	.00	1.00	1.00	9

Sentence: how much does the limousine service cost within pittsburgh True tags: ADV ADV AUX DET NOUN NOUN VERB ADP PROPN Predicted tags: ADJ ADJ AUX DET NOUN NOUN NOUN VERB PROPN Classification Report:

	precis	ion	recall	f1-sc	ore s	suppo	rt
1	1.0	00	1.00	1.0	0	1	
2	1.0	00	0.00	0.0	0	1	
3	0.0	67	1.00	0.8	0	2	
4	0.0	00	0.00	0.0	0	1	
5	1.0	00	1.00	1.0	0	1	
7	0.0	00	1.00	0.0	0	0	
8	1.0	00	1.00	1.0	0	1	
11	1.	00	0.00	0.0	00	2	
accur	acy			0.56	6	9	
macro	avg	0.7	1 0	).62	0.47		9
weighted	d avg	3.0	31	0.56	0.51	1	9

Sentence: on november twenty third of this <unk> 1991 i <unk> like to fly from atlanta to denver and i <unk> like to fly on delta

True tags: ADP NOUN NUM PROPN ADP DET NOUN NUM PRON AUX VERB PART VERB ADP PROPN ADP PROPN CCONJ PRON AUX VERB PART VERB ADP PROPN

Predicted tags: ADP NOUN NUM ADJ ADP NOUN ADJ PROPN PRON AUX VERB PART VERB ADP PROPN ADP PROPN CCONJ PRON AUX ADP PART VERB ADP PROPN

precision		recall	f1-score	support
1	0.75	0.75	0.75	4
2	0.83	1.00	0.91	5
3	0.50	0.50	0.50	2
4	1.00	0.75	0.86	4
5	1.00	0.00	0.00	1
6	1.00	1.00	1.00	2
7	0.00	1.00	0.00	0

	8	1.00	1.00	1.00	2	
	9	1.00	0.50	0.67	2	
	10	1.00	1.00	1.00	1	
	12	1.00	1.00	1.00	2	
a	ccurac	/		0.80	25	

accuracy 0.80 25 macro avg 0.83 0.77 0.70 25 weighted avg 0.89 0.80 0.81 25

Sentence: can you tell me the flights on october fifteenth 1991 from boston to oakland

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADJ NUM ADP PROPN ADP PROPN

Predicted tags: AUX PRON VERB PRON DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Classification Report:

		- 1					
	preci	sion	reca	II f1-s	score	supp	ort
1	0	.60	1.00	) ()	.75	3	
2	_	.00	1.00	-	.00	3	
3		.00	1.00	) 1	.00	1	
4	1	.00	1.00	1	.00	1	
5	1	.00	1.00	) 1	.00	1	
6	1	.00	1.00	) 1	.00	2	
7	1	.00	0.00	0	.00	1	
8		.00	1.00		.00	1	
9	1	.00	0.00	0	.00	1	
				_			
accur	•	_		_	86	_ 14	
macro	_		96	0.78	0.7	_	14
weighte	d avg	C	).91	0.86	0.	80	14

Sentence: show me all united flights from denver to san francisco for september first 1991

True tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADJ NUM

Predicted tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADJ ADJ

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2		1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	0.50	1.00	0.67	1
9	1.00	0.00	0.00	1

accuracy		0.9	3 14	1
macro avg	0.94	0.88	0.83	14
weighted avg	0.96	0.93	0.90	14

Sentence: information on american airline flights from washington to philadelphia early morning times of flight

True tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADJ

NOUN NOUN ADP NOUN

Predicted tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADJ NOUN NOUN ADP NOUN

Classification Report:

		-	• • • • • • • • • • • • • • • • • • • •					
	prec	ision	rec	call	f1-s	core	supp	ort
1	1	.00	1.0	00	1.	00	4	
2	1	.00	1.0	00	1.	00	4	
3	1	.00	1.0	00	1.	00	5	
7	1	.00	1.0	00	1.	00	1	
accur	acy				1.0	00	14	
macro	avg	1	.00	1	.00	1.0	00	14
weighted	d avg		1.00	•	1.00	1	.00	14

Sentence: please give me the flight times i would like to fly from boston to baltimore in the morning before 8

True tags: INTJ VERB PRON DET NOUN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NUM

Predicted tags: INTJ VERB PRON DET NOUN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NUM Classification Report:

	pre	cisio	n re	call	f1-s	core	supp	ort
1		1.00	1.	.00	1.0	00	2	
2		1.00	1.	.00	1.0	00	4	
3	,	1.00	1.	.00	1.0	00	3	
4		1.00	1.	.00	1.0	00	3	
5	)	1.00	1.	.00	1.0	00	2	
6	;	1.00	1.	.00	1.0	00	2	
8	}	1.00	1.	.00	1.0	00	1	
9		1.00		.00	1.0		1	
12		1.00		.00		00	1	
13		1.00		.00		00	1	
	•	1.00	, ,	.00	•	.00	•	
accur	acv				1.0	nn	20	
	•		1.00	1	.00	, 1.0	_	20
macro	_					_	-	
weighte	u av	J	1.00		1.00	١.	00	20

Sentence: please list the flight times for boston to pittsburgh

True tags: INTJ VERB DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: INTJ VERB DET NOUN NOUN ADP PROPN ADP PROPN Classification Report:

	precis	ion	recall	t1-sco	ore su	oqqı	rt
1	1.	00	1.00	1.00	)	2	
2	1.	00	1.00	1.00	)	2	
3	1.	00	1.00	1.00	)	2	
4	1.	00	1.00	1.00	)	1	
5	1.	00	1.00	1.00	)	1	
13	3 1	.00	1.00	1.0	0	1	
accura	асу			1.00	) !	9	
macro	avg	1.0	0 1	.00	1.00		9
weighted	d avg	1.0	00 '	1.00	1.00		9

Sentence: show me all flights and fares from dallas to san francisco

True tags: VERB PRON DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

PROPN

Predicted tags: VERB PRON DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	1.	.00	1.00	1.	00	3	
2	1.	.00	1.00	1.	00	2	
3	1.	.00	1.00	1.	00	2	
4	1.	.00	1.00	1.	00	1	
5	1.	.00	1.00	1.	00	1	
6	1.	.00	1.00	1.	00	1	
10	) 1	.00	1.00	) 1	.00	1	
accur	acy			1.0	00	11	
macro	avg	1.0	0	1.00	1.0	0	11
weighted	d avg	1.	00	1.00	1.0	00	11

Sentence: please list me the flights and their cost of all airlines flying from denver to baltimore

True tags: INTJ VERB PRON DET NOUN CCONJ DET NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: INTJ VERB PRON DET NOUN CCONJ NOUN VERB ADP DET NOUN VERB ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 2 1 2 1.00 1.00 1.00 3 3 3 0.67 0.67 0.67 4 0.67 0.80 2 1.00 5 1.00 3 0.67 0.80 6 1.00 1.00 1.00 1 10 1.00 1.00 1.00 1 13 1.00 1.00 1.00

accuracy		0.8	8 16	3
macro avg	0.92	0.92	0.91	16
weighted avg	0.90	0.88	0.88	16

Sentence: give me the flights and fares on december twenty seventh from

indianapolis to orlando

True tags: VERB PRON DET NOUN CCONJ NOUN ADP NOUN NUM ADJ ADP

PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN CCONJ NOUN ADP NOUN NUM ADJ

ADP PROPN ADP PROPN

Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	2	
2	•	1.00	1.0	00	1.0	0	3	
3		1.00	1.0	00	1.0	0	3	
4	•	1.00	1.0	00	1.0	0	1	
5	•	1.00	1.0	00	1.0	0	1	
6	•	1.00	1.0	00	1.0	0	1	
7	•	1.00	1.0	00	1.0	0	1	
9	•	1.00	1.0	00	1.0	0	1	
10	)	1.00	1.0	00	1.0	00	1	
accur	acy				1.00	)	14	
macro	avg	1.	.00	1.	.00	1.0	0	14
weighted	d avg	1	1.00	•	1.00	1.	00	14

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

ision	recall	f1-sc	ore su	pport
1.00	0.00	0.0	0	1
1.00	1.00	1.0	0 .	1
0.50	1.00	0.6	7	1
		0.67	7 3	3
		-	0.56 0.56	3 3
	1.00 1.00 0.50	1.00 0.00 1.00 1.00 0.50 1.00 0.83 0	1.00 0.00 0.00 1.00 1.00 1.00 0.50 1.00 0.60 0.67 0.83 0.67	1.00 1.00 1.00 0.50 1.00 0.67 0.67 3 0.83 0.67 0.56

Sentence: is there ground transportation from Iga into new york city

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN

Predicted tags: AUX PRON NOUN NOUN ADP PROPN ADP PROPN PROPN

PROPN

Classification Report:

precision recall f1-score support

1.00 1.00 1.00 4

2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	0.00	0.00	1
6	1.00	1.00	1.00	1
8	0.00	1.00	0.00	0

accuracy		0.9	0 10	)
macro avg	0.83	0.83	0.67	10
weighted avg	1.00	0.90	0.90	10

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

precision recall f1-score support 1 1.00 0.00 0.00 1 6 1.00 1.00 1.00 1 8 0.50 1.00 0.67 1 0.67 3 accuracy 0.83 0.67 0.56 3 macro avg weighted avg 0.83 0.67 0.56 3

Sentence: how far is toronto international from downtown True tags: ADV ADV AUX PROPN PROPN ADP NOUN Predicted tags: ADJ ADJ AUX PROPN PROPN ADP NOUN

Classification Report:

	precis	ion	reca	ll f1-s	core	supp	ort
1	1	00	1.00	1	.00	2	
2		00	1.00		.00	1	
3		00	1.00		.00	1	
7		00	1.00		.00	0	
8		00	1.00		.00	1	
11		.00	0.00		.00	2	
1 1	1.	.00	0.00	) (	.00	2	
accur	асу			0.	71	7	
macro	avg	0.8	33	0.83	0.6	57	7
veighte	d avg	1	.00	0.71	0.	71	7

Sentence: how far is los angeles international from downtown True tags: ADV ADV AUX PROPN PROPN PROPN ADP NOUN Predicted tags: ADJ ADJ AUX PROPN PROPN PROPN ADP NOUN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 1 3 1.00 1.00 1 1.00

7	0.00	1.0	00	0.0	0	0	
8	1.00	1.0	00	1.0	0	1	
11	1.00	0.	00	0.0	0	2	
accuracy	,			0.75	5	8	
macro av		0.83	3.0		0.67		8
weighted av	vg	1.00	0.	.75	0.7	5	8

Sentence: how long does a flight from baltimore to san francisco take

True tags: ADV ADV AUX DET NOUN ADP PROPN ADP PROPN PROPN VERB Predicted tags: ADJ PROPN AUX DET NOUN ADP PROPN ADP PROPN PROPN

**ADP** 

Classification Report:

0.0000		.оро.	••			
	precis	ion	recall	f1-sco	re supp	ort
1	0.7	75	1.00	0.86	3	
2	0.6	67	1.00	0.80	2	
3	1.0	00	1.00	1.00	1	
4	1.0	00	0.00	0.00	1	
5	1.0	00	1.00	1.00	1	
7	0.0	00	1.00	0.00	0	
8	1.0	00	1.00	1.00	1	
11	1.	00	0.00	0.00	) 2	
accur	acy			0.73	11	
macro	avg	0.80	0 C	.75	0.58	11
weighte	d avg	3.0	37	0.73	0.65	11

Sentence: what airport in new york is closest to downtown

True tags: DET NOUN ADP PROPN PROPN AUX ADJ ADP NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN VERB ADP NOUN

Classification Report:

	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	0.00	1.00	0.00	0
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
7	1.00	0.00	0.00	1
8	1.00	0.00	0.00	1
accur	acy		0.67	9
macro	avg 0	.71 0	.62 0.3	35 9
weighted	d avg	0.93 (	0.67 0.	62 9

Sentence: houston airports True tags: PROPN NOUN Predicted tags: PROPN NOUN

## Classification Report:

	precision		recall	f1-sc	f1-score		ort
1	1.	00	1.00	1.0	0	1	
3	1.	00	1.00	1.0	0	1	
accur	acy			1.0	0	2	
macro	avg	1.0	0 1	1.00	1.0	0	2
weighte	d avg	1.	00	1.00	1.0	)0	2

Sentence: give me a list of airports in baltimore

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN

Classification Report:

	precis	ion I	recall	f1-sc	ore si	upport	
1	1.0	00	1.00	1.0	0	1	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
accur	асу			1.00	)	8	
macro	avg	1.00	) 1	.00	1.00	8	
weighte	d avg	1.0	0	1.00	1.00	8	3

Sentence: where does delta fly to that american does not

True tags: ADV AUX PROPN VERB PART ADP PROPN AUX ADV

Predicted tags: VERB AUX PROPN VERB ADP VERB PROPN PROPN VERB

Classification Report:

	pred	cision	rec	all	f1-sc	core	supp	ort
1		0.67	1.0	00	3.0	30	2	
2		0.00	0.0	00	0.0	00	1	
4		0.25	1.0	00	0.4	10	1	
8		1.00	0.5	50	0.6	67	2	
11	1	1.00	0.	00	0.	00	2	
12	2	1.00	0.	00	0.	00	1	
accur	асу				0.4	4	9	
macro	avg	0.	65	0	.42	0.3	31	9
weighted	d avç	g C	).73	(	).44	0.	37	9

Sentence: which airline has the smallest plane leaving pittsburgh and arriving in baltimore on july fourth

True tags: DÉT NOUN VERB DET ADJ NOUN VERB PROPN CCONJ VERB ADP

PROPN ADP NOUN ADJ

Predicted tags: DET NOUN VERB DET ADJ NOUN VERB PROPN CCONJ VERB ADP PROPN ADP NOUN NUM

## Classification Report:

	precisi	ion	recall	f1-sco	ore su	ıpport
1	1.0	00	1.00	1.00	)	2
2	1.0	00	1.00	1.00	)	2
3	1.0	00	1.00	1.00	)	3
4	1.0	00	1.00	1.00	)	3
5	1.0	00	1.00	1.00	)	2
7	1.0	00	0.50	0.6	7	2
9	0.0	00	1.00	0.0	)	0
10	) 1.	00	1.00	1.0	0	1
accura	acy			0.93	3 1	5
macro	avg	8.0	8 0	.94	0.83	15
weighted	d avg	1.0	00	0.93	0.96	15

Sentence: which flight from pittsburgh to baltimore carries the smallest number of passengers

True tags: DET NOUN ADP PROPN ADP PROPN VERB DET ADJ NOUN ADP NOUN

Predicted tags: DET NOUN ADP PROPN ADP PROPN DET ADJ NOUN ADP NOUN

Classification Report:

	precisi	on re	call	f1-sc	ore su	upport
1	0.6	7 1	.00	0.8	0	2
2	1.0	0 1.	.00	1.0	0	3
3	1.0	0 1.	.00	1.0	0	3
4	1.0	0 0	.00	0.0	0	1
5	1.0	0 1.	.00	1.0	0	2
7	1.0	0 1.	.00	1.0	0	1
accur	acy			0.92	2 1	12
macro	avg	0.94	0	.83	0.80	12
weighted	d avg	0.94	(	0.92	0.88	12

Sentence: what is the first flight from boston to stapleton airport for tomorrow True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN NOUN ADP NOUN

Classification Report:

precision recall f1-score support 1.00 3 1 0.67 0.80 2 1.00 1.00 1.00 3 3 0.67 1.00 0.80 2 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 1.00 1.00 1 1.00

8 1.00 1.00 1.00 1 0.92 12 accuracy 0.94 macro avg 0.95 0.95 12 0.92 12 weighted avg 0.94 0.92

Sentence: list all the flights that arrive at general mitchell international

True tags: VERB DET DET NOUN ADP VERB ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 2 1.00 1.00 1.00 3 1.00 1.00 1.00 1 4 2 1.00 1.00 1.00 5 1.00 1.00 1.00 2 1.00 10 accuracy macro avg 1.00 1.00 1.00 10 weighted avg 1.00 1.00 1.00 10

Sentence: how much does it cost to go from downtown to logan airport

True tags: ADV ADV AUX PRON VERB PART VERB ADP NOUN ADP PROPN

**PROPN** 

Predicted tags: ADJ ADJ AUX AUX VERB PART VERB ADP NOUN ADP PROPN

PROPN

Classification Report:

ŗ	precision		f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
6	1.00	0.00	0.00	1	
7	0.00	1.00	0.00	0	
8	0.50	1.00	0.67	1	
11	1.00	0.00	0.00	2	
12	1.00	1.00	1.00	1	
accura macro a	_	83 0	0.75 .78 0.6	12 3	12
weighted	avg 0	.96 (	0.75 0.	72	12

Sentence: show me flights from all airports to love field

True tags: VERB PRON NOUN ADP DET NOUN ADP PROPN PROPN Predicted tags: VERB PRON NOUN ADP DET NOUN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

```
2
      1
           1.00
                   1.00
                          1.00
      2
           1.00
                   1.00
                          1.00
                                    2
      3
                                    2
           1.00
                   1.00
                          1.00
      4
           1.00
                   1.00
                          1.00
                                    1
      5
           1.00
                   1.00
                          1.00
                                    1
      6
           1.00
                   1.00
                          1.00
                                    1
  accuracy
                          1.00
 macro avg
               1.00
                       1.00
                              1.00
                                        9
weighted avg
                1.00
                       1.00
                               1.00
                                        9
```

Sentence: flights from cincinnati to <unk> departing after 718 am american True tags: NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN PROPN Predicted tags: NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN PROPN Classification Report:

	precis	ion	recall	f1-sco	ore sup	oport
1	1.0	00	1.00	1.00	) 3	}
2	1.0	00	1.00	1.00	) 3	}
3	1.0	00	1.00	1.00	) 2	<u>)</u>
4	1.0	00	1.00	1.00	) 1	
9	1.0	00	1.00	1.00	) 1	
accura	acy			1.00	) 10	)
macro	avg	1.00	0 1	.00	1.00	10
weighted	d avg	1.0	00	1.00	1.00	10

Sentence: show me all flights to dallas that are less than 1500 dollars round trip True tags: VERB PRON DET NOUN ADP PROPN ADP AUX ADJ ADP NUM NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP VERB VERB ADP NUM

NOUN NOUN NOUN Classification Report:

Olabbillo	auon i	opolt.				
	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	1	
2	_	-	.00	1.00		
3	1.0	0 1.	.00	1.00	4	
4	0.3	3 1.	.00	0.50	1	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 0	.00	0.00	1	
8	1.0	0 0	.00	0.00	1	
9	1.0	0 1.	.00	1.00	1	
				0.00		
accur	acy			0.86	14	
macro	_	0.93	_		0.72	14
weighted	d avg	0.95	(	0.86	0.82	14

Sentence: round trip fares from pittsburgh to philadelphia under 1000 dollars

True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN VERB PROPN NOUN

Classification Report:

	precisi	on re	call	f1-sco	re supp	oort
1	0.6	7 1.	.00	0.80	2	
2	1.0	0 0.	67	0.80	3	
3	1.0	0 1.	.00	1.00	4	
4	0.0	0 1.	.00	0.00	0	
9	1.0	0 0.	.00	0.00	1	
accur	асу			0.80	10	
macro weighted	_	0.73 0.93	_	.73 ).80	0.52 0.80	10 10

Sentence: round trip fares from baltimore to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN VERB PROPN NOUN

Classification Report:

р	recision	n rec	all	f1-scc	re sup	port
1	0.67	1.0	00	0.80	) 2	
2	1.00	0.6	67	0.80	) 3	
3	1.00	1.0	00	1.00	) 4	
4	0.00	1.0	00	0.00	0	
9	1.00	0.0	00	0.00	) 1	
accurac	;y			0.80	10	
macro a	vg (	0.73	0.	73	0.52	10
weighted a	avg	0.93	0	.80	0.80	10

Sentence: all flights from baltimore to philadelphia less than 1000 dollars True tags: DET NOUN ADP PROPN ADP PROPN ADJ ADP NUM NOUN Predicted tags: DET NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN Classification Report:

	precisi	on re	call	f1-sco	re suppo	ort
1	1.0	00 1.	.00	1.00	2	
2	1.0	00 1.	.00	1.00	3	
3	1.0	00 1.	.00	1.00	2	
4	0.0	00 1.	.00	0.00	0	
5	1.0	0 1.	.00	1.00	1	
7	1.0	0.00	.00	0.00	1	
9	1.0	00 1.	.00	1.00	1	
accur	acy			0.90	10	
macro	avg	0.86	0.	86	0.71	10
weighte	d avg	1.00	0	.90	0.90	10

Sentence: how many seats in a 100

True tags: ADV ADJ NOUN ADP DET PROPN Predicted tags: ADJ ADJ ADJ ADP DET PROPN

Classification Report:

	precisio	n rec	all f1-so	core su	pport
1	1.00	) 1.0	0 1.0	00	1
2	1.00	1.0	0 1.0	00	1
3	1.00	0.0	0.0	00	1
5	1.00	1.0	0 1.0	00	1
7	0.33	3 1.0	0 0.	50	1
11	1.0	0.0	00 0.	00	1
accura	асу		0.6	67 6	3
macro	avg	0.89	0.67	0.58	6
weighted	l avg	0.89	0.67	0.58	6

Sentence: how many passengers can a boeing 737 hold True tags: ADV ADJ NOUN AUX DET PROPN NUM VERB Predicted tags: ADJ ADJ NOUN AUX DET NOUN NOUN ADJ

Classification Report:

р	recision	recall	f1-score	support
1	1.00	0.00	0.00	1
3	0.33	1.00	0.50	1
4	1.00	0.00	0.00	1
5	1.00	1.00	1.00	1
7	0.33	1.00	0.50	1
8	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1
11	1.00	0.00	0.00	1
accurac	СУ		0.50	8
macro a	vg 0.	83 0	.50 0.3	88 8
weighted	avg 0	.83	0.50 0.	38 8

Sentence: what is the seating capacity of a <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP DET PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	1
2		1.00	1.00	1
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		1.0	8 0	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: what is the seating capacity for delta be1

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN

Classification Report:

	- P				
precisi	on re	call	f1-scc	re su	pport
1.0	0 1	00	1.00	, ,	2
1.0	I.	UU	1.00	) ,	2
1.0	0 1.	.00	1.00	)	1
1.0	0 1.	.00	1.00	) :	2
1.0	0 1.	.00	1.00	)	1
1.0	0 1.	.00	1.00	)	1
1.0	0 1.	.00	1.00	)	1
асу			1.00	3	3
avg	1.00	1	.00	1.00	8
d avg	1.00	•	1.00	1.00	8
	1.0 1.0 1.0 1.0 1.0	1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1.	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: show me the flights from indianapolis to orlando with round trip fares less than <unk>

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN ADJ ADP NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ ADP AUX

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	4	
3	1.0	0 1.	.00	1.00	4	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	1	
8	0.0	0 1.	.00	0.00	0	
9	1.0	0 0.	.00	0.00	1	
accura	•	0.89	Λ	0.93 89 (	15 ).78	15
weighted	•	1.00	_	0.93	0.93	15

Sentence: show me what flights are available from baltimore to dallas with economy fares

True tags: VERB PRON DET NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN NOUN

Predicted tags: VERB PRON DET NOUN AUX ADJ ADP PROPN ADP NOUN NOUN

## Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accuracy			1.00	13	
macro av	g 1.0	00 1	.00 1.0	00	13
weighted av	/g 1	.00	1.00 1.	00	13

Sentence: baltimore to kansas city economy
True tags: PROPN ADP PROPN PROPN NOUN
Predicted tags: PROPN ADP PROPN PROPN NOUN

Classification Report:

precision	n recall	f1-scor	e suppo	ort
1.00	1.00	1.00	3	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
асу		1.00	5	
avg	1.00 1	.00 1	.00	5
l avg	1.00	1.00	1.00	5
	1.00 1.00 1.00 acy avg	1.00 1.00 1.00 1.00 1.00 1.00 acy avg 1.00 1	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1 acy 1.00 5 avg 1.00 1.00 1.00

Sentence: economy fares new york to miami round trip

True tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN Predicted tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN Classification Report:

I	precision		recall f1-score			support	
1	1.0	0 1	.00	1.0	0	3	
2	1.0	0 1	.00	1.0	0	1	
3	1.0	0 1	.00	1.0	00	4	
accura	СУ			1.0	0	8	
macro a	avg	1.00	1	.00	1.0	0	8
weighted	avg	1.00	•	1.00	1.0	00	8

Sentence: find me all the round trip flights from burbank to milwaukee stopping in <unk> louis

True tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN

VERB ADP PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN VERB ADP PROPN PROPN

## Classification Report:

	precis	ion	recal	l f1-sc	ore	supp	ort
1	1.	00	1.00	1.0	00	4	
2	1.	00	1.00	1.0	0	3	
3	1.	00	1.00	1.0	0	3	
4	1.	00	1.00	1.0	0	2	
5	1.	00	1.00	1.0	0	2	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.0	0	15	
macro	avg	1.0	00	1.00	1.00	)	15
weighte	d avg	1	.00	1.00	1.0	0	15

Sentence: i <unk> like to find a flight from charlotte to las vegas and make a stop in <unk> louis

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN PROPN CCONJ PROPN DET NOUN ADP PROPN PROPN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	0.83	1.00	0.91	5	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	0.67	0.80	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accuracy	/		0.95	19	
macro av	•		.96 0.9 0.95 0.	97 94	19 19
	. 9		0.00	<b>.</b>	. 0

Sentence: can you tell me which flights go from memphis to tacoma and make a stop in los angeles

True tags: AUX PRON VERB PRON DET NOUN VERB ADP PROPN ADP PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: AUX PRON VERB PRON DET NOUN VERB ADP PROPN ADP PROPN CCONJ PROPN DET NOUN ADP PROPN PROPN

р	recision	recall	f1-score	support
1	0.80	1.00	0.89	4
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1 00	0.67	0.80	3

Sentence: is there a flight between oakland and boston with a stopover in dallas fort worth on twa

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Predicted tags: AUX PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Classification Report:

	precisio	n reca	II f1-scor	e support
1	1.00	1.00	1.00	6
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	1.00	0.00	0.00	1
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
8	0.00	1.00	0.00	0
10	1.0	0 1.00	1.00	1
accur	асу		0.94	17
macro	avg	0.88	0.88 (	0.75 17
weighted	d avg	1.00	0.94	0.94 17

Sentence: show me all direct flights from san francisco to boston departing before noon

True tags: VERB PRON DET ADJ NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Predicted tags: VERB PRON DET ADJ NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

	prec	ision	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	3	
3	1	.00	1.00	1.0	00	2	
4	1	.00	1.00	1.	00	2	
5	1	.00	1.00	1.	00	1	
6	1	.00	1.00	1.0	00	1	
7	1	.00	1.00	1.0	00	1	
accur	асу			1.0	00	13	
macro	avg	1	.00	1.00	1.0	0	13

weighted avg 1.00 1.00 1.00 13

Sentence: do you have an early morning direct flight from philadelphia to pittsburgh True tags: AUX PRON VERB DET ADJ NOUN ADJ NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: AUX PRON VERB DET ADJ NOUN ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	ecall	f1-sco	re supp	ort
1	1.0	00 1	1.00	1.00	2	
2	1.0	00 1	00.1	1.00	2	
3	1.0	00 1	00.1	1.00	2	
4	1.0	00 1	00.1	1.00	1	
5	1.0	00 1	00.1	1.00	1	
6	1.0	00 1	00.1	1.00	1	
7	1.0	00 1	00.1	1.00	2	
8	1.0	00 1	1.00	1.00	1	
accur	асу			1.00	12	
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00	)	1.00	1.00	12

Sentence: which united flights from boston to san francisco make connections True tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN VERB NOUN Predicted tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN VERB VERB

Classification Report:

	preci	sion	reca	all	f1-sc	ore	supp	ort
1	1	.00	1.0	0	1.0	0	4	
2	1	.00	1.0	0	1.0	0	2	
3	1	.00	0.5	0	0.6	7	2	
4	. 0	.50	1.0	0	0.6	7	1	
5	1	.00	1.0	0	1.0	0	1	
accur	acy				0.9	0	10	
macro	avg	0.9	90	0.	90	8.0	7	10
weighte	d avg	0	.95	0	.90	0.9	90	10

Sentence: nonstop or connecting flights from seattle to boston True tags: NOUN CCONJ VERB NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN PRON NOUN ADP PROPN ADP PROPN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	0.67	1.00	0.80	2
4	1.00	0.00	0.00	1

Sentence: please give me direct morning flights from pittsburgh to atlanta True tags: INTJ VERB PRON ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: INTJ VERB PRON ADJ NOUN NOUN ADP PROPN ADP PROPN Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1	1	1.00	1.0	00	1.0	0	2	
2	. 1	1.00	1.0	00	1.0	0	2	
3	1	1.00	1.0	00	1.0	0	2	
4	. 1	1.00	1.0	00	1.0	0	1	
6	1	1.00	1.0	00	1.0	0	1	
7	1	1.00	1.0	00	1.0	0	1	
13	3	1.00	1.	00	1.0	00	1	
accur	acy				1.00	)	10	
macro	avg	1	.00	1	.00	1.0	0	10
weighte	d avg		1.00	•	1.00	1.	00	10

Sentence: list the flights that leave from philadelphia to atlanta early thursday morning before 8 am

True tags: VERB DET NOUN ADP VERB ADP PROPN ADP PROPN ADJ NOUN NOUN ADP NUM NOUN

Predicted tags: VERB DET NOUN ADP VERB ADP PROPN ADP PROPN ADJ NOUN NOUN ADP NUM NOUN

Classification Report:

	precisi	on re	call	f1-sco	e supp	ort
1	1.0	00 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	4	
3	1.0	0 1.	.00	1.00	4	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	1	
9	1.0	0 1.	.00	1.00	1	
accur	асу			1.00	15	
macro weighte	_	1.00 1.00		.00 1.00	1.00 1.00	15 15

Sentence: give me the flights from boston to san francisco leaving early today True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADJ NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADJ NOUN

Classification Report:

	precisi	ion r	ecall	f1-sc	ore su	upport
1	1.0	00	1.00	1.0	0	3
2	1.0	00	1.00	1.0	0	2
3	1.0	00	1.00	1.0	0	2
4	1.0	00	1.00	1.0	0	2
5	1.0	00	1.00	1.0	0	1
6	1.0	00	1.00	1.0	0	1
7	1.0	00	1.00	1.0	0	1
accur	acy			1.00	) 1	2
macro weighted	_	1.00		.00 1.00	1.00 1.00	12 12
weignie	aavy	1.0	U	1.00	1.00	12

Sentence: show me the continental flights leaving chicago early saturday morning True tags: VERB PRON DET PROPN NOUN VERB PROPN ADJ NOUN NOUN Predicted tags: VERB PRON DET PROPN NOUN VERB PROPN PROPN NOUN NOUN

Classification Report:

0.0000		vopo.	••			
	precisi	ion	recall	f1-sco	ore sup	port
		_				
1	0.6	57	1.00	0.80	) 2	
3	1.0	00	1.00	1.00	3	
4	1.0	00	1.00	1.00	) 2	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
7	1.0	00	0.00	0.00	) 1	
accura	асу			0.90	) 10	)
macro	avg	0.9	4 0	.83	0.80	10
weighted	d avg	0.9	93 (	0.90	0.86	10

Sentence: which flights are leaving from kansas city to atlanta early monday morning True tags: DET NOUN AUX VERB ADP PROPN PROPN ADP PROPN ADJ NOUN NOUN

Predicted tags: DET NOUN VERB VERB ADP PROPN PROPN ADP PROPN ADJ NOUN NOUN

ŗ	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3
4	0.50	1.00	0.67	1
5	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	0.00	0.00	1

accuracy		0.9	2 12	
macro avg	0.93	0.86	0.81	12
weighted avg	0.96	0.92	0.89	12

Sentence: i would like to find flights from columbus to minneapolis on monday june fourteenth early in the morning or in the evening sunday june thirteenth thank you True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP NOUN NOUN ADJ ADJ ADJ ADP DET NOUN CCONJ ADP DET NOUN NOUN ADJ VERB PRON

Predicted tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP NOUN NOUN PROPN ADJ ADP DET NOUN NUM ADP DET NOUN NOUN NOUN NUM PRON

Classification Report:

				_			
pre	cision	n red	call	f1-sc	ore	supp	ort
1	0.67	1.0	00	0.8	0	2	
2	1.00	1.0	00	1.0	0	5	
3	1.00	1.0	00	1.0	0	7	
4	1.00	0.0	67	0.8	0	3	
5	1.00	1.0	00	1.0	0	2	
6	1.00	1.0	00	1.0	0	2	
7	1.00	0.3	33	0.5	0	3	
8	1.00	1.0	00	1.0	0	1	
9	0.00	1.0	00	0.0	0	0	
10	1.00	0.	.00	0.0	00	1	
12	1.00	1.	.00	1.0	00	1	
uracv				0.8	5	27	
•	, (	0.88	0.			_	27
ed av	g	0.98	C	).85	0.8	87	27
	1 2 3 4 5 6 7 8 9 10 12 uracy ro avo	1 0.67 2 1.00 3 1.00 4 1.00 5 1.00 6 1.00 7 1.00 8 1.00 9 0.00 10 1.00 12 1.00	1 0.67 1.0 2 1.00 1.0 3 1.00 1.0 4 1.00 0.0 5 1.00 1.0 6 1.00 1.0 7 1.00 0.3 8 1.00 1.0 9 0.00 1.0 10 1.00 0.0 12 1.00 1.0	1 0.67 1.00 2 1.00 1.00 3 1.00 1.00 4 1.00 0.67 5 1.00 1.00 6 1.00 1.00 7 1.00 0.33 8 1.00 1.00 9 0.00 1.00 10 1.00 0.00 12 1.00 1.00	1 0.67 1.00 0.8 2 1.00 1.00 1.0 3 1.00 1.00 1.0 4 1.00 0.67 0.8 5 1.00 1.00 1.0 6 1.00 1.00 1.0 7 1.00 0.33 0.5 8 1.00 1.00 1.0 9 0.00 1.00 0.0 10 1.00 0.00 0.0 12 1.00 1.00 1.0	1 0.67 1.00 0.80 2 1.00 1.00 1.00 3 1.00 1.00 1.00 4 1.00 0.67 0.80 5 1.00 1.00 1.00 6 1.00 1.00 1.00 7 1.00 0.33 0.50 8 1.00 1.00 1.00 9 0.00 1.00 0.00 10 1.00 0.00 0.00 12 1.00 1.00 1.00	2 1.00 1.00 1.00 5 3 1.00 1.00 1.00 7 4 1.00 0.67 0.80 3 5 1.00 1.00 1.00 2 6 1.00 1.00 1.00 2 7 1.00 0.33 0.50 3 8 1.00 1.00 1.00 1 9 0.00 1.00 1.00 1 9 0.00 1.00 0.00 0 10 1.00 0.00 0.00 1 12 1.00 1.00 1.00 1  uracy 0.85 27 ro avg 0.88 0.82 0.74

Sentence: and from milwaukee to atlanta before 10 am daily

True tags: CCONJ ADP PROPN ADP PROPN ADP NUM NOUN ADJ Predicted tags: CCONJ ADP PROPN ADP PROPN ADP NUM NOUN ADJ

Classification Report:

	prec	ision	recall	f1-sco	e suppo	ort
1	•	1.00	1.00	1.00	2	
2		1.00	1.00	1.00	3	
3	•	1.00	1.00	1.00	1	
7	•	1.00	1.00	1.00	1	
9	•	1.00	1.00	1.00	1	
1(	)	1.00	1.00	1.00	) 1	
accur	acy			1.00	9	
macro	avq	1.0	00 1	.00	1.00	9
weighte	_			1.00	1.00	9
•	_					

Sentence: list daily flights from denver to boston

True tags: VERB ADJ NOUN ADP PROPN ADP PROPN Predicted tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	ecall	f1-sco	ore su	ıpport
1	1.0	0 1	.00	1.00	0	2
2	1.0	0 1	.00	1.00	0	2
3	1.0	0 1	.00	1.00	0	1
4	1.0	0 1	.00	1.00	0	1
7	1.0	0 1	.00	1.00	0	1
accur	acy			1.00	)	7
macro	avg	1.00	1	.00	1.00	7
weighted	d avg	1.00	) .	1.00	1.00	7

Sentence: list flights from boston to pittsburgh daily True tags: VERB NOUN ADP PROPN ADP PROPN ADJ Predicted tags: VERB NOUN ADP PROPN ADP PROPN ADJ

Classification Report:

	precisio	n rec	all f1-s	score s	upport
1	1.00	) 1.0	00 1	.00	2
2	1.00	) 1.0	00 1	.00	2
3	1.00	) 1.0	00 1	.00	1
4	1.00	) 1.0	00 1	.00	1
7	1.00	) 1.0	00 1	.00	1
accur	асу		1.	00	7
macro	avg	1.00	1.00	1.00	7
weighted	d avg	1.00	1.00	1.00	) 7

Sentence: show me all daily flights between milwaukee and orlando True tags: VERB PRON DET ADJ NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB PRON DET ADJ NOUN ADP PROPN CCONJ PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 1 4 1 1.00 1.00 1.00 5 1 1.00 1.00 1.00 6 1.00 1.00 1 1.00 7 1.00 1.00 1.00 1 10 1.00 1.00 1.00 1.00 accuracy macro avg 1.00 1.00 1.00 9 weighted avg 1.00 1.00 1.00 9 Sentence: list daily flights from boston to oakland using continental airlines
True tags: VERB ADJ NOUN ADP PROPN ADP PROPN VERB PROPN PROPN
Predicted tags: VERB ADJ NOUN ADP PROPN ADP PROPN VERB PROPN

PROPN

Classification Report:

	precisi	on r	ecall	f1-sc	ore	supp	ort
_		_			_		
1	1.0	0	1.00	1.0	00	4	
2	1.0	0	1.00	1.0	0	2	
3	1.0	0	1.00	1.0	0	1	
4	1.0	0	1.00	1.0	0	2	
7	1.0	0	1.00	1.0	0	1	
accur	acy			1.0	0	10	
macro	avg	1.00	1	.00	1.00	)	10
weighted	d avg	1.0	0	1.00	1.0	0	10

Sentence: show me the flights arriving in baltimore on june fifteenth leaving either from denver or dallas

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ VERB CCONJ ADP PROPN CCONJ PROPN

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ

VERB VERB ADP PROPN CCONJ PROPN

Classification Report:

precision	on re	call f	1-scor	e supp	ort
1.0	0 1.	00	1.00	3	
1.0	0 1.	00	1.00	3	
1.0	0 1.	00	1.00	2	
0.7	5 1.	00	0.86	3	
1.0	0 1.	00	1.00	1	
1.0	0 1.	00	1.00	1	
1.0	0 1.	00	1.00	1	
1.0	0 0	.50	0.67	2	
асу			0.94	16	
avg I avg	0.97 0.95			).94 0.93	16 16
	1.0 1.0 1.0 0.7 1.0 1.0 1.0	1.00 1. 1.00 1. 1.00 1. 0.75 1. 1.00 1. 1.00 1. 1.00 0	1.00 1.00 1.00 1.00 1.00 1.00 0.75 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.50	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.75 1.00 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.50 0.67 acy 0.94 avg 0.97 0.94	1.00 1.00 1.00 3 1.00 1.00 1.00 3 1.00 1.00 1.00 2 0.75 1.00 0.86 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: list the flights from pittsburgh to baltimore arriving on july first

True tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN ADJ

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2

5 1.00 1.00 1.00 1 7 1.00 1.00 1.00 1 1.00 11 accuracy macro avg 1.00 1.00 1.00 11 weighted avg 1.00 1.00 1.00 11

Sentence: show me the flights arriving on baltimore on june fourteenth True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN PROPN

Classification Report:

precision recall f1-score support 1 1 0.50 1.00 0.67 2 2 1.00 1.00 1.00 3 2 1.00 1.00 1.00 2 4 1.00 1.00 1.00 5 1 1.00 1.00 1.00 1 6 1.00 1.00 1.00 7 1.00 0.00 0.00 1 10 accuracy 0.90 macro avg 0.93 0.86 0.81 10 weighted avg 0.95 0.90 0.87 10

Sentence: show me the cheapest flight arriving in baltimore on june fourteenth starting from dallas

True tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN ADJ VERB ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN PROPN PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	0.5	50 1.	.00	0.67	7 2	
2	1.0	0 1.	.00	1.00	) 3	
3	1.0	0 1.	.00	1.00	) 2	
4	1.0	0.	.67	0.80	) 3	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
7	1.0	0 0.	.50	0.67	7 2	
accur	acy			0.86	14	
macro weighted	•	0.93 0.93	_	.88 ).86	0.88 0.86	14 14

Sentence: how many airlines fly from new york to los angeles by way of milwaukee True tags: ADV ADJ NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP NOUN ADP PROPN

Predicted tags: ADJ ADJ NOUN VERB ADP PROPN PROPN ADP PROPN PROPN

ADP NOUN ADP PROPN

Classification Report:

	pred	cision	rec	call	f1-sc	core	supp	ort
1		1.00	1.0	00	1.0	00	5	
2	1	1.00	1.0	00	1.0	00	4	
3	,	1.00	1.0	00	1.0	00	2	
4	ı	1.00	1.0	00	1.0	00	1	
7	•	0.50	1.0	00	0.6	67	1	
11	1	1.00	0.	00	0.0	00	1	
accur	асу				0.9	3	14	
macro	avg	0	.92	0	.83	0.7	'8	14
weighted	d av	9	0.96	(	0.93	0.	90	14

Sentence: how many flights does twa have in business class

True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN Predicted tags: ADJ ADJ NOUN AUX PROPN VERB ADP NOUN NOUN

Classification Report:

	precis	ion re	ecall	f1-sco	ore su	ıpport
1	1.0	00 1	.00	1.00	0	1
2	1.0	00 1	.00	1.00	)	1
3	1.0	00 1	.00	1.00	)	3
4	1.0	00 1	.00	1.00	)	1
7	0.5	50 1	.00	0.6	7	1
8	1.0	00 1	.00	1.00	)	1
11	1.	00 (	00.0	0.0	0	1
accur	acy			0.89	) !	9
macro	avg	0.93	0	.86	0.81	9
weighted	d avg	0.94	1 (	0.89	0.85	9

Sentence: how many first class flights does delta have today

True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB NOUN Predicted tags: ADJ ADJ ADJ NOUN NOUN AUX PROPN VERB NOUN

	precision		recall	f1-sco	ore su	pport
1	1	.00	1.00	1.00	)	1
3	3 1	.00	1.00	1.00	) ;	3
4	. 1	.00	1.00	1.00	)	1
7	0	.33	1.00	0.50	) ·	1
8	3 1	.00	1.00	1.00	) ·	1
1	1 1	.00	0.00	0.0	0	2
accur	acy			0.78	3 9	)
macro	avg	0.8	39 0	.83	0.75	9
weighte	d avg	0	.93	0.78	0.72	9

Sentence: how many flights does twa have with business class True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN Predicted tags: ADJ ADJ NOUN AUX PROPN VERB ADP NOUN NOUN

Classification Report:

Olacollic	auon i	vopo.	٠.			
	precis	ion	recall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 1	
2			1.00	1.00		
3	1.0	00	1.00	1.00	) 3	
4	1.0	00	1.00	1.00	) 1	
7	0.	50	1.00	0.67	7 1	
8	1.0	00	1.00	1.00	) 1	
11	1.	00	0.00	0.0	0 1	
accur	acy			0.89	9	
macro	avg	0.9	3 0	.86	0.81	9
weighte	d avg	0.	94	0.89	0.85	9

Sentence: how many first class flights does united have leaving from all cities today True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB VERB ADP DET NOUN NOUN

Predicted tags: ADJ ADJ ADJ NOUN NOUN AUX PROPN VERB VERB ADP DET NOUN NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	0	1	
2	1.0	00	1.00	1.0	0	1	
3	1.0	00	1.00	1.0	0	4	
4	1.0	00	1.00	1.0	0	2	
5	1.0	00	1.00	1.0	0	1	
7	0.3	33	1.00	0.5	0	1	
8	1.0	00	1.00	1.0	0	1	
11	1.	00	0.00	0.0	0	2	
accura	асу			0.85	5	13	
macro weighted	_	0.9		).88 0.85	0.81		13 13
5	- 3						

Sentence: what time does the tuesday morning 755 flight leaving washington arrive in san francisco

True tags: DET NOUN AUX DET NOUN NOUN NUM NOUN VERB PROPN VERB ADP PROPN PROPN

Predicted tags: PRON NOUN AUX DET NOUN NOUN PROPN NOUN VERB

PROPN VERB ADP PROPN PROPN

Classification Report:

precision recall f1-score support

0.75 1.00 0.86 3

2	1.00	1.0	00	1.0	0	1	
3	1.00	1.0	00	1.0	0	4	
4	1.00	1.0	00	1.0	0	2	
5	1.00	0.5	50	0.6	7	2	
6	0.00	1.0	00	0.0	0	0	
8	1.00	1.0	00	1.0	0	1	
9	1.00	0.0	00	0.0	0	1	
accuracy	,			0.8	6	14	
macro av	g (	0.84	0.	81	0.6	9	14
weighted av	vg	0.95	C	.86	3.0	35	14

Sentence: i would like the time of your earliest flight in the morning from philadelphia to washington on american airlines

True tags: PRON AUX VERB DET NOUN ADP DET ADJ NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP DET ADJ NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN Classification Report:

	precision		recal	f1-sco	ore supp	ort
1	1.	.00	1.00	1.00	) 4	
2	1.	.00	1.00	1.00	5	
3	1.	.00	1.00	1.00	3	
4	. 1.	.00	1.00	1.00	) 1	
5	1.	.00	1.00	1.00	3	
6	1.	.00	1.00	1.00	) 1	
7	<b>'</b> 1.	.00	1.00	1.00	) 1	
8	1.	.00	1.00	1.00	) 1	
accur	acy			1.00	19	
macro	avg	1.0	00 ′	1.00	1.00	19
weighte	d avg	1.	.00	1.00	1.00	19

Sentence: when does continental fly from philadelphia to denver on sundays True tags: ADV AUX PROPN VERB ADP PROPN ADP PROPN ADP PROPN Predicted tags: PROPN AUX PROPN VERB ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precisi	ion	reca	all	f1-sc	ore	supp	ort
1	0.7	<b>7</b> 5	0.7	5	0.7	5	4	
2	1.0	00	1.0	0	1.0	0	3	
3	0.0	00	1.0	0	0.0	0	0	
4	1.0	00	1.0	0	1.0	0	1	
8	1.0	00	1.0	0	1.0	0	1	
11	l 1.0	00	0.0	0	0.0	0	1	
accur	acy				0.80	)	10	
macro	avg	0.7	79	0.	79	0.6	2	10
weighted	d avg	0	.90	C	08.0	0.	80	10

Sentence: i would like a schedule of flights from san francisco to boston on

wednesday

True tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN ADP

PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN

ADP PROPN ADP NOUN

Classification Report:

	precisior	n recall	f1-score	support	t
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accur	acy		1.00	14	
macro	avg	1.00 1	.00 1.0	00 14	4
weighted	d avg	1.00	1.00 1	.00 1	4

Sentence: in pittsburgh i <unk> like to rent a car

True tags: ADP PROPN PRON AUX VERB PART VERB DET NOUN Predicted tags: ADP PROPN PRON AUX ADP PART VERB DET NOUN

Classification Report:

	precis	sion	recall	f1-sc	ore	suppo	ort
1	1.	00	1.00	1.0	0	1	
2	0.	50	1.00	0.6	7	1	
3	1.	00	1.00	1.0	0	1	
4	1.	00	0.50	0.6	7	2	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
8	1.	00	1.00	1.0	0	1	
12	2 1	.00	1.00	1.0	00	1	
accur	асу			0.89	9	9	
macro weighted	_	0.9 0.9	_	).94 0.89	0.9		9 9

Sentence: is there limousine service available at baltimore airport True tags: AUX PRON NOUN NOUN ADJ ADP PROPN PROPN Predicted tags: AUX PRON NOUN NOUN ADJ ADP PROPN PROPN

	precision		f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2

6	1.00	1.0	00	1.00		
7	1.00	1.0	00	1.00	1	1
8	1.00	1.0	00	1.00	1	1
accuracy				1.00	8	}
macro avo	9	1.00	1.00	) 1	1.00	8
weighted av	⁄g	1.00	1.0	0	1.00	8

Sentence: may i have a listing of flights from long beach california to columbus ohio on wednesday

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN PROPN ADP NOUN

Predicted tags: NOUN PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN ADP NOUN

Classification Report:

	precisio	n re	call	f1-sc	ore	supp	ort
1	1.00	) 1.	00	1.0	0	5	
2	1.00	) 1.	00	1.0	0	4	
3	0.75	5 1.	00	0.8	6	3	
4	1.00	) 1.	00	1.0	0	1	
5	1.00	) 1.	00	1.0	0	1	
6	1.00	) 1.	00	1.0	0	1	
8	1.00	0.	00	0.0	0	1	
accura	су			$0.9^{-1}$	4	16	
macro	avg	0.96	0	.86	0.84	ļ	16
weighted	avg	0.95	(	0.94	0.9	1	16

Sentence: i need a ticket from nashville tennessee to seattle

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN Classification Report:

		- 1						
	preci	sion	reca	all	f1-scc	ore	supp	ort
1	1	.00	1.00	)	1.00	)	3	
2	. 1	.00	1.00	)	1.00	)	2	
3	3 1	.00	1.00	)	1.00	)	1	
4	. 1	.00	1.00	)	1.00	)	1	
5	5 1	.00	1.00	)	1.00	)	1	
6	5 1	.00	1.00	)	1.00	)	1	
accur	acy				1.00	)	9	
macro	avg	1.	00	1.	00	1.0	0	9
veighte	d avg	1	.00	1	.00	1.0	00	9

Sentence: i <unk> need information please on a flight from washington dc san francisco california

True tags: PRON AUX VERB NOUN INTJ ADP DET NOUN ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX VERB NOUN INTJ ADP DET NOUN ADP PROPN

PROPN PROPN PROPN

Classification Report:

Ciassilica	alion Nepo	71 L.			
	precision	recall	f1-score	supp	ort
	4.00	4.00	4.00	_	
1	1.00	1.00	1.00	5	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accura	су		1.00	14	
macro	avg 1.0	00 1	.00 1.0	00	14
weighted	avg 1	.00	1.00 1.	00	14

Sentence: please list any flights from oakland california to philadelphia on tuesday True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN Predicted tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Classification Report:

	precis	sion	recall	f1-sc	ore s	uppor	t
1	1.	00	1.00	1.0	0	3	
2	1.	00	1.00	1.0	0	3	
3	1.	00	1.00	1.0	0	2	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
13	3 1	.00	1.00	1.0	00	1	
accur	асу			1.00	) .	11	
macro	_	1.0		.00	1.00		1
weighted	d avg	1.	00	1.00	1.00		11

Sentence: can you tell me which flight from dallas to baltimore has the least

expensive fare

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN VERB DET ADJ ADJ NOUN

Predicted tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN VERB DET ADJ ADJ NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2		1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	2

6	1.00	0 1.	00	1.00	2	
7	1.00	) 1.	00	1.00	2	
8	1.00	) 1.	00	1.00	1	
accurac	су			1.00	15	
macro a	vg	1.00	1.00	) 1	.00	15
weighted a	avg	1.00	1.0	0 '	1.00	15

Sentence: of the flights available from dallas to baltimore on august third which airline has the least expensive flight

True tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ DET NOUN VERB DET ADJ ADJ NOUN

Predicted tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ ADJ NOUN VERB DET ADJ ADJ NOUN

Classification Report:

	precisi	on	recal	l f1-s	core	supp	ort
1	1.0	10	1 00	4	00	2	
1	1.0		1.00		00	2	
2	1.0	0	1.00	1.	00	4	
3	1.0	0	1.00	1.	00	4	
4	1.0	0	1.00	1.	00	1	
5	1.0	0	0.67	0.	80	3	
7	0.8	80	1.00	0.	89	4	
accur	acy			0.9	94	18	
macro	avg	0.9	7 (	0.94	0.9	5	18
weighte	d avg	0.9	96	0.94	0.9	94	18

Sentence: what are the most expensive first class tickets between boston and san francisco

True tags: PRON AUX DET ADJ ADV NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN CCONJ PROPN PROPN

0.0.000	precis	ion r	ecall	f1-sco	re supp	oort
1	1.0	00	1.00	1.00	3	
2	1.0	00 .	1.00	1.00	1	
3	1.0	00	1.00	1.00	2	
5	1.0	00 .	1.00	1.00	1	
6	1.0	00	1.00	1.00	1	
7	0.6	67 °	1.00	0.80	2	
8	1.0	00	1.00	1.00	1	
10	) 1.	00	1.00	1.00	) 1	
11	1.	00	0.00	0.00	) 1	
accur	асу			0.92	13	
macro	avg	0.96	0	.89	0.87	13
weighted	d avg	0.9	5 (	0.92	0.89	13

Sentence: what are the least expensive flights from denver to atlanta True tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	ecall	f1-sc	ore sup	port
1	1.0	00 1	.00	1.0	0 2	
2	1.0	00 1	.00	1.0	0 2	
3	1.0	00 1	.00	1.0	0 1	
5	1.0	00 1	.00	1.0	0 1	
6	1.0	00 1	.00	1.0	0 1	
7	1.0	00 1	.00	1.0	0 2	
8	1.0	00 1	.00	1.0	0 1	
accur	acy			1.00	) 10	)
macro	avg	1.00	1	.00	1.00	10
weighte	d avg	1.00		1.00	1.00	10

Sentence: what <unk> the price of the least expensive first class round trip ticket on us air from cleveland to miami

True tags: PRON AUX DET NOUN ADP DET ADJ ADV NOUN NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP DET ADJ ADJ ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

1 1.00 1.00 1.00 4	
2 1.00 1.00 1.00 4	
3 1.00 1.00 1.00 5	
5 1.00 1.00 1.00 2	
6 1.00 1.00 1.00 1	
7 0.67 1.00 0.80 2	
8 1.00 1.00 1.00 1	
11 1.00 0.00 0.00 1	
accuracy 0.95 20	
macro avg 0.96 0.88 0.85	20
weighted avg 0.97 0.95 0.93	20

Sentence: great now what i want to find out is on april twentieth from washington to denver do you have a flight least expensive fare around 5 <unk> in the morning True tags: ADJ ADV PRON PRON VERB PART VERB ADV AUX ADP NOUN ADJ ADP PROPN AUX PRON VERB DET NOUN ADJ ADJ NOUN ADP NUM ADV ADP DET NOUN

Predicted tags: PROPN VERB PRON PRON VERB PART VERB VERB ADP NOUN ADJ ADP PROPN ADP PROPN VERB PRON VERB DET NOUN PROPN ADJ NOUN ADP NUM AUX ADP DET NOUN Classification Report:

р	recision	recall	f1-score	suppo	ort
1	0.50	1.00	0.67	2	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	4	
4	0.43	1.00	0.60	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	3	
7	1.00	0.50	0.67	4	
8	0.00	0.00	0.00	2	
9	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	3	
12	1.00	1.00	1.00	1	
accurac	21/		0.77	30	
macro a	-	R1 N	.77 0.7		30
weighted a	U		_	73	30
	∽.ອ ບ		J O.	. •	-0

Sentence: what ground transportation is available between milwaukee airport and downtown milwaukee

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN CCONJ NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN CCONJ NOUN PROPN

Classification Report:

	pre	cisio	n r	ecall	f1-s	core	supp	ort
1		1.00	)	1.00	1	.00	3	
2	<u> </u>	1.00	)	1.00	1	.00	1	
3	}	1.00	)	1.00	1	.00	3	
5	5	1.00	)	0.00	0	.00	1	
6	<b>)</b>	0.00	)	1.00	0	.00	0	
7	•	1.00	)	1.00	1	.00	1	
8	3	1.00	)	1.00	1	.00	1	
10	0	1.0	0	1.00	1	.00	1	
accur	асу				0.	91	11	
macro	avg	l	0.88	3 (	.88	0.7	<b>7</b> 5	11
weighte	d av	g	1.0	0	0.91	0.	91	11

Sentence: please list all the takeoffs and landings for general mitchell international True tags: INTJ VERB DET DET NOUN CCONJ NOUN ADP PROPN PROPN PROPN

Predicted tags: INTJ VERB DET DET NOUN CCONJ CCONJ ADP PROPN PROPN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1 00	1 00	1 00	1

3	1.00	0.50	0.67	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	2	
10	0.50	1.00	0.67	1	
13	1.00	1.00	1.00	1	
accurac	:y		0.91	11	
	o (	22 0	00 00	0	44

accuracy 0.91 11 macro avg 0.93 0.93 0.90 11 weighted avg 0.95 0.91 0.91 11

Sentence: what ground transportation is available from la guardia airport into new york city

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

	pre	cisio	n re	call	f1-s	core	supp	ort
	•							
1	1	1.00	1.	00	1.0	00	6	
2	2	1.00	1.	00	1.0	00	2	
3	3	1.00	1.	00	1.0	00	2	
5	5	1.00	0.	00	0.0	00	1	
6	3	0.00	1.	00	0.0	00	0	
7	7	1.00	1.	00	1.0	00	1	
3	3	1.00	1.	00	1.0	00	1	
accui	racy				0.9	92	13	
macro	o avg		0.86	0	.86	0.7	'1	13
weighte	d av	g	1.00	(	0.92	0.	92	13

Sentence: what ground transportation is available from dallas fort worth airport to downtown dallas

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN ADP NOUN PROPN

naooniio	ation	i topoi	٠.				
	precis	sion	recall	f1-s	core	supp	ort
1	1.	.00	1.00	1.0	00	5	
2	1.	.00	1.00	1.0	00	2	
3	1.	.00	1.00	1.0	00	3	
5	1.	.00	0.00	0.0	00	1	
6	0.	.00	1.00	0.0	00	0	
7	1.	.00	1.00	1.0	00	1	
8	1.	.00	1.00	1.0	00	1	
accur	асу			0.9	92	13	
macro	avg	0.8	6 (	).86	0.7	1	13

weighted avg 1.00 0.92 0.92 13

Sentence: ground transportation please in the city of boston between airport and downtown

True tags: NOUN NOUN INTJ ADP DET PROPN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: NOUN NOUN INTJ ADP DET PROPN ADP PROPN ADP PROPN CCONJ NOUN

Classification Report:

	precis	sion	recall	f1-sco	re supp	ort
1	0.	.67	1.00	0.80	2	
2	1.	.00	1.00	1.00	3	
3	1.	.00	0.75	0.86	4	
5	1.	.00	1.00	1.00	1	
10	) 1	.00	1.00	1.00	0 1	
13	3 1	.00	1.00	1.00	0 1	
accur	асу			0.92	12	
macro weighted	_	0.9 0.		0.96 0.92	0.94 0.92	12 12

Sentence: ground san francisco True tags: NOUN PROPN PROPN Predicted tags: NOUN PROPN PROPN

Classification Report:

1.00 1.00 1.00 2 3 1.00 1.00 1 1.00 1.00 accuracy 3 macro avg 1.00 1.00 1.00 3 3 weighted avg 1.00 1.00 1.00

precision recall f1-score support

Sentence: tell me about ground transportation at san francisco True tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN

	precisi	on re	call	f1-scc	ore si	upport
1	1.0		.00	1.00		2
2			.00	1.00		2
3	1.0	0 1	.00	1.00	)	2
4	1.0	0 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
accur	асу			1.00	)	8
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00		1.00	1.00	8

Sentence: now show me all the flights from <unk> louis to burbank

True tags: ADV VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB VERB PRON DET DET NOUN ADP PROPN PROPN ADP

PROPN

Classification Report:

	precisi	ion r	ecall	f1-sc	ore s	uppor	t
1	1.0	00 -	1.00	1.0	0	3	
2	1.0	00 1	1.00	1.0	0	2	
3	1.0	00 1	1.00	1.0	0	1	
4	0.5	50 1	1.00	0.6	7	1	
5	1.0	00 1	1.00	1.0	0	2	
6	1.0	00 1	1.00	1.0	0	1	
11	1.	00	0.00	0.0	0	1	
accur	асу			0.9	1	11	
macro	avg	0.93	0	.86	0.81	1	1
weighted	d avg	0.9	5 (	0.91	0.88	,	11

Sentence: saturday or sunday flights between milwaukee and phoenix american airlines

True tags: NOUN CCONJ NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: NOUN NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

	pred	cisio	n r	ecall	†1-	score	sup	por	t
1		1.00		1.00	1	.00	4		
2	)	1.00		1.00	1	.00	1		
3		0.75		1.00	0	.86	3	<b>,</b>	
10	)	1.00	)	0.50	(	0.67	2	2	
accur	асу				0	.90	10	)	
macro	avg		0.94	. C	.88	0.	88	1	0
weighte	d avç	3	0.9	3	0.90	) (	).89		10

Sentence: show me all flights from denver or philadelphia or pittsburgh to baltimore True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN CCONJ

PROPN ADP PROPN Classification Report:

precision recall f1-score support 1.00 1.00 1.00 4 1 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1

Sentence: what are the flights from cleveland to indianapolis on wednesday may twelfth on either twa delta or continental

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ ADP CCONJ PROPN PROPN CCONJ PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ ADP NOUN PROPN PROPN NUM PROPN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	5	
2	1.00	1.00	1.00	4	
3	0.75	1.00	0.86	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	0.00	1.00	0.00	0	
10	1.00	0.00	0.00	2	
accura	ісу		0.89	18	
macro weighted	0		.89 0.7 0.89 0.	'6 87	18 18

Sentence: list all flights that leave from baltimore or denver or pittsburgh and arrive in philadelphia

True tags: VERB DET NOUN ADP VERB ADP PROPN CCONJ PROPN CCONJ PROPN CCONJ VERB ADP PROPN

Predicted tags: VERB DET NOUN ADP VERB ADP PROPN CCONJ PROPN CCONJ PROPN CCONJ VERB ADP PROPN

	prec	ision	recal	l f1-so	core	supp	ort
1		1.00	1.00	1.0	00	4	
2	<u>,                                    </u>	1.00	1.00	1.0	00	3	
3	}	1.00	1.00	1.0	00	1	
4	. '	1.00	1.00	1.0	00	3	
5	, '	1.00	1.00	1.0	00	1	
10	0	1.00	1.00	) 1.	.00	3	
accur	acy			1.0	00	15	
macro	avg	1.0	00	1.00	1.0	0	15
weighte	d avg	1	.00	1.00	1.	00	15

Sentence: what does the fare code y mean

True tags: PRON AUX DET NOUN NOUN VERB Predicted tags: PRON AUX DET NOUN NOUN NOUN VERB

Classification Report:

	precis	sion	reca	all i	f1-sc	ore	suppo	ort
3	1.	.00	1.0	0	1.0	00	3	
4	. 1.	.00	1.0	0	1.0	00	1	
5	1.	.00	1.0	0	1.0	00	1	
6	1.	.00	1.0	0	1.0	00	1	
8	1.	.00	1.0	0	1.0	00	1	
accur	асу				1.0	0	7	
macro	avg	1.0	00	1.0	00	1.0	0	7
weighte	_	1.	.00	1	.00	1.	00	7
•	•							

Sentence: what does fare code qw mean

True tags: PRON AUX NOUN NOUN PROPN VERB Predicted tags: PRON AUX NOUN NOUN PROPN VERB

Classification Report:

			••				
	precisi	on	recall	f1-sc	ore	suppo	ort
1	1 (	١0	1 00	1 (	10	1	
1	1.0	JU	1.00	1.0	)U	I	
3	1.0	00	1.00	1.0	00	2	
4	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
8	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	0	6	
macro	avg	1.0	0 1	.00	1.00	)	6
weighted	d avg	1.	00	1.00	1.0	0	6

Sentence: what is fare code qw

True tags: PRON AUX NOUN NOUN PROPN Predicted tags: PRON AUX NOUN NOUN PROPN

Classification Report:

	preci	sion	recal	l f1-sc	ore	supp	ort
1	1	.00	1.00	1.0	0	1	
3	1	.00	1.00	1.0	0	2	
6	1	.00	1.00	1.0	0	1	
8	1	.00	1.00	1.0	0	1	
accur	acy			1.0	0	5	
macro	avg	1.0	00	1.00	1.0	0	5
weighted	d avg	1.	.00	1.00	1.0	)0	5

Sentence: what does fare code <unk> mean

True tags: PRON AUX NOUN NOUN PROPN VERB

Predicted tags: PRON AUX NOUN NOUN PROPN VERB

Classification Report:

	precis	ion	recall	f1-sc	ore s	upport
	4		4 00	4.0	•	4
1	1.0	JU	1.00	1.0	U	1
3	1.0	00	1.00	1.0	0	2
4	1.0	00	1.00	1.0	0	1
6	1.0	00	1.00	1.0	0	1
8	1.0	00	1.00	1.0	0	1
accur	acy			1.00	)	6
macro	avg	1.0	0 1	.00	1.00	6
weighte	d avg	1.0	00	1.00	1.00	6

Sentence: what does the fare code yn mean

True tags: PRON AUX DET NOUN NOUN PROPN VERB Predicted tags: PRON AUX DET NOUN NOUN PROPN VERB

Classification Report:

	preci	sion	recall	f1-scc	re su	pport
1	1	00	1.00	1.00	٠ ،	1
1		.00	1.00	1.00		•
3	1	.00	1.00	1.00	) 2	2
4	. 1	.00	1.00	1.00	) ′	1
5	5 1	.00	1.00	1.00	) '	1
6	1	.00	1.00	1.00	) ′	1
8	1	.00	1.00	1.00	) ′	1
accur	acy			1.00	7	,
macro	avg	1.0	0 1	.00	1.00	7
weighte	_	1.	00	1.00	1.00	7

Sentence: list all flights on united from san francisco to boston with fare code qx True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NOUN PROPN

Classification Report:

	precision	on re	call f1-s	score s	upport
1	1.0	0 1.	00 1.	.00	5
2	1.0	0 1.	00 1.	.00	4
3	1.0	0 1.	00 1.	.00	3
4	1.0	0 1.	00 1.	.00	1
5	1.0	0 1.	00 1.	.00	1
accur	acy		1.	00	14
macro	avg	1.00	1.00	1.00	14
weighted	d avg	1.00	1.00	1.00	14

Sentence: what is the latest flight from boston to denver that serves a meal

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN

Classification Report:

	precisio	n reca	all f1-s	core su	ıpport
1	1.00	1.0	0 1.	00	2
2	1.00	1.0	0 1.	00	3
3	1.00	1.0	0 1.	00	2
4	1.00	1.0	0 1.	00	1
5	1.00	1.0	0 1.	00	2
6	1.00	1.0	0 1.	00	1
7	1.00	1.0	0 1.	00	1
8	1.00	1.0	0 1.	00	1
accur	асу		1.0	00 1	3
macro	avg	1.00	1.00	1.00	13
weighted	d avg	1.00	1.00	1.00	13

Sentence: list all flights from chicago to seattle on continental which depart on saturday and serve meals

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP NOUN CCONJ VERB NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN DET VERB ADP NOUN CCONJ VERB NOUN

Classification Report:

	precis	sion	reca	ıll f1	-sco	re su	oport
1	1.	.00	1.00	)	1.00	3	3
2	1.	.00	1.00	)	1.00	4	Ļ
3	1.	.00	1.00	)	1.00	3	3
4	1.	.00	1.00	)	1.00	3	}
5	0.	.50	1.00	)	0.67	1	
6	1.	.00	0.00	)	0.00	1	
10	) 1	.00	1.0	0	1.00	)	1
accur	acy				0.94	16	6
macro	avg	0.9	93	0.8	6	0.81	16
weighted	d avg	0	.97	0.9	94	0.92	16

Sentence: could you tell me what the earliest flight that goes between atlanta and denver is which serves a meal

True tags: AUX PRON VERB PRON PRON DET ADJ NOUN ADP VERB ADP PROPN CCONJ PROPN AUX PRON VERB DET NOUN

Predicted tags: AUX PRON VERB PRON DET DET ADJ NOUN ADP VERB ADP

PROPN CCONJ PROPN VERB DET VERB DET NOUN

Classification Report:

precision recall f1-score support

	1	1.0	00	1.0	00	1.0	00	2	
	2	1.0	00	1.0	00	1.0	00	2	
	3	1.0	00	1.0	00	1.0	00	2	
	4	0.7	<b>7</b> 5	1.0	00	3.0	36	3	
	5	0.5	50	1.0	00	0.6	67	2	
	6	1.0	00	0.5	50	0.6	67	4	
	7	1.0	00	1.0	00	1.0	00	1	
	8	1.0	00	0.5	50	0.6	67	2	
	10	1.	00	1.	00	1.	00	1	
aco	curac	y				0.8	4	19	
ma	cro av	√g	0.	92	0.	89	3.0	37	19
weigh	nted a	avg	0	.91	C	.84	0	.84	19

Sentence: give me the saturday morning flights with meals from chicago to minneapolis

True tags: VERB PRON DET NOUN NOUN NOUN ADP NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

		- 1						
	pred	cision	rec	call	f1-sc	ore si	uppo	rt
						_	_	
,	1	1.00	1.0	00	1.00	)	2	
4	2	1.00	1.0	00	1.0	C	3	
;	3	1.00	1.0	00	1.0	<b>C</b>	4	
4	4	1.00	1.0	00	1.0	)	1	
Į.	5	1.00	1.0	00	1.0	<b>C</b>	1	
(	6	1.00	1.0	00	1.0	)	1	
accu	racy				1.00	) 1	12	
macro	o avg	1	1.00	1	.00	1.00	1	2
weighte	ed av	g	1.00	•	1.00	1.00		12

Sentence: list flights from seattle to salt lake city on delta I10

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN ADP

PROPN PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 6 2 1.00 1.00 1.00 3 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 accuracy 1.00 11 1.00 macro avg 1.00 1.00 11 1.00 weighted avg 1.00 1.00 11 Sentence: show me all flights from san diego to phoenix on a boeing 737

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET

PROPN NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

DET PROPN NOUN Classification Report:

	precisio	n reca	all f1-s	core su	pport
1	1.00	0 1.0	0 1.	00 4	4
2	1.00	0 1.0	0 1.	00 3	3
3	0.50	1.0	0 0.	67 <i>'</i>	1
4	1.00	1.0	0 1.	00 ′	1
5	1.00	1.0	0 1.	00 2	2
6	1.00	0 1.0	0 1.	00 ′	1
9	1.00	0.0	0 0.	00	1
accur	асу		0.9	92 1	3
macro weighted	•	0.93 0.96	0.86 0.92	0.81 0.90	13 13

Sentence: what is a d9s

True tags: PRON AUX DET PROPN Predicted tags: PRON AUX DET PROPN

Classification Report:

	•				
precision		call	f1-scc	re su	pport
1 (	00 1	00	1 00	٠ .	1
1.0	, I	·UU	1.00	,	I
1.0	00 1.	.00	1.00	) .	1
1.0	00 1.	.00	1.00	)	1
1.0	00 1.	.00	1.00	)	1
асу			1.00	4	ļ
avg	1.00	1.	.00	1.00	4
d avg	1.00	•	1.00	1.00	4
	1.( 1.( 1.( 1.( acy avg	1.00 1. 1.00 1. 1.00 1. 1.00 1. acy avg 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy avg 1.00 1	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: what is the earliest flight between baltimore and oakland that serves

breakfast

True tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN ADP VERB

**NOUN** 

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN ADP VERB NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

6	1.00	) ′	1.00	1.0	00	1	
7	1.00	) ′	1.00	1.0	00	1	
8	1.00	) ′	1.00	1.0	00	1	
10	1.0	0	1.00	1.	00	1	
accuracy	/			1.0	0	12	
macro av	g	1.00	1	.00	1.00		12
weighted a	vg	1.00	)	1.00	1.00	0	12

Sentence: a breakfast flight from denver to san francisco please

True tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN INTJ Predicted tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN INTJ

Classification Report:

	precis	sion	recall	f1-sco	ore s	suppoi	
1	1.	.00	1.00	1.00	)	3	
2	1.	.00	1.00	1.00	)	2	
3	1.	.00	1.00	1.00	)	2	
5	1.	.00	1.00	1.00	)	1	
13	3 1	.00	1.00	1.0	0	1	
accur	acy			1.00	)	9	
macro	avg	1.0	0 1	.00	1.00		9
weighted	d avg	1.	00	1.00	1.00	)	9

Sentence: list flights between boston and san francisco that serve breakfast True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN ADP VERB NOUN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN ADP VERB NOUN

Classification Report:

	prec	ision	rec	all	†1-s	core	supp	ort
1		1.00	1.0	0	1.0	00	3	
2		1.00	1.0	0	1.0	00	2	
3	,	1.00	1.0	0	1.0	00	2	
4		1.00	1.0	0	1.0	00	2	
10	)	1.00	1.0	00	1.	.00	1	
accur	асу				1.0	00	10	
macro	avg	1.	00	1	.00	1.0	00	10
weighte	d avg	j 1	.00	•	1.00	1.	00	10

Sentence: give me all flights from boston to philadelphia next week arriving after lunch

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADJ NOUN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADJ NOUN VERB ADP NUM

Classification Report:

precision recall f1-score support

1	1.00	1.0	0	1.00	) :	2	
2	1.00	1.0	0	1.00	) ;	3	
3	1.00	0.6	7	0.80	) ;	3	
4	1.00	1.0	0	1.00	) :	2	
5	1.00	1.0	0	1.00		1	
6	1.00	1.0	0	1.00		1	
7	1.00	1.0	0	1.00		1	
9	0.00	1.0	0	0.00	) (	0	
accuracy				0.92	1	3	
macro avo	<b>)</b> 0	.88.	0.9	6	0.85		13
weighted av	g	1.00	0.9	92	0.95		13

Sentence: please show me flights from pittsburgh to atlanta on wednesday morning serving breakfast

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN NOUN VERB NOUN

Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN

Classification Report:

	precision		recall f1-score		ore su	upport
1	1.	00	1.00	1.0	0	2
2	1.	00	1.00	1.0	0	3
3	1.	00	1.00	1.0	0	4
4	1.	00	0.50	0.6	7	2
6	1.	00	1.00	1.0	0	1
9	0.	00	1.00	0.0	0	0
13	3 1	.00	1.00	1.0	00	1
accur	•	0.0		0.92		13
macro weighted	_	0.80 1.0		.93 0.92	0.81 0.95	13 13

Sentence: what is the first flight that goes from atlanta to baltimore that serves breakfast

True tags: PRON AUX DET ADJ NOUN ADP VERB ADP PROPN ADP VERB NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP VERB ADP PROPN ADP PROPN ADP VERB NOUN

Classification Report:

precision recall f1-score support 1.00 1.00 1 1.00 2 2 1.00 1.00 1.00 4 2 3 1.00 1.00 1.00 4 1.00 1.00 1.00 2 5 1.00 1.00 1.00 1 1.00 1.00 1.00

Sentence: which flights arrive in <unk> louis from <unk> paul on thursday morning True tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN

Predicted tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN ADP NOUN NOUN

Classification Report:

	preci	sion	rec	all	†1-s	core	supp	ort
1	1	.00	1.0	0	1.0	00	4	
2	1	.00	1.0	0	1.	00	3	
3	1	.00	1.0	0	1.	00	3	
4	1	.00	1.0	0	1.	00	1	
5	1	.00	1.0	0	1.	00	1	
accur	acy				1.0	00	12	
macro	avg	1	.00	1	.00	1.0	00	12
weighted	d avg	•	1.00	•	1.00	1.	00	12

Sentence: i would like one flight from kansas city to <unk> paul arriving around dinnertime 6 pm

True tags: PRON AUX VERB NUM NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN NUM NOUN

Predicted tags: PRON AUX VERB NUM NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN NUM NOUN

Classification Report:

	precisio	on red	call f	1-score	e suppo	ort
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	3	
4	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
9	1.0	0 1.	00	1.00	2	
accur	асу			1.00	16	
macro weighted	_	1.00 1.00	1.0 1.		.00 1.00	16 16

Sentence: list flights from dallas to houston arriving sunday afternoon True tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Classification Report:

	precis	ion re	call	f1-scc	re su	pport
1	1.0	00 1	.00	1.00	) :	2
2	1.0	00 1	.00	1.00	) :	2
3	1.0	00 1	.00	1.00	) ;	3
4	1.0	00 1	.00	1.00	) :	2
accur	acy			1.00	ç	)
macro	avg	1.00	1	.00	1.00	9
weighte	d avg	1.00	•	1.00	1.00	9

Sentence: list nonstop flights from baltimore washington airport to oakland that depart in the afternoon

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

Classification Report:

	precision		recall f1		ore su	pport
1	1.0	00	1.00	1.0	0 4	4
2	1.0	00	1.00	1.0	0 4	4
3	1.0	00	1.00	1.0	0	3
4	1.0	00	1.00	1.0	0 :	2
5	1.0	00	1.00	1.0	0	1
accur	acy			1.00	) 1	4
macro	avg	1.00	) 1	.00	1.00	14
weighted	d avg	1.0	0	1.00	1.00	14

Sentence: i need flight information on thursday leaving pittsburgh and arriving in baltimore in the morning

True tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN CCONJ VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN CCONJ VERB ADP PROPN ADP DET NOUN

	precision	on re	call	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	2	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	4	
4	1.0	0 1.	.00	1.00	3	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
10	1.0	00 1	.00	1.00	) 1	
accura	асу			1.00	15	
macro	avg	1.00	1	.00	1.00	15
veighted	d avg	1.00	•	1.00	1.00	15

Sentence: morning flights out of san francisco arriving boston afternoon True tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Predicted tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Classification Report:

	precis	ion re	call	f1-scc	re su	pport
1	1.0	00 1	.00	1.00	) 3	3
2	1.0	00 1	.00	1.00	) 2	2
3	1.0	00 1	.00	1.00	) 3	3
4	1.0	00 1	.00	1.00	) 1	1
accur	асу			1.00	9	)
macro	avg	1.00	1	.00	1.00	9
weighte	d avg	1.00	•	1.00	1.00	9

Sentence: i would like to <unk> my flight in washington dc stop in denver with the destination city of san francisco

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN VERB ADP PROPN ADP DET NOUN PROPN ADP PROPN

Predicted tags: PRON AUX VERB PART VERB VERB NOUN ADP PROPN PROPN VERB ADP PROPN ADP DET ADJ PROPN ADP PROPN PROPN Classification Report:

	precis	ion r	ecall	f1-sco	re supp	ort
1	1.0	00 -	1.00	1.00	6	
2	1.0	00 1	1.00	1.00	4	
3	1.0	00 0	0.50	0.67	2	
4	0.7	75 <i>^</i>	1.00	0.86	3	
5	1.0	00 0	0.50	0.67	2	
6	1.0	00 1	1.00	1.00	1	
7	0.0	00 1	1.00	0.00	0	
8	1.0	00 1	1.00	1.00	1	
12	2 1.	.00	1.00	1.00	) 1	
accura macro	•	0.86	0	0.90 .89	20 0.80	20
weighted	_	0.96		0.90	0.91	20

Sentence: show me a list of flights on july twenty second leaving dc to dallas leaving dc after 6 pm

True tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB PROPN ADP PROPN VERB PROPN ADP NUM NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4

```
3
           1.00
                   1.00
                           1.00
                                     4
      4
           1.00
                   1.00
                           1.00
                                     3
      5
                                     1
           1.00
                   1.00
                           1.00
      6
           1.00
                   1.00
                           1.00
                                     1
      7
           1.00
                   1.00
                           1.00
                                     1
      9
                                     2
           1.00
                   1.00
                           1.00
                                   19
  accuracy
                           1.00
                1.00
                       1.00
                               1.00
                                        19
 macro avg
weighted avg
                1.00
                        1.00
                                1.00
                                         19
```

Sentence: what airlines from washington dc to columbus True tags: DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore si	upport
1	1.0	0 1.	00	1.00	)	3
2	1.0	0 1.	00	1.00	)	2
3	1.0	0 1.	00	1.00	)	1
5	1.0	0 0.	00	0.0	)	1
6	0.0	0 1.	00	0.00	)	0
accura	асу			0.86	6	7
macro	avg	0.80	0	.80	0.60	7
weighted	d avg	1.00	(	0.86	0.86	7

Sentence: list flights from washington dc to boston

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

port
7
7

Sentence: could you please give me information <unk> american airlines a flight from washington dc to philadelphia the earliest one in the morning as possible True tags: AUX PRON INTJ VERB PRON NOUN VERB PROPN PROPN DET NOUN ADP PROPN PROPN ADP PROPN DET ADJ PRON ADP DET NOUN ADP ADJ

Predicted tags: AUX PRON INTJ VERB PRON NOUN PROPN PROPN PROPN DET NOUN ADP PROPN PROPN ADP PROPN DET ADJ NUM ADP DET NOUN NOUN NUM

# Classification Report:

	precis	sion	recal	l f1-sc	ore :	supp	ort
1	0.	83	1.00	0.9	1	5	
2	1.	.00	0.75	0.8	6	4	
3	0.	75	1.00	0.8	6	3	
4	1.	.00	0.50	0.6	7	2	
5	1.	.00	1.00	1.0	0	3	
6	1.	.00	0.67	0.8	0	3	
7	1.	.00	0.50	0.6	7	2	
8	1.	.00	1.00	1.0	0	1	
9	0.	.00	1.00	0.0	0	0	
13	3 1	.00	1.00	) 1.0	00	1	
accur	acy			0.8	3	24	
macro	avg	3.0	36	0.84	0.78	,	24
weighte	d avg	0.	93	0.83	0.8	6	24

Sentence: list flights from washington dc to pittsburgh

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore su	upport
1	1	00	1.00	1.00	<b>1</b>	3
2		00	1.00	1.00		2
3	1.	00	1.00	1.00	)	1
4	1.	00	1.00	1.00	)	1
				4.00		7
accur	acy			1.00	)	1
macro	avg	1.0	00 1	.00	1.00	7
weighted	d avg	1.	.00	1.00	1.00	7

Sentence: i need a flight from washington dc to san diego

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

PROPN

	precis	ion	recall	f1-sco	re supp	ort
1	1.	00	1.00	1.00	4	
2	1.	00	1.00	1.00	2	
3	1.	00	1.00	1.00	1	
4	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
accur	асу			1.00	10	
macro	avg	1.00	<b>1</b>	.00	1.00	10
weighte	d avg	1.0	00 ′	1.00	1.00	10

Sentence: i would like to fly from boston to baltimore please tell me what are the times of the flights

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN INTJ VERB PRON PRON AUX DET NOUN ADP DET NOUN

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN INTJ VERB PRON DET AUX DET NOUN ADP DET NOUN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	3	
5	0.67	1.00	0.80	2	
6	1.00	0.67	0.80	3	
8	1.00	1.00	1.00	2	
12	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accuracy	/		0.95	19	
macro av	g 0.9	96 0	.96 0.9	96	19
weighted a	vg 0	.96 (	0.95 0.	95	19

Sentence: does flight dl <unk> dl <unk> from boston to denver stop in philadelphia True tags: AUX NOUN PROPN NUM PROPN NUM ADP PROPN ADP PROPN VERB ADP PROPN

Predicted tags: AUX NOUN PROPN AUX PROPN AUX ADP PROPN ADP PROPN VERB ADP PROPN

Classification Report:

		-					
	precisi	on re	ecall	f1-sc	ore s	uppo	ort
1	1.0	n 1	.00	1.0	0	5	
-	_	-				5	
2	1.0	0 1	.00	1.0	0	3	
3	1.0	0 1	.00	1.0	0	1	
4	1.0	0 1	.00	1.0	0	1	
8	0.3	3 1	.00	0.5	0	1	
9	1.0	0 0	00.0	0.0	0	2	
accur	acy			0.8	5	13	
macro	avg	0.89	0	.83	0.75		13
weighte	d avg	0.95	5 (	0.85	0.81		13

Sentence: what kind of airplane is flight ua 281 from boston to denver

True tags: DET NOUN ADP NOUN AUX NOUN PROPN NUM ADP PROPN ADP

PROPN

Predicted tags: PRON NOUN ADP NOUN AUX NOUN PROPN VERB ADP PROPN

**ADP PROPN** 

Classification Report:

precision recall f1-score support

1	1.00	1.0	0	1.0	0	3	
2	1.00	1.0	0	1.0	0	3	
3	1.00	1.0	0	1.0	0	3	
4	0.00	1.0	0	0.0	0	0	
5	1.00	0.0	0	0.0	0	1	
6	0.00	1.0	0	0.0	0	0	
8	1.00	1.0	0	1.0	0	1	
9	1.00	0.0	0	0.0	0	1	
accuracy	/			0.83	3	12	
macro av	g C	).75	0.	75	0.50	)	12
weighted a	vg	1.00	0	.83	8.0	3	12

Sentence: what is the price of american airlines flight <unk> from new york to los angeles

True tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN NUM ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN VERB ADP PROPN PROPN ADP PROPN PROPN

Classification Report:

	hi eci	51011	Teca	11 11-3	COLE	supp	OIL
1	1	.00	1.00	) 1	.00	6	
2	1	.00	1.00	) 1	.00	3	
3	1	.00	1.00	) 1	.00	2	
4	0	.00	1.00	0	.00	0	
5	1	.00	1.00	) 1	.00	1	
6	1	.00	1.00	) 1	.00	1	
8	1	.00	1.00	) 1	.00	1	
9	1	.00	0.00	0 (	.00	1	
accur	acy			0.	93	15	
macro	avg	0.8	38	0.88	0.7	5	15
weighted	•	1	.00	0.93	0.9	93	15

precision recall f1-score support

Sentence: what is the first class fare on united flight <unk> from denver to boston True tags: PRON AUX DET ADV NOUN NOUN ADP PROPN NOUN NUM ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN NOUN AUX ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 1 3 2 1.00 1.00 1.00 3 3 1.00 1.00 1.00 3 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 0.00 1.00 0.00

8	0.50	1.0	00	0.67	•	1	
9	1.00	0.0	00	0.00		1	
11	1.00	0.0	00	0.00	)	1	
accuracy				0.86	,	14	
macro avo	g 0	.83	0.7	8	0.63		14
weighted av	'q	0.96	0.8	36	0.83		14

Sentence: how much does flight ua 281 from boston to denver cost

True tags: ADV ADV AUX NOUN PROPN NUM ADP PROPN ADP PROPN VERB Predicted tags: ADJ ADJ AUX NOUN PROPN VERB ADP PROPN ADP PROPN

VERB

Classification Report:

	precis	sion	recall	f1-sco	ore su	upport
1	1	00	1.00	1.00	1	3
2		00	1.00	1.00		2
3		00	1.00	1.00		1
4	0.	50	1.00	0.67	7	1
7	0.	00	1.00	0.00	)	0
8		00	1.00	1.00		1
9		00	0.00	0.00		1
11	1	.00	0.00	0.0	0	2
				0.70		ı.a
accur	•	0.8	1 (	0.73 0.75	0.58	1   11
macro weighted	_	0.8		0.73	0.56	11
weignie	aavy	0.0	,,,	0.75	0.70	- 11

Sentence: does flight dl <unk> from philadelphia to denver fly on saturdays True tags: AUX NOUN PROPN PROPN ADP PROPN VERB ADP PROPN

Predicted tags: AUX NOUN PROPN AUX ADP PROPN ADP PROPN VERB ADP DET

Classification Report:

	prec	ision	reca	ll f1-s	core	supp	ort
1		1.00	0.60	0.	75	5	
2		1.00	1.00	1.	00	3	
3	,	1.00	1.00	1.	00	1	
4		1.00	1.00	1.	00	1	
5	, (	0.00	1.00	0.	00	0	
8	; (	0.50	1.00	0.	67	1	
accur	acy			0.0	32	11	
macro	avg	0.	75	0.93	0.7	<b>'</b> 4	11
weighte	d avg	, 0	.95	0.82	0.	86	11

Sentence: what airline is dl <unk>

True tags: DET NOUN AUX PROPN NUM

Predicted tags: PRON NOUN AUX PROPN PROPN

### Classification Report:

	precis	ion	recall	f1-sc	ore	suppo	ort
1	0.5	50	1.00	0.6	57	1	
3	1.0	00	1.00	1.0	0	1	
5	1.0	00	0.00	0.0	0	1	
6	0.0	00	1.00	0.0	0	0	
8	1.0	00	1.00	1.0	0	1	
9	1.0	00	0.00	0.0	0	1	
accura	асу			0.6	0	5	
macro	avg	0.7	5 0	.67	0.44	ļ	5
weighted	d avg	0.9	90 (	0.60	0.5	3	5

Sentence: what first class airplane goes from philadelphia to san francisco and stops in dallas in the afternoon on monday

True tags: DET ADV NOUN NOUN VERB ADP PROPN ADP PROPN PROPN CCONJ VERB ADP PROPN ADP DET NOUN ADP NOUN

Predicted tags: PRON ADJ NOUN NOUN ADJ ADP PROPN ADP PROPN

CCONJ VERB ADP PROPN ADP DET NOUN ADP NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	4	
4	1.00	0.50	0.67	2	
5	1.00	0.50	0.67	2	
6	0.00	1.00	0.00	0	
7	0.00	1.00	0.00	0	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accura macro	_	78 0	0.84 .78 0.5	19 so	19
weighted	0			88	19

Sentence: what planes are used by twa

True tags: DET NOUN AUX VERB ADP PROPN

Predicted tags: PRON NOUN AUX VERB ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 1 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 8 1.00 1.00 1.00 1

accuracy		8.0	3 6	
macro avg	0.86	0.86	0.71	6
weighted avg	1.00	0.83	0.83	6

Sentence: <unk> leaving denver to san francisco before 10 am what type of aircraft is used

True tags: VERB VERB PROPN ADP PROPN PROPN ADP NUM NOUN DET NOUN ADP NOUN AUX VERB

Predicted tags: AUX VERB PROPN ADP PROPN ADP NUM NOUN DET

NOUN ADP NOUN AUX VERB

Classification Report:

	preci	sion	reca	all	f1-sc	ore	supp	ort
1	1	.00	1.0	0	1.0	0	3	
2	. 1	.00	1.0	0	1.0	0	3	
3	1	.00	1.0	0	1.0	0	3	
4	. 1	.00	0.6	7	0.8	0	3	
5	1	.00	1.0	0	1.0	0	1	
8	C	.50	1.0	0	0.6	7	1	
9	1	.00	1.0	0	1.0	0	1	
accur	acy				0.9	3	15	
macro	avg	0.	93	0	.95	0.9	2	15
weighte	d avg	C	).97	(	0.93	0.	94	15

Sentence: what kinds of planes are used by midway airlines

True tags: DET NOUN ADP NOUN AUX VERB ADP NOUN PROPN

Predicted tags: PRON AUX ADP NOUN AUX VERB ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scc	re su	pport
1	0.5	50 1.	.00	0.67	7 1	
2	1.0	0 1.	.00	1.00	) 2	2
3	1.0	0 0	.33	0.50	) 3	3
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 0	.00	0.00	) 1	
6	0.0	0 1.	.00	0.00	) (	)
8	0.5	50 1	.00	0.67	7 1	l
accur	асу			0.67	9	
macro	avg	0.71	0	.76	0.55	9
weighted	d avg	0.89	(	0.67	0.65	9

Sentence: what type of aircraft leaves from boston to washington dc at 9 am during a weekday

True tags: DET NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP DET NOUN

Predicted tags: PRON NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN NUM DET NOUN

## Classification Report:

	precisio	n red	call	f1-scc	re su	pport
1	1.00	) 1.0	00	1.00	) (	3
2	1.00	0.0	80	0.89	) !	5
3	1.00	) 1.0	00	1.00	) 4	1
4	1.00	) 1.0	00	1.00	) '	1
5	1.00	0.9	50	0.67	7 2	2
6	0.00	) 1.0	00	0.00	) (	)
9	0.50	) 1.0	00	0.67	,	1
accura	асу			0.88	10	6
macro	avg	0.79	0	.90	0.75	16
weighted	d avg	0.97	(	0.88	0.90	16

Sentence: what type of aircraft are flying from cleveland to dallas before noon True tags: DET NOUN ADP NOUN AUX VERB ADP PROPN ADP NOUN

Predicted tags: PRON NOUN ADP NOUN VERB VERB ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	1.	.00	1.00	1.	00	2	
2	1.	.00	1.00	1.	00	4	
3	1.	.00	1.00	1.	00	3	
4	0.	50	1.00	0.	67	1	
5	1.	.00	0.00	0.	00	1	
6	0.	.00	1.00	0.	00	0	
8	1.	.00	0.00	0.	00	1	
accur	acy			0.0	33	12	
macro	avg	0.7	'9	0.71	0.5	2	12
weighted	d avg	0.	96	0.83	0.8	31	12

Sentence: what airplane types fly from pittsburgh to baltimore True tags: DET NOUN NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN NOUN VERB ADP PROPN ADP PROPN

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
accuracy	,		0.88	8	
macro av	g 0.8	33 0	.83 0.6	67	8

weighted avg 1.00 0.88 0.88 8

Sentence: what is ground transportation between the san francisco airport and the

True tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN CCONJ DET PROPN

Predicted tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN

CCONJ DET PROPN Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	1.	.00	1.00	1.	00	4	
2	1.	.00	1.00	1.	00	1	
3	1.	.00	1.00	1.	00	2	
5	1.	.00	1.00	1.	00	2	
6	1.	.00	1.00	1.	00	1	
8	1.	.00	1.00	1.	00	1	
10	) 1	.00	1.00	) 1	.00	1	
accur	асу			1.0	00	12	
macro weighted	_	1.0 1.	00 00	1.00 1.00	1.0 1.0		12 12

Sentence: what flights on united leave la guardia for san jose and arrive around 10 pm

True tags: DET NOUN ADP PROPN VERB PROPN PROPN ADP PROPN PROPN CCONJ VERB ADP NUM NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN CCONJ VERB ADP PROPN NOUN

Classification Report:

precision		f1-score	support
0.71	1.00	0.83	5
1.00	1.00	1.00	3
1.00	1.00	1.00	2
1.00	0.50	0.67	2
1.00	0.00	0.00	1
0.00	1.00	0.00	0
1.00	0.00	0.00	1
1.00	1.00	1.00	1
су		0.80	15
avg 0.			56 15 77 15
	0.71 1.00 1.00 1.00 1.00 0.00 1.00 1.00	0.71 1.00 1.00 1.00 1.00 1.00 1.00 0.50 1.00 0.00 0.00 1.00 1.00 0.00 1.00 1.00	0.71 1.00 0.83 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.50 0.67 1.00 0.00 0.00 0.00 1.00 0.00 1.00 0.00 0.00 1.00 1.00 1.00 cy 0.80 avg 0.84 0.69 0.5

Sentence: what ground transportation is available from the denver airport to

downtown denver

True tags: DET NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP NOUN

PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP

**NOUN PROPN** 

Classification Report:

	precis	ion	recall	f1-sc	ore sup	oport
1	1.0	00	1.00	1.00	0 3	}
2	1.0	00	1.00	1.00	) 2	) -
3	1.0	00	1.00	1.0	) 3	3
5	1.0	00	0.50	0.6	7 2	<u>)</u>
6	0.0	00	1.00	0.0	O C	)
7	1.0	00	1.00	1.0	) 1	
8	1.0	00	1.00	1.0	0 1	
accur	acy			0.92	2 12	2
macro	avg	0.8	6 0	.93	0.81	12
weighted	d avg	1.0	00	0.92	0.94	12

Sentence: list us air flights leaving saturday from charlotte airport around 1 pm True tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN ADP NUM NOUN

Predicted tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN ADP PROPN NOUN

Classification Report:

Ciacoinio	auon i	00011.				
	precisi	on r	ecall	f1-sco	ore sup	oport
1	0.8	0 1	1.00	0.89	9 4	Ļ
2	1.0	0 1	1.00	1.00	) 2	<u>)</u>
3	1.0	0 1	1.00	1.00	) 3	}
4	1.0	0 1	1.00	1.00	) 2	<u>)</u>
9	1.0	0 (	0.00	0.00	) 1	
accur	acy			0.92	! 12	2
macro	avg	0.96	0	.80	0.78	12
weighted	d avg	0.93	3	0.92	0.88	12

Sentence: could you tell me about ground transportation arrangements from the dallas airport to downtown dallas

True tags: AUX PRON VERB PRON ADP NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: AUX PRON VERB PRON ADP NOUN NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	4
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	2

8 1.00 1.00 1.00 1 accuracy 1.00 15

macro avg 1.00 1.00 1.00 15 weighted avg 1.00 1.00 1.00 15

Sentence: please list the flights taking off and landing on general mitchell

international airport

True tags: INTJ VERB DET NOUN VERB ADV CCONJ NOUN ADP PROPN PROPN PROPN

Predicted tags: INTJ VERB DET NOUN NOUN VERB CCONJ PRON ADP PROPN PROPN PROPN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	1.0	00	1.00	1.	00	4	
2	1.0	00	1.00	1.	00	1	
3	0.	50	0.50	0.	50	2	
4	0.	50	0.50	0.	50	2	
5	1.0	00	1.00	1.	00	1	
6	0.0	00	1.00	0.	00	0	
10	) 1.	.00	1.00	) 1	.00	1	
11	1.	00	0.00	0	.00	1	
13	3 1.	.00	1.00	) 1	.00	1	
accur	acy			0.7	77	13	
macro	avg	0.7	<b>7</b> 8	0.78	0.6	<b>57</b>	13
weighted	d avg	0.	85	0.77	0.	77	13

Sentence: i <unk> like to fly from cleveland to indianapolis tomorrow morning as early as possible what <unk> available

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN ADP ADV ADP ADJ PRON AUX ADJ

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN ADP NUM ADP NUM DET AUX ADJ

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
5	0.00	1.00	0.00	0
6	1.00	0.50	0.67	2
7	1.00	0.50	0.67	2
8	1.00	1.00	1.00	2
9	0.00	1.00	0.00	0
11	1.00	0.00	0.00	1
12	1.00	1.00	1.00	1

accuracy		0.8	3 18	8
macro avg	0.82	0.82	0.67	18
weighted avg	1.00	0.83	0.87	18

Sentence: i need a flight from logan to atlanta this afternoon

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN DET NOUN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN DET NOUN

Classification Report:

	precisi	on re	call	f1-sco	ore sup	port
1	1.0	0 1.	.00	1.00	) 2	
2	1.0	0 1.	.00	1.00	) 2	
3	1.0	0 1.	.00	1.00	) 2	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 2	
6	1.0	0 1.	.00	1.00	) 1	
accur	acy			1.00	) 10	
macro	avg	1.00	1	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: give me the latest flight tomorrow on american airlines from milwaukee to tacoma

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP

PROPN ADP PROPN Classification Report:

	precisio	n reca	ll f1-scor	e suppo	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
accur	асу		1.00	13	
macro weighted	•	1.00 1.00	1.00 1 1.00	1.00 1.00	13 13

Sentence: i <unk> like to fly from columbus to nashville tomorrow morning

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN

NOUN

Classification Report:

precision recall f1-score support

1.00 1.00 1.00 2

Sentence: and what is the last flight from denver to boston for tomorrow evening True tags: CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP NOUN NOUN

Predicted tags: CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP NOUN NOUN

Classification Report:

		1					
	precis	ion	recall	f1-sc	ore s	suppo	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	0	3	
3	1.	00	1.00	1.0	0	3	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	00	1	
7	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
10	) 1	.00	1.00	1.0	00	1	
accur	acy			1.0	0	13	
macro	avg	1.0	0 1	.00	1.00		13
weighted	d avg	1.0	00	1.00	1.00	)	13

Sentence: list evening flights tomorrow from phoenix to detroit True tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN Classification Report:

	precision	on re	call f	1-scor	e supp	ort
1	1.0		00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	3	
4	1.0	0 1.	00	1.00	1	
accura	асу			1.00	8	
macro	avg	1.00	1.0	0 1	1.00	8
weighted	d avg	1.00	1.	00	1.00	8

Sentence: show me the flights on continental from indianapolis to san diego in the afternoon tomorrow

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN

PROPN ADP DET NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN

PROPN ADP DET NOUN NOUN

Classification Report:

1 1.00 1.00 1.00 4 2 1.00 1.00 1.00 4 3 1.00 1.00 1.00 3 4 1.00 1.00 1.00 1	rt
3 1.00 1.00 1.00 3	
4 1.00 1.00 1.00 1	
5 1.00 1.00 1.00 2	
6 1.00 1.00 1.00 1	
accuracy 1.00 15	
macro avg 1.00 1.00 1.00 1	5
weighted avg 1.00 1.00 1.00	15

Sentence: how many flights does northwest have leaving dulles True tags: ADV ADJ NOUN AUX PROPN VERB VERB PROPN Predicted tags: ADJ ADJ NOUN AUX PROPN VERB VERB VERB

Classification Report:

Ciaconio	auoni	opoit.				
	precisi	on r	ecall	f1-sc	ore su	upport
1	1.0	0 (	0.50	0.6	7	2
3	1.0		1.00	1.0		1
4	0.6	7 1	00.1	0.8	0	2
7	0.5	0 1	00.1	0.6	7	1
8	1.0		00.1	1.0		1
11	1.0	00	0.00	0.0	0	1
					_	_
accur	acy			0.75	5	8
macro	avg	0.86	0	.75	0.69	8
weighted	d avg	0.85	5 (	0.75	0.70	8

Sentence: nonstop flights from new york city to las vegas on sunday

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

**ADP NOUN** 

	preci	sion	rec	all	f1-s	core	supp	ort
1	1	.00	1.0	0	1.	00	5	
2	1	.00	1.0	0	1.	00	3	
3	1	.00	1.0	0	1.	00	3	
accur	acy				1.0	00	11	
macro	avg	1.	.00	1.	.00	1.0	00	11
weighted	d avg	•	1.00	•	1.00	1.	00	11

Sentence: show me the flights from los angeles to pittsburgh which arrive at

pittsburgh on monday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB

ADP PROPN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN DET VERB ADP PROPN ADP NOUN

Classification Report:

	prec	ision	recall	f1-sco	re sup	port
1		1.00	1.00	1.00	4	
2		1.00	0.80	0.89	5	
3	•	1.00	1.00	1.00	2	
4		1.00	1.00	1.00	2	
5	(	0.50	1.00	0.67	1	
6	•	1.00	1.00	1.00	1	
accur	acy			0.93	15	
macro weighte	_		92 ( .97	).97 0.93	0.93 0.94	15 15

Sentence: show me all flights from philadelphia to dallas which arrive in dallas before 3 <unk> pm on saturday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN DET VERB ADP PROPN ADP NUM AUX NOUN ADP NOUN

Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	0.83	0.91	6	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	2	
5	0.50	1.00	0.67	1	
6	1.00	1.00	1.00	1	
8	0.00	1.00	0.00	0	
9	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accuracy macro av weighted av	g 0.8		0.89 .87 0.7 0.89 0.	18 '3 90	18 18
weignted av	vy U	.51	ე. <del>ს</del> მ	90	10

Sentence: what flights leave pittsburgh and arrive in los angeles after 5 pm on thursday

True tags: DET NOUN VERB PROPN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

Predicted tags: PRON NOUN VERB PROPN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

## Classification Report:

	precis	ion	recall	f1-scc	ore sup	port
1	1.0	00	1.00	1.00	) 3	
2	1.0	00	1.00	1.00	) 3	
3	1.0	00	1.00	1.00	) 3	
4	1.0	00	1.00	1.00	) 2	
5	1.0	00	0.00	0.00	) 1	
6	0.0	00	1.00	0.00	0 0	
9	1.0	00	1.00	1.00	) 1	
10	) 1.	.00	1.00	1.0	0 1	
accur	acy			0.93	14	
macro	avg	0.8	8 0	.88	0.75	14
weighted	d avg	1.0	00	0.93	0.93	14

Sentence: what is the earliest flight arriving in charlotte from <unk> louis on friday True tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	precis	sion	recall	f1-sco	re supp	ort
1	1.	.00	1.00	1.00	3	
2	1.	.00	1.00	1.00	3	
3	1.	.00	1.00	1.00	2	
4	. 1.	.00	1.00	1.00	1	
5	1.	.00	1.00	1.00	1	
6	1.	.00	1.00	1.00	1	
7	' <b>1</b> .	.00	1.00	1.00	1	
8	1.	.00	1.00	1.00	1	
accur	acy			1.00	13	
macro	avg	1.0	0 1	.00	1.00	13
weighte	d avg	1.	00	1.00	1.00	13

Sentence: what flights do you have from boston to pittsburgh on wednesday of next week after 6 pm

True tags: DET NOUN AUX PRON VERB ADP PROPN ADP PROPN ADP NOUN ADP ADJ NOUN ADP NUM NOUN

Predicted tags: PRON NOUN AUX PRON VERB ADP PROPN ADP PROPN ADP NOUN ADP ADJ NOUN ADP NUM NOUN

pı	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	5
3	1.00	1.00	1.00	4
4	1 00	1 00	1 00	1

_	4 00	•	^^	~ ~	^	4	
5	1.00	0.0	UU	0.0	U	1	
6	0.50	1.0	00	0.6	7	1	
7	1.00	1.0	00	1.0	0	1	
8	1.00	1.0	00	1.0	0	1	
9	1.00	1.0	00	1.0	0	1	
					_		
accurac	У			0.94	4	17	
macro av	/g	0.94	0.8	89	0.85	;	17
weighted a	ıvg	0.97	0	.94	0.9	2	17

Sentence: i <unk> like a flight from <unk> petersburg to miami on that next thursday True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP DET ADJ NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP DET ADJ NOUN

Classification Report:

	precis	ion	recall	f1-s	core s	suppo	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	3	
3	1.	00	1.00	1.0	00	2	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	2	
6	1.	00	1.00	1.0	00	1	
7	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
accur	асу			1.0	00	14	
macro	avg	1.0	0 1	1.00	1.00		14
weighted	d avg	1.0	00	1.00	1.0	0	14

Sentence: i <unk> like to travel from kansas city to chicago next wednesday

True tags: PRON AUX VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ NOUN

Predicted tags: PRON AUX VERB PART VERB ADP PROPN PROPN ADJ NOUN

	prec	ision	reca	all f1-	score	supp	ort
1		1.00	1.00	0 1	.00	3	
2		1.00	1.00	) 1	.00	2	
3		1.00	1.00	) 1	.00	1	
4		1.00	1.00	) 1	.00	2	
6		1.00	1.00	) 1	.00	1	
7		1.00	1.00	) 1	.00	1	
8		1.00	1.00	) 1	.00	1	
12	2	1.00	1.0	0	1.00	1	
accur	асу			1	.00	12	
macro	avg	1.	.00	1.00	1.	00	12

weighted avg 1.00 1.00 1.00 12

Sentence: i would like to fly from boston to philadelphia next thursday

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADJ NOUN Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADJ

NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accura	асу		1.00	11	
macro	avg 1	.00 1	.00 1.0	00	11
weighted	d avg	1.00	1.00 1.	00	11

Sentence: tell me about flights from atlanta to charlotte next monday
True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN ADJ NOUN
Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN ADJ NOUN
Classification Report:

10
10

Sentence: what flights go from pittsburgh to baltimore after 8 <unk> next wednesday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV ADJ NOUN Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NUM NUM ADJ NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

5	1.00	0.0	00	0.0	0	1	
6	0.00	1.0	00	0.0	0	0	
7	1.00	1.0	00	1.0	0	1	
9	0.50	1.0	00	0.6	7	1	
11	1.00	0.	00	0.0	0	1	
accurac	y			0.83	3 1	2	
macro a	vg	0.83	0.	78	0.63		12
weighted a	avg	0.96	0	.83	0.81		12

Sentence: give me the fares for round trip flights from cleveland to miami next wednesday

True tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADJ NOUN

Classification Report:

precisi	on re	ecall	f1-sc	ore su	pport
1.0	0 1	.00	1.0	) :	2
1.0	0 1	.00	1.0	) ;	3
1.0	0 1	.00	1.0	) :	5
1.0	0 1	.00	1.0	) ·	1
1.0	0 1	.00	1.0	) ·	1
1.0	0 1	.00	1.0	) ·	1
1.0	0 1	.00	1.0	) ·	1
асу			1.00	) 1	4
avg	1.00	1	.00	1.00	14
l avg	1.00	)	1.00	1.00	14
	1.0 1.0 1.0 1.0 1.0 1.0 1.0 acy avg	1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: i want to leave chicago next tuesday and arrive in detroit around 6 pm True tags: PRON VERB PART VERB PROPN ADJ NOUN CCONJ VERB ADP PROPN ADP NUM NOUN

Predicted tags: PRON VERB PART VERB PROPN ADJ NOUN CCONJ VERB ADP

PROPN ADP NUM NOUN

pre	ecision	recall	f1-score	support
1 2	1.00 1.00	1.00 1.00	1.00 1.00	2 2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	3
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
9	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
12	1.00	1.00	1.00	1
accuracy			1.00	14

macro avg	1.00	1.00	1.00	14
weighted ava	1.00	1.00	1.00	14

Sentence: i want a flight from montreal to washington dc

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	precisio	n red	all	f1-sco	re su	nnort
	prodicio		Jan	11 000	10 00	pport
1	1.00	1.0	00	1.00	) :	3
2	1.00	1.0	00	1.00	)	2
3	1.00	1.0	00	1.00	)	1
4	1.00	1.0	00	1.00	)	1
5	1.00	1.0	00	1.00	)	1
6	1.00	1.0	00	1.00	)	1
accur	acy			1.00	ć	)
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: show me the flights leaving from atlanta for washington dc on thursday morning

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

Classification Report:

	precis	sion	reca	II f1-	score	supp	ort
1	1	.00	1.00	) -	1.00	3	
2	1	.00	1.00	) 1	1.00	3	
3	1	.00	1.00	) 1	1.00	3	
4	1	.00	1.00	) 1	1.00	2	
5	1	.00	1.00	) 1	1.00	1	
6	1	.00	1.00	) 1	1.00	1	
accur	acy			1	.00	13	
macro	avg	1.0		1.00	1.0	00	13
weighted	d avg	1.	.00	1.00	) 1	.00	13

Sentence: show me flights from denver to dc on wednesday

True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

6 1	.00 1	.00 1.	00	1
accuracy		1.0	00	9
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: please give me the flights from san francisco to washington dc True tags: INTJ VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: INTJ VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

**PROPN** 

Classification Report:

	precis	sion	recall	f1-scc	re sup	port
1	1.	00	1.00	1.00	) 4	
2	1.	00	1.00	1.00	) 2	
3	1.	00	1.00	1.00	) 1	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
13	3 1	.00	1.00	1.0	0 1	
accur	асу			1.00	11	
macro	avg	1.0	0 1	.00	1.00	11
weighted	d avg	1.	00	1.00	1.00	11

Sentence: show me the prices of all flights from atlanta to washington dc

True tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 3 3 2 1.00 1.00 1.00 4 1.00 1 1.00 1.00 5 1.00 2 1.00 1.00 6 1.00 1.00 1.00 accuracy 1.00 12 1.00 1.00 1.00 12 macro avg weighted avg 1.00 12 1.00 1.00

Sentence: what is the latest flight on wednesday going from atlanta to washington dc

True tags: PRON AUX DET ADJ NOUN ADP NOUN VERB ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP NOUN VERB ADP PROPN ADP

PROPN PROPN

#### Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accuracy			1.00	13	
macro av	g 1.0	00 1	.00 1.0	00	13
weighted av	/g 1	.00	1.00 1.	.00	13

Sentence: list flights from toronto to washington dc saturday am

1.00

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN Classification Report:

1

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 2 3 3 1.00 1.00 1.00

accuracy		1.0	0 9	
macro avg	1.00	1.00	1.00	9
weighted ava	1.00	1.00	1.00	9

1.00

1.00

Sentence: i <unk> like to see the flights from atlanta to washington dc

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN PROPN Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 2 3 1 1.00 1.00 1.00 4 1.00 1.00 2 1.00 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 12 1.00 1.00 1.00

accuracy 1.00 12 macro avg 1.00 1.00 1.00 12 weighted avg 1.00 1.00 1.00 12

Sentence: i <unk> sorry i want to book a flight from atlanta to denver colorado

True tags: PRON AUX ADJ PRON VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX VERB PRON VERB PART VERB DET NOUN ADP

PROPN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	3	
2	1.0	0 0	.67	0.80	3	
3	1.0	00 1.	.00	1.00	1	
4	0.6	§7 1.	.00	0.80	2	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	2	
7	1.0	0 0	.00	0.00	1	
8	1.0	00 1.	.00	1.00	1	
12	2 0.	00 1	.00	0.00	) (	)
accur	асу			0.86	14	ļ
macro	avg	0.85	0.	.85	0.73	14
weighted	d avg	0.95	(	0.86	0.86	14

Sentence: i would like a list of round trip flights between indianapolis and orlando florida for the twenty seventh and the twenty eighth of december

True tags: PRON AUX VERB DET NOUN ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET NUM ADJ CCONJ DET NUM ADJ ADP NOUN Predicted tags: PRON AUX VERB DET NOUN ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET ADJ ADJ CCONJ DET ADJ ADJ ADP NOUN

	precision		recal	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	4	
3	1	.00	1.00	1.0	00	5	
4	1	.00	1.00	1.0	00	1	
5	1	.00	1.00	1.0	00	3	
6	1	.00	1.00	1.0	00	1	
7	0	.50	1.00	0.0	67	2	
8	1	.00	1.00	1.0	00	1	
9		.00	0.00			2	
10		.00	1.00	_	.00	2	
.,						_	
accur	acv			0.9	12	24	
macro	•	0.9	15	0.90	0.8		24
weighted	_		96	0.92	0.0		24
weignie	u avy	0.	90	0.32	0.0	J	<b>4</b>

Sentence: may i have a listing of flights on monday from minneapolis to long beach california please

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP NOUN ADP PROPN ADP PROPN PROPN INTJ

Predicted tags: NOUN PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN PROPN INTJ

Classification Report:

	precision		recall	f1-sc	ore s	upport
					_	_
1	1.	00	1.00	1.0	0	4
2	1.	00	1.00	1.0	0	4
3	0.	75	1.00	0.8	6	3
4	1.	00	1.00	1.0	0	1
5	1.	00	1.00	1.0	0	1
6	1.	00	1.00	1.0	0	1
8	1.	00	0.00	0.0	0	1
13	3 1	.00	1.00	1.0	00	1
accur	acy			0.94	4 ′	16
macro	avg	0.9	97 C	88.0	0.86	16
weighte	d avg	0.	95	0.94	0.91	16

Sentence: please give all flights from dallas to oakland california monday True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN Predicted tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN Classification Report:

	precis	ion	recal	l †1-s	core	supp	ort
1	1	00	1.00	1	00	3	
2		00	1.00		00	2	
3	1.	00	1.00	1.	00	2	
4	1.	00	1.00	1.	00	1	
5	1.	00	1.00	1.	00	1	
13	3 1	.00	1.00	1.	.00	1	
accur	acy			1.0	00	10	
macro	avg	1.0	00	1.00	1.0	0	10
weighted	d avg	1.	00	1.00	1.0	00	10

Sentence: on tuesday the twenty third flights from philadelphia to san francisco on american airlines

True tags: ADP NOUN DET NUM ADJ NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

Predicted tags: ADP NOUN DET ADJ ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN

precision		recall	f1-score	support	
1	1.00	1.00	1.00	5	
2	1.00	1.00	1.00	4	

3	1.0	0	1.00	1.	00	2	
5	1.0	0	1.00	1.	00	1	
7	0.5	0	1.00	0.	67	1	
9	1.0	0	0.00	0.	00	1	
accura	асу			0.9	93	14	
macro	avg	0.92	2 (	0.83	0.7	8	14
weighted avg		0.9	6	0.93	0.	90	14

Sentence: what is the cheapest first class fare from cleveland to miami on us air on february twenty fourth

True tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM NUM

Classification Report:

	pre	cisio	n re	call	f1-sc	core	supp	ort
1		1.00	1.	00	1.0	00	4	
2		1.00	1.	00	1.0	00	4	
3	}	1.00	1.	00	1.0	00	3	
5	,	1.00	1.	00	1.0	00	1	
6	;	1.00	1.	00	1.0	00	1	
7	•	1.00	0.	67	0.8	30	3	
8	}	1.00	1.	00	1.0	00	1	
9	)	0.50	1.	00	0.6	67	1	
accur	асу				0.9	)4	18	
macro	avg		0.94	0	.96	0.9	3	18
weighte	d av	g	0.97	(	0.94	0.	95	18

Sentence: cheapest round trip fare from or indianapolis to orlando on december twenty fifth

True tags: ADJ NOUN NOUN NOUN ADP CCONJ PROPN ADP PROPN ADP NOUN NUM ADJ

Predicted tags: ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ

	precision		reca	ll f1-s	core	supp	ort
1	(	0.67	1.00	0	.80	2	
2	<u>,</u>	1.00	1.00	1.	.00	3	
3	} 1	1.00	1.00	1.	.00	4	
7	,	1.00	1.00	1.	.00	2	
9	) 1	1.00	1.00	1.	.00	1	
10	0	1.00	0.0	) C	0.00	1	
accur	acy			0.	92	13	
macro	avg	0.9	94	0.83	8.0	80	13
weighte	d avg	0.	95	0.92	0.	89	13

Sentence: i would like to fly from dallas to denver on the morning of august twenty seventh leaving at <unk>

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN NUM ADJ VERB ADP NUM

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN NUM ADJ VERB ADP PROPN

Classification Report:

	precision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.50	0.67	2	
12	1.00	1.00	1.00	1	
accura	ісу		0.95	19	
macro	avg 0.	97 0	.95 0.9	)5	19
weighted	avg C	).96 (	0.95 0.	94	19

Sentence: give me the flights from indianapolis to orlando on december twenty seventh and twenty eighth

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ CCONJ NUM ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ CCONJ NUM NUM

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.50	0.67	2	
9	0.67	1.00	0.80	2	
10	1.00	1.00	1.00	1	
accurac	•		0.93	15	
macro av	-		.94 0.9 0.93 0.	)4 93	15 15
weignted a	ivy U	.50	0.95 0.	33	13

Sentence: i would like to book a flight going from tampa to seattle on may twenty sixth i would like to stop in milwaukee on the way

True tags: PRON AUX VERB PART VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN NUM ADJ PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB PART VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN NUM ADJ PRON AUX ADJ PART VERB ADP PROPN ADP DET NOUN

Classification Report:

ŗ	recision	recall	f1-score	suppo	rt
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	3	
4	1.00	0.80	0.89	5	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
7	0.50	1.00	0.67	1	
8	1.00	1.00	1.00	2	
9	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	2	
accura	су		0.96	26	
macro a	•		.98 0.9	-	26
weighted	avg 0	.98 (	0.96 0.	97	26

Sentence: what is the cheapest one way fare from san francisco to boston on wednesday august twenty first

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM ADJ

Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM ADJ

Classification Report:

	precisi	on re	call f	1-sco	re supp	port
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	4	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	2	
8	1.0	0 1.	.00	1.00	1	
9	1.0	0 1.	.00	1.00	2	
accur	acy			1.00	17	
macro weighte	•	1.00 1.00	1.0 1.	.00 .00	1.00 1.00	17 17
5	3				_	

Sentence: which flights are available from tacoma to san jose in the morning on april twenty second

True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP NOUN NUM ADJ

Predicted tags: DET NOUN VERB ADJ ADP PROPN ADP PROPN PROPN ADP

DET NOUN ADP NOUN NUM ADJ

Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	3	
4	0.00	1.00	0.00	0	
5	1.00	1.00	1.00	2	
7	1.00	1.00	1.00	2	
8	1.00	0.00	0.00	1	
9	1.00	1.00	1.00	1	
accuracy			0.94	16	
macro av	g 0.8	88 0	.88 0.	75	16
weighted av	/g 1	.00 (	0.94	.94	16

Sentence: list all round trip flights between indianapolis and orlando on the twenty

seventh of december

True tags: VERB DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN ADP DET

NUM ADJ ADP NOUN

Predicted tags: VERB DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN ADP

DET ADJ ADJ ADP NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	3	
3	1.	00	1.00	1.0	0	4	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	2	
7	0.	50	1.00	0.6	7	1	
9	1.	00	0.00	0.0	0	1	
10	) 1	.00	1.00	1.0	00	1	
accur	асу			0.9	3	15	
macro	_	0.9		88.0	0.83		15
weighted	d avg	0.	97	0.93	0.9	1	15

Sentence: what is hp

True tags: PRON AUX PROPN Predicted tags: PRON AUX PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		1.0	0 3	3
macro avg	1.00	1.00	1.00	3
weighted avg	1.00	1.00	1.00	3

Sentence: define airline us

True tags: VERB NOUN PROPN Predicted tags: VERB NOUN PROPN

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	0 1.	00	1.00	) -	1
3	1.0	0 1.	00	1.00	) 1	1
4	1.0	0 1.	00	1.00	) 1	1
accura	асу			1.00	3	}
macro	avg	1.00	1.	.00	1.00	3
weighted	avg	1.00	1	1.00	1.00	3

Sentence: code ff

True tags: NOUN PROPN Predicted tags: NOUN NOUN

Classification Report:

pr	ecision	reca	all f1-s	core	supp	ort
1	1.00	0.0	0.	00	1	
3	0.50	1.00	0.	67	1	
accuracy	<b>/</b>		0.9	50	2	
macro av	· _	.75	0.50	0.3	3	2
weighted a	vg (	0.75	0.50	0.	33	2

Sentence: from las vegas to new york a nonstop twa and fare

True tags: ADP PROPN PROPN ADP PROPN PROPN DET NOUN PROPN CCONJ

NOUN

Predicted tags: ADP PROPN PROPN ADP PROPN DET NOUN PROPN

**CCONJ NOUN** 

Classification Report:

1	precision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
				•
accura	су		1.00	11
macro a	avg 1	.00 1	.00 1.0	00 11
weighted	avg	1.00	1.00 1.	00 11

Sentence: airline that stands for dl

True tags: NOUN ADP VERB ADP PROPN Predicted tags: NOUN ADP VERB ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	1	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
accur	acy			1.00	5	
macro	avg	1.00	1.	.00	1.00	5
weighted	d avg	1.00	1	1.00	1.00	5

Sentence: list round trip flights between boston and oakland using twa

True tags: VERB NOUN NOUN NOUN ADP PROPN CCONJ PROPN VERB

PROPN

Predicted tags: VERB NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

PROPN

Classification Report:

	pred	CISIO	n r	ecall	†1 <b>-</b> 8	core	supp	ort
1		0.75		1.00	0	.86	3	
2		1.00		1.00	1	.00	1	
3	}	1.00		1.00	1	.00	3	
4		1.00	(	0.50	0	.67	2	
10	)	1.00	)	1.00	1	.00	1	
accur	acy				0.	90	10	
macro	avg		0.95	0	.90	0.9	90	10
weighte	d av	9	0.9	3	0.90	0	.89	10

Sentence: i <unk> like a twa flight from las vegas to new york nonstop

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN

Predicted tags: PRON AUX VERB DET PROPN NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 5 2 2 1.00 1.00 1.00 3 1.00 1.00 2 1.00 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 1.00 13 accuracy 1.00 1.00 1.00 macro avg 13 weighted avg 1.00 1.00 1.00 13

Sentence: what airline is <unk>
True tags: DET NOUN AUX PROPN
Predicted tags: PRON NOUN AUX AUX

Classification Report:

		1					
	precis	ion	reca	II f1-	score	e sup	port
4	4.4	20	0.00				
1	1.0	JU	0.00	) (	0.00	1	
3	1.0	00	1.00	) 1	1.00	1	
5	1.0	00	0.00	) (	0.00	1	
6	0.0	00	1.00	) (	0.00	0	
8	0.5	50	1.00	) (	0.67	1	
accur	acy			0	.50	4	
macro	avg	0.7	70	0.60	0	.33	4
weighted	d avg	0.	88	0.50	) (	0.42	4

Sentence: what airline is dl

True tags: DET NOUN AUX PROPN

Predicted tags: PRON NOUN AUX PROPN

Classification Report:

	precisi	on r	ecali	TT-SC	core	suppo	ort
1	1.0	0 1	1.00	1.0	00	1	
3	1.0	0 1	1.00	1.0	00	1	
5	1.0	0 (	0.00	0.0	00	1	
6	0.0	0 1	1.00	0.0	00	0	
8	1.0	0 1	1.00	1.0	00	1	
accur	acy			0.7	5	4	
macro	•	0.80	0	.80	0.6	0	4
weighted	_	1.00	) (	0.75	0.7	<b>7</b> 5	4

Sentence: find a flight between denver and oakland the flight should leave in the afternoon and arrive near 5 pm the flight should also be nonstop

True tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN AUX VERB ADP DET NOUN CCONJ VERB ADP NUM NOUN DET NOUN AUX ADV AUX NOUN

Predicted tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN VERB VERB ADP DET NOUN CCONJ VERB VERB NUM NOUN DET NOUN ADJ ADJ AUX NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	0.67	0.80	3
3	1.00	1.00	1.00	6
4		1.00	0.75	3
5	1.00	1.00	1.00	4

7	0.00	1.00	0.0	0	0	
8	1.00	0.33	0.5	0	3	
9	1.00	1.00	1.0	0	1	
10	1.00	1.00	) 1.0	00	2	
11	1.00	0.00	0.0	00	1	
accuracy	<i>'</i>		0.8	4 :	25	
macro av	g 0.8	36	0.80	0.70		25
weighted av	va 0	95	0.84	0.85	,	25

Sentence: i need a flight on american airlines from miami to chicago that arrives around 5 pm

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Classification Report:

	nre	rieinr	n re	الدم	f1_ec	ore	sunn	ort
	pie	GISIUI	1 16	Jan	11-30	OIE	Supp	JIL
,	1	1.00	1.	00	1.0	0	4	
2	2	1.00	1.	00	1.0	0	5	
3	3	1.00	1.	00	1.0	0	2	
4	1	1.00	1.	00	1.0	0	2	
5	5	1.00	1.	00	1.0	0	1	
6	3	1.00	1.	00	1.0	0	1	
Ş	9	1.00	1.	00	1.0	0	1	
accu	racy				1.0	0	16	
macro	o avg		1.00	1	.00	1.00	)	16
weighte	_		1.00		1.00	1.0	0	16
_		_						

Sentence: flights from kansas city to cleveland on wednesday arriving before 5 pm True tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Predicted tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Classification Report:

	precis	ion	recall	f1-scc	re supp	port
1	1.0	20	1.00	1.00	) 3	
2			1.00	1.00		
3	1.0	00	1.00	1.00	3	
4	1.0	00	1.00	1.00	) 1	
9	1.0	00	1.00	1.00	) 1	
accur	acy			1.00	12	
macro	_	1.00		.00	1.00	12
weighte	d avg	1.0	00	1.00	1.00	12

Sentence: what flights depart baltimore on friday and arrive in san francisco by 8 pm

True tags: DET NOUN VERB PROPN ADP NOUN CCONJ VERB ADP PROPN

PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB PROPN ADP NOUN CCONJ VERB ADP

PROPN PROPN ADP NUM NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore su	upport
1	1.0	00	1.00	1.0	0	3
2	1.0	00	1.00	1.0	0	3
3	1.0	00	1.00	1.0	0	3
4	1.0	00	1.00	1.0	0	2
5	1.0	00	0.00	0.0	0	1
6	0.0	00	1.00	0.0	0	0
9	1.0	00	1.00	1.0	0	1
10	) 1.	00	1.00	1.0	00	1
accur	асу			0.93	3 1	14
macro	avg	0.88	3 0	.88	0.75	14
weighted	d avg	1.0	00 (	0.93	0.93	14

---!! \$4 -----

Sentence: i <unk> like a nonstop flight from atlanta to baltimore that <unk> in around 7 pm

True tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP VERB ADP ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP AUX ADP ADP NUM NOUN

Classification Report:

	preci	sion	recal	l f1-sc	ore s	upport
1	1	.00	1.00	1.0	0	2
2	1	.00	1.00	1.0	0	5
3	1	.00	1.00	1.0	0	3
4	. 1	.00	0.50	0.6	7	2
5	1	.00	1.00	1.0	0	1
6	1	.00	1.00	1.0	0	1
8	0	.50	1.00	0.6	7	1
9	1	.00	1.00	1.0	0	1
accur	асу			0.9	4	16
macro	avg	0.9	94 (	0.94	0.92	16
weighte	d avg	0.	.97	0.94	0.94	16

Sentence: what nonstop flights between boston and washington arrive after 5 <unk>pm

True tags: DET NOUN NOUN ADP PROPN CCONJ PROPN VERB ADP NUM ADV NOUN

Predicted tags: PRON NOUN NOUN ADP PROPN CCONJ PROPN VERB ADP

NUM NUM NOUN Classification Report:

precision recall f1-score support

Sentence: all flights pittsburgh to baltimore on thursday arrival by 10 am

True tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP NUM NOUN Predicted tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP NUM NOUN

Classification Report:

	prec	ision	red	call	f1-s	core	supp	ort
1	1	.00	1.	00	1.	00	2	
2	: 1	.00	1.	00	1.	00	3	
3	. 1	.00	1.	00	1.	00	4	
5	, 1	.00	1.	00	1.	00	1	
9	1	.00	1.	00	1.	00	1	
accur	acy				1.0	00	11	
macro	avg	1	.00	1	.00	1.0	00	11
weighte	d avg		1.00	•	1.00	1.	.00	11

Sentence: show me all flights direct and connecting from boston to pittsburgh that arrive in pittsburgh before 10 am

True tags: VERB PRON DET NOUN ADJ CCONJ VERB ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN ADJ CCONJ VERB ADP PROPN ADP PROPN ADP NUM NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	5
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
9	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1

accuracy		1.0	0 18	
macro avg	1.00	1.00	1.00	18
weighted avg	1.00	1.00	1.00	18

Sentence: cleveland to miami on wednesday arriving before 4 pm True tags: PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN Predicted tags: ADP ADP PROPN ADP NOUN VERB ADP NUM NOUN

Classification Report:

	precisi	on re	ecall	f1-sco	ore su	ıpport	
1	1.0	0 0	.50	0.67	7	2	
2	0.7	-	.00	0.86		3	
3	1.0	0 1	.00	1.00	)	2	
4	1.0	0 1	.00	1.00	)	1	
9	1.0	0 1	.00	1.00	)	1	
accura	асу			0.89	) (	9	
macro	avg	0.95	0	.90	0.90	9	
weighted	d avg	0.92	. (	0.89	0.88	9	

Sentence: show me airlines between boston and san francisco

True tags: VERB PRON NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB PRON NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

pport
P P
3
1
4
1
1
1
1
•
}
8
J
8

Sentence: show me the airlines that fly from san francisco to boston

True tags: VERB PRON DET NOUN ADP VERB ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP VERB ADP PROPN PROPN ADP

**PROPN** 

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1

6 1.0	00 1.0	00 1.0	00 1	
accuracy		1.0	0 11	
macro avg	1.00	1.00	1.00	11
weighted ava	1.00	1.00	1.00	11

Sentence: what airlines fly from boston to denver

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-scc	re su	pport
1	1.0	0 1.	.00	1.00	)	2
2	1.0	0 1.	.00	1.00	)	2
3	1.0	0 1.	.00	1.00	)	1
4	1.0	0 1.	.00	1.00	)	1
5	1.0	O.	.00	0.00	)	1
6	0.0	0 1.	.00	0.00	)	0
accur	acy			0.86	7	7
macro	avg	0.83	0	.83	0.67	7
weighted	d avg	1.00	(	0.86	0.86	7

Sentence: what airlines have flights from baltimore to seattle True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	1.	.00	1.00	1	.00	2	
2	1.	.00	1.00	1	.00	2	
3	1.	.00	1.00	1	.00	2	
4	1.	.00	1.00	1	.00	1	
5	1.	.00	0.00	0	.00	1	
6	0	.00	1.00	0	.00	0	
accur	acy			0.	88	8	
macro	_	3.0		0.83	0.6	57	8
weighted	d avg	1.	00	0.88	0.	88	8

Sentence: what airlines have flights from boston to philadelphia that leave before 630 am

True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB

ADP NUM NOUN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 2

2	1.00	1.0	0 1.	.00	4	
3	1.00	1.0	0 1.	.00	3	
4	1.00	1.0	0 1.	.00	2	
5	1.00	0.0	0 0.	.00	1	
6	0.00	1.0	0 0.	.00	0	
9	1.00	1.0	0 1.	.00	1	
accuracy	/		0.	92	13	
macro av	g (	0.86	0.86	0.7	<b>'</b> 1	13
weighted a	vg	1.00	0.92	0.	92	13

Sentence: are there any airlines that have flights from boston to philadelphia that leave before 630 am

True tags: VERB PRON DET NOUN ADP VERB NOUN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN ADP VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Classification Report:

	precis	sion	reca	II f1-	score	supp	ort
1	1.	00	1.00	) 1	1.00	2	
2	1.	00	1.00	) 1	1.00	5	
3	1.	00	1.00	) 1	1.00	3	
4	1.	00	1.00	) 1	1.00	3	
5	1.	00	1.00	) 1	1.00	1	
6	1.	00	1.00	) 1	00.1	1	
9	1.	00	1.00	) 1	00.1	1	
accur	acy			1	.00	16	
macro	avg	1.	00	1.00	1.0	00	16
weighted	d avg	1	.00	1.00	) 1	.00	16

Sentence: show me airlines that have flights between toronto and detroit between detroit and <unk> louis and between <unk> louis and toronto

True tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ PROPN CCONJ ADP PROPN PROPN CCONJ PROPN

Predicted tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ CCONJ PROPN CCONJ ADP PROPN PROPN CCONJ PROPN

pr	ecision	recall	f1-score	support
1	1.00	0.88	0.93	8
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
10	0.80	1.00	0.89	4

accuracy		0.9	5 2	1
macro avg	0.97	0.98	0.97	21
weighted avg	0.96	0.95	0.95	21

Sentence: which airlines fly between boston and baltimore True tags: DET NOUN VERB ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB ADP PROPN CCONJ PROPN

Classification Report:

	precis	sion	recall	f1-sco	re su	oport
1	1.	00	1.00	1.00	) 2	2
2	1.	00	1.00	1.00	) 1	
3	1.	00	1.00	1.00	) 1	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
10	) 1	.00	1.00	1.0	0	1
accura	асу			1.00	7	
macro	avg	1.0	00 1	.00	1.00	7
weighted	d avg	1.	00	1.00	1.00	7

Sentence: does any airline have an early afternoon flight from boston to pittsburgh True tags: AUX DET NOUN VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: AUX DET NOUN VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	core s	uppo	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	3	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	2	
7	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	12	
macro weighted	avg	1.0 1.	00 1	1.00 1.00	1.00 1.00		12 12

Sentence: please show me airlines with flights from philadelphia to dallas True tags: INTJ VERB PRON NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: INTJ VERB PRON NOUN ADP NOUN ADP PROPN Classification Report:

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2

4 1	.00	1.00	1.00	1	
6 1	.00	1.00	1.00	1	
13 1	.00	1.00	1.00	0 1	
accuracy			1.00	10	
macro avg	1.00	) 1.	00	1.00	10
weighted avg	1.0	0 1	.00	1.00	10

Sentence: which airlines fly from boston to san francisco

True tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN Predicted tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 3 1.00 2 2 1.00 1.00 1.00 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 1.00 accuracy 1.00 1.00 8 macro avg 1.00 weighted avg 1.00 1.00 1.00 8

Sentence: which airlines have flights between charlotte and newark True tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN

Classification Report:

	pred	ision	reca	all	f1-scc	ore	supp	ort
1		1.00	1.0	0	1.00	)	2	
2		1.00	1.0	0	1.00	)	1	
3	,	1.00	1.0	0	1.00	)	2	
4		1.00	1.0	0	1.00	)	1	
5	,	1.00	1.0	0	1.00	)	1	
10	)	1.00	1.0	00	1.0	0	1	
accur	асу				1.00	)	8	
macro	avg	1.	00	1.	.00	1.0	0	8
weighte	d avg	j 1	.00	•	1.00	1.0	00	8

Sentence: show me all flights from san francisco to new york nonstop

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

PROPN NOUN

Classification Report:

1.00

precision recall f1-score support

1.00

1.00

	_	1.00	, ,	.00		.00		_	
	3	1.00	) 1	.00	1	.00		2	
	4	1.00	) 1	.00	1	.00		1	
	5	1.00	) 1	.00	1	.00		1	
	6	1.00	) 1	.00	1	.00		1	
acc	uracy				1.	00		11	
mac	ro avg	J	1.00		1.00	•	1.00		11
weigh	ted av	g	1.00	)	1.00		1.00	)	11

100 100 100

Sentence: show me nonstop flights from toronto to <unk> petersburg
True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN
Classification Report:

2

	precis	sion	reca	all f1	l-sco	re si	nbbo	rt
1		00	1.00		1.00		3	
2	1.	00	1.00	)	1.00	)	2	
3	1.	00	1.00	)	1.00	)	2	
4	1.	00	1.00	)	1.00	)	1	
6	1.	00	1.00	)	1.00	)	1	
accur	асу				1.00		9	
macro weighted	_	1.0 1.	00 .00	1.0 1.0		1.00 1.00		9 9

Sentence: show me all round trip flights from miami to new york nonstop

True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

2

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Classification Report:

	precisio	n rec	all f1-s	core s	upport
1	1.00	1.0	0 1.	00	3
2	1.00	1.0	0 1.	00	2
3	1.00	1.0	0 1.	00	4
4	1.00	1.0	0 1.	00	1
5	1.00	1.0	0 1.	00	1
6	1.00	1.0	0 1.	00	1
accur	acy		1.0	00	12
macro	avg	1.00	1.00	1.00	12
weighted	d avg	1.00	1.00	1.00	) 12

Sentence: nonstop flights seattle to kansas city

True tags: NOUN NOUN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

Sentence: i want to fly from atlanta to philadelphia nonstop

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN

Classification Report:

all f1-score	support
0 1.00	2
0 1.00	2
0 1.00	1
0 1.00	2
0 1.00	1
00 1.00	1
	_
1.00	9
1.00 1.0	0 9
1.00 1.	00 9
	0 1.00 0 1.00 0 1.00 0 1.00 00 1.00 1.00

Sentence: what is the earliest nonstop flight from washington to san francisco True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	preci	sion	recal	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	3	
2	1	.00	1.00	1.0	00	2	
3	1	.00	1.00	1.0	00	2	
5	1	.00	1.00	1.0	00	1	
6	1	.00	1.00	1.0	00	1	
7	1	.00	1.00	1.0	00	1	
8	1	.00	1.00	1.0	00	1	
accur	acy			1.0	0	11	
macro weighte	•	1.0 1.	00 .00	1.00 1.00	1.0 1.0		11 11
. 9							

Sentence: please list nonstop flights from las vegas to new york on america west True tags: INTJ VERB NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP PROPN

Predicted tags: INTJ VERB NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN

## Classification Report:

1	precision	n recal	l f1-scor	e supp	ort
1	1.00	1.00	1.00	6	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accura	су		1.00	13	
macro	avg	1.00	1.00 1	.00	13
weighted	avg	1.00	1.00	1.00	13

Sentence: show me first class round trip flights from new york to miami i want the cheapest first class fare please

True tags: VERB PRON ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN INTJ

Predicted tags: VERB PRON ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN NUM Classification Report:

	p. 00.0		· O O G	0	00.0	оарр	0
1	1.	00	1.00	1.	00	3	
2	1.	00	1.00	1.	00	2	
3	1.	00	1.00	1.	00	6	
4	1.	00	1.00	1.	00	2	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	2	
7	1.	00	1.00	1.	00	3	
9	0.	00	1.00	0.	00	0	
13	3 1	.00	0.00	0 0	.00	1	
accura	acy			0.9	95	20	
macro	_	8.0		0.89	0.7	-	20
weighted	d avg	1.	00	0.95	0.	95	20

precision recall f1-score support

Sentence: show me which flights from san francisco to pittsburgh on a monday are first class

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN AUX ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN VERB ADJ NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	0.50	1.00	0.67	1
5	1.00	1.00	1.00	2

	6	1.0	0	1.0	00	1.0	00	1	
	7	1.0	0	1.0	00	1.0	00	1	
	8	1.0	0	0.0	00	0.0	00	1	
ac	curac	У				0.9	3	15	
ma	icro av	vg	0.9	94	0.8	88	0.8	3	15
weig	hted a	avg	0	.97	0	.93	0.9	91	15

Sentence: give me flights from baltimore to denver on united that offer first class True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN ADJ NOUN

Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP PROPN ADP

ADJ ADJ NOUN

Classification Report:

	precisio	n red	call	f1-scor	e suppo	ort
1	1.00	) 1.	00	1.00	3	
2	1.00	) 1.	00	1.00	4	
3	1.00	0.0	67	0.80	3	
4	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
7	0.50	) 1.	00	0.67	1	
accur	acy			0.92	13	
macro weighted	_	0.92 0.96	_	94 ( 92	).91 0.93	13 13

Sentence: first class flights pittsburgh to newark monday morning True tags: ADJ NOUN NOUN PROPN ADP PROPN NOUN NOUN Predicted tags: ADJ NOUN NOUN PROPN ADP PROPN NOUN NOUN Classification Report:

precision recall f1-score support 1.00 1.00 1.00 1 2 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 4 7 1.00 1.00 1.00 1 accuracy 1.00

macro avg 1.00 1.00 1.00 8
weighted avg 1.00 1.00 1.00 8

Sentence: first class fares from dallas to baltimore please True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN INTJ Predicted tags: ADJ NOUN NOUN ADP PROPN ADP PROPN INTJ Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 2
2 1.00 1.00 1.00 2

3	1.0	0	1.0	0	1.0	0	2	
7	1.0	0	1.0	0	1.0	0	1	
13	1.0	00	1.0	00	1.0	00	1	
accuracy	,				1.00	)	8	
macro av	g	1.0	0	1.0	00	1.00	)	8
weighted av	vg	1.	00	1.	00	1.0	0	8

Sentence: show me all united airlines first class flights

True tags: VERB PRON DET PROPN PROPN ADJ NOUN NOUN Predicted tags: VERB PRON DET PROPN PROPN ADJ NOUN NOUN

Classification Report:

precision recall f1-score support 1 1.00 1.00 2 1.00 3 2 1.00 1.00 1.00 4 1.00 1.00 1.00 1 5 1 1.00 1.00 1.00 6 1.00 1.00 1.00 1 7 1.00 1.00 1.00 1 accuracy 1.00 macro avg 1.00 1.00 1.00 8 weighted avg 1.00 1.00 1.00 8

Sentence: first class price san francisco pittsburgh round trip

True tags: ADJ NOUN NOUN PROPN PROPN NOUN NOUN Predicted tags: ADJ NOUN NOUN PROPN PROPN PROPN NOUN NOUN

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1.	.00	1.00	) 1.	00	3	
3	1.	.00	1.00	) 1.	00	4	
7	1.	.00	1.00	) 1.	00	1	
accur	асу			1.0	00	8	
macro	avg	1.	00	1.00	1.0	0	8
weighte	d avg	1	.00	1.00	1.	00	8

Sentence: how much is a first class ticket from baltimore to san francisco True tags: ADV ADV AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN

PROPN

Predicted tags: ADJ ADJ AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN

PROPN

precision		recall	recall f1-score		
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1 00	1 00	1 00	2	

5	1.0	0	1.0	0	1.0	0	1	
7	0.3	3	1.0	0	0.5	0	1	
8	1.0	0	1.0	0	1.0	0	1	
11	1.0	0	0.0	0	0.0	0	2	
accuracy	/				0.83	3	12	
macro av	'g	0.9	0	3.0	36	0.79	)	12
weighted a	vg	0.	94	0.	83	0.79	9	12

Sentence: first class american flight from philadelphia to dallas on wednesday True tags: ADJ NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: ADJ NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precisio	n re	call f1	-score	supp	ort
1	1.0	) 1.	00	1.00	3	
2	1.0	) 1.	00	1.00	3	
3	1.0	) 1.	00	1.00	3	
7	1.0	) 1.	00	1.00	1	
accura	•			1.00	10	
macro weighted		1.00 1.00	1.00 1.0		00 .00	10 10

Sentence: show flights first class on american airlines between dallas and philadelphia

True tags: VERB NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN CCONJ

PROPN

Predicted tags: VERB NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN CCONJ PROPN

Classification Report:

	precis	sion	reca	II f1	-sco	re si	uppo	ort
1	1.	00	1.00	)	1.00		4	
2	1.	00	1.00	)	1.00		2	
3	1.	00	1.00	)	1.00		2	
4	1.	00	1.00	)	1.00		1	
7	1.	00	1.00	)	1.00		1	
10	) 1	.00	1.0	0	1.00	)	1	
accur	acy				1.00	•	11	
macro	avg	1.0	00	1.00	0	1.00		11
weighted	d avg	1.	00	1.0	00	1.00		11

Sentence: what are the first class fares from dallas to baltimore

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.0	00	1.0	0	2	
2	1.00	1.0	00	1.0	0	2	
3	1.00	1.0	00	1.0	0	2	
5	1.00	1.0	00	1.0	0	1	
6	1.00	1.0	00	1.0	0	1	
7	1.00	1.0	00	1.0	0	1	
8	1.00	1.0	00	1.0	0	1	
accurac	y			1.00	) 1	0	
macro a	vg	1.00	1.0	00	1.00		10
weighted a	ava	1.00	1	.00	1.00		10

Sentence: show me one way flights from tampa to <unk> louis departing before 10 am first class

True tags: VERB PRON NUM NOUN NOUN ADP PROPN ADP PROPN PROPN VERB ADP NUM NOUN ADJ NOUN

Predicted tags: VERB PRON NUM NOUN NOUN ADP PROPN ADP PROPN PROPN VERB ADP NUM NOUN ADJ NOUN

Classification Report:

	precisio	n re	call	f1-scor	e supp	ort
1	1.00	) 1.	00	1.00	3	
2	1.00	) 1.	00	1.00	3	
3	1.00	) 1.	00	1.00	4	
4	1.00	) 1.	00	1.00	2	
6	1.00	) 1.	00	1.00	1	
7	1.00	) 1.	00	1.00	1	
9	1.00	) 1.	00	1.00	2	
accura	асу			1.00	16	
macro	avg	1.00	1	.00 ′	1.00	16
weighted	l avg	1.00	•	1.00	1.00	16

Sentence: what flights leave san francisco on monday night and arrive at atlanta later in the evening

True tags: DET NOUN VERB PROPN PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN ADJ ADP DET NOUN

Predicted tags: PRON NOUN VERB PROPN PROPN ADP NOUN PROPN CCONJ VERB ADP PROPN PROPN ADP DET NOUN

ļ	orecision	recall	f1-score	support
1	0.60	1.00	0.75	3
2	1.00	1.00	1.00	3
3	1.00	0.75	0.86	4
4	1.00	1.00	1.00	2
5	1.00	0.50	0.67	2
6	0.00	1.00	0.00	0
7	1.00	0.00	0.00	1
10	1.00	1.00	1.00	1

accuracy		0.8	1 1	6
macro avg	0.82	0.78	0.66	16
weighted avg	0.93	0.81	0.81	16

Sentence: please list all flights into denver before noon on united airlines and northwest airlines

True tags: INTJ VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN CCONJ PROPN PROPN

Predicted tags: INTJ VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

	nrec	ision	recall	f1-scor	e supp	ort
	proc	131011	rccan	11-3001	c supp	<i>,</i> 011
1		1.00	1.00	1.00	5	
2		1.00	1.00	1.00	3	
3	}	1.00	1.00	1.00	2	
4	. 1	1.00	1.00	1.00	1	
5	;	1.00	1.00	1.00	1	
10	0	1.00	1.00	1.00	1	
13	3	1.00	1.00	1.00	1	
accur	acy			1.00	14	
macro	avg	1.0	00 1	.00	1.00	14
weighte	d avg	1.	.00	1.00	1.00	14

Sentence: what are the coach fares for flights from pittsburgh to denver True tags: PRON AUX DET PROPN NOUN ADP NOUN ADP PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recal	I f1-	score	supp	ort
1	1.0	00	1.00	1	.00	3	
2	1.0	00	1.00	1	.00	3	
3	1.0	00	1.00	1	.00	2	
5	1.0	00	1.00	1	.00	1	
6	1.0	00	1.00	1	.00	1	
8	1.0	00	1.00	1	.00	1	
accur	acy			1	.00	11	
macro	_	1.0		1.00		00	11
weighte	d avg	1.0	00	1.00	) 1	.00	11

Sentence: what are the flights on tuesday october first from atlanta to baltimore True tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP

PROPN

	precision		call	f1-sc	ore su	upport
1	1.0	00 1	.00	1.0	0	3
2	1.0	00 1	.00	1.0	0	3
3	1.0	00 1	.00	1.0	0	2
5	1.0	00 1	.00	1.0	0	1
6	1.0	00 1	.00	1.0	0	1
7	1.0	00 1	.00	1.0	0	1
8	1.0	00 1	.00	1.0	0	1
accur	acy			1.00	) 1	12
macro	•	1.00		.00	1.00	12
weighte	d avg	1.00	•	1.00	1.00	12

Sentence: what are the coach fares from la to charlotte monday morning

True tags: PRON AUX DET PROPN NOUN ADP PROPN ADP PROPN NOUN

NOUN

Predicted tags: PRON AUX DET PROPN NOUN ADP PROPN ADP PROPN NOUN

NOUN

Classification Report:

	precision		ecall	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	) 3	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	3	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	) '	1.00	1.00	11

Sentence: show me dallas ground transport True tags: VERB PRON PROPN NOUN NOUN Predicted tags: VERB PRON PROPN NOUN NOUN

Classification Report:

	prec	ision	recall	f1-sc	ore su	oqqı	rt
1	1	.00	1.00	1.0	0	1	
3	3 1	.00	1.00	1.0	0	2	
4	. 1	.00	1.00	1.0	0	1	
6	; 1	.00	1.00	1.0	0	1	
accur	асу			1.00	)	5	
macro	avg	1.	00 1	.00	1.00		5
weighte	d avg	1	.00	1.00	1.00		5

Sentence: show me ground transportation in denver True tags: VERB PRON NOUN NOUN ADP PROPN

Predicted tags: VERB PRON NOUN NOUN ADP PROPN

Classification Report:

	precision		recall	f1-scc	ore sup	port
1	1	1.00	1.00	1.00	) 1	
2	: 1	.00	1.00	1.00	) 1	
3	1	.00	1.00	1.00	) 2	
4	. 1	.00	1.00	1.00	) 1	
6	1	.00	1.00	1.00	) 1	
accur	acy			1.00	6	
macro	avg	1.	00 1	.00	1.00	6
weighte	d avg	1	.00	1.00	1.00	6

Sentence: what ground transport is available in minneapolis

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

0.0000	G. 1. G. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	γ O				
	precisio	n re	call	f1-sco	ore su	ıpport
1	1.00	) 1	00	1.00	1	1
2	1.00		00	1.00		1
3	1.00		00	1.00		2
5	1.00	0.	00	0.00	)	1
6	0.00		00	0.00		0
7	1.00		00	1.00		1
8	1.00	) 1.	00	1.00	)	1
					_	_
accura	асу			0.86		1
macro	avg	0.86	0	.86	0.71	7
weighted	d avg	1.00	(	0.86	0.86	7

Sentence: please show me ground transportation in denver True tags: INTJ VERB PRON NOUN NOUN ADP PROPN Predicted tags: INTJ VERB PRON NOUN NOUN ADP PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 1 2 1.00 1.00 1.00 1 3 2 1.00 1.00 1.00 4 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 13 1.00 1.00 1.00 1 1.00 accuracy 7 1.00 1.00 macro avg 1.00 7 weighted avg 1.00 1.00 1.00 7

Sentence: what kind of ground transportation is there in dallas

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN Predicted tags: PRON NOUN ADP NOUN NOUN AUX PRON ADP PROPN Classification Report:

	precisi	on re	ecall	f1-sc	ore s	upport	
1	1.0	0 1	1.00	1.0	0	1	
2	1.0	0 1	.00	1.0	0	2	
3	1.0	00 1	.00	1.0	0	3	
4	1.0	00 0	0.00	0.0	0	1	
5	1.0	00 0	0.00	0.0	0	1	
6	0.5	50 1	.00	0.6	7	1	
8	0.0	00 1	.00	0.0	0	0	
accura	асу			0.78	8	9	
macro	avg	0.79	0	.71	0.52	9	
weighted	d avg	0.94	1 (	0.78	0.74	Ç	9

Sentence: what ground transportation is available in charlotte

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

	precis	1011	ieca	11 11-3	COLE	Supp	Oit
1	1.	00	1.00	1.	00	1	
2	1.	00	1.00	1.	00	1	
3	1.	00	1.00	1.	00	2	
5	1.	00	0.00	0.	00	1	
6	0.	00	1.00	0.	00	0	
7	1.	00	1.00	1.	00	1	
8	1.	00	1.00	1.	00	1	
accur	acy			0.6	36	7	
macro	•	0.8	36	0.86	0.7	<b>'</b> 1	7
weighted	•	1	.00	0.86	0.	86	7
_	•						

Sentence: what <unk> the ground transportation like at pittsburgh True tags: PRON AUX DET NOUN NOUN VERB ADP PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP ADP PROPN Classification Report:

pre	ecision	recall	f1-score	support
1	1.00	1.00	1.00	1
2 3	0.50 1.00	1.00 1.00	0.67 1.00	1 2
3 4	1.00	0.00	0.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accuracy	,		0.88	8

macro avg	0.93	0.86	0.81	8
weighted ava	0.94	0.88	0.83	8

Sentence: ground transportation in baltimore

True tags: NOUN NOUN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN

Classification Report:

	рі	recision	recall	f1-sc	ore	supp	ort
	1	1.00	1.00	1.0	0	1	
	2	1.00	1.00	1.0	0	1	
	3	1.00	1.00	1.0	0	2	
acc	urac	У		1.00	0	4	
mad	ro a	vg 1.	.00 1	.00	1.0	0	4
weigh	ted a	ava 1	1.00	1.00	1.0	00	4

Sentence: what ground transportation is there in dallas True tags: DET NOUN NOUN AUX PRON ADP PROPN

Predicted tags: PRON NOUN NOUN AUX PRON ADP PROPN

Classification Report:

	precision	n recall	f1-score	suppo	ort
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
5	1.00	0.00	0.00	1	
6	0.50	1.00	0.67	1	
8	1.00	1.00	1.00	1	
accur	acy		0.86	7	
macro	avg (	0.92 0	.83 0.7	78	7
weighted	d avg	0.93	0.86 0.	.81	7

Sentence: what ground transportation is available in baltimore

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

	precis	ion r	ecall	t1-scc	ore s	uppo	ort
1	1.0	00	1.00	1.00	)	1	
2	1.0	00	1.00	1.00	)	1	
3	1.0	00	1.00	1.00	)	2	
5	1.0	00	0.00	0.00	)	1	
6	0.0	00	1.00	0.00	)	0	
7	1.0	00	1.00	1.00	)	1	
8	1.0	00	1.00	1.00	)	1	
accur	acy			0.86	;	7	
macro	avg	0.86	0	.86	0.71		7

weighted avg 1.00 0.86 0.86 7

Sentence: ground transport phoenix True tags: NOUN NOUN PROPN Predicted tags: NOUN NOUN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 1 3 1.00 1.00 1.00 2 1.00 accuracy macro avg 1.00 1.00 1.00 3 3 weighted avg 1.00 1.00 1.00

Sentence: show me information on ground transportation for dallas True tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN

Classification Report:

0.0000		•			
	precision		all f1-s	core si	upport
4	4.04			00	
1	1.00	) 1.0	)0 1.	00	1
2	1.00	1.0	00 1.	00	2
3	1.00	) 1.0	00 1.	00	3
4	1.00	) 1.0	00 1.	00	1
6	1.00	) 1.0	00 1.	00	1
accur	acy		1.0	00	8
macro	avg	1.00	1.00	1.00	8
weighted	d avg	1.00	1.00	1.00	8

Sentence: i would like an american flight from toronto to san diego with a stopover in denver please

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN INTJ

Predicted tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN INTJ

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 5 2 4 1.00 1.00 1.00 3 1.00 2 1.00 1.00 4 1.00 1.00 1.00 1 2 5 1.00 1.00 1.00 1.00 1.00 1 6 1.00 1.00 1.00 8 1.00 1 13 1.00 1.00 1.00 1 1.00 17 accuracy

macro avg	1.00	1.00	1.00	17
weighted avg	1.00	1.00	1.00	17

Sentence: can i go from boston to san francisco with a stopover in denver

True tags: AUX PRON VERB ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Predicted tags: AUX PRON VERB ADP PROPN ADP PROPN PROPN ADP DET

NOUN ADP PROPN Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accura	асу			1.00	13	
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	13 13

Sentence: please show me flights from boston to denver with a stopover in philadelphia

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP DET NOUN ADP PROPN

Classification Report:

	precis	sion	reca	ıll f	1-scc	ore s	uppo	ort
1	1.	00	1.00	)	1.00	)	3	
2	1.	00	1.00	)	1.00	)	4	
3	1.	00	1.00	)	1.00	)	2	
4	1.	00	1.00	)	1.00	)	1	
5	1.	00	1.00	)	1.00	)	1	
6	1.	00	1.00	)	1.00	)	1	
13	3 1	.00	1.0	0	1.0	0	1	
accur	асу				1.00		13	
macro weighted	•	1.0 1.	00 .00	1.0 1.	00 00	1.00 1.00	)	13 13

Sentence: show me the flights from new york to los angeles with stop in milwaukee True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

PROPN ADP NOUN ADP PROPN

	precis	ion r	ecall	f1-sc	ore su	pport
1	1.	00	1.00	1.0	0 5	5
2	1.	00	1.00	1.0	0 4	4
3	1.	00	1.00	1.0	0 2	2
4	1.	00	1.00	1.0	0 ′	1
5	1.	00	1.00	1.0	0 ′	1
6	1.	00	1.00	1.0	0 ′	1
accur	acy			1.00	) 14	4
macro	avg	1.00	) 1	.00	1.00	14
weighted	d avg	1.0	0	1.00	1.00	14

Sentence: are there any flights from denver to pittsburgh with stops in atlanta True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP **PROPN** 

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Classification Report:

	precisio	n red	call	f1-sco	e supp	ort
1	1.00	) 1.0	00	1.00	3	
2	1.00	) 1.0	00	1.00	4	
3	1.00	) 1.0	00	1.00	2	
4	1.00	) 1.0	00	1.00	1	
5	1.00	) 1.0	00	1.00	1	
6	1.00	) 1.0	00	1.00	1	
accura	асу			1.00	12	
macro	avg	1.00	1.	.00	1.00	12
weighted	d avg	1.00	1	1.00	1.00	12

Sentence: are there any flights from boston to san francisco which stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PRON VERB ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN DET VERB ADP PROPN

VERB ADP PROPN								
Classification Report:								
	precis	sion	reca	ll f1-s	core	supp	ort	
				_				
1	1.	00	1.00	1.	00	4		
2	1.	00	1.00	1.	00	3		
3	1.	00	1.00	1.	00	1		
4	1.	00	1.00	1.	00	2		
5	0.	50	1.00	0.	67	1		
6	1.	00	0.50	0.	67	2		
accur	acy			0.9	92	13		
macro	avg	0.9	92	0.92	8.0	89	13	
weighted	d avg	0	.96	0.92	0.	92	13	

Sentence: all do you have a flight from washington to boston that stops in

philadelphia

True tags: DET AUX PRON VERB DET NOUN ADP PROPN ADP VERB ADP PROPN

Predicted tags: DET AUX PRON VERB DET NOUN ADP PROPN ADP VERB ADP PROPN

Classification Report:

	precisio	n red	call	f1-sco	ore sup	port
1	1.00	) 1.	00	1.00	) 3	
2	1.00	) 1.	00	1.00	) 4	
3	1.00	) 1.	00	1.00	) 1	
4	1.00	) 1.	00	1.00	) 2	
5	1.00	) 1.	00	1.00	) 2	
6	1.00	) 1.	00	1.00	) 1	
8	1.00	) 1.	00	1.00	) 1	
accur	acy			1.00	) 14	
macro	avg	1.00	1.0	00	1.00	14
weighted	d avg	1.00	1	.00	1.00	14

Sentence: show me the flights from san diego to newark by way of houston True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN ADP PROPN Classification Report:

	precis	sion	recal	l f1-so	core	suppo	ort
1	1.	00	1.00	1.0	00	4	
2	1.	00	1.00	1.0	00	4	
3	1.	00	1.00	1.0	00	2	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
accur	acy			1.0	00	13	
macro	avg	1.0	00	1.00	1.00	)	13
weighted	d avg	1.	00	1.00	1.0	0	13

Sentence: find a flight on american airlines from boston to san francisco that makes a stopover in denver

True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN

PROPN ADP VERB DET NOUN ADP PROPN

Classification Report:

precision recall f1-score support

Sentence: i <unk> looking for a flight that goes from ontario to westchester and stops in chicago

True tags: PRON AUX VERB ADP DET NOUN ADP VERB ADP PROPN ADP PROPN CCONJ VERB ADP PROPN

Predicted tags: PRON AUX VERB ADP DET NOUN ADP VERB ADP PROPN ADP PROPN CCONJ VERB ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 5 3 1.00 1.00 1 1.00 4 1.00 1.00 1.00 3 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 10 1.00 1.00 1.00 1.00 16 accuracy 1.00 1.00 16 1.00 macro avg weighted avg 1.00 1.00 16 1.00

Sentence: list the flights from philadelphia to san francisco via dallas True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN Classification Report:

	precis	ion	reca	II f1∹	score	supp	ort
1	1.0	00	1.00	) 1	.00	4	
2	1.0	00	1.00	) 1	.00	3	
3	1.0	00	1.00	) 1	.00	1	
4	1.0	00	1.00	) 1	.00	1	
5	1.0	00	1.00	) 1	.00	1	
accura	асу			1	.00	10	
macro weighted	•	1.0 1.	00 00	1.00 1.00		00 .00	10 10

Sentence: are there any flights from denver to atlanta with stops in pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP

PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN

ADP PROPN

Classification Report:

	precision	on re	call	f1-sc	ore su	pport
1	1.0	0 1.	.00	1.0	0 ;	3
2	1.0	0 1.	.00	1.0	0 4	4
3	1.0	0 1.	.00	1.0	0 2	2
4	1.0	0 1.	.00	1.0	0 .	1
5	1.0	0 1.	.00	1.0	0 .	1
6	1.0	0 1.	00	1.0	0 .	1
accur	acy			1.00	) 1:	2
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: i need a flight from baltimore to seattle that stops in minneapolis

True tags: PRON VERB DET NOUN ADP PROPN ADP VERB ADP

**PROPN** 

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB

ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	ore su	pport
1	1.0	0 1.	.00	1.00	) 3	3
2	1.0	0 1.	.00	1.00	) 4	1
3	1.0	0 1.	.00	1.00	) 1	l
4	1.0	0 1.	.00	1.00	) 2	2
5	1.0	0 1.	.00	1.00	) 1	1
6	1.0	0 1.	.00	1.00	) 1	1
accur	acy			1.00	12	2
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: i would like a flight that leaves on friday from philadelphia to dallas that makes a stop in atlanta

True tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	6
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	3

5	1.00	0 1.	00	1.00	2	
6	1.00	0 1.	00	1.00	1	
8	1.00	0 1.	00	1.00	1	
accurac	у			1.00	19	
macro av	vg	1.00	1.0	0	1.00	19
weighted a	avg	1.00	1.0	00	1.00	19

Sentence: list flights from philadelphia to dallas that stop in atlanta

True tags: VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 4 3 1.00 1.00 1.00 1 4 1.00 1.00 2 1.00 1.00 10 accuracy macro avg 1.00 1.00 1.00 10 10 weighted avg 1.00 1.00 1.00

Sentence: what is the available ground transportation between san francisco and downtown

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN

Classification Report:

	preci	sion	recall	f1-scor	e supp	ort
1	1	.00	1.00	1.00	2	
2	1	.00	1.00	1.00	1	
3	1	.00	1.00	1.00	3	
5	1	.00	1.00	1.00	1	
6	1	.00	1.00	1.00	1	
7	1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
10	) .	1.00	1.00	1.00	1	
accur	асу			1.00	11	
macro	avg	1.0	00 1	.00	1.00	11
weighte	d avg	1.	00	1.00	1.00	11

Sentence: what ground transportation is there from the airport in atlanta to downtown True tags: DET NOUN NOUN VERB PRON ADP DET NOUN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN NOUN AUX PRON ADP DET NOUN ADP PROPN

ADP NOUN

	precision	on re	call	f1-sco	ore sup	port
1	1.0	0 1	.00	1.00	) 1	
2	1.0		.00	1.00		
3	1.0	0 1	.00	1.00	) 4	
4	1.0	0 0	.00	0.00	) 1	
5	1.0	0 0	.50	0.67	7 2	
6	0.5	0 1	.00	0.67	7 1	
8	0.0	0 1	.00	0.00	0 0	
accura	асу			0.83	12	
macro	avg	0.79	0	.79	0.62	12
weighted	l avg	0.96	(	0.83	0.83	12

Sentence: what flights go from dallas to denver leaving after 3 pm

True tags: DET NOUN VERB ADP PROPN ADP PROPN VERB ADP NUM NOUN Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN NOUN

Classification Report:

	precisio	n re	call	f1-sc	ore su	pport
1	1.0	0 1.	00	1.0	0 2	2
2	1.0	0 1.	00	1.0	0 ;	3
3	0.6	7 1.	00	0.8	0 2	2
4	1.0	0 1.	00	1.0	0 2	2
5	1.0	0.	00	0.0	0	1
6	0.0	0 1.	00	0.0	0 (	<b>C</b>
9	1.0	0.	00	0.0	0	1
accura	асу			0.82	2 1	1
macro	avg	0.81	0	.71	0.54	11
weighted	d avg	0.94	(	0.82	0.78	11

Sentence: can you list all flights from chicago to <unk> louis that depart after 12 noon

True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB ADP NUM NOUN

Predicted tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB ADP NUM NOUN

-	· • · · · · · · · · · · · · · · · · · ·			
	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
9	1.00	1.00	1.00	1

accuracy		1.0	0 15	5
macro avg	1.00	1.00	1.00	15
weighted avg	1.00	1.00	1.00	15

Sentence: is there a flight between philadelphia and denver that leaves philadelphia around 2 <unk> in the afternoon

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP VERB PROPN ADP NUM ADV ADP DET NOUN

Predicted tags: AUX PRON DET NOUN ADP PROPN CCONJ PROPN ADP VERB PROPN ADP VERB AUX ADP DET NOUN

Classification Report:

ation i topt	J. C.			
precision	recall	f1-score	supp	ort
1.00	1.00	1.00	3	
1.00	1.00	1.00	4	
1.00	1.00	1.00	2	
0.50	0.50	0.50	2	
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
0.00	1.00	0.00	0	
1.00	0.00	0.00	1	
1.00	1.00	1.00	1	
1.00	0.00	0.00	1	
acv		0.82	17	
_	85 0			17
U				17
	1.00 1.00 1.00 0.50 1.00 1.00 0.00 1.00 1	1.00 1.00 1.00 1.00 1.00 1.00 0.50 0.50 1.00 1.00 1.00 1.00 0.00 1.00 1.00 0.00 1.00 1.00 1.00 0.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	precision         recall f1-score         supp           1.00         1.00         1.00         3           1.00         1.00         1.00         4           1.00         1.00         1.00         2           0.50         0.50         0.50         2           1.00         1.00         1.00         2           1.00         1.00         1.00         1           0.00         1.00         0.00         0           0         1.00         1.00         1.00         1           1.00         0.00         0.00         1         1           1.00         0.00         0.00         1         1           1.00         0.85         0.75         0.65

Sentence: what flights leaving pittsburgh arrive in denver and leave after say 6 <unk> at night

True tags: DET NOUN VERB PROPN VERB ADP PROPN CCONJ VERB ADP VERB NUM ADV ADP NOUN

Predicted tags: PRON NOUN VERB PROPN VERB ADP PROPN CCONJ VERB ADP NUM NUM AUX ADP PROPN

accinc	alion Nope			
	precision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	3
3	1.00	0.50	0.67	2
4	1.00	0.75	0.86	4
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
8	0.00	1.00	0.00	0
9	0.50	1.00	0.67	1
10	1.00	1.00	1.00	1
11	1.00	0.00	0.00	1
accura	асу		0.73	15

macro avg	0.72	0.72	0.50	15
weighted ava	0.92	0.73	0.74	15

Sentence: dallas to houston after <unk> am

True tags: PROPN ADP PROPN ADP NUM NOUN

Predicted tags: PROPN ADP PROPN ADP PROPN NOUN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
accurac	СУ		0.83	6	
macro a	ivg 0	.92 0	.75 0.	70	6
weighted	avg (	0.89	0.83 0	.77	6

Sentence: is there a flight around 3 pm from charlotte to minneapolis

True tags: VERB PRON DET NOUN ADP NUM NOUN ADP PROPN ADP PROPN Predicted tags: AUX PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP

PROPN Classification Report:

Ciaconiic	alion	· vopo				
	preci	sion	recall	f1-sc	ore sup	port
1	1	.00	1.00	1.0	0 2	
2	1	.00	1.00	1.0	0 3	
3	0	.67	1.00	8.0	0 2	
4	1	.00	0.00	0.0	0 1	
5	1	.00	1.00	1.0	0 1	
6	1	.00	1.00	1.0	0 1	
8	0	.00	1.00	0.0	0 0	
9	1	.00	0.00	0.0	0 1	
accur	acy			0.82		
macro	_	0.8		).75	0.60	11
weighted	d avg	0	.94	0.82	0.78	11

Sentence: i like to see the information for flights from pittsburgh to san francisco leaving pittsburgh after 12 pm

True tags: PRON VERB PART VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: PRON VERB PART VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN PROPN VERB PROPN ADP NUM NOUN

pr	ecision	recall	recall f1-score	
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3

Sentence: a listing of all flights from boston to baltimore before 10 am on thursday True tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Predicted tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Classification Report:

	nroc	roo	٦II	f1 cc	1 00000		ort	
	precision		160	all	11-50	ore	Supp	Οιι
1	1	.00	1.0	0	1.0	00	2	
2	: 1	.00	1.0	0	1.0	00	5	
3	. 1	.00	1.0	0	1.0	00	4	
5	1	.00	1.0	0	1.0	00	2	
9	1	.00	1.0	0	1.0	00	1	
accur	acy				1.0	0	14	
macro	avg	1.	.00	1	.00	1.0	0	14
weighte	d avg	1	1.00	•	1.00	1.0	00	14

Sentence: i <unk> like a flight from san diego to toronto on alaska airlines leaving around 1 pm

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN NOUN

Grademeation respecti											
	on red	call f1-	score	suppo	ort						
1	1.0	0 1.0	00 1	.00	5						
2	1.0	0 1.0	00 1	.00	4						
3	0.6	7 1.0	0 00	.80	2						
4	1.0	0 1.0	00 1	.00	2						
5	1.0	0 1.0	00 1	.00	1						
6	1.0	0 1.0	00 1	.00	1						
8	1.0	0 1.0	00 1	.00	1						
9	1.0	0.0	0 00	.00	1						
accur	acy		0	.94	17						
macro avg 0.		0.96	0.88	0.8	5	17					
weighted	d avg	0.96	0.94	9.0	92	17					

Sentence: i want a flight from atlanta to washington that leaves after 3 pm

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore si	upport
1	1.	00	1.00	1.0	0	2
2	1.	00	1.00	1.0	0	4
3	1.	00	1.00	1.0	0	2
4	1.	00	1.00	1.0	0	2
5	1.	00	1.00	1.0	0	1
6	1.	00	1.00	1.0	0	1
9	1.	00	1.00	1.0	0	1
accur	acy			1.00	) ^	13
macro	avg	1.0	0 1	.00	1.00	13
weighted	d avg	1.0	00	1.00	1.00	13

Sentence: list all flights going from boston to atlanta on wednesday after 6 <unk> pm on wednesday

True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NUM NOUN ADP NOUN

Classification Report:

	precisi	on re	ecall	f1-sc	ore su	oport
1	1.0	0 1	.00	1.00	) 2	2
2	1.0	0 1	.00	1.00	) 5	5
3	1.0	00 1	.00	1.00	) 4	Ļ
4	1.0	00 1	.00	1.00	) 2	<u>)</u>
5	1.0	00 1	.00	1.00	) 1	
9	0.5	50 1	.00	0.6	7 1	
11	1.0	00 00	0.00	0.0	0	1
accura	асу			0.94	16	6
macro weighted	•	0.93 0.97	_	.86 0.94	0.81 0.92	16 16

Sentence: i need flight information for a flight departing from cleveland to milwaukee wednesday after 6 pm

True tags: PRON VERB NOUN NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN NOUN ADP NUM NOUN

Classification Report:

precision recall f1-score support

```
2
      1
           1.00
                   1.00
                           1.00
      2
           1.00
                   1.00
                           1.00
                                     4
      3
                                     5
           1.00
                   1.00
                           1.00
      4
                                     2
           1.00
                   1.00
                           1.00
      5
           1.00
                                     1
                   1.00
                           1.00
      6
           1.00
                                     1
                   1.00
                           1.00
      9
           1.00
                   1.00
                           1.00
                                     1
                           1.00
                                   16
  accuracy
 macro avg
                1.00
                       1.00
                               1.00
                                        16
weighted avg
                1.00
                        1.00
                                1.00
                                         16
```

Sentence: what flights go from boston to denver before 10 am

True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN

Classification Report:

	precisio	n re	call	f1-sco	ore sup	port
1	1.00	) 1.	00	1.00	) 2	
2	1.00	) 1.	00	1.00	) 3	1
3	1.00	) 1.	00	1.00	) 2	
4	1.00	) 1.	00	1.00	) 1	
5	1.00	0.	00	0.00	) 1	
6	0.00	) 1.	00	0.00	0 0	)
9	1.00	) 1.	00	1.00	) 1	
accura	асу			0.90	) 10	)
macro	avg	0.86	0	.86	0.71	10
weighted	lavg	1.00	(	0.90	0.90	10

Sentence: list all flights from boston to atlanta after 6 <unk> pm on wednesday True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM NUM NOUN ADP NOUN

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	3	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
9	0.5	0 1.	00	0.67	1	
11					) 1	
				0.00	•	
accur	acy			0.92	13	
macro	avg	0.93	0.	86 (	0.81	13
weighted	•	0.96	C	.92	0.90	13
9 11 accur macro	0.5 1.0 acy avg	0 1. 00 0 0.93	00 .00 0.	0.67 0.00 0.92 86	1 1 13 0.81	

Sentence: i <unk> looking for flights from pittsburgh to philadelphia leaving before 9 am

True tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

Classification Report:

	precis	sion	recal	f1-sc	ore	suppo	ort
1	1	.00	1.00	1.0	00	2	
2	1	.00	1.00	1.0	00	4	
3	1	.00	1.00	1.0	0	2	
4	1	.00	1.00	1.0	0	2	
6	1	.00	1.00	1.0	00	1	
8	1	.00	1.00	1.0	0	1	
9	1	.00	1.00	1.0	00	1	
accur	acy			1.0	0	13	
macro weighted	_	1.0 1.	00 ´	1.00 1.00	1.00 1.0		13 13

Sentence: list all flights going from boston to atlanta before 7 am on thursday True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Classification Report:

	precis	ion re	call	f1-sco	re supp	oort
1	1.0	00 1	.00	1.00	2	
2	1.0	00 1	.00	1.00	4	
3	1.0	00 1	.00	1.00	3	
4	1.0	00 1	.00	1.00	2	
5	1.0	00 1	.00	1.00	1	
9	1.0	00 1	.00	1.00	1	
accur	асу			1.00	13	
macro	avg	1.00	1	.00	1.00	13
weighte	d avg	1.00	•	1.00	1.00	13

Sentence: i need flight information for flights departing from cleveland to milwaukee on wednesday after 5 pm

True tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 2

2	1.00	1.	00	1.00	) 5	5
3	1.00	1.	00	1.00	) 5	5
4	1.00	1.	00	1.00	) 2	2
6	1.00	1.	00	1.00	) 1	1
9	1.00	1.	00	1.00	) 1	1
accura	су			1.00	16	ô
macro a	avg	1.00	1.0	00	1.00	16
weighted	avg	1.00	1	.00	1.00	16
accura macro a	cy avg	1.00	1.0	1.00 00	1.00	16

Sentence: can you find me another flight from cincinnati to new york on saturday before 6 pm

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP NOUN ADP NUM NOUN

Predicted tags: AUX PRON VERB PRON NOUN NOUN ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

Classification Report:

pr	ecision	recall	f1-score	e supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	4	
3	0.75	1.00	0.86	3	
4	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	1.00	1.00	1.00	2	
8	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
accurac	y		0.94	16	
macro av	/g 0.9	97 0	.88 0	.86	16
weighted a	vg 0	.95 (	0.94 (	0.91	16

Sentence: i would like a flight from san francisco to pittsburgh on friday morning after 10 <unk>

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP NOUN NOUN ADP NUM ADV

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP NOUN NOUN ADP NUM NUM

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
9	0.50	1.00	0.67	1
11	1.00	0.00	0.00	1

accuracy		0.9	4 10	3
macro avg	0.94	0.89	0.85	16
weighted avg	0.97	0.94	0.92	16

Sentence: list all flights going from boston to atlanta before 5 <unk> am on thursday

True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV

NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM

NUM NOUN ADP NOUN Classification Report:

0.0000	G. C. C					
	precisi	on re	call	f1-scc	re sup	port
1	1.0	0 1	.00	1.00	) 2	
2	1.0	0 1	.00	1.00	) 4	
3	1.0	0 1	.00	1.00	) 3	
4	1.0	0 1	.00	1.00	) 2	
5	1.0	0 1	.00	1.00	) 1	
9	0.5	0 1	.00	0.67	7 1	
11	1.0	0 0	00.0	0.0	0 1	
accura	асу			0.93	14	
macro weighted	•	0.93 0.96	_	.86 0.93	0.81 0.90	14 14

Sentence: what is the last flight from baltimore to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	pred	isior	n re	call	f1-sc	ore	supp	ort
1	,	1.00	1.	00	1.0	00	2	
2		1.00		00	1.0		2	
3	3	1.00	1.	00	1.0	00	1	
5	5	1.00	1.	00	1.0	00	1	
6	}	1.00	1.	00	1.0	00	1	
7	,	1.00	1.	00	1.0	00	1	
8	}	1.00	1.	00	1.0	00	1	
accur	асу				1.0	0	9	
macro	avg	•	1.00	1	.00	1.0	0	9
veighte	d avg	l	1.00	•	1.00	1.	00	9

Sentence: what <unk> the latest flight from san jose to houston

True tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 3

2	1.00	1.00	) 1.	00	2	
3	1.00	1.00	1.	00	1	
5	1.00	1.00	1.	00	1	
6	1.00	1.00	) 1.	00	1	
7	1.00	1.00	1.	00	1	
8	1.00	1.00	1.	00	1	
accurac	y		1.0	00	10	
macro av	/g 1	.00	1.00	1.0	0	10
weighted a	vg	1.00	1.00	1.	00	10

Sentence: what is the earliest flight from pittsburgh to san francisco

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	СУ		1.00	10	
macro a	vg 1.0	00 1	.00 1.0	00	10
weighted	avg 1	.00	1.00 1.	.00	10

Sentence: show first flight from philadelphia to dallas True tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 3 1 1.00 1.00 1.00 4 0.50 1.00 0.67 1 7 1.00 0.00 0.00 accuracy 0.86 0.73 0.90 0.80 7 macro avg 7 weighted avg 0.93 0.86 0.81

Sentence: what <unk> the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support

Sentence: what is the shortest flight from milwaukee to <unk> petersburg
True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN
Classification Report:

	precis	ion	recall	f1-sc	ore su	ipport
1	1.	00	1.00	1.0	0	3
2	1.	00	1.00	1.0	0	2
3	1.	00	1.00	1.0	0	1
5	1.	00	1.00	1.0	0	1
6	1.	00	1.00	1.0	0	1
7	1.	00	1.00	1.0	0	1
8	1.	00	1.00	1.0	0	1
accur	acy			1.00	) 1	0
macro	avg	1.0	0 1	.00	1.00	10
weighted	d avg	1.0	00	1.00	1.00	10

Sentence: shortest evening flight from tampa to cincinnati True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: ADJ NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore su	pport
1	1.	00	1.00	1.00	0 2	2
2	1.	00	1.00	1.0	0 2	2
3	1.	00	1.00	1.0	0 2	2
7	1.	00	1.00	1.0	0 '	1
accur	асу			1.00	) 7	,
macro weighte	_	1.0 1.		.00 1.00	1.00 1.00	7 7

Sentence: what is the earliest flight you have leaving boston heading to philadelphia True tags: PRON AUX DET ADJ NOUN PRON VERB VERB PROPN VERB ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN PRON VERB VERB PROPN ADP ADP

**PROPN** 

Classification Report:

i	orecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	0.50	1.00	0.67	1	
3	1.00	1.00	1.00	1	
4	1.00	0.67	0.80	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	2	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	су		0.92	12	
macro a	avg 0.9	94 0	.96 0.9	93	12
weighted	avg 0	.96	0.92	.92	12

Sentence: what is the earliest flight from boston to san francisco

precision recall f1-score support

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

	•							٠.	
	1	1.00	1	.00	1	.00		3	
	2	1.00	1	.00	1	.00		2	
	3	1.00	1	.00	1	.00		1	
	5	1.00	1	.00	1	.00		1	
	6	1.00	1	.00	1	.00		1	
	7	1.00	1	.00	1	.00		1	
	8	1.00	1	.00	1	.00		1	
accu	ıracy				1.	.00	1	0	
	o avg		1.00		1.00		1.00		10
weighte	ed av	g	1.00		1.00		1.00		10

Sentence: flights from denver to westchester county new york weekdays
True tags: NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN NOUN
Predicted tags: NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN NOUN
Classification Report:

ŀ	orecisio	on rec	all f1-s	core	suppo	ort
1	1.00	0 1.0	00 1.	.00	5	
2	1.00	0.1	00 1.	.00	2	
3	1.00	0.1	00 1.	.00	2	
accura	су		1.	00	9	
macro a	avg	1.00	1.00	1.00	)	9
weighted	avg	1.00	1.00	1.0	0	9

Sentence: what is the last flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n recal	l f1-score	e suppor	t
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accur	acy		1.00	9	
macro	avg	1.00	1.00 1	.00 9	)
weighted	d avg	1.00	1.00	1.00	9

Sentence: what is the earliest flight leaving denver going to boston

True tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN

Classification Report:

	precis	ion	recall	f1-sco	re supp	oort
1	1.	00	1.00	1.00	2	
2	1.	00	1.00	1.00	1	
3	1.	00	1.00	1.00	1	
4	1.	00	1.00	1.00	2	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
7	1.	00	1.00	1.00	1	
8	1.	00	1.00	1.00	1	
accur	acy			1.00	10	
macro	avg	1.0	0 1	.00	1.00	10
weighte	d avg	1.	00	1.00	1.00	10

Sentence: what is the earliest flight from ontario to memphis

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		1.0	0 9	
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: what is the earliest flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore :	suppo	ort
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accur	acy			1.0	0	9	
macro	avg	1.0	0 1	.00	1.00	)	9
weighted	d avg	1.0	00	1.00	1.0	0	9

Sentence: what is the last flight leaving san francisco going to washington on friday True tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP PROPN ADP NOUN

Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	3	
2	•	1.00	1.0	00	1.0	0	2	
3	•	1.00	1.0	00	1.0	0	2	
4	•	1.00	1.0	00	1.0	0	2	
5	•	1.00	1.0	00	1.0	0	1	
6	•	1.00	1.0	00	1.0	0	1	
7	•	1.00	1.0	00	1.0	0	1	
8	•	1.00	1.0	00	1.0	0	1	
accur	асу				1.00	)	13	
macro weighted	_		.00 1.00		.00 1.00	1.0 1.	0 00	13 13

Sentence: what is the earliest morning flight from san francisco to boston True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP

**PROPN** 

Classification Report:

precision recall f1-score support

Sentence: what <unk> the earliest flight from dallas to houston
True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accur	acy		1.00	9	
macro	avg	1.00 1	.00 1.0	00	9
weighted	d avg	1.00	1.00 1	.00	9

Sentence: i <unk> like to find the earliest flight possible from san francisco to atlanta True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADJ ADP PROPN

PROPN ADP PROPN

Predicted tags: PRON AUX VERB PART VERB DET ADJ NOUN NUM ADP PROPN

PROPN ADP PROPN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.50	0.67	2
8	1.00	1.00	1.00	1
9	0.00	1.00	0.00	0
12	2 1.00	1.00	1.00	1

accuracy		0.9	3 14	1
macro avg	0.90	0.95	0.87	14
weighted avg	1.00	0.93	0.95	14

Sentence: what is the latest evening flight leaving san francisco for washington True tags: PRON AUX DET ADJ NOUN NOUN VERB PROPN PROPN ADP PROPN PROPN AUX DET ADJ NOUN NOUN VERB PROPN PROPN PROPN

Classification Report:

	precision	on re	call	f1-sco	ore sup	port
1	1.0	0 1.	.00	1.00	) 3	,
2	1.0	0 1.	.00	1.00	) 1	
3	1.0	0 1.	.00	1.00	) 2	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 1	
6	1.0	0 1.	.00	1.00	) 1	
7	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 1.	.00	1.00	) 1	
accur	асу			1.00	11	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	11 11
5	5					

Sentence: what is the first flight from boston to atlanta and what is the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	prec	ision	recall	f1-scor	e supp	ort
1	1	1.00	1.00	1.00	4	
2	<u> </u>	1.00	1.00	1.00	4	
3	} '	1.00	1.00	1.00	2	
5	5	1.00	1.00	1.00	2	
6	)	1.00	1.00	1.00	2	
7	,	1.00	1.00	1.00	2	
8	} '	1.00	1.00	1.00	2	
1	0	1.00	1.00	1.00	1	
accur	асу			1.00	19	
macro weighte	•	1.0 1.0		.00 1 1.00	1.00 1.00	19 19

Sentence: what <unk> the cheapest one way ticket from baltimore to atlanta True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN

## Classification Report:

þ	recision	recall	t1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
accura	СУ		1.00	11	
macro a	vg 1.0	00 1	.00 1.	.00	11
weighted	avg 1	.00	1.00 1	1.00	11

Sentence: what <unk> the cheapest round trip fare between boston and washington True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN

## Classification Report:

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accura	су		1.00	11
macro a	vg 1.0	00 1	.00 1.0	00 11
weighted	avg 1	.00	1.00 1.	00 11

Sentence: what is the cheapest round trip fare between boston and san francisco True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 1 3 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 3 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 1.00 1.00 1 1.00

Sentence: what is the cheapest round trip fare from atlanta to pittsburgh

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precisio	n re	call	f1-sc	ore s	uppor	t
1 2	1.00 1.00		00 00	1.0 1.0		2	
3	1.00		00	1.0		3	
5	1.00	) 1.	00	1.0	0	1	
6	1.00	) 1.	00	1.0	0	1	
7	1.00	) 1.	00	1.0	0	1	
8	1.00	) 1.	00	1.0	0	1	
				4.0	_	4.4	
accura	acy			1.00	) .	11	
macro	avg	1.00	1	.00	1.00	1	1
weighted	d avg	1.00	•	1.00	1.00		11

Sentence: what is the cheapest fare from baltimore to dallas in any class True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
5	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	асу			1.00	12	
macro weighted	•	1.00 1.00		.00 .00	1.00 1.00	12 12

Sentence: what is the cheapest one way fare from boston to washington

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP

**PROPN** 

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
accurac	СУ		1.00	11	
macro a	vg 1.0	00 1	.00 1.0	00	11
weighted	avg 1	.00	1.00 1	.00	11

Sentence: i <unk> interested in the cheapest fare from washington to fort worth True tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN PROPN

Predicted tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN PROPN

Classification Report:

precis	ion	ieca	11 11-3	COLE	Supp	Oit
1.	00	1.00	1.	.00	3	
1.	00	1.00	1.	.00	3	
1.	00	1.00	1.	.00	1	
1.	00	1.00	1.	.00	1	
1.	00	1.00	1.	.00	1	
1.	00	1.00	1.	.00	1	
1.	00	1.00	1.	.00	1	
1.	00	1.00	1.	.00	1	
acy			1.	00	12	
avg	1.0	00	1.00	1.0	00	12
d avg	1	.00	1.00	1.	00	12
	1. 1. 1. 1. 1. 1. 1. acy avg	1.00 1.00 1.00 1.00 1.00 1.00 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.101 1.00 1.100 1.00 1.00 1.	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

precision recall f1-score support

Sentence: i would like to book a flight from denver to pittsburgh on july fifteenth i <unk> like it to be the cheapest flight

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN ADJ PRON AUX VERB PRON PART AUX DET ADJ NOUN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN ADJ PRON AUX VERB VERB PART VERB DET ADJ NOUN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	0.60	1.00	0.75	3
5	1.00	1.00	1.00	2

	6	1.0	U	0.6	1	0.8	U	3	
	7	1.0	0	1.0	0	1.0	0	2	
	8	1.0	0	0.6	7	0.8	0	3	
	12	1.0	00	1.0	00	1.0	00	2	
aco	curacy	<i>'</i>				0.9	1	23	
mad	cro av	g	0.9	96	0.9	93	0.93	3	23
weigh	nted a	vg	0.	95	0.	.91	0.9	2	23

Sentence: what is the cheapest fare from dallas to denver on delta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

	precision	on rec	all f1-s	core su	upport
1	1.0	0 1.0	00 1.	00	3
2	1.0	0 1.0	00 1.	00	3
3	1.0	0 1.0	00 1.	00	1
5	1.0	0 1.0	00 1.	00	1
6	1.0	0 1.0	00 1.	00	1
7	1.0	0 1.0	00 1.	00	1
8	1.0	0 1.0	00 1.	00	1
accur	acy		1.0	00 1	1
macro	avg	1.00	1.00	1.00	11
weighte	d avg	1.00	1.00	1.00	11

Sentence: can you show me the cheapest round trip flights between denver and pittsburgh

True tags: AUX PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

Predicted tags: AUX PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

	recision		f1-score	supp	ort
·					
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	2	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accura	су		1.00	13	
macro a	avg 1.0	00 1	.00 1.0	00	13
weighted	avg 1	.00	1.00 1.	00	13

Sentence: what <unk> the lowest round trip fare from denver to atlanta

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precisi	on re	ecall	f1-sc	ore si	upport
1	1.0	00 1	.00	1.0	0	2
2	1.0	00 1	.00	1.0	0	2
3	1.0	00 1	.00	1.0	0	3
5	1.0	00 1	.00	1.0	0	1
6	1.0	00 1	.00	1.0	0	1
7	1.0	00 1	.00	1.0	0	1
8	1.0	00 1	.00	1.0	0	1
accur	acy			1.00	) 1	11
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	)	1.00	1.00	11

Sentence: what is the cheapest flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re su	pport
1	1.0	0 1	.00	1.00	) :	2
2	1.0	0 1.	.00	1.00	) ;	2
3	1.0	0 1.	.00	1.00	) .	1
5	1.0	0 1.	.00	1.00	)	1
6	1.0	0 1.	.00	1.00	) .	1
7	1.0	0 1.	.00	1.00	)	1
8	1.0	0 1	.00	1.00	) '	1
accur	acy			1.00	S	)
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: i <unk> like to find the cheapest fare from atlanta to dallas

True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

pı	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1 00	1 00	1 00	2

5	1.00	1.0	0 1.	00	1	
6	1.00	1.0	0 1.	00	1	
7	1.00	1.0	0 1.	00	1	
8	1.00	1.0	0 1.	00	1	
12	1.00	1.0	0 1	.00	1	
accuracy			1.0	00	12	
macro avo	g 1.	00	1.00	1.00	)	12
weighted av	g 1	.00	1.00	1.0	0	12

Sentence: lowest fare from san francisco to los angeles

True tags: ADJ NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN

Classification Report:

	prec	ision	reca	all f	1-sc	core	supp	ort
1		1.00	1.00		1.0		4	
2		1.00	1.00		1.0		2	
3		1.00	1.00		1.0		1	
5	(	0.00	1.00	)	0.0	00	0	
7	1	1.00	0.00	)	0.0	00	1	
accur	acy				8.0	8	8	
macro	avg	3.0	30	3.0	30	0.6	iO	8
weighte	d avg	1.	00	0.	88	0.	88	8

Sentence: i <unk> like the lowest fare from denver to pittsburgh

True tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call f1	-score	supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accura	асу			1.00	10	
macro weighted	_	1.00 1.00	1.00 1.0		00 .00	10 10
5	3					_

Sentence: okay i <unk> want to know the cheapest fare from atlanta to boston

True tags: INTJ PRON ADV VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: PROPN PRON AUX VERB PART VERB DET ADJ NOUN ADP

PROPN ADP PROPN

## Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	0.00	1.00	0.00	0	
11	1.00	0.00	0.00	1	
12	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
00011800			0.05	12	
accurac	_	20 0	0.85	13	40
macro av	•		.82 0.7		13
weighted a	vg 0	.95 (	0.85 0.	.82	13

Sentence: what are the lowest one way fares from atlanta to denver

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP

PROPN

Classification Report:

	precis	ion re	call	f1-scc	re supp	oort
1	1.0	00 1.	.00	1.00	) 2	
2	1.0	00 1.	.00	1.00	) 2	
3	1.0	00 1.	.00	1.00	) 2	
5	1.0	00 1.	.00	1.00	) 1	
6	1.0	00 1.	.00	1.00	) 1	
7	1.0	00 1.	.00	1.00	) 1	
8	1.0	00 1.	.00	1.00	) 1	
9	1.0	00 1.	.00	1.00	) 1	
accur	acy			1.00	11	
macro	avg	1.00	1.	.00	1.00	11
weighte	d avg	1.00	1	1.00	1.00	11

Sentence: what is the cheapest one way fare from any city to another

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP DET PROPN ADP DET Predicted tags: PRON AUX DET ADJ NUM NOUN NOUN ADP DET PROPN ADP

**PROPN** 

precision		recall f1-score		support
1 2 3	0.50 1.00 1.00	1.00 1.00 1.00	0.67 1.00 1.00	1 2 2
5	1.00	0.67	0.80	3

6 7 8 9	1.00 1.00 1.00 1.00	0 1. 0 1.	00 00 00 00	1.00 1.00 1.00 1.00	) 1 ) 1	
accurac macro av weighted a	/g	0.94 0.96	0.0	0.92 96 .92	2 12 0.93 0.92	12 12

Sentence: i <unk> like the cheapest cost fare to fort worth from boston

True tags: PRON AUX VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB DET ADJ NOUN NOUN ADP PROPN PROPN

ADP PROPN

Classification Report:

	precis	sion	reca	ll f1-s	score	supp	ort
1	1.	.00	1.00	) 1	.00	3	
2	1.	.00	1.00	) 1	.00	2	
3	1.	.00	1.00	) 1	.00	2	
4	1.	.00	1.00	) 1	.00	1	
5	1.	.00	1.00	) 1	.00	1	
6	1.	.00	1.00	) 1	.00	1	
7	1.	.00	1.00	1	.00	1	
8	1.	.00	1.00	) 1	.00	1	
accur	асу			1.	00	12	
macro	avg	1.0	00	1.00	1.0	00	12
weighted	d avg	1	.00	1.00	1.	00	12

Sentence: show me the cheapest one way fares from san diego to miami

True tags: VERB PRON DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB PRON DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN

precision	recall	f1-score	support	
1.00	1.00	1.00	3	
1.00	1.00	1.00	2	
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
acy		1.00	12	
U			_	<u>2</u> 2
	1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 3 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 2 2 3 4 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4

Sentence: what flights leave philadelphia for dallas and depart before noon on

american airlines

True tags: DET NOUN VERB PROPN ADP PROPN CCONJ VERB ADP NOUN ADP PROPN PROPN

Predicted tags: PRON NOUN VERB PROPN ADP PROPN CCONJ VERB ADP NOUN ADP PROPN PROPN

Classification Report:

	precision		call	f1-sco	re supp	oort
1	1.00	) 1.	00	1.00	4	
2	1.00	) 1.	00	1.00	3	
3	1.00	) 1.	00	1.00	2	
4	1.00	) 1.	00	1.00	2	
5	1.00	0.	00	0.00	1	
6	0.00	) 1.	00	0.00	0	
10	1.0	0 1	.00	1.00	) 1	
accura	acv			0.92	13	
macro	•	0.86	0.		0.71	13
weighted	•	1.00		).92	0.92	13
9	9					

Sentence: i need a flight from cleveland to dallas that leaves before noon see if too much information

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN VERB ADP ADV ADV NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN VERB NOUN NUM VERB NOUN

Classification Report:

	precis	ion	recal	l f1-so	core	supp	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	0.80	0.8	89	5	
3	0.	75	1.00	0.0	86	3	
4	0.	75	1.00	0.0	86	3	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
9	0.	00	1.00	0.0	00	0	
11	1	.00	0.00	0.	00	2	
accur	•			3.0		17	
macro weighted	_	0.8	61 ( 91	0.85 0.82	0.7 0.	0 80	17 17

Sentence: list all flights leaving denver on continental on sunday after 2134
True tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP NUM
Predicted tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP

NUM

Classification Report:

precision recall f1-score support

Sentence: all flights from san francisco to boston leaving before noon True tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Predicted tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Classification Report:

рі	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
accurac	y		1.00	10	
macro a	vg 1.0	00 1	.00 1.0	00	10
weighted a	avg 1	.00	1.00 1.	00	10

Sentence: i need a flight from cincinnati to san jose leaving after 6 in the evening True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP

NUM ADP DET NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADP NUM ADP DET NOUN

Classification Report:

	precis	ion re	ecall	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	3	
2	1.0	00 1	.00	1.00	4	
3	1.0	00 1	.00	1.00	2	
4	1.0	00 1	.00	1.00	2	
5	1.0	00 1	.00	1.00	2	
6	1.0	00 1	.00	1.00	1	
9	1.0	00 1	.00	1.00	1	
accur	асу			1.00	15	
macro	avg	1.00	1	.00	1.00	15
weighte	d avg	1.00	) ′	1.00	1.00	15

Sentence: flights from milwaukee to orlando one way
True tags: NOUN ADP PROPN ADP PROPN NUM NOUN

Predicted tags: NOUN ADP PROPN ADP PROPN NUM NOUN

Classification Report:

	precision		recall	f1-sc	ore su	pport
1	1.0	00	1.00	1.0	0 :	2
2	1.	00	1.00	1.0	0 :	2
3	1.	00	1.00	1.0	0 :	2
9	1.	00	1.00	1.0	0	1
accur	acy			1.00	) 7	7
macro	avg	1.00	) 1	.00	1.00	7
weighte	d avg	1.0	0	1.00	1.00	7

Sentence: i want to fly from baltimore to dallas round trip

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN

Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accurac	У		1.00	10	
macro a	vg 1.	00 1	.00 1.0	00	10
weighted a	avg 1	.00	1.00 1.	.00	10

Sentence: hi i want a round trip ticket to dallas

True tags: INTJ PRON VERB DET NOUN NOUN NOUN ADP PROPN

Predicted tags: PROPN PRON VERB DET NOUN NOUN ADP PROPN

Classification Report:

	preci	sion	recall	f1-scc	ore su	pport
1	0	.50	1.00	0.67	7	1
2	1	.00	1.00	1.00	)	1
3	1	.00	1.00	1.00	) ;	3
4	1	.00	1.00	1.00	)	1
5	1	.00	1.00	1.00	)	1
6	1	.00	1.00	1.00	)	1
13	3 1	.00	0.00	0.0	0	1
accur	асу			0.89	) 9	)
macro veighte	•	0.9 0.9		.86 ).89	0.81 0.85	9 9

Sentence: what would be cost of a round trip from pittsburgh to san francisco

True tags: PRON AUX AUX NOUN ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX AUX VERB ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

Olacollic	auon i	vopo.	٠.			
	precis	ion	recall	f1-scc	re sup	port
1	1.0	20	1.00	1.00	1 2	
•						
2	1.0	00	1.00	1.00	) 3	
3	1.0	00	0.67	0.80	3	
4	0.0	00	1.00	0.00	0	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
8	1.0	00	1.00	1.00	) 2	
accur	acy			0.92	13	
macro	avg	8.0	6 0	.95	0.83	13
weighte	d avg	1.0	00	0.92	0.95	13

Sentence: show me round trip fares from toronto to detroit on delta northwest us air and united airlines

True tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN PROPN

Classification Report:

	pred	cision	recal	l f1-sc	ore s	suppo	ort
,	1	1.00	1.00	1.0	0	8	
2	2	1.00	1.00	1.0	0	3	
3	3	1.00	1.00	1.0	0	3	
4	4	1.00	1.00	1.0	0	1	
6	3	1.00	1.00	1.0	0	1	
1	0	1.00	1.00	) 1.0	OC	1	
accu	racy			1.0		17	
macro weighte	•		.00 1.00	1.00 1.00	1.00 1.00	)	17 17

Sentence: give me all the flights from new york to miami round trip

True tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3

4	1.00	) 1.	00	1.00	1	
5	1.00	) 1.	00	1.00	2	
6	1.00	) 1.	00	1.00	1	
accurac	y			1.00	12	
macro av	vg	1.00	1.0	0	1.00	12
weighted a	avg	1.00	1.0	00	1.00	12

Sentence: how much is a round trip fare from nashville to seattle

True tags: ADV ADV AUX DET NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: ADJ ADJ AUX DET NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

		المم	f1		t
precisio	n re	call	TI-SCO	re sup	port
1.00	) 1.	00	1.00	2	
1.00	1.	00	1.00	2	
1.00	1.	00	1.00	3	
1.00	1.	00	1.00	1	
0.00	1.	00	0.00	0	
1.00	1.	00	1.00	1	
1.00	0 0	.00	0.00	) 2	
асу			0.82	11	
avg	0.86	0	.86	0.71	11
lavg	1.00	(	0.82	0.82	11
	1.00 1.00 1.00 1.00 0.00 1.00 1.00 acy	1.00 1. 1.00 1. 1.00 1. 1.00 1. 0.00 1. 1.00 1. 1.00 0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00 1.00 1.00 0.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 2 1.00 1.00 1.00 3 1.00 1.00 1.00 1 0.00 1.00 0.00 0 1.00 1.00 1.00 1 1.00 0.00 0.00 2 acy 0.82 11 avg 0.86 0.86 0.71

Sentence: what is the fare going from baltimore to boston one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Classification Report:

	preci	31011	recan	11-300	ie supp	OIL
1	1.	.00	1.00	1.00	2	
2	1.	.00	1.00	1.00	3	
3	1.	.00	1.00	1.00	3	
4	1.	.00	1.00	1.00	1	
5	1.	.00	1.00	1.00	1	
6	1.	.00	1.00	1.00	1	
7	1.	.00	1.00	1.00	1	
8	1.	.00	1.00	1.00	1	
9	1.	.00	1.00	1.00	1	
accur	acy			1.00	14	
macro	avg	1.0	0 1	.00	1.00	14
weighte	d avg	1.0	00	1.00	1.00	14

precision recall f1-score support

Sentence: show me the round trip flights between phoenix and salt lake city

True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN

PROPN PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ

PROPN PROPN PROPN

Classification Report:

	prec	ision	recal	f1-sc	ore	supp	ort
1	1	1.00	1.00	1.0	0	4	
2		1.00	1.00	1.0		1	
3	. 1	.00	1.00	1.0	0	3	
4	1	.00	1.00	1.0	0	1	
5	1	.00	1.00	1.0	0	1	
6	1	.00	1.00	1.0	0	1	
10	)	1.00	1.00	1.0	00	1	
accur	acy			1.0	0	12	
macro	avg	1.	00 ′	1.00	1.0	0	12
weighte	d avg	1	.00	1.00	1.0	00	12

Sentence: what is the fare going from baltimore to atlanta one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Classification Report:

		- 1				
	precis	ion r	ecall	f1-sc	ore su	upport
1	1.0	00 -	1.00	1.0	0	2
2			1.00	1.0		3
3	1.0	00 ′	1.00	1.0		3
4	1.0	00 1	1.00	1.0	0	1
5	1.0	00 1	1.00	1.0	0	1
6	1.0	00 1	1.00	1.0	0	1
7	1.0	00 1	1.00	1.0	0	1
8			1.00	1.0		1
9	1.0	00 1	1.00	1.0	0	1
				4.04		
accur	•			1.00		4
macro	_	1.00		.00	1.00	14
weighte	d avg	1.00	) .	1.00	1.00	14

Sentence: now i want to see return flights from miami to new york

True tags: ADV PRON VERB PART VERB NOUN NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON VERB PART VERB NOUN NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.0	0	1.0	0	3	
2	1.00	1.0	0	1.0	0	2	
3	1.00	1.0	0	1.0	0	2	
4	0.67	1.0	0	0.8	0	2	
6	1.00	1.0	0	1.0	0	1	
11	1.00	0.0	00	0.0	00	1	
12	1.00	1.0	00	1.0	00	1	
accuracy	′			0.9	2	12	
macro av	g 0	.95	0.8	36	3.0	33	12
weighted av	vg (	0.94	0	.92	0.	88	12

Sentence: do you have an <unk> flight from denver to san francisco

True tags: AUX PRON VERB DET NUM NOUN ADP PROPN ADP PROPN PROPN Predicted tags: AUX PRON VERB DET AUX NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

		- 1					
	precis	ion	recal	l f1-so	core	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	1	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
8	0.	50	1.00	0.6	67	1	
9	1.	00	0.00	0.0	00	1	
accur	acy			0.9	91	11	
macro	avg	0.9	94 (	0.88	0.83	3	11
weighted	d avg	0.	.95	0.91	8.0	88	11

Sentence: i would like to book a flight from chicago to seattle on june fourth

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

ADP NOUN ADJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN ADP NOUN NOUN

	precision	recall f1-score		support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
12	1.00	1.00	1.00	1

accuracy		0.9	3 14	
macro avg	0.96	0.89	0.87	14
weighted avg	0.95	0.93	0.90	14

Sentence: are there any flights from long beach to columbus on wednesday april sixth

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADJ

Classification Report:

	precis	ion	recall	f1-so	core	supp	ort
1	1.0	00	1.00	1.0	00	3	
2	1.0	00	1.00	1.0	00	3	
3	1.0	00	1.00	1.0	00	3	
4	1.0	00	1.00	1.0	00	1	
5	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
7	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	0	13	
macro	•	1.0		.00	1.0	-	13
weighte	d avg	1.	00	1.00	1.0	00	13

Sentence: i <unk> like flights going from boston to atlanta leaving on august sixth in the afternoon

True tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN ADJ ADP DET NOUN

Predicted tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN ADJ ADP DET NOUN

Classification Report:

	precision		call	f1-sco	re supp	ort
1	1.0	00 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	4	
3	1.0	0 1.	.00	1.00	3	
4	1.0	0 1.	.00	1.00	3	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	1	
8	1.0	0 1	.00	1.00	1	
accur	acv			1.00	16	
macro weighte	avg	1.00 1.00		.00 1.00	1.00 1.00	16 16

Sentence: i would like to find out what flights there are on friday june eleventh from <unk> petersburg to milwaukee and then from milwaukee to tacoma thank you

True tags: PRON AUX VERB PART VERB ADV DET NOUN PRON VERB ADP NOUN NOUN ADJ ADP PROPN PROPN ADP PROPN CCONJ ADV ADP PROPN ADP PROPN VERB PRON

Predicted tags: PRON AUX VERB PART VERB VERB DET NOUN PRON AUX ADP NOUN NOUN ADP PROPN PROPN ADP PROPN CCONJ NUM ADP PROPN ADP PROPN ADP PRON

Classification Report:

illon Nepc	л			
orecision	recall	f1-score	supp	ort
1.00	1.00	1.00	5	
0.83	1.00	0.91	5	
0.75	1.00	0.86	3	
0.67	0.50	0.57	4	
1.00	1.00	1.00	1	
1.00	1.00	1.00	3	
1.00	0.00	0.00	1	
0.50	1.00	0.67	1	
0.00	1.00	0.00	0	
1.00	1.00	1.00	1	
1.00	0.00	0.00	2	
1.00	1.00	1.00	1	
су		0.81	27	
U				27
avg 0	.87 (	0.81 0.	78	27
	1.00 0.83 0.75 0.67 1.00 1.00 0.50 0.00 1.00 1.00 1.00	1.00 1.00 0.83 1.00 0.75 1.00 0.67 0.50 1.00 1.00 1.00 1.00 1.00 0.00 0.50 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 0.83 1.00 0.91 0.75 1.00 0.86 0.67 0.50 0.57 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 0.50 1.00 0.67 0.00 1.00 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 5 0.83 1.00 0.91 5 0.75 1.00 0.86 3 0.67 0.50 0.57 4 1.00 1.00 1.00 1 1.00 1.00 1.00 3 1.00 0.00 0.00 1 0.50 1.00 0.67 1 0.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: i need a flight from chicago to dallas on continental on june fifth

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN ADJ

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN

ADP NOUN ADJ Classification Report:

	preci	sion	recall	f1-sc	ore su	pport
1	1	.00	1.00	1.0	0 :	3
2	1	.00	1.00	1.0	0 4	4
3	1	.00	1.00	1.0	0 :	2
4	. 1	.00	1.00	1.0	0	1
5	5 1	.00	1.00	1.0	0	1
6	1	.00	1.00	1.0	0	1
7	1	.00	1.00	1.0	0	1
accur	acy			1.00	) 1	3
macro	_	1.0		.00	1.00	13
veighte	d avg	1.0	00	1.00	1.00	13

Sentence: i <unk> like a flight on july ninth from orlando to kansas city in the afternoon

True tags: PRON AUX VERB DET NOUN ADP NOUN ADJ ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN NUM ADP PROPN ADP

PROPN PROPN ADP DET NOUN

Classification Report:

	pred	ision	reca	ll f1-so	core	supp	ort
1		1.00	1.00	1.0	00	3	
2		1.00	1.00	1.0	00	4	
3	}	1.00	1.00	1.0	00	3	
4		1.00	1.00	1.0	00	1	
5	,	1.00	1.00	1.0	00	2	
6	,	1.00	1.00	1.0	00	1	
7	•	1.00	0.00	0.0	00	1	
8	}	1.00	1.00	1.0	00	1	
9	) (	0.00	1.00	0.0	00	0	
accur	acy			0.9	4	16	
macro	avg	0.	89	0.89	0.7	8	16
weighte	d avg	<b>j</b> 1	.00	0.94	0.9	94	16
•							

Sentence: i <unk> like to arrange a trip to baltimore on january first

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN

ADJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

**NOUN ADJ** 

Classification Report:

	preci	151011	reca	111 11	-800	ie su	ipport	
1	1	.00	1.00	0	1.00		1	
2	1	.00	1.00	0	1.00		2	
3	1	.00	1.00	0	1.00		2	
4	1	.00	1.00	0	1.00		2	
5	1	.00	1.00	0	1.00		1	
6	1	.00	1.00	0	1.00		1	
7	1	.00	1.00	0	1.00		1	
8	1	.00	1.00	0	1.00		1	
12	2	1.00	1.0	0	1.00	)	1	
accur	acy				1.00	1	2	
macro	avg	1.	00	1.00	)	1.00	12	
weighted	d avg	1	.00	1.0	00	1.00	12	

Sentence: okay and then from pittsburgh i <unk> like to travel to atlanta on

september fourth

True tags: INTJ CCONJ ADV ADP PROPN PRON AUX VERB PART VERB ADP

PROPN ADP NOUN ADJ

Predicted tags: PROPN CCONJ CCONJ ADP PROPN PRON AUX ADP PART VERB

ADP PROPN ADP NOUN NOUN

Classification Report:

precision recall f1-score support

1	0.67	1.0	0	8.0	0	2	
2	0.75	1.0	0	8.0	6	3	
3	0.50	1.0	0	0.6	7	1	
4	1.00	0.5	0	0.6	7	2	
6	1.00	1.0	0	1.0	0	1	
7	1.00	0.0	0	0.0	0	1	
8	1.00	1.0	0	1.0	0	1	
10	0.50	1.0	00	0.6	37	1	
11	1.00	0.0	00	0.0	0	1	
12	1.00	1.0	00	1.0	00	1	
13	1.00	0.0	00	0.0	00	1	
accuracy				0.73	3	15	
macro avo	g 0.8	36	0.6	8	0.6	1	15
veighted av	/g 0	.84	0.	73	0.6	66	15

Sentence: list the flights from westchester county to denver on june seventh True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ

Classification Report:

		. – 1 –				
	precis	ion	recall	f1-sco	ore sup	port
1	1	00	1.00	1.00	) 3	
=					_	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	2	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
7	1.	00	1.00	1.00	) 1	
accura	асу			1.00	) 11	
macro	avg	1.0	00 1	.00	1.00	11
weighted	d avg	1	.00	1.00	1.00	11

Sentence: flights from atlanta august second True tags: NOUN ADP PROPN NOUN ADJ

Predicted tags: NOUN ADP PROPN NOUN VERB

ŗ	recision	rec	all f1	-score	supp	ort
1	1.00	1.0	0	1.00	1	
2	1.00	1.0	0	1.00	1	
3	1.00	1.0	0	1.00	2	
4	0.00	1.0	0	0.00	0	
7	1.00	0.0	0	0.00	1	
accura	су			0.80	5	
macro a	avg C	.80	0.80	0.	60	5
weighted	avg	1.00	0.8	30 0	.80	5

Sentence: what are the flights between pittsburgh and baltimore on august tenth True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN ADJ Predicted tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN ADJ

Classification Report:

	precision		call f1-s	score	suppo	rt
1	1.00	) 1.0	00 1	.00	2	
2	1.00	) 1.0	00 1	.00	2	
3	1.00	) 1.0	00 1	.00	2	
5	1.00	) 1.0	00 1	.00	1	
6	1.00	) 1.0	00 1	.00	1	
7	1.00	) 1.0	00 1	.00	1	
8	1.00	) 1.0	00 1	.00	1	
10	1.0	0 1.	00	1.00	1	
accura	асу		1.	.00	11	
macro	avg	1.00	1.00	1.00	) 1	1
weighted	d avg	1.00	1.00	1.0	0	11

Sentence: on april first i need a flight going from phoenix to san diego

True tags: ADP NOUN ADJ PRON VERB DET NOUN VERB ADP PROPN ADP PROPN PROPN

Predicted tags: ADP NOUN ADJ PRON VERB DET NOUN VERB ADP PROPN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	00 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
4	1.0	00 1.	00	1.00	2	
5	1.0	00 1.	00	1.00	1	
6	1.0	00 1.	00	1.00	1	
7	1.0	00 1.	00	1.00	1	
accur	асу			1.00	13	
macro weighted	_	1.00 1.00			.00 1.00	13 13

Sentence: show me a list of flights from denver to baltimore on united for august third True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP PROPN ADJ

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP NOUN ADJ

р	precision recal		f1-score	support	
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	5	

3	1.00	) 1.	UU	1.0	U	3	
4	1.00	) 1.	00	1.0	0	1	
5	1.00	) 1.	00	1.0	0	1	
6	1.00	) 1.	00	1.0	0	1	
7	1.00	) 1.	00	1.0	0	1	
accuracy	<b>y</b>			1.00	)	15	
macro av	⁄g	1.00	1.	00	1.00		15
weighted a	vg	1.00	1	.00	1.00	C	15

Sentence: what are the flights from san jose to nashville on thursday the twentieth True tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN DET ADJ

Classification Report:

	precisio	n reca	all f1-s	core su	pport
1	1.00	1.0	0 1.	00 :	3
2	1.00	1.0	0 1.	00	3
3	1.00	1.0	0 1.	00	2
5	1.00	1.0	0 1.	00	2
6	1.00	1.0	0 1.	00	1
7	1.00	1.0	0 1.	00	1
8	1.00	1.0	0 1.	00	1
accura	асу		1.0	00 1	3
macro	avg	1.00	1.00	1.00	13
weighted	l avg	1.00	1.00	1.00	13

Sentence: i need a ticket from nashville to seattle

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	on reca	II †1-scoi	re support
1	1.00	0 1.00	1.00	2
2	1.00	0 1.00	1.00	2
3	1.00	0 1.00	1.00	1
4	1.00	0 1.00	1.00	1
5	1.00	0 1.00	1.00	1
6	1.00	0 1.00	1.00	1
accur	acy		1.00	8
macro weighted	•	1.00 1.00	1.00 1.00	1.00 8 1.00 8

Sentence: how much does it cost to fly on delta from dallas to baltimore True tags: ADV ADV AUX PRON VERB PART VERB ADP PROPN ADP PROPN ADP PROPN Predicted tags: ADJ ADJ AUX AUX VERB PART VERB ADP PROPN ADP PROPN

ADP PROPN

Classification Report:

	precision	n recall	f1-score	support	
1	1.00	1 00	1.00	2	
1	1.00		1.00	3	
2	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	2	
6	1.00	0.00	0.00	1	
7	0.00	1.00	0.00	0	
8	0.50	1.00	0.67	1	
11	1.00	0.00	0.00	2	
12	1.00	1.00	1.00	1	
accura	асу		0.77	13	
macro	avg	0.81 (	0.75 0.	58 13	3
weighted	l avg	0.96	0.77 0	.74 1	3

Sentence: what are the fares for flights from charlotte to newark on tuesday and wednesday

True tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP

NOUN CCONJ NOUN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	4
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accura macro	avg 1.		1.00 .00 1.0	-
weighted	avg 1	.00	1.00 1.	00 14

Sentence: show fares and flights from denver to oakland

True tags: VERB NOUN CCONJ NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN CCONJ NOUN ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1

accuracy		1.0	0 8	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: what is the airfare between denver and pittsburgh True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN

Classification Report:

Ciacomicati	on itopo	,, ,,			
pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accurac	y		1.00	8	
macro av	/g 1.0	00 1	.00 1.0	00	8
weighted a	ivg 1	.00	1.00 1.	00	8

Sentence: what does it cost to fly from boston to oakland on united airlines

True tags: PRON AUX PRON VERB PART VERB ADP PROPN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX AUX VERB ADP VERB ADP PROPN ADP PROPN ADP

PROPN PROPN

Classification Report:

	pred	cisio	n	reca	all	†1-s	core	sup	pqc	ort
1		1.00	)	1.00	0	1.	00	4		
2		0.75	,	1.00	0	0.	86	3	•	
4		1.00	)	1.00	0	1.	00	2		
6		1.00	)	0.50	0	0.	67	2		
8		0.50	)	1.00	0	0.	67	1		
12	2	1.0	0	0.0	0	0	.00		1	
accur	асу					9.0	35	13	}	
macro weighted	_	9	0.88			.75 ).85		70 .81		13 13

Sentence: get saturday fares from washington to montreal
True tags: VERB NOUN NOUN ADD PROPN
Prodicted tags: VERB NOUN ADD PROPN

Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN

	precision		f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2

3	1.0	00	1.0	0	1.00	)	2	
4	1.0	00	1.0	0	1.00	)	1	
accurac	y				1.00	)	7	
macro av	/g	1.0	00	1.0	0	1.00		7
weighted a	ıvg	1.	00	1.0	00	1.00	0	7

Sentence: give me fares from atlanta to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	1.	00	1.00	1.00	) 2	2
2	1.	00	1.00	1.00	) 2	2
3	1.	00	1.00	1.00	) ′	1
4	1.	00	1.00	1.00	) ′	1
6	1.	00	1.00	1.00	) ′	1
accur	acy			1.00	) 7	,
macro	avg	1.0	00 1	.00	1.00	7
weighte	d avg	1.	.00	1.00	1.00	7

Sentence: continental airlines on saturday from chicago to seattle True tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN Predicted tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN Classification Report:

	precis	sion	recall	f1-sc	ore su	upport
1	1.	.00	1.00	1.00	0	4
2	1.	.00	1.00	1.00	0	3
3	1.	.00	1.00	1.00	0	1
accur	acy			1.00	) ;	8
macro	avg	1.0	00 1	.00	1.00	8
weighte	d avg	1	.00	1.00	1.00	8

Sentence: does eastern airlines fly between boston and washington True tags: AUX PROPN PROPN VERB ADP PROPN CCONJ PROPN Predicted tags: AUX PROPN PROPN VERB ADP PROPN CCONJ PROPN Classification Report:

precision		recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accuracy			1.00	8

macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: i would like some information on a flight from denver to san francisco on united airlines

True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN

Classification Report:

	predic	olOl l	1000		-300	0 30	ιρροιι	
1	1.	00	1.00	)	1.00		5	
2	1.	00	1.00	)	1.00		4	
3	1.	00	1.00	)	1.00		2	
4	1.	00	1.00	)	1.00		1	
5	1.	00	1.00	)	1.00		2	
6	1.	00	1.00	)	1.00		1	
8	1.	00	1.00	)	1.00		1	
accur	acy				1.00	1	6	
macro	avg	1.0	00	1.00	)	1.00	16	3
weighted	d avg	1	.00	1.0	0	1.00	1	6

precision recall f1-score support

Sentence: american airlines from denver to milwaukee True tags: PROPN PROPN ADP PROPN Predicted tags: PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	reca	II f1-s	score	supp	ort
1	1.	00	1.00	) 1	.00	4	
2	1.	00	1.00	) 1	.00	2	
accur	acy			1.	.00	6	
macro	avg	1.0	00	1.00	1.0	0	6
weighte	d avg	1.	.00	1.00	1.	00	6

Sentence: i need a flight delta airlines kansas city to salt lake

True tags: PRON VERB DET NOUN PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: PRON VERB DET NOUN PROPN PROPN PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 6 1.00 2 1.00 1.00 1 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00

6 1	.00	1.00	1.00	) 1	
accuracy			1.00	11	
macro avg	1.00	0 1	.00	1.00	11
weighted avg	1.0	00	1.00	1.00	11

Sentence: list the alaska airlines flights a departing from burbank

True tags: VERB DET PROPN PROPN NOUN DET VERB ADP PROPN Predicted tags: VERB DET PROPN PROPN NOUN DET VERB ADP PROPN

Classification Report:

	preci	sion	recal	l f1-sc	ore	supp	ort
1		.00	1.00	1.0		3	
2		.00	1.00	1.0		1	
3		.00	1.00	1.0		1	
4		.00	1.00	1.0		2	
5	1	.00	1.00	1.0	0	2	
accur	acy			1.0	0	9	
macro	avg	1.0	00	1.00	1.00	)	9
weighte	d avg	1.	.00	1.00	1.0	0	9

Sentence: give me all the flights from miami to chicago on american airlines

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN ADP

PROPN PROPN Classification Report:

	precision	on re	call	f1-sco	re supp	oort
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
accura	асу			1.00	12	
macro	avg	1.00	1.	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: i <unk> like united airlines flights from denver to baltimore

True tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP

**PROPN** 

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	2

Sentence: i <unk> like a flight from new york to los angeles on saturday morning on us air

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-scc	ore supp	oort
1	1	.00	1.00	1.00	) 6	
2	1	.00	1.00	1.00	) 4	
3	1	.00	1.00	1.00	3	
4	1	.00	1.00	1.00	) 1	
5	1	.00	1.00	1.00	) 1	
6	1	.00	1.00	1.00	) 1	
8	1	.00	1.00	1.00	) 1	
accur	acy			1.00	17	
macro	avg	1.0	0 1	.00	1.00	17
weighted	d avg	1.	00	1.00	1.00	17

Sentence: show me the southwest airlines flights from san diego to san francisco True tags: VERB PRON DET PROPN PROPN NOUN ADP PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB PRON DET ADJ PROPN NOUN ADP PROPN PROPN PROPN PROPN

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 0	.83	0.91	6	
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	1	
4	1.0	00 1.	.00	1.00	1	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	0.0	00 1	.00	0.00	0	
accur	acy			0.92	12	
macro	avg	0.86	0	.98	0.84	12
weighted	d avg	1.00	(	0.92	0.95	12

Sentence: what flights does american airlines have from boston to dallas

True tags: DET NOUN AUX PROPN PROPN VERB ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PROPN PROPN VERB ADP PROPN ADP

PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	upport	[
1	1.0	00	1.00	1.0	0	4	
2			1.00	1.0	-	2	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	0.00	0.0	0	1	
6	0.0	00	1.00	0.0	0	0	
8	1.0	00	1.00	1.0	0	1	
accur	acy			0.90	) 1	10	
macro	avg	0.8	6 0	.86	0.71	10	)
weighte	d avg	1.0	00	0.90	0.90	1	0

Sentence: what flights go from chicago to seattle on continental airlines on saturday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP PROPN

PROPN ADP NOUN Classification Report:

		-				
	precision	on re	call	f1-sco	re supp	ort
4	4.0	^ 4	00	4.00		
1	1.0	υ 1.	.00	1.00	4	
2	1.0	0 1.	.00	1.00	4	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 0.	.00	0.00	1	
6	0.0	0 1.	.00	0.00	0	
accur	acy			0.92	12	
macro	avg	0.83	0	.83	0.67	12
weighted	d avg	1.00	(	0.92	0.92	12

Sentence: list the flights from dallas to san francisco on american airlines

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

**PROPN** 

	precision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1

5 1	.00 1	.00 1.	00	1
accuracy		1.0	00 1	1
macro avg	1.00	1.00	1.00	11
weighted avg	1.00	1.00	1.00	11

Sentence: what flights go from chicago to seattle on saturday on continental airlines True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP PROPN PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP

PROPN PROPN

Classification Report:

precisi	on	recall	f1-sc	ore su	upport	
1.0	00	1.00	1.0	0	4	
1.0	00	1.00	1.0	0	4	
1.0	00	1.00	1.0	0	2	
1.0	00	1.00	1.0	0	1	
1.0	00	0.00	0.0	0	1	
0.0	00	1.00	0.0	0	0	
acy			0.92	2 1	12	
avg	0.83	3 0	.83	0.67	12	
d avg	1.0	0 (	0.92	0.92	12	2
	1.0 1.0 1.0 1.0 1.0 0.0 acy avg	1.00 1.00 1.00 1.00 1.00 0.00 acy avg 0.83	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 1.00 acy	1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 4 1.00 1.00 1.00 4 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 0.00 0.00 1 0.00 1.00 0.00 0 acy 0.92 12 avg 0.83 0.83 0.67 12

Sentence: show me the flight classes for delta airlines

True tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	0 1	.00	1.00	) 2	2
2	1.0	0 1.	.00	1.00	) 1	1
3	1.0	0 1.	.00	1.00	) 2	2
4	1.0	0 1.	.00	1.00	) 1	1
5	1.0	0 1.	.00	1.00	) 1	1
6	1.0	0 1.	.00	1.00	) 1	1
accur macro weighted	avg	1.00 1.00		1.00 00 .00	8 1.00 1.00	8 8
	9					·

Sentence: please list the flights from cincinnati to burbank on american airlines True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN Predicted tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1.00 1.00 1.00 4

Sentence: show me all the flights from indianapolis to san diego on us air

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN ADP

PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN

ADP PROPN PROPN Classification Report:

	precision	on re	call	f1-sc	ore su	pport
1	1.0	0 1.	00	1.00	o 5	5
2	1.0	0 1.	00	1.00	) 3	3
3	1.0	0 1.	00	1.00	) 1	1
4	1.0	0 1.	00	1.00	) 1	1
5	1.0	0 1.	00	1.00	) 2	2
6	1.0	0 1.	00	1.00	) 1	1
accura	асу			1.00	) 1:	3
macro	avg	1.00	1.	.00	1.00	13
weighted	d avg	1.00	•	1.00	1.00	13

Sentence: i would like to fly delta airlines from atlanta to pittsburgh

True tags: PRON AUX VERB PART VERB PROPN PROPN ADP PROPN ADP

PROPN

Predicted tags: PRON AUX VERB PART VERB PROPN PROPN ADP PROPN ADP

**PROPN** 

Classification Report:

	prec	ision	rec	call	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	4	
2		1.00	1.0	00	1.0	0	2	
4		1.00	1.0	00	1.0	0	2	
6	,	1.00	1.0	00	1.0	0	1	
8	•	1.00	1.0	00	1.0	0	1	
12	2	1.00	1.	.00	1.0	00	1	
accur	асу				1.0	0	11	
macro	avg	1	.00	1	.00	1.0	0	11
weighte	d avg	l	1.00	•	1.00	1.	00	11

Sentence: what flights are available wednesday afternoon from denver to san francisco

True tags: DET NOUN AUX ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore s	upport
1	1.0	0 1	.00	1.0	0	3
2	1.0	0 1	.00	1.0	0	2
3	1.0	0 1	.00	1.0	0	3
5	1.0	0 0	.00	0.0	0	1
6	0.0	0 1	.00	0.0	0	0
7	1.0	0 1	.00	1.0	0	1
8	1.0	0 1	.00	1.0	0	1
accur	acy			0.9	1 '	11
macro	avg	0.86	0	.86	0.71	11
weighted	•	1.00	(	0.91	0.91	11

Sentence: show me all flights to philadelphia in the evening

True tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN

Classification Report:

	precis	ion i	recall	TT-SC	ore s	upport	
1	1.0	00	1.00	1.0	0	1	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	2	
6	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	)	9	
macro	•	1.00	) 1	.00	1.00	9	
weighted	_	1.0		1.00	1.00	9	

Sentence: flights from chicago to denver on continental on saturday morning True tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precis	sion	reca	all f	1-sc	ore	supp	ort
1	1.	00	1.0	0	1.0	0	3	
2	1.	00	1.0	0	1.0	0	4	
3	1.	00	1.0	0	1.0	0	3	
accur	асу				1.0	0	10	
macro weighte		1.0 1.	00 .00	1.0 1.	00 00	1.00 1.0		10 10

Sentence: what flights from san jose to dallas on friday afternoon

True tags: DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN

Classification Report:

					-  -	
1	1.0	0 1.	00 1.	.00	3	
2	1.0	0 1.	00 1.	.00	3	
3	1.0	0 1.	00 1.	.00	3	
5	1.0	0 0.	00 0.	.00	1	
6	0.0	0 1.	00 0.	.00	0	
accur	acy		0.	90	10	
macro	avg	0.80	0.80	0.60	)	10
weighted	d avg	1.00	0.90	0.9	0	10

precision recall f1-score support

Sentence: what are the flights and prices from la to charlotte for monday morning True tags: PRON AUX DET NOUN CCONJ NOUN ADP PROPN ADP NOUN NOUN

Predicted tags: PRON AUX DET NOUN CCONJ NOUN ADP PROPN ADP NOUN NOUN

Classification Report:

								1- 1-	
	1	1.0	0	1.0	0	1.0	)	2	
	2	1.0	00	1.0	0	1.0	C	3	
	3	1.0	00	1.0	0	1.0	C	4	
	5	1.0	00	1.0	0	1.0	)	1	
	6	1.0	00	1.0	0	1.0	C	1	
	8	1.0	00	1.0	0	1.0	C	1	
	10	1.	00	1.0	00	1.0	0	1	
ac	curac	y				1.00	)	13	
	cro av	•	1.0 1.	00 .00	1.0 1.	00 .00	1.0 1.0	0 00	13 13

precision recall f1-score support

Sentence: on friday night i would like a flight from newark to los angeles

True tags: ADP NOUN NOUN PRON AUX VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: ADP NOUN PROPN PRON AUX VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1 0.75 0.86 3 2 1.00 1.00 1.00 3 0.80 3 1.00 0.67 3 4 1.00 1.00 1.00 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1 1.00

8	1.00	1.00	1.00	1

accuracy		0.9	2 13	
macro avg	0.96	0.95	0.95	13
weighted avg	0.94	0.92	0.92	13

Sentence: <unk> paul to kansas city friday night

True tags: PROPN PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: AUX PROPN ADP PROPN PROPN NOUN PROPN

Classification Report:

precision recall f1-score support 1 0.75 0.75 0.75 4 2 1.00 1.00 1.00 1 3 1.00 0.50 0.67 2 8 1.00 0.00 0.00 0 0.71 7 accuracy 0.60 7 macro avg 0.69 0.81 7 weighted avg 0.86 0.71 0.76

Sentence: show me the flights from philadelphia to baltimore in the morning True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

core supp	t1-score	recall	precision	
00 2	1.00	1.00	1.00	1
00 3	1.00	1.00	1.00	2
00 2	1.00	1.00	1.00	3
00 1	1.00	1.00	1.00	4
00 2	1.00	1.00	1.00	5
00 1	1.00	1.00	1.00	6
0 11	1.00		су	accura
1.00	.00 1.	00 1	avg 1.	macro
1.00	1.00 1	.00	avg 1	weighted
1.00	.00 1.		avg 1.	macro

Sentence: what flights from chicago to denver in the morning

True tags: DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
5	1.00	0.50	0.67	2
6	0.00	1.00	0.00	0

accuracy		8.0	9 9	)
macro avg	0.80	0.90	0.73	9
weighted avg	1.00	0.89	0.93	9

Sentence: now i need a flight from detroit to san diego leaving tuesday evening True tags: ADV PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

NOUN NOUN

Predicted tags: VERB PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB NOUN NOUN

Classification Report:

	precis	ion re	ecall	f1-scc	re sup	port
1	1.0	00 1	.00	1.00	) 3	
2	1.0	00 1	.00	1.00	) 2	
3	1.0	00 1	.00	1.00	) 3	
4	0.6	<sub>67</sub> 1	.00	0.80	) 2	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
11	l 1.	00 (	0.00	0.0	) 1	
accur	acy			0.92	13	}
macro	avg	0.95	0	.86	0.83	13
weighte	d avg	0.95	5 (	0.92	0.89	13
9	U					

Sentence: how about flights from dallas to atlanta on wednesday morning True tags: ADV ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: ADJ ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	pre	cisior	n r	ecall	f1-s	core	supp	ort
1		1.00	•	1.00	1.	00	2	
2	) -	1.00		1.00	1.	00	4	
3	}	1.00		1.00	1.	00	3	
7	•	0.00		1.00	0.	00	0	
11	1	1.00	)	0.00	0	.00	1	
accur	acy				9.0	90	10	
macro	avg	(	0.80	0	.80	0.6	0	10
weighte	d av	g	1.0	0 (	0.90	0.	90	10

Sentence: show me the evening flights from baltimore to atlanta

True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2

4	1.0	0	1.00	1.0	00	1	
5	1.0	0	1.00	1.0	00	1	
6	1.0	0	1.00	1.0	00	1	
accurac	:y			1.0	00	9	
macro a	vg	1.00	1	.00	1.00		9
weighted a	avg	1.0	0	1.00	1.00		9

Sentence: which flights go from pittsburgh to atlanta in the evening

True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precision	on re	call	f1-scc	re sup	port
1	1.0	0 1.	.00	1.00	) 2	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	) 2	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 2	
accura	асу			1.00	10	
macro	avg	1.00	1.	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: from toronto to atlanta in the afternoon

True tags: ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precision	on re	call	t1-scc	re su	ipport	
1 2	1.0 1.0		.00	1.00 1.00		2	
3	1.0	0 1.	.00	1.00	)	3 1	
5	1.0	0 1.	.00	1.00	)	1	
accur	асу			1.00	7	7	
macro	avg	1.00	1.	.00	1.00	7	
weighted	d avg	1.00	•	1.00	1.00	7	,

Sentence: i need to fly from pittsburgh to oakland and depart in the afternoon True tags: PRON VERB PART VERB ADP PROPN ADP PROPN CCONJ VERB

ADP DĚT NOUN

Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN CCONJ VERB

ADP DET NOUN Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 2
2 1.00 1.00 1.00 3
3 1.00 1.00 1.00 1

Sentence: i need a flight from los angeles to pittsburgh on monday afternoon True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN

Classification Report:

	precis	ion	recall	f1-sco	re supp	oort
1	1.0	00	1.00	1.00	3	
2	1.0	00	1.00	1.00	3	
3	1.0	00	1.00	1.00	3	
4	1.0	00	1.00	1.00	1	
5	1.0	00	1.00	1.00	1	
6	1.0	00	1.00	1.00	1	
accura	асу			1.00	12	
macro	avg	1.0	0 1	.00	1.00	12
weighted	d avg	1.0	00	1.00	1.00	12

Sentence: show me the evening flights from atlanta to boston

True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	II f1-	scor	e su	ppo	rt
1	1	.00	1.00	) 1	1.00		2	
2	1	.00	1.00	) 1	00.1		2	
3	1	.00	1.00	) 1	00.1		2	
4	1	.00	1.00	) 1	00.1		1	
5	1	.00	1.00	) 1	00.1		1	
6	1	.00	1.00	) 1	00.1		1	
accur	acy			1	.00	Ś	)	
macro	avg	1.0	0	1.00	1	.00	,	9
weighte	d avg	1.	00	1.00	)	1.00		9

Sentence: i need to know what flights leave atlanta on sunday evening and arrive in baltimore

True tags: PRON VERB PART VERB DET NOUN VERB PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN

Predicted tags: PRON VERB PART VERB DET NOUN VERB PROPN ADP NOUN

NOUN CCONJ VERB ADP PROPN

Classification Report:

recision	recall	f1-score	supp	ort
1.00	1.00	1.00	2	
1.00	1.00	1.00	2	
1.00	1.00	1.00	3	
1.00	1.00	1.00	4	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
У		1.00	15	
vg 1.0	00 1	.00 1.0	00	15
avg 1	.00	1.00 1.	00	15
	1.00 1.00 1.00 1.00 1.00 1.00 y	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 3 1.00 1.00 1.00 4 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: what flights are there from boston to denver on monday morning

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN ADP NOUN

NOUN

Classification Report:

	precis	ion	reca	ll f1	-sco	re supp	ort
1	1.	00	1.00	)	1.00	2	
2	1.	00	1.00	)	1.00	3	
3	1.	00	1.00	)	1.00	3	
4	1.	00	0.00	)	0.00	1	
5	1.	00	0.00	)	0.00	1	
6	0.	50	1.00	)	0.67	1	
8	0.	00	1.00	)	0.00	0	
accur	acy			(	0.82	11	
macro weighted	_	0.7 0.	79 .95	0.71		0.52 0.79	11 11

Sentence: give me morning flights from atlanta to baltimore

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN

	pre	cision	recall	f1-score	support
	1	1.00	1.00	1.00	2
2	2	1.00	1.00	1.00	2
3	3	1.00	1.00	1.00	2
4	1	1.00	1.00	1.00	1
(	3	1.00	1.00	1.00	1
accu	racy			1.00	8

macro avg	1.00	1.00	1.00	8
weighted ava	1.00	1.00	1.00	8

Sentence: flights from atlanta to dallas in the afternoon

True tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precision		recall f1-score		re su	pport
1	1.0	00 1	.00	1.00	)	2
2	1.0	00 1	.00	1.00	)	3
3	1.0	00 1	.00	1.00	)	2
5	1.0	00 1	.00	1.00	)	1
accur	асу			1.00	8	3
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00	•	1.00	1.00	8

Sentence: morning flights from pittsburgh to atlanta on wednesday
True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN
Predicted tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN
Classification Paperty

Classification Report:

р	recision	recall	T1-SCORE	supp	orτ
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
accurac	y		1.00	8	
macro a	vg 1.	00 1	.00 1	.00	8
weighted a	avg 1	.00	1.00 ′	1.00	8

Sentence: what are the flights dallas to boston on monday morning True tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precis	ion	recall	f1-s	core	supp	ort
1	1.0	00	1.00	1.0	00	2	
2			1.00		00	2	
3	1.0	00	1.00	1.	00	3	
5	1.0	00	1.00	1.	00	1	
6	1.0	00	1.00	1.	00	1	
8	1.0	00	1.00	1.	00	1	
accur	acy			1.0	00	10	
macro	_	1.0		.00	1.0		10
weighte	d avg	1.0	00	1.00	1.0	00	10

Sentence: am flights from atlanta to philadelphia

True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	ion r	recall f1-score			suppo	ort
1	1.0	00 -	1.00	1.0	0	2	
2	1.0	00 ′	1.00	1.0	0	2	
3	1.0	00 ′	1.00	1.0	0	2	
accur	acy			1.0	0	6	
macro	avg	1.00	1	.00	1.00		6
weighte	d avg	1.00	)	1.00	1.0	0	6

Sentence: tampa to charlotte sunday morning True tags: PROPN ADP PROPN NOUN NOUN Predicted tags: VERB PART PROPN NOUN NOUN

Classification Report:

Ciassilic	auon	1 (Cpc	JI L.					
	preci	sion	recall		f1-score		supp	ort
1	1	.00	0.5	50	0.6	7	2	
2	1	.00	0.0	00	0.0	0	1	
3	1	.00	1.0	00	1.0	0	2	
4	C	.00	1.0	00	0.0	0	0	
12	2	0.00	1.	00	0.0	00	0	
accur	асу				0.60	)	5	
macro	avg	0.	60	0	.70	0.3	3	5
weighted	d avg	1	.00	(	0.60	0.	67	5

Sentence: show flights saturday evening from <unk> louis to burbank
True tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Classification Report:

	prec	ision	rec	call	f1-s	core	supp	oort
1	1	.00	1.0	00	1.	00	3	
2		.00	1.0			00	2	
3	1	.00	1.0	00	1.	00	3	
4	1	.00	1.0	00	1.	00	1	
accur	acy				1.0	00	9	
macro	avg	1	.00	1	.00	1.0	00	9
weighte	d avg		1.00	•	1.00	1	.00	9

Sentence: what pm flights are available from philadelphia to pittsburgh True tags: DET NOUN NOUN AUX ADJ ADP PROPN ADP PROPN

Predicted tags: PRON NOUN NOUN VERB ADJ ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1	1.0	0	1.00	1	.00	4	2	
2	1.0	0	1.00	1	.00	-	2	
3	1.0	0	1.00	1	.00		2	
4	0.0	0	1.00	0	.00		0	
5	1.0	0 (	0.00	0	.00		1	
6	0.0	0	1.00	0	.00		0	
7	1.0	0	1.00	1	.00		1	
8	1.0	0 (	0.00	0	.00	,	1	
accuracy	/			0.	.78	ç	)	
macro av	g	0.75	,	0.75	(	0.50		9
weighted a	vg	1.0	0	0.78	}	0.78		9

Sentence: what are the flights from milwaukee to orlando on wednesday night True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN PROPN

Classification Report:

	precis	sion	recall	f1-scc	re sup	port
1	0	.67	1.00	0.80	) 2	
2	1.	.00	1.00	1.00	) 3	
3	1.	.00	0.67	0.80	3	
5	1.	.00	1.00	1.00	) 1	
6	1.	.00	1.00	1.00	) 1	
8	1.	.00	1.00	1.00	) 1	
				0.04	4.4	
accur	acy			0.91	11	
macro	avg	0.9	4 0	.94	0.93	11
weighte	d avg	0.9	94	0.91	0.91	11

Sentence: show me the flights from san francisco to dallas

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	sion	recall	t1-sc	ore s	uppo	rt
1	1.	00	1.00	1.0	0	3	
2		00	1.00	1.0		2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
accur	acy			1.0	0	9	
macro	_	1.0	0 1	.00	1.00		9
weighte	d avg	1.0	00	1.00	1.00	)	9

Sentence: show flights from san francisco to denver on a thursday

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN

Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
accura	су		1.00	10	
macro	avg 1.	00 1	.00 1.0	00	10
weighted	avg 1	.00	1.00 1	.00	10

Sentence: from las vegas to phoenix

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 2 1.00 accuracy macro avg 1.00 1.00 1.00 5 weighted avg 1.00 1.00 1.00 5

Sentence: show me all flights from san diego to los angeles

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

**PROPN** 

Classification Report:

	precisi	ion re	call	f1-sc	ore s	uppo	ort
1	1.0	00 1	.00	1.0	0	4	
2	1.0	00 1	.00	1.0	0	2	
3	1.0	00 1	.00	1.0	0	1	
4	1.0	00 1	.00	1.0	0	1	
5	1.0	00 1	.00	1.0	0	1	
6	1.0	00 1	.00	1.0	0	1	
accur	асу			1.00	)	10	
macro	avg	1.00	1	.00	1.00	,	10
weighte	d avg	1.00	•	1.00	1.00	)	10

Sentence: show flights from kansas city to minneapolis

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support

Sentence: list flights from las vegas to phoenix

1.00

1.00

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

1.00

7

Classification Report:

weighted avg

	precisio	n re	call	f1-sco	re su	pport
1	1.00	) 1.	.00	1.00	;	3
2	1.00	) 1.	.00	1.00	) :	2
3	1.00	) 1.	.00	1.00	, .	1
4	1.00	) 1.	.00	1.00	,	1
accura	асу			1.00	7	7
macro	avg	1.00	1	.00	1.00	7
weighted	d avg	1.00	•	1.00	1.00	7

Sentence: flights from las vegas to montreal

True tags: NOUN ADP PROPN PROPN ADP PROPN Predicted tags: NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisio	n rec	all f1-s	core su	upport
1	1.00	1.0	0 1.	00	3
2	1.00	1.0	0 1.	00	2
3	1.00	1.0	0 1.	00	1
accur	асу		1.0	00	6
macro weighted	_	1.00 1.00	1.00 1.00	1.00 1.00	6 6

Sentence: i am also interested in a flight that <unk> from <unk> louis to las vegas True tags: PRON AUX ADV VERB ADP DET NOUN ADP VERB ADP PROPN

PROPN ADP PROPN PROPN

Predicted tags: PRON VERB VERB VERB ADP DET NOUN ADP AUX ADP PROPN PROPN PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 1.00 1.00 1.00 4 3 1.00 1 1.00 1.00

4	0.33	0.50	0.40	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	0.00	0.00	0.00	1
11	1.00	0.00	0.00	1

accuracy		8.0	0 15	
macro avg	0.79	0.69	0.68	15
weighted avg	0.84	0.80	0.79	15

Sentence: <unk> petersburg to detroit True tags: PROPN PROPN ADP PROPN Predicted tags: AUX PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 0.67 0.80 3 2 1.00 1.00 1.00 1 8 0.00 1.00 0.00 0 0.75 accuracy 0.67 0.89 0.60 4 macro avg weighted avg 1.00 0.75 0.85 4

Sentence: show me flights from san francisco to minneapolis

True tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisi	on	recall	f1-sc	core	supp	ort
1	1.0	Ω	1.00	1.0	<b>1</b> 0	3	
2			1.00	1.0		2	
3	1.0	0	1.00	1.0	00	1	
4	1.0	0	1.00	1.0	00	1	
6	1.0	0	1.00	1.0	00	1	
				4.0		•	
accur	acy			1.0	10	8	
macro	avg	1.00	0 1	.00	1.0	0	8
weighted	d avg	1.0	00	1.00	1.0	00	8

Sentence: what flights from salt lake city to las vegas

True tags: DET NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 1 5 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 5 1.00 1 0.00 0.00

6	0.00	1.0	00 0.	00	0
accuracy			0.0	39	9
macro avo	, 0	.80	0.80	0.60	9
weighted av	q	1.00	0.89	0.89	9

Sentence: show me all flights from san francisco to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	-				
precision	on re	call	f1-scc	ore su	pport
4.0			4.04		•
1.0	υ 1.	UÜ	1.00	) ;	3
1.0	0 1.	00	1.00	) :	2
1.0	0 1.	00	1.00	)	1
1.0	0 1.	00	1.00	)	1
1.0	0 1.	00	1.00	)	1
1.0	0 1.	00	1.00	)	1
acy			1.00	9	}
avg	1.00	1	.00	1.00	9
d avg	1.00	•	1.00	1.00	9
	1.00 1.00 1.00 1.00 1.00 1.00 acy avg	1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1.	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy 1.00	1.00 1.00 1.00 2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: do you have flights from <unk> petersburg to toronto on monday True tags: AUX PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: AUX PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Classification Report:

Olacollic	auon i	opoit.				
	precisi	on re	call	f1-sco	re supp	ort
1	1.0	Λ 1	.00	1.00	3	
-						
2	1.0	0 1.	.00	1.00		
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
8	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	•	1.00	1.00	11

Sentence: what are all the flights on delta in and out of fort worth

True tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ ADP ADP

PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ ADP ADP

PROPN PROPN Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy	,		1.00	13	
macro av	g 1.0	00 1.	00 1.0	00	13
weighted av	vg 1.	.00 1	.00 1	.00	13

Sentence: show flights from <unk> petersburg to charlotte
True tags: VERB NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 3 1 1.00 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 1.00 accuracy 1.00 1.00 1.00 macro avg 7 weighted avg 1.00 1.00 1.00

Sentence: i <unk> like flight information from dallas fort worth to boston on tuesday True tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP

PROPN ADP NOUN Classification Report:

	pred	cisio	n re	call	f1-s	core	supp	ort
1		1.00	1.	.00	1.	00	4	
2	) -	1.00	1.	.00	1.	00	3	
3	}	1.00	1.	.00	1.	00	3	
4		1.00	1.	.00	1.	00	1	
6	;	1.00	1.	.00	1.	00	1	
8	}	1.00	1.	.00	1.	00	1	
accur	acy				1.0	00	13	
macro	_		1.00		.00	1.0		13
weighte	d avo	)	1.00	•	1.00	1.	00	13

Sentence: show me all flights from san francisco to pittsburgh on friday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN** 

Classification Report:

	precision		recall f1-score		ore	support	
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	3	
3	1.	00	1.00	1.0	00	2	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	11	
macro	avg	1.0	00	1.00	1.00	)	11
weighted	d avg	1	.00	1.00	1.0	0	11

Sentence: from las vegas to montreal

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 2 accuracy 1.00 5 5 macro avg 1.00 1.00 1.00 5 weighted avg 1.00 1.00 1.00

Sentence: sunday flights from new york city to las vegas

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN

Classification Report:

	precision		recall f1-sco		core	re supp	
1	1.0	0 1	.00	1.0	00	5	
2	1.0	0 1	.00	1.0	00	2	
3	1.0	0 1	.00	1.0	00	2	
accura	асу			1.0	0	9	
macro	avg	1.00	1	.00	1.0	0	9
weighted	d avg	1.00		1.00	1.	00	9

Sentence: please find a flight from kansas city to newark

True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

1

precision recall f1-score support

1.00 1.00 1.00 3

2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
13	1.00	1.00	1.00	1	
accuracy	/		1.00	9	
macro av	g 1.0	00 1.0	00 1.	00	9
weighted a	vg 1	.00 1	.00 1	.00	9

Sentence: i want to go from san francisco to denver

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accurac	;y		1.00	9	
macro a	0	00 1	.00 1.0	00	9
weighted a	avg 1	.00	1.00 1	.00	9

Sentence: list all flights on continental leaving denver on monday True tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN Classification Report:

	precision		recall	f1-sc	ore su	pport
1	1.	.00	1.00	1.0	0 :	2
2	1.	.00	1.00	1.0	0 :	2
3	1.	.00	1.00	1.0	0 :	2
4	1.	.00	1.00	1.0	0 :	2
5	1.	.00	1.00	1.0	0	1
accur	acy			1.00	) (	9
macro	avg	1.0	00 1	1.00	1.00	9
weighted	d avg	1.	.00	1.00	1.00	9

Sentence: only show continental flights True tags: ADV VERB PROPN NOUN

Predicted tags: VERB VERB PROPN NOUN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 1
3 1.00 1.00 1

4	0.50	) 1.	00	0.67	7	1	
11	1.0	0 0	.00	0.00		1	
accuracy				0.75		4	
macro avo	3	0.88	0.7	<b>'</b> 5	0.67		4
weighted av	′g	0.88	0.	75	0.67		4

Sentence: find a flight on delta from philadelphia to san francisco

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

1	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
accura	су		1.00	10	
macro a	avg 1.	00 1	.00 1.0	00	10
weighted	avg 1	.00	1.00 1.	00	10

Sentence: all delta flights to <unk> if you can

True tags: DET PROPN NOUN ADP NOUN ADP PRON AUX

Predicted tags: DET PROPN NOUN ADP PROPN PROPN PRON AUX

Classification Report:

	precision		recall	f1-sc	ore su	ıppor	t
1	0.	33	1.00	0.50	)	1	
2	1.	00	0.50	0.6	7	2	
3	1.	00	0.50	0.6	7	2	
5	1.	00	1.00	1.00	)	1	
6	1.	00	1.00	1.00	)	1	
8	1.	00	1.00	1.00	<b>C</b>	1	
accur	acy			0.75	5 6	3	
macro weighted	_	0.8 9.0		.83 0.75	0.81 0.77	8	} 8

Sentence: show me all the flights from toronto on nationair

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

precision		recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	

5	1.00	1.00	0 1.	00	2	
6	1.00	1.00	) 1.	00	1	
accuracy			1.0	00	9	
macro avg	1.	.00	1.00	1.00		9
weighted av	g ´	1.00	1.00	1.00	)	9

Sentence: show me all the united flights from boston to denver

True tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	recall f1		ore su	ipport
1	1.0	00 1	.00	1.0	0	3
2	1.0	00 1.	.00	1.0	0	2
3	1.0	00 1.	.00	1.0	0	1
4	1.0	00 1.	.00	1.0	0	1
5	1.0	00 1.	.00	1.0	0	2
6	1.0	00 1.	.00	1.0	0	1
accur	acy			1.00	) 1	0
macro	avg	1.00	1	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: show me all the flights on united leaving from boston

True tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN Classification Report:

	precision		rec	recall f1-sc		ore	supp	ort
1	1	1.00	1.0	00	1.0	00	2	
2	1	00.1	1.0	00	1.0	00	2	
3	1	.00	1.0	00	1.0	00	1	
4	1	00.1	1.0	00	1.0	00	2	
5	1	.00	1.0	00	1.0	00	2	
6	1	.00	1.0	00	1.0	00	1	
accur	acy				1.0	0	10	
macro	_		.00	1	.00	1.0	0	10
weighte	d avg	,	1.00	•	1.00	1.	00	10

Sentence: when are the american flights from phoenix to milwaukee True tags: ADV AUX DET PROPN NOUN ADP PROPN ADP PROPN

Predicted tags: PROPN VERB DET PROPN NOUN ADP PROPN ADP PROPN

	precision		f1-score	support
1	0.75	1.00	0.86	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1

4	0.00	1.00	0.00	0	
5	1.00	1.00	1.00	1	
8	1.00	0.00	0.00	1	
11	1.00	0.00	0.00	) 1	
accuracy	<i>(</i>		0.78	9	
macro av	g 0.8	B2 0.	.71	0.55	9
weighted a	vg 0	.92 (	).78	0.73	9

Sentence: please list all united flights between pittsburgh and baltimore True tags: INTJ VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Predicted tags: INTJ VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Classification Report:

precision		ion re	ecall	f1-scc	re sup	port
1	1.0	00 1	.00	1.00	) 3	}
2	1.0	00 1	.00	1.00	) 1	
3	1.0	00 1	.00	1.00	) 1	
4	1.0	00 1	.00	1.00	) 1	
5	1.0	00 1	.00	1.00	) 1	
10	1.	00	1.00	1.0	0	1
13	3 1.	00	1.00	1.0	0	1
accura	асу			1.00	9	
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00	)	1.00	1.00	9

Sentence: please list all flights between boston and philadelphia <unk> on sundays True tags: INTJ VERB DET NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN

Predicted tags: INTJ VERB DET NOUN ADP PROPN CCONJ PROPN PROPN ADP NOUN

Classification Report:

pr	•		f1-score	support
1	0.67	0.67	0.67	3
2	1.00	1.00	1.00	2
3	0.50	1.00	0.67	1
4	1.00	0.50	0.67	2
5	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
13	1.00	1.00	1.00	1
accuracy	/		0.82	11
macro av	_		.88 0.8	-
weighted a	vg 0	.86	0.82 0.	82 11

Sentence: list all flights from baltimore to san francisco on friday

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

## Classification Report:

	precis	ion r	ecall	†1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	00	3	
2	1.0	00	1.00	1.0	00	3	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	1.00	1.0	00	1	
5	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	0	10	
macro	avg	1.00	) 1	.00	1.00	)	10
weighte	d avg	1.0	0	1.00	1.0	0	10

Sentence: show me flights from philadelphia to denver on a monday

True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Classification Report:

	precision	on re	call	f1-sc	ore	supp	ort
1	1.0	0 1.	.00	1.0	00	2	
2	1.0	0 1.	.00	1.0	0	3	
3	1.0	0 1.	.00	1.0	0	2	
4	1.0	0 1.	.00	1.0	0	1	
5	1.0	0 1.	.00	1.0	0	1	
6	1.0	0 1.	.00	1.0	0	1	
accur	acy			1.0	0	10	
macro	avg	1.00	1	.00	1.00	)	10
weighted	d avg	1.00	•	1.00	1.0	0	10

Sentence: show me the flights from denver to atlanta on friday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precisi	on re	ecall	t1-sco	re sup	port
1	1.0	0 1	.00	1.00	) 2	
2	1.0	0 1	.00	1.00	) 3	
3	1.0	0 1	.00	1.00	) 2	
4	1.0	0 1	.00	1.00	) 1	
5	1.0	0 1	.00	1.00	) 1	
6	1.0	0 1	.00	1.00	) 1	
accur	acy			1.00	10	)
macro	avg	1.00	1	.00	1.00	10
weighte	_	1.00		1.00	1.00	10
•	•					

Sentence: flights that go from oakland to philadelphia on friday

True tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN Predicted tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN

## Classification Report:

	precision	on re	call f1-s	score s	upport
1	1.0	0 1.	00 1	.00	2
2				.00	4
3	1.0	0 1.	00 1	.00	2
4	1.0	0 1.	00 1	.00	1
			4	00	•
accur	acy		1.	00	9
macro	_	1.00	1.00	1.00	9
weighted	d avg	1.00	1.00	1.00	9

Sentence: baltimore to philadelphia wednesday

True tags: PROPN ADP PROPN NOUN Predicted tags: PROPN ADP PROPN NOUN

Classification Report:

	precisi	on re	call 1	f1-sco	re supp	ort
1	1.0	00 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	1	
3	1.0	00 1.	.00	1.00	1	
accur	асу			1.00	4	
macro	avg	1.00	1.0	00	1.00	4
weighte	d avg	1.00	1	.00	1.00	4

Sentence: i <unk> like a flight from montreal to san diego for sunday

True tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN

ADP NOUN

Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	) 1	00	3	
2		.00	1.00		00	3	
3	1	.00	1.00	1.	00	2	
4	. 1	.00	1.00	1.	00	1	
5	1	.00	1.00	1.	00	1	
6	1	.00	1.00	1.	00	1	
8	1	.00	1.00	1.	00	1	
accur	•	1 (	00	1.0 1.00	00 1.0	12	12
macro weighte	•		.00	1.00		00	12

Sentence: what flights are available friday from philadelphia to oakland True tags: DET NOUN AUX ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX ADJ NOUN ADP PROPN ADP PROPN

	precisi	on I	recall	f1-sc	ore si	uppor	t
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	2	
5	1.0	00	0.00	0.0	0	1	
6	0.0	00	1.00	0.0	0	0	
7	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
				0.00	<u> </u>	^	
accura	acy			0.89		9	
macro	avg	0.86	6 0	.86	0.71	9	)
weighted	d avg	1.0	0 (	0.89	0.89		9

Sentence: i would like to see the flights available from pittsburgh to san francisco for monday

True tags: PRON AUX VERB PART VERB DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
12	1.00	1.00	1.00	1
accura	асу		1.00	15
macro weighted	9		.00 1.0 1.00 1.	00 15 00 15
o.giitoc				00 10

Sentence: show me the flights on sunday from tampa to charlotte

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

accuracy		1.0	0 10	
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: what are all flights from denver to philadelphia on saturday True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precis	ion re	call	f1-sco	re sup	port
1	1.0	00 1.	.00	1.00	2	
2	1.0	00 1.	.00	1.00	3	
3	1.0	00 1.	.00	1.00	2	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
accur	асу			1.00	10	
macro	avg	1.00	1	.00	1.00	10
weighte	d avg	1.00	•	1.00	1.00	10

Sentence: what flights are available from denver to philadelphia on wednesday True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN Predicted tags: PRON NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precision	on re	call	f1-scor	e supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accura	асу			0.90	10	
macro weighted	_	0.86 1.00	_	86 ( ).90	0.71 0.90	10 10

Sentence: i want to go from boston to washington on a saturday

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN ADP DET

NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	2

5	1.00	1.0	00	1.00	1	
6	1.00	1.0	00	1.00	1	
12	1.00	1.	00	1.00	1	
accuracy			,	1.00	11	
macro avg	1	.00	1.00	1	.00	11
weighted av	g	1.00	1.0	0 ′	1.00	11

Sentence: show flights from burbank to <unk> louis on monday

True tags: VERB NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

Ciaconio	auoni	oport.				
	precision	on re	call f	1-score	suppo	rt
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
accur	acy			1.00	9	
macro	avg	1.00	1.0	0 1.0	00	9
weighted	d avg	1.00	1.0	00 1	.00	9

Sentence: please show me flights from dallas to atlanta on monday
True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN
Predicted tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	preci	sion	recal	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	2	
2	1	.00	1.00	1.0	00	3	
3	1	.00	1.00	1.0	00	2	
4	. 1	.00	1.00	1.0	00	1	
6	1	.00	1.00	1.0	00	1	
13	3	1.00	1.00	) 1.	00	1	
accur	acy			1.0	0	10	
macro	avg	1.0	00	1.00	1.00	)	10
weighte	d avg	1	.00	1.00	1.0	0	10

Sentence: show me the flights from pittsburgh to los angeles on thursday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3

3	1.00	1.0	)0	1.0	0	2	
4	1.00	1.0	00	1.0	0	1	
5	1.00	1.0	00	1.0	0	1	
6	1.00	1.0	00	1.0	0	1	
accurac	;y			1.00	)	11	
macro a	vg	1.00	1.0	00	1.00		11
weighted a	avg	1.00	1	.00	1.00	)	11

Sentence: i <unk> like a list of the flights from oakland to dallas fort worth on sunday

True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP NOUN

Classification Report:

	precisio	n red	call	f1-score	supp	ort
1	1.00	) 1.(	00	1.00	4	
2	1.00	1.0	00	1.00	4	
3	1.00	1.0	00	1.00	3	
4	1.00	1.0	00	1.00	1	
5	1.00	1.0	00	1.00	2	
6	1.00	1.0	00	1.00	1	
8	1.00	1.0	00	1.00	1	
accura	асу			1.00	16	
macro	avg	1.00	1.	00 1.	00	16
weighted	l avg	1.00	1	.00 1	.00	16

Sentence: show me the flights from boston to pittsburgh on wednesday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	pred	isior	n red	call	f1-sc	core	supp	ort
1		1.00	1.	00	1.0	00	2	
2		1.00	1.	00	1.0	00	3	
3	,	1.00	1.	00	1.0	00	2	
4		1.00	1.	00	1.0	00	1	
5	,	1.00	1.	00	1.0	00	1	
6	;	1.00	1.	00	1.0	00	1	
accur	acy				1.0	0	10	
macro weighte	_		1.00 1.00		.00 1.00	1.0 1.	00 00	10 10
5		,						-

Sentence: list all flights from nashville to cleveland on sunday

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	3	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
						_	
accur	acy			1.00	)	9	
macro	avg	1.0	0 1	.00	1.00		9
weighted	d avg	1.0	00	1.00	1.00		9

Sentence: give me a flight from tampa to charlotte on sunday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	prec	ision	reca	all	f1-sc	ore	supp	ort
	1 ′	1.00	1.0	0	1.00	)	2	
2	2 ′	1.00	1.0	0	1.0	)	3	
3	3 ′	1.00	1.0	0	1.0	)	2	
4	4 <i>′</i>	1.00	1.0	0	1.0	)	1	
į	5 ′	1.00	1.0	0	1.0	)	1	
6	6 ´	1.00	1.0	0	1.0	)	1	
accu	racy				1.00	)	10	
macro	o avg	1	.00	1	.00	1.0	0	10
weighte	d avg	١ .	1.00	•	1.00	1.0	00	10

Sentence: show flights from denver to san francisco

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	1	.00	1.00	1.00	) (	3
2	1	.00	1.00	1.00	) 2	2
3	1	.00	1.00	1.00	) ′	1
4	. 1	.00	1.00	1.00	) ′	1
accur	acy			1.00	) 7	•
macro	avg	1.0	0 1	.00	1.00	7
weighte	d avg	1.	00	1.00	1.00	7

Sentence: what are all the flights available between pittsburgh and dallas fort worth True tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN

PROPN PROPN Classification Report:

	precis	sion	recall	f1-scc	re sup	port
1	1.	00	1.00	1.00	) 4	
2	1.	00	1.00	1.00	) 1	
3	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 2	
6	1.	00	1.00	1.00	) 1	
7	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	) 1	
10	) 1	.00	1.00	1.0	0 1	
accur	асу			1.00	12	
macro	avg	1.0	00 1	.00	1.00	12
weighted	d avg	1.	00	1.00	1.00	12

Sentence: what flights from seattle to salt lake city

True tags: DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN PROPN PROPN

Classification Report:

	precis	sion	reca	II f1	-sco	re s	uppo	ort
1	1.	.00	1.00	)	1.00	)	4	
2	1.	.00	1.00	)	1.00	)	2	
3	1.	.00	1.00	)	1.00	)	1	
5	1.	.00	0.00	)	0.00	)	1	
6	0	.00	1.00	)	0.00	)	0	
accur	acy				0.88		8	
macro	avg	8.0	30	0.80	)	0.60		8
weighted	d avg	1.	00	8.0	88	0.88		8

Sentence: what are the flights from memphis to las vegas

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accur	асу			1.00	)	9	
macro	avg	1.00		.00	1.00		9
weighte	d avg	1.0	00	1.00	1.00	)	9

Sentence: what flights are there from pittsburgh to los angeles

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recal	l †1-sc	core	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	1	
4	. 1.	00	0.00	0.0	00	1	
5	1.	00	0.00	0.0	00	1	
6	0.	50	1.00	0.6	67	1	
8	0.	00	1.00	0.0	00	0	
accur	acy			0.7	8	9	
macro weighte	•	0.7	79 ( .94	0.71 0.78	0.5		9
	~ ~ · · 9	•		J U	٠.		·

Sentence: i <unk> looking for a flight from pittsburgh to san francisco

True tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

0.0000					
	precision	n recall	f1-score	suppo	ort
1	1.00	1.00	1.00	3	
2		1.00	1.00	3	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accur	acy		1.00	11	
macro	avg '	1.00 1	.00 1.0	00	11
weighted	d avg	1.00	1.00 1.	00	11

Sentence: show me the flights from dallas to san francisco

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
accurac	СУ		1.00	9	
macro a	vg 1.0	00 1	.00 1.0	00	9

weighted avg 1.00 1.00 1.00 9

Sentence: what are the flights from boston to san francisco

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore su	pport
1	1.	.00	1.00	1.00	o ;	3
2	1.	.00	1.00	1.00	o :	2
3	1.	.00	1.00	1.0	o .	1
5	1.	.00	1.00	1.0	) .	1
6	1.	.00	1.00	1.0	) .	1
8	1.	.00	1.00	1.0	) ·	1
accur	acy			1.00	) 9	)
macro	avg	1.0	00 1	.00	1.00	9
weighte	d avg	1.	00	1.00	1.00	9

Sentence: what flights do you have leaving boston going to san francisco True tags: DET NOUN AUX PRON VERB VERB PROPN VERB ADP PROPN

**PROPN** 

Predicted tags: PRON NOUN AUX PRON VERB VERB PROPN VERB ADP PROPN

PROPN

Classification Report:

Classifica	mon repe	/I L.			
ŗ	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	3	
5	1.00	0.00	0.00	1	
6	0.50	1.00	0.67	1	
8	1.00	1.00	1.00	1	
accura	су		0.91	11	
macro a	avg 0.9	93 0	.86 0.8	31	11
weighted	avg 0	.95 (	0.91 0.	.88	11

Sentence: list all flights please from washington to san francisco

True tags: VERB DET NOUN INTJ ADP PROPN ADP PROPN PROPN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2		1.00	1.00	2
3	1.00	1.00	1.00	1
4	0.50	1.00	0.67	1
5	1.00	1.00	1.00	1

13 1.00 0.00 0.00 1

accuracy 0.89 9
macro avg 0.92 0.83 0.78 9

0.94

Sentence: list flights between oakland and san francisco

0.89

True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN

0.85

9

Classification Report:

weighted avg

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1 1.00 3 1.00 1.00 1 1.00 4 1.00 1.00 1.00 1 10 1.00 1.00 1.00 1 1.00 accuracy 7 macro avg 1.00 1.00 1.00 7 weighted avg 1.00 1.00 1.00 7

Sentence: interested in a flight from washington to fort worth

True tags: VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

0.0.0000	о	•		
	precision	recall	f1-score	support
1	0.75	1.00	0.86	3
ı	0.75	1.00	0.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	1
4	1.00	0.00	0.00	1
5	1.00	1.00	1.00	1
accura	су		0.89	9
macro	avg 0.	.95 0	.80 0.7	77 9
weighted	avg (	0.92	0.89 0.	.84 9

Sentence: what flights are <unk> available between boston and dallas fort worth True tags: DET NOUN AUX ADV ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: PRON NOUN AUX AUX ADJ ADP PROPN CCONJ PROPN PROPN

**PROPN** 

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
5	1 00	0.00	0.00	1

6	0.00	1.00	0 (	.00	0	
7	1.00	1.00	) 1	.00	1	
8	0.50	1.00	0 (	.67	1	
10	1.00	1.0	0 ′	1.00	1	
11	1.00	0.0	0 (	0.00	1	
accuracy			0	.82	11	
macro avg	3.0	33	0.78	0.6	3	11

0.95

Sentence: what about flights from boston to san diego

0.82

True tags: PRON ADP NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN ADP PROPN PROPN

0.79

11

Classification Report:

weighted avg

	precisi	on re	call	f1-sco	re su	oport
1	1.0	0 1	.00	1.00	3	3
2	1.0	0 1.	.00	1.00	3	}
3	1.0	0 1.	.00	1.00	1	
6	1.0	00 1	.00	1.00	1	
accura	асу			1.00	8	
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00		1.00	1.00	8

Sentence: flights from baltimore to san francisco
True tags: NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	0	6	
macro weighte	_	1.0 1.0		1.00 1.00	1.00 1.0		6 6

Sentence: i live in washington and i would like to make a trip to san francisco can you tell me which airlines connect with those two cities

True tags: PRON VERB ADP PROPN CCONJ PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN AUX PRON VERB PRON DET NOUN VERB ADP DET NUM NOUN

Predicted tags: PRON VERB ADP PROPN CCONJ PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN AUX PRON VERB PRON DET NOUN NOUN ADP PROPN ADJ NOUN

Classification Report:

1	0.75	1.00	0.86	3	
2	1.00	1.00	1.00	3	
3	0.75	1.00	0.86	3	
4	1.00	0.80	0.89	5	
5	1.00	0.67	0.80	3	
6	1.00	1.00	1.00	4	
7	0.00	1.00	0.00	0	
8	1.00	1.00	1.00	2	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accurac	у		0.88	26	
macro av	/g 0.8	36 0.8	86 0.7	<b>'</b> 6	26

0.94

Sentence: show me the flights from detroit to las vegas

0.88

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

0.88

26

Classification Report:

weighted avg

	precisio	n rec	all f1-	score	suppo	ort
1	1.0	). 1. C	00	1.00	3	
2	1.0	0.1	00 ′	1.00	2	
3	1.0	0.1	00 ′	1.00	1	
4	1.0	0.1	00 ′	1.00	1	
5	1.0	0.1	00 ′	1.00	1	
6	1.0	0.1	00 ′	1.00	1	
accur	acy		1	.00	9	
macro weighted	_	1.00 1.00	1.00 1.00			9 9

Sentence: what flights go from denver to atlanta

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

	precisio	on red	call	t1-scc	ore su	pport
1	1.00	1 1	00	1.00	) <i>'</i>	2
2			00	1.00		2
3	1.00	) 1.	00	1.00	) .	1
4	1.00	) 1.	00	1.00	) .	1
5	1.00	0.0	00	0.00	) .	1
6	0.00	) 1.	00	0.00	) (	)
accur	acy			0.86	5 7	,
macro	avg	0.83	0	.83	0.67	7
eighted	d avg	1.00	(	0.86	0.86	7

Sentence: show me the flights from montreal to philly

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	ion re	call	f1-sco	ore su	upport
1	1.0		.00	1.00		2
2	1.0	00 1	.00	1.00	)	2
3	1.0	00 1	.00	1.00	C	1
4	1.0	00 1	.00	1.00	)	1
5	1.0	00 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
accur	acy			1.00	)	8
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	8 8
- 9	3					-

Sentence: flight from denver to philadelphia True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n rec	all f1-	score	supp	ort
1	1.00	) 1.0	00 1	1.00	2	
2	1.00	) 1.0	00 1	1.00	2	
3	1.00	) 1.0	00 1	1.00	1	
accura	асу		1	.00	5	
macro	avg	1.00	1.00	1.0	0	5
weighted	avg	1.00	1.00	) 1.	00	5

Sentence: give me the flights from baltimore to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-sc	ore si	uppor	rt
					_	_	
1	1.0	0 1.	.00	1.0	0	2	
2	1.0	0 1.	.00	1.0	0	2	
3	1.0	0 1.	.00	1.0	0	1	
4	1.0	0 1.	.00	1.0	0	1	
5	1.0	0 1.	.00	1.0	0	1	
6	1.0	0 1.	.00	1.0	0	1	
accur	acy			1.00	)	8	
macro	avg	1.00	1	.00	1.00	8	3
weighted	d avg	1.00	•	1.00	1.00		8

Sentence: i would like to fly from boston to baltimore

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN

Predicted tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

	preci	sion	recall	f1-sco	re sup	port
1	1	.00	1.00	1.00	2	
2	1	.00	1.00	1.00	2	
4	. 1	.00	1.00	1.00	2	
6	1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
12	2	1.00	1.00	1.00	) 1	
accur	acy			1.00	9	
macro	avg	1.0	00 1	.00	1.00	9
weighte	d avg	1.	00	1.00	1.00	9

Sentence: tell me the flights that leave philadelphia and go to dallas

True tags: VERB PRON DET NOUN ADP VERB PROPN CCONJ VERB ADP

**PROPN** 

Predicted tags: VERB PRON DET NOUN ADP VERB PROPN CCONJ VERB ADP

**PROPN** 

Classification Report:

	precision		recall f1-s		core	suppo	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	1	
4	1.	00	1.00	1.0	00	3	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
10	) 1	.00	1.00	1.	00	1	
accura	•		_	1.0	_	11	
macro weighted	_	1.0 1.0		1.00 1.00	1.00 1.0		11 11

Sentence: flight information from oakland to denver True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		red	call	f1-s	core	supp	ort
1		1.00	1.	00	1.	00	2	
2		1.00	1.	00	1.	00	2	
3		1.00	1.	00	1.	00	2	
accur	acy				1.0	00	6	
macro	avg	•	1.00	1	.00	1.0	0	6
weighte	d avg	3	1.00	•	1.00	1.0	00	6

Sentence: the flight will <unk> from boston

True tags: DET NOUN AUX VERB ADP PROPN Predicted tags: DET NOUN ADJ AUX ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	) 1	
2			.00	1.00		
3	1.0	0 1	.00	1.00	1	
4	1.0	0 0	.00	0.00	1	
5	1.0	0 1	.00	1.00	1	
7	0.0	0 1	.00	0.00	0	
8	0.0	0 0	.00	0.00	1	
				0.07	0	
accur	acy			0.67	6	
macro	avg	0.71	0	.71	0.57	6
weighted	d avg	0.83	(	0.67	0.67	6

Sentence: what are the flights from pittsburgh to oakland True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	on red	all f1	-score	suppo	ort
1	1.0	0 1.0	00	1.00	2	
2	1.0	0 1.0	00	1.00	2	
3	1.0	0 1.0	00	1.00	1	
5	1.0	0 1.0	00	1.00	1	
6	1.0	0 1.0	00	1.00	1	
8	1.0	0 1.0	00	1.00	1	
accur	acy		•	1.00	8	
macro	avg	1.00	1.00	1.0	00	8
weighted	d avg	1.00	1.0	0 1.	.00	8

Sentence: what flights are there from baltimore to newark

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

	precision	n recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	0.00	0.00	1
5	1.00	0.00	0.00	1
6	0.50	1.00	0.67	1
8	0.00	1.00	0.00	0
accur	асу		0.75	8
macro	avg (	0.79 0	.71 0.	52 8

weighted avg 0.94 0.75 0.71 8

Sentence: flights from columbus to milwaukee True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		call	f1-scc	re su	pport
1	1.0	00 1	.00	1.00	) :	2
2	1.0	00 1	.00	1.00	) :	2
3	1.0	00 1	.00	1.00	)	1
accur	асу			1.00	5	5
macro	avg	1.00	1	.00	1.00	5
weighted	d avg	1.00	•	1.00	1.00	5

Sentence: i <unk> like information on boston to washington True tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN

Classification Report:

								1- 1-	
	1	1.0	0	1.0	00	1.0	0	2	
	2	1.0	0	1.0	00	1.0	0	2	
	3	1.0	0	1.0	00	1.0	0	1	
	4	1.0	0	1.0	00	1.0	0	1	
	6	1.0	0	1.0	00	1.0	0	1	
	8	1.0	0	1.0	00	1.0	0	1	
acc	curac	СУ				1.0	0	8	
mad	cro a	ıvg	1.	00	1.	00	1.0	00	8
weigh	ited	avg	1	.00	1	.00	1.	00	8

precision recall f1-score support

Sentence: list flights from houston to phoenix

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

рі	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
accurac	у		1.00	6	
macro av	vg 1.0	00 1	.00 1.0	00	6
weighted a	avg 1	.00	1.00 1	.00	6

Sentence: information of a flight from atlanta to pittsburgh True tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN

Predicted tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		recall	f1-score		supp	ort
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	00	3	
3	1.0	00	1.00	1.0	00	2	
5	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	0	8	
macro	avg	1.0	0 1	.00	1.0	0	8
weighte	d avg	1.0	00	1.00	1.0	00	8

Sentence: i need to go to pittsburgh and denver

True tags: PRON VERB PART VERB ADP PROPN CCONJ PROPN Predicted tags: PRON VERB PART VERB ADP PROPN CCONJ PROPN

Classification Report:

pre	ecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accuracy			1.00	8	
macro av		00 1	.00 1.0	00	8
weighted av	/g 1	.00	1.00 1	.00	8

Sentence: what flights from philadelphia to atlanta True tags: DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		ecall	f1-score		suppo	ort
1	1.0	0 1	1.00	1.0	00	2	
2			.00	1.0		2	
3	1.0	0 1	.00	1.0	00	1	
5	1.0	0 (	00.0	0.0	00	1	
6	0.0	0 1	.00	0.0	00	0	
						_	
accur	acy			8.0	3	6	
macro	avg	0.80	0	.80	0.60		6
weighted	d avg	1.00	) (	0.83	0.8	3	6

Sentence: flight from milwaukee to denver True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

pr	precision		recall f1-score		ore su	nbbo	rt
1	1.00	1.0	00	1.00	)	2	
2	1.00	1.0	00	1.00	)	2	
3	1.00	1.0	00	1.00	)	1	
accurac	y			1.00	)	5	
macro av	/g	1.00	1.0	00	1.00		5
weighted a	ıvg	1.00	1.	00	1.00		5

Sentence: tell me the flights from baltimore to dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n reca	all f1-s	core s	upport
1	1.00	1.00	0 1.	00	2
2	1.00	1.00	0 1.	00	2
3	1.00	1.00	0 1.	00	1
4	1.00	1.00	0 1.	00	1
5	1.00	1.00	0 1.	00	1
6	1.00	1.00	0 1.	00	1
accur	асу		1.0	00	8
macro weighted	_	1.00 1.00	1.00 1.00	1.00 1.00	8 ) 8

Sentence: i <unk> like to book a flight from atlanta to denver

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN

Classification Report:

	precis	ion re	ecall	f1-scor	e supp	ort
1	1.	00 1	.00	1.00	2	
2	1.	00 1	.00	1.00	2	
3	1.	00 1	.00	1.00	1	
4	1.	00 1	.00	1.00	2	
5	1.	00 1	.00	1.00	1	
6	1.	00 1	.00	1.00	1	
8	1.	00 1	.00	1.00	1	
12	2 1	.00	1.00	1.00	1	
accur macro	•	1.00	1	1.00	11 1.00	11
weighte	d avg	1.00	) ′	1.00	1.00	11

Sentence: now get me from pittsburgh to denver

True tags: ADV VERB PRON ADP PROPN ADP PROPN

Predicted tags: VERB VERB PRON ADP PROPN ADP PROPN

## Classification Report:

	precis	sion	recall	f1-sco	ore s	uppo	rt
1	1.	00	1.00	1.00	)	2	
2	1.	00	1.00	1.00	)	2	
4	0.	50	1.00	0.67	7	1	
6	1.	00	1.00	1.00	)	1	
11	1 1	.00	0.00	0.0	0	1	
accur	acy			0.86	;	7	
macro	avg	0.9	0 0	.80	0.73		7
weighte	d avg	0.9	93 (	0.86	0.81		7

Sentence: what flights are there from boston to dallas

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recal	ll f1-s	core	supp	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	00	1	
4	1.	00	0.00	0.0	00	1	
5	1.	00	0.00	0.0	00	1	
6	0.	50	1.00	0.0	67	1	
8	0.	00	1.00	0.	00	0	
accur	асу			0.7	<b>7</b> 5	8	
macro	avg	0.	79	0.71	0.5	52	8
weighted	d avg	0	.94	0.75	0.	71	8

Sentence: show me flights from pittsburgh to philadelphia True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

F	orecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
accura	су		1.00	7	
macro a	0		.00 1.0	00	7
weighted	avg 1	.00	1.00 1.	00	7

Sentence: show flights from philadelphia to boston True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

## Classification Report:

	precision	on re	call f1	-score	suppo	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
accur	acv			1.00	6	
macro	avg	1.00 1.00	1.00 1.0	1.0		6 6

Sentence: i <unk> like to see flights from pittsburgh to philadelphia

True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	1	
4	1.0	0 1.	.00	1.00	2	
6	1.0	0 1.	.00	1.00	1	
8	1.0	0 1.	.00	1.00	1	
12	2 1.	00 1	.00	1.00	) 1	
accur	асу			1.00	10	
macro	_	1.00			1.00	10
weighted	avg	1.00		1.00	1.00	10

Sentence: give me flights from pittsburgh to baltimore True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recal	l f1-sc	ore	supp	ort
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	00	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	7	
macro	avg	1.0	00 '	1.00	1.0	0	7
weighte	d avg	1.	00	1.00	1.	00	7

Sentence: i need to go from philadelphia to dallas

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
12	1.00	1.00	1.00	1	
accurac	СУ		1.00	8	
macro a	vg 1.	00 1	.00 1.0	00	8
weighted a	avg 1	.00	1.00 1	.00	8

Sentence: show flights from pittsburgh to oakland True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call 1	f1-sco	re suppo	ort
1	1.0	00 1.	.00	1.00		
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	1	
4	1.0	00 1.	.00	1.00	1	
accur	acy			1.00	6	
macro	avg	1.00	1.0	00	1.00	6
weighted	d avg	1.00	1	.00	1.00	6

Sentence: what are the flights from chicago to indianapolis
True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-s	core	suppo	ort
1	1.0	00	1.00	1.	00	2	
2			1.00		00	2	
3	1.0	00	1.00	1.	00	1	
5	1.0	00	1.00	1.	00	1	
6	1.0	00	1.00	1.	00	1	
8	1.0	00	1.00	1.	00	1	
accur	acy			1.0		8	
macro	_	1.00		1.00	1.0		8
weighted	d avg	1.0	00	1.00	1.	00	8

Sentence: get flights from toronto to milwaukee True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

1	1.00	) 1.	00	1.0	0	2	
2	1.00	) 1.	00	1.0	0	2	
3	1.00	) 1.	00	1.0	0	1	
4	1.00	) 1.	00	1.0	0	1	
accuracy	/			1.00	)	6	
macro av	′g	1.00	1.	00	1.00		6
weighted a	vg	1.00	1	.00	1.00		6

Sentence: what are the different classes that an airline offers True tags: PRON AUX DET ADJ NOUN ADP DET NOUN VERB

Predicted tags: PRON AUX DET ADJ NOUN ADP DET NOUN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore si	nbbo	rt
1	0.0	00	1.00	0.0	0	0	
2	1.0	00	1.00	1.0	0	1	
3	1.0	00	1.00	1.0	0	2	
4	1.0	00	0.00	0.0	0	1	
5	1.0	00	1.00	1.0	0	2	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accur	асу			0.89	9	9	
macro	avg	0.8	8 0	.88	0.75		9
weighted	d avg	1.0	00	0.89	0.89		9

Sentence: show flights between boston and denver True tags: VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN

Classification Report:

	precisi	on re	ecall	f1-sc	ore	supp	ort
1	1.0	0 1	.00	1.0	0	2	
2	1.0	0 1	.00	1.0	0	1	
3	1.0	0 1	.00	1.0	0	1	
4	1.0	0 1	.00	1.0	0	1	
10	1.	00	1.00	1.0	00	1	
accura	асу			1.0	0	6	
macro	•	1.00		.00	1.0		6
weighted	l avg	1.00	)	1.00	1.0	00	6

Sentence: show flights from dallas to oakland

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

1	1.00	) 1.	00	1.0	0	2	
2	1.00	) 1.	00	1.0	0	2	
3	1.00	) 1.	00	1.0	0	1	
4	1.00	) 1.	00	1.0	0	1	
accuracy	/			1.00	)	6	
macro av	′g	1.00	1.	00	1.00		6
weighted a	vg	1.00	1	.00	1.00		6

Sentence: show me flights from baltimore to dallas

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	prec	ision	reca	all f	1-sco	ore	supp	ort
1	,	1.00	1.00	)	1.00	)	2	
2		1.00	1.00	)	1.00	)	2	
3	,	1.00	1.00	)	1.00	)	1	
4		1.00	1.00	)	1.00	)	1	
6	;	1.00	1.00	)	1.00	)	1	
accur	acy				1.00	)	7	
macro	avg	1.	00	1.0	00	1.0	)	7
weighte	d avg	j 1	.00	1.	.00	1.0	00	7

Sentence: give me all the flights from memphis to charlotte

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-scc	re su	pport
1	1.0	0 1.	.00	1.00	) 2	2
2	1.0	0 1.	.00	1.00	) 2	<u> </u>
3	1.0	0 1.	.00	1.00	) 1	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 1.	.00	1.00	) 2	2
6	1.0	0 1.	.00	1.00	) 1	
accur	•	1.00	1	1.00		_
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	9

Sentence: i would like to see the flights from baltimore to philadelphia please True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

INTJ

Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN INTJ

Classification Report:

1	1.00	1.0	0	1.00	2	
2	1.00	1.0	0	1.00	2	
3	1.00	1.0	0	1.00	1	
4	1.00	1.0	0	1.00	2	
5	1.00	1.0	0	1.00	1	
6	1.00	1.0	0	1.00	1	
8	1.00	1.0	0	1.00	1	
12	1.00	1.0	0	1.00	) 1	1
13	1.00	1.0	0	1.00	) 1	1
accuracy				1.00	12	
macro avo	<b>j</b> 1.0	00	1.0	0	1.00	12
weighted av	g 1	.00	1.0	00	1.00	12

Sentence: what flights are there from indianapolis to orlando True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN ADP PROPN

Classification Report:

	precisio	on re	call	f1-scc	ore sup	port
1	1.0	0 1.	.00	1.00	) 2	
2	1.0	0 1.	.00	1.00	) 2	
3	1.0	0 1.	.00	1.00	) 1	
4	1.0	0 0.	.00	0.00	) 1	
5	1.0	0 0.	.00	0.00	) 1	
6	0.5	0 1.	.00	0.67	7 1	
8	0.0	0 1.	.00	0.00	0	l
000118	001			0.75	. 0	
accur	•		_		_	_
macro	avg	0.79	0	.71	0.52	8
weighted	d avg	0.94	(	0.75	0.71	8

Sentence: no i want to go from denver to oakland

True tags: DET PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: DET PRON VERB PART VERB ADP PROPN ADP PROPN

Classification Report:

	preci	sion	recall	f1-sc	ore si	uppo	rt
1	1	.00	1.00	1.00	)	2	
2	1	.00	1.00	1.0	)	2	
4	1	.00	1.00	1.0	)	2	
5	1	.00	1.00	1.0	)	1	
6	1	.00	1.00	1.0	)	1	
12	2 1	1.00	1.00	1.0	0	1	
accur	acy			1.00	)	9	
macro		1.0		.00	1.00		9
weighted	d avg	1.	00	1.00	1.00		9

Sentence: show me flights from milwaukee to orlando

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

precisio	n rec	call f1-s	core s	support
				2
1.00	) 1.0	00 1	.00	2
1.00	) 1.0	00 1	.00	1
1.00	) 1.0	00 1	.00	1
1.00	1.0	00 1	.00	1
асу		1.	00	7
avg d avg	1.00 1.00	1.00 1.00	1.00 1.00	7 ) 7
	1.00 1.00 1.00 1.00 1.00 acy avg	1.00 1.0 1.00 1.0 1.00 1.0 1.00 1.0 1.00 1.0 acy avg 1.00	1.00 1.00 1 1.00 1.00 1 1.00 1.00 1 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: give me a list of flights between denver and oakland

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN

Classification Report:

precision recall f1-score support

	<b>P</b>						.  -	
1		1.00	1.00	)	1.00		2	
2	<u> </u>	1.00	1.00	)	1.00		2	
3	}	1.00	1.00	)	1.00		2	
4		1.00	1.00	)	1.00		1	
5	,	1.00	1.00	)	1.00		1	
6	;	1.00	1.00	)	1.00		1	
10	0	1.00	1.0	0	1.00	)	1	
accur	асу				1.00	1	0	
macro	_	1.0		1.00		1.00		10
weighte	d avg	g 1.0	UU	1.0	)()	1.00		10

Sentence: show me all the flights from charlotte to cleveland

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

	precis	sion	reca	II t1-s	core	supp	ort
4		00	4.00			•	
1	1.	00	1.00	) 1.	.00	2	
2	1.	00	1.00	) 1.	.00	2	
3	1.	00	1.00	1.	.00	1	
4	1.	00	1.00	) 1.	.00	1	
5	1.	00	1.00	1.	.00	2	
6	1.	00	1.00	1.	.00	1	
accur	асу			1.	00	9	
macro	avg	1.0	00	1.00	1.0	0	9
weighte	d avg	1	.00	1.00	1.	00	9

Sentence: give me flights from denver to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	on re	call f1-	score	support
1	1.0	0 1.	00 1	1.00	2
2	1.0	0 1.	00 1	1.00	2
3	1.0	0 1.	00 1	1.00	1
4	1.0	0 1.	00 1	1.00	1
6				1.00	1
		-			
accur	acy		1	.00	7
macro	avg	1.00	1.00	1.00	7
weighted	d avg	1.00	1.00	0.1	0 7
3	J				

Sentence: tell me about flights from indianapolis to houston True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	recall	f1-sco	ore su	pport
1	1	.00	1.00	1.00	) 2	2
2	1	.00	1.00	1.00	) ;	3
3	1	.00	1.00	1.00	) '	1
4	1	.00	1.00	1.00	) ,	1
6	1	.00	1.00	1.00	) '	1
accur	acv			1.00	) 8	}
macro	•	1.0	00 1	.00	1.00	8
weighte	d avg	1	.00	1.00	1.00	8

Sentence: oakland to philadelphia True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

	precisi	on i	recall	f1-s	core	supp	ort
1 2	1.0 1.0		1.00 1.00		00 00	2 1	
accura macro weighted	avg	1.00		1.0 .00 1.00	00 1.0 1.0	-	3

Sentence: what are your flights from denver to baltimore

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	1	1.0	0	1.0	0	1.0	00		2	
	2	1.0	0	1.0	0	1.0	00		2	
	3	1.0	0	1.0	0	1.0	00		1	
	5	1.0	0	1.0	0	1.0	00		1	
	6	1.0	0	1.0	0	1.0	00		1	
	8	1.0	0	1.0	0	1.0	00		1	
acc	curac	у				1.0	0	3	3	
mad	cro a	vg	1.0	00	1.	00	1.	00		8
weigh	nted a	avg	1	.00	1	.00	1	.00		8

Sentence: list all flights from baltimore to philadelphia True tags: VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-s	core	supp	ort
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	00	2	
3	1.0	00	1.00	1.0	00	1	
4	1.0	00	1.00	1.0	00	1	
5	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	00	7	
macro	avg	1.00	0 1	.00	1.0	0	7
weighted	d avg	1.0	00	1.00	1.0	00	7

Sentence: what flights are available from boston to dallas True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN

Predicted tags: PRON NOUN AUX ADJ ADP PROPN ADP PROPN

Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	) 1.	00	2	
2	1	.00	1.00	) 1.	00	2	
3	1	.00	1.00	) 1.	00	1	
5	1	.00	0.00	0.	00	1	
6	0	.00	1.00	0.	00	0	
7	1	.00	1.00	) 1.	00	1	
8	1	.00	1.00	) 1.	00	1	
accur	acy			0.8	88	8	
macro	avg	3.0	36	0.86	0.7	'1	8
veighte	d avg	1.	.00	0.88	0.	88	8

Sentence: i would like to see all flights from denver to philadelphia

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP

PROPN

## Classification Report:

	preci	sion	recal	I f1-s	core	supp	ort
1	1	.00	1.00	1.	00	2	
2	1	.00	1.00	1.	00	2	
3	1	.00	1.00	1.	00	1	
4	1	.00	1.00	1.	00	2	
5	1	.00	1.00	1.	00	1	
6	1	.00	1.00	1.	00	1	
8	1	.00	1.00	1.	00	1	
12	2	1.00	1.00	) 1	.00	1	
accur	acy			1.0	00	11	
macro	avg	1.	00	1.00	1.0	00	11
weighted	d avg	1	.00	1.00	1.	00	11

Sentence: atlanta to pittsburgh True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 1.00 1 accuracy 1.00 3 macro avg 1.00 1.00 1.00 3 weighted avg 1.00 1.00 1.00

Sentence: give me a flight from baltimore to newark that arrives as early as possible True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP ADV ADP ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP ADJ ADP NUM

	precis	sion	recall	f1-scc	re supp	oort
1	1.	00	1.00	1.00	) 2	
2	1.	00	1.00	1.00	) 5	
3	1.	00	1.00	1.00	) 1	
4	1.	00	1.00	1.00	) 2	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
7	0.	00	0.00	0.00	) 1	
9	0.	00	1.00	0.00	0 (	
11	1 1	.00	0.00	0.0	0 1	
accur	acy			0.86	14	
macro	•	0.7	78 0	.78	0.67	14
weighted	•	0.	93	0.86	0.86	14

Sentence: what flights are there between atlanta and denver

True tags: DET NOUN VERB PRON ADP PROPN CCONJ PROPN Predicted tags: PRON NOUN AUX PRON ADP PROPN CCONJ PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore s	uppo	rt
1	1.	00	1.00	1.00	)	2	
2		00	1.00	1.0		1	
3	1.	00	1.00	1.0	)	1	
4	1.	00	0.00	0.0	)	1	
5	1.	00	0.00	0.0	)	1	
6	0.	50	1.00	0.6	7	1	
8	0.	00	1.00	0.0	)	0	
10	) 1	.00	1.00	1.0	0	1	
accur	асу			0.75	5	8	
macro	avg	0.8	1 0	.75	0.58		8
weighted	d avg	0.9	94 (	0.75	0.71		8

Sentence: i need a flight from phoenix to atlanta

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n rec	all f	1-scoı	e sup	port
1	1.00	) 1.0	00	1.00	2	
2	1.00	) 1.0	00	1.00	2	
3	1.00	) 1.0	00	1.00	1	
4	1.00	) 1.0	00	1.00	1	
5	1.00	) 1.0	00	1.00	1	
6	1.00	) 1.0	00	1.00	1	
accur	acy			1.00	8	
macro	avg	1.00	1.0	00	1.00	8
weighted	d avg	1.00	1.	.00	1.00	8

Sentence: i want to fly from atlanta to philadelphia

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB PART VERB ADP PROPN ADP PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
12	1.00	1.00	1.00	1
accuracy	y		1.00	8

macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: also give me a list of flights between oakland and boston

True tags: ADV VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN

Classification Report:

0.0000		vopo.	••			
	precis	sion	recal	f1-sco	re sup	port
1	1.	00	1.00	1.00	) 2	
2	1.	00	1.00	1.00	2	
3	1.	00	1.00	1.00	) 2	
4	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	0.	50	1.00	0.67	7 1	
10	) 1	.00	1.00	1.0	0 1	
11	1	.00	0.00	0.0	0 1	
accur	асу			0.91	11	
macro	avg	0.9	4 (	0.88	0.83	11
weighted	d avg	0.9	95	0.91	0.88	11

Average Loss: 0.2058 Average Accuracy: 93.77 %

Sentence: what are the coach flights between dallas and baltimore leaving august

tenth and returning august <unk>

True tags: PRON AUX DET NOUN NOUN ADP PROPN CCONJ PROPN VERB

NOUN ADJ CCONJ VERB NOUN NUM

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN CCONJ PROPN

CCONJ NOUN NOUN CCONJ PROPN NOUN ADJ

Classification Report:

ort	supp	f1-score	ecall	ion r	precisi	
	2	0.80	.00	67 <sup>-</sup>	0.6	1
	1	1.00	.00	00 ′	1.0	2
	4	0.89	.00	80 ′	3.0	3
	2	0.00	.00	00 (	1.0	4
	1	1.00	.00	00	1.0	5
	1	1.00	.00	00	1.0	6
	1	0.00	.00	00 (	0.0	7
	1	1.00	.00	00 ′	1.0	8
	1	0.00	.00	00 (	1.0	9
	2	0.80	1.00	.67	0.	10
	16	0.75			асу	accura
16	5	.70 0.6	0	0.81	avg	macro
16	67	0.75 0.	) (	0.80	l avg	weighted
	2 1 1 1 1 2 16	0.00 1.00 1.00 0.00 1.00 0.00 0.80 0.75	.00 .00 .00 .00 .00 .00	00 (00 00 00 00 00 00 00 00 00 00 00 00	1.0 1.0 0.0 1.0 1.0 0. acy avg	4 5 6 7 8 9 10 accura macro

Sentence: i want a flight from nashville to seattle that arrives no later than 3 pm

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB DET

ADJ ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB

VERB ADJ ADP NOUN NOUN Classification Report:

	precis	ion ı	recall	f1-scc	ore su	pport
1	1.0	00	1.00	1.00	) 2	2
2	1.0	00	1.00	1.00	) 4	1
3	0.0	67	1.00	0.80	) 2	2
4	0.0	67	1.00	0.80	) 2	2
5	1.0	00	0.50	0.67	7 2	2
6	1.0	00	1.00	1.00	) 1	1
7	1.0	00	1.00	1.00	) 1	l
9	1.0	00	0.00	0.00	) 1	1
accur	acy			0.87	' 1	5
macro	avg	0.92	2 0	.81	0.78	15
weighted	d avg	0.9	1 (	0.87	0.84	15

Sentence: i need a flight leaving kansas city to chicago leaving next wednesday and returning the following day

True tags: PRON VERB DET NOUN VERB PROPN PROPN ADP PROPN VERB ADJ NOUN CCONJ VERB DET VERB NOUN

Predicted tags: PRON VERB DET NOUN VERB PROPN PROPN ADP PROPN VERB NOUN NOUN VERB PROPN DET PROPN PROPN

Classification Report:

pr	ecision	recall	f1-score	suppo	ort
1	0.50	1.00	0.67	3	
2	1.00	1.00	1.00	1	
3	0.67	0.67	0.67	3	
4	0.75	0.60	0.67	5	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
10	1.00	0.00	0.00	1	
accurac			0.71	17	
macro av	•		.66 0.6 0.71 0.	62 67	17 17

Sentence: explain meal codes <unk> <unk> True tags: VERB NOUN NOUN PROPN PROPN Predicted tags: NOUN VERB VERB VERB VERB

р	recision	recall	f1-score	support
1	1.00	0.00	0.00	2.0
3	0.00	0.00	0.00	2.0

4 0.00 0.00 0.00 1.0

accuracy 0.00 5.0 macro avg 0.33 0.00 0.00 5.0 weighted avg 0.40 0.00 0.00 5.0

Sentence: show me all flights from atlanta to san francisco which leave the day after

tomorrow after 5 <unk> pm

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PRON VERB DET NOUN ADP NOUN ADP NUM ADV NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN DET

VERB DET ADJ ADP NOUN ADP NUM ADJ NOUN

Classification Report:

		•			
	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	4	
3	1.00	0.75	0.86	4	
4	1.00	1.00	1.00	2	
5	0.67	1.00	0.80	2	
6	1.00	0.50	0.67	2	
7	0.00	1.00	0.00	0	
9	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accura	асу		0.84	19	
macro	avg 0	.85 0	.81 0.7	70	19
weighted	lavg (	0.96 (	0.84 0.	86	19

Sentence: i need a flight from toronto to montreal reaching montreal early on friday True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN VERB PROPN ADJ ADP NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN NUM ADP NOUN

	precis	ion	recal	f1-so	core	supp	ort
1	0.	75	1.00	3.0	36	3	
2	1.	00	1.00	1.0	00	3	
3	1.	00	1.00	1.0	00	2	
4	1.	00	0.50	0.6	67	2	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
7	1.	00	0.00	0.0	00	1	
9	0.	00	1.00	0.0	00	0	
accur	асу			0.8	5	13	
macro	avg	3.0	34 (	0.81	0.69	9	13
weighted	d avg	0.	94	0.85	3.0	34	13

Sentence: are there any flights from new york to montreal canada leaving on thursday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN

Classification Report:

Ciaconic	auoni	(Opo				
	precis	ion	recall	f1-sco	ore sup	port
4	4 (	20	1 00	1.00	<b>.</b> 1	
1	1.0	00	1.00	1.00		
2	1.0	00	1.00	1.00	) 3	}
3	1.0	00	1.00	1.00	) 2	)
4	1.0	00	1.00	1.00	) 2	)
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
accur	асу			1.00	) 13	}
macro	avg	1.0	00 1	.00	1.00	13
weighted	d avg	1.	.00	1.00	1.00	13

Sentence: show me ground transportation in philadelphia on monday morning True tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP NOUN NOUN Classification Report:

	precisio	n red	call f1	-score	suppo	ort
1	1.00			1.00	1	
2				1.00	2	
3	1.00	) 1.	00	1.00	4	
4	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
accur	acy			1.00	9	
macro weighted	•	1.00 1.00	1.00 1.0		00 00	9 9

Sentence: find a flight from toronto to san diego with a layover in dc on delta airlines True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	6
2	1.00	1.00	1.00	5
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	2

accuracy		1.0	0 16	3
macro avg	1.00	1.00	1.00	16
weighted avg	1.00	1.00	1.00	16

Sentence: what is restriction ap80
True tags: PRON AUX NOUN PROPN
Predicted tags: PRON AUX NOUN PROPN

Classification Report:

	precisi	on red	call f1-s	score s	upport
1	1.0	0 1.	00 1	.00	1
3	1.0	0 1.	00 1	.00	1
6	1.0	0 1.	00 1	.00	1
8	1.0	0 1.	00 1	.00	1
accur	acy		1.	.00	4
macro	avg	1.00	1.00	1.00	4
weighted	d avg	1.00	1.00	1.00	) 4

Sentence: list the arizona airport

True tags: VERB DET PROPN PROPN Predicted tags: VERB DET NOUN NOUN

Classification Report:

	precisi	on re	call 1	1-sco	re sup	port
1	1.0	0 0	.00	0.00	2	
3			.00	0.00		
4	1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	1	
accur	acy			0.50	4	
macro	avg	0.75	0.7	75	0.50	4
weighted	d avg	1.00	0.	.50	0.50	4

Sentence: what are the nonstop flights on america west or southwest air from kansas city to burbank on saturday may twenty two

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN CCONJ PROPN PROPN ADP PROPN ADP PROPN ADP NOUN NOUN NUM NUM Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN VERB PROPN PROPN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ VERB Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	7
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	4
4	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	0.00	1.00	0.00	0

21
21

Sentence: what times does the late afternoon flight leave from washington for denver

True tags: DET NOUN AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP

**PROPN** 

Predicted tags: PRON NOUN AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP

PROPN

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	1.0	0 1.	.00	1.00	) 2	
2	1.0	0 1.	.00	1.00	) 2	
3	1.0	0 1.	.00	1.00	3	
4	1.0	0 1.	.00	1.00	) 1	
5	1.0	0 0.	50	0.67	7 2	
6	0.0	0 1.	.00	0.00	0	
7	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 1.	.00	1.00	) 1	
accur	асу			0.92	12	
macro	avg	0.88	0.	94	0.83	12
weighted	d avg	1.00	C	).92	0.94	12

Sentence: what does the meal code s stand for

True tags: PRON AUX DET NOUN NOUN PROPN VERB ADP Predicted tags: PRON AUX DET NOUN NOUN PROPN VERB ADP

Classification Report:

	precisi	on re	call	f1-sc	ore su	ıpport
1	1.0	00 1.	.00	1.00	)	1
2	1.0	00 1.	.00	1.00	)	1
3	1.0	00 1.	.00	1.00	)	2
4	1.0	00 1.	.00	1.00	)	1
5	1.0	00 1.	.00	1.00	)	1
6	1.0	00 1.	.00	1.00	)	1
8	1.0	00 1.	.00	1.00	)	1
accur	acy			1.00	) (	3
macro	avg	1.00	1	.00	1.00	8
weighte	d avg	1.00	•	1.00	1.00	8

Sentence: is there ground transportation from the memphis airport into town when if i arrive at <unk> in the morning

True tags: VERB PRON NOUN NOUN ADP DET PROPN PROPN ADP PROPN

ADV ADP PRON VERB ADP NUM ADP DET NOUN

Predicted tags: VERB PRON NOUN NOUN ADP DET PROPN PROPN ADP PROPN

PROPN PROPN PRON VERB ADP PROPN ADP DET NOUN

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	0.5	0 1	.00	0.67	3	
2	1.0	0 0	.80	0.89	5	
3	1.0	0 1.	.00	1.00	) 3	
4	1.0	0 1.	.00	1.00	) 2	
5	1.0	0 1.	.00	1.00	) 2	
6	1.0	0 1.	.00	1.00	2	
9	1.0	0 0	.00	0.00	) 1	
11	1.0	0 0	.00	0.0	) 1	
accura	асу			0.84	19	
macro	avg	0.94	0.	72	0.69	19
weighted	d avg	0.92	C	).84	0.81	19

Sentence: what flights between dfw and oakland arrive in oakland between <unk> am and <unk> pm

True tags: DET NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN ADP NUM NOUN CCONJ NUM NOUN

Predicted tags: PRON NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN ADP PROPN NOUN CCONJ CCONJ NOUN

Classification Report:

	precision		recall	f1-sc	ore su	pport
1	0.	75	1.00	0.8	6 3	3
2	1.	00	1.00	1.0	0 3	3
3	1.	00	1.00	1.0	0 3	3
4	1.	00	1.00	1.0	0 ′	1
5	1.	00	0.00	0.0	0 ′	1
6	0.	00	1.00	0.0	0 (	)
9	1.	00	0.00	0.0	0 2	2
10	0	.67	1.00	9.0	80	2
accur	асу			0.80	) 1	5
macro	avg	0.8	0 (	).75	0.58	15
weighte	d avg	0.9	91	0.80	0.74	15

Sentence: what are the flights on mondays that travel from charlotte north carolina to phoenix arizona

True tags: PRON AUX DET NOUN ADP PROPN ADP VERB ADP PROPN ADV PROPN ADP PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN VERB ADP PROPN

PROPN PROPN ADP PROPN PROPN

Classification Report:

1	0.71	1.	00	0.83	3	5	
2	1.00	0.	75	0.80	3	4	
3	1.00	1.	00	1.00	)	1	
4	1.00	1.	00	1.00	)	1	
5	1.00	1.	00	1.00	)	1	
6	1.00	1.	00	1.00	)	1	
8	1.00	1.	00	1.00	)	1	
11	1.00	0.	.00	0.0	0	1	
accuracy	/			0.87	7	15	
macro av	′g	0.96	0.	84	0.84		15
weighted a	vg	0.90	C	.87	0.84	Ļ	15

Sentence: what kind of ground transportation is there in washington dc

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN PROPN Predicted tags: PRON NOUN ADP NOUN NOUN AUX PRON ADP PROPN PROPN Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1	.00	1.00	2	
2	1.0	0 1	.00	1.00	2	
3	1.0	0 1	.00	1.00	3	
4	1.0	0 0	.00	0.00	1	
5	1.0	0 0	.00	0.00	1	
6	0.5	0 1	.00	0.67	1	
8	0.0	0 1	.00	0.00	0	
00011	001			0.00	10	
accura macro weighted	avg	0.79 0.95	_	0.80 .71 0.80	10 0.52 0.77	10 10

Sentence: in economy class from dallas to baltimore arriving july seventh i <unk> like to know what <unk> the cheapest ticket possible

True tags: ADP NOUN NOUN ADP PROPN ADP PROPN VERB NOUN ADJ PRON AUX VERB PART VERB PRON AUX DET ADJ NOUN ADJ

Predicted tags: ADP NOUN NOUN ADP PROPN ADP PROPN VERB NOUN ADJ PRON AUX ADP ADP VERB DET AUX DET ADJ ADJ

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.60	1.00	0.75	3
3	1.00	0.75	0.86	4
4	1.00	0.67	0.80	3
5	0.50	1.00	0.67	1
6	1.00	0.50	0.67	2
7	0.75	1.00	0.86	3
8	1.00	1.00	1.00	2
12	2 1.00	0.00	0.00	1

accuracy		0.8	1 21	
macro avg	0.87	0.77	0.73	21
weighted avg	0.88	0.81	0.79	21

Sentence: show flights from baltimore to san francisco between 6 pm and 8 pm on friday

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN CCONJ NUM NOUN ADP NOUN

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN CCONJ CCONJ NOUN ADP NOUN

Classification Report:

0.0000	J	vpo.	••				
	precisi	on	recal	l f1-s	core	supp	ort
4	4.6		4 00		00	•	
1	1.0	)()	1.00	1.	00	3	
2	1.0	00	1.00	1.	00	4	
3	1.0	00	1.00	1.	00	4	
4	1.0	00	1.00	1.	00	1	
9	1.0	00	0.50	0.	67	2	
10	0.	50	1.00	0	.67	1	
						4-	
accur	acy			0.9	93	15	
macro	avg	0.9	2 (	0.92	0.8	9	15
weighte	d avg	0.	97	0.93	0.9	93	15

Sentence: what meals are available on dl <unk> which <unk> arrives in san

francisco at <unk> am

True tags: DET NOUN AUX ADJ ADP PROPN NUM DET PROPN VERB ADP PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN AUX ADJ ADP NOUN PROPN ADJ ADJ ADJ ADP PROPN PROPN ADP PROPN NOUN

Classification Report:

	precis	sion	recall	f1-sc	ore su	pport
1		50	0.50	0.5	_	4
2	1.	00	1.00	1.0	0 ;	3
3	0.	67	1.00	0.8	0 :	2
4	1.	00	0.00	0.0	0	1
5	1.	00	0.00	0.0	0 2	2
6	0.	00	1.00	0.0	0 (	0
7	0.	25	1.00	0.4	0	1
8	1.	00	1.00	1.0	0	1
9	1.	00	0.00	0.0	0 :	2
accur	асу			0.56	5 1	
macro weighte	•	0.7 0.	'1 ( 79	0.61 0.56	0.41 0.50	16 16
9	9					

Sentence: i want to fly from kansas city to chicago next wednesday arriving in the evening and returning the next day

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ NOUN VERB ADP DET NOUN CCONJ VERB DET ADJ NOUN Predicted tags: PRON VERB VERB VERB ADP PROPN PROPN ADP PROPN NOUN NOUN VERB ADP DET NOUN CCONJ PROPN DET ADJ ADJ

Classification Report:

	precis	ion	recall	f1-sco	re supp	port
1	0.	75	1.00	0.86	3	
2	_	00	1.00	1.00		
3	0.	67	0.67	0.67	3	
4	0.	75	0.75	0.75	5 4	
5	1.	00	1.00	1.00	2	
6	1.	00	1.00	1.00	1	
7	0.	50	0.50	0.50	2	
10	) 1	.00	1.00	1.0	0 1	
12	2 1	.00	0.00	0.0	0 1	
				0.00	00	
accura	•			0.80	20	00
macro	_	8.0		).77	0.75	20
weighted	d avg	0.	81	0.80	0.78	20

Sentence: please book for me a flight on twa from washington dc to san francisco earliest possible time

True tags: INTJ VERB ADP PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN ADV ADJ NOUN

Predicted tags: VERB VERB ADP DET DET NOUN ADP PROPN ADP PROPN PROPN PROPN CCONJ ADJ NOUN

Classification Report:

р	recision	recall	f1-score	suppo	rt
1	1.00	1.00	1.00	5	
2	1.00	1.00	1.00	4	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	1	
5	0.50	1.00	0.67	1	
6	1.00	0.00	0.00	1	
7	1.00	1.00	1.00	1	
10	0.00	1.00	0.00	0	
11	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accurac macro a weighted a	vg 0.8		0.82 .70 0.5 0.82 0.	17 3 78	17 17

Sentence: is there a red eye flight from san jose to nashville on wednesday the nineteenth of may

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ ADP NOUN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ ADP NUM

Classification Report:

	precision	on re	call	f1-sc	ore su	pport
1	1.0	0 1.	.00	1.00	) ;	3
2	1.0	0 1.	.00	1.00	) 4	1
3	0.7	5 0	.75	0.7	5 4	1
4	1.0	0 1.	.00	1.00	) ,	1
5	1.0	0 1.	.00	1.00	) 2	2
6	1.0	0 1.	.00	1.00	) ,	1
7	1.0	0 0	.50	0.6	7 2	2
9	0.0	0 1	.00	0.00	) (	)
accura	асу			0.88	3 1 <sup>-</sup>	7
macro	avg	0.84	0	.91	0.80	17
weighted	l avg	0.94	(	0.88	0.90	17

Sentence: i <unk> like to arrange for two friends to fly into los angeles next saturday evening one of the people is coming from kansas city and the other is coming from las vegas

True tags: PRON AUX VERB PART VERB ADP NUM NOUN PART VERB ADP PROPN PROPN ADJ NOUN NOUN NUM ADP DET NOUN AUX VERB ADP PROPN PROPN CCONJ DET ADJ AUX VERB ADP PROPN PROPN PROPN PROPN PROPN AUX VERB ADP VERB ADP VERB ADP VERB ADP VERB ADP PROPN PROPN NOUN NOUN NOUN ADJ ADP DET NOUN VERB ADJ ADP PROPN PROPN CCONJ DET ADJ AUX PROPN ADP PROPN PROPN Classification Report:

Classilic	auoni	(choi	ι.			
	precis	sion	recall	f1-score	supp	ort
1	0.	86	1.00	0.92	6	
2	0.	71	1.00	0.83	5	
3	0.	75	0.75	0.75	4	
4	0.	50	0.60	0.55	5	
5	1.	00	1.00	1.00	2	
6	1.	00	1.00	1.00	1	
7	0.	33	0.50	0.40	2	
8	1.	00	0.67	0.80	3	
9	1.	00	0.00	0.00	2	
10	) 1	.00	1.00	1.00	1	
12	2 1	.00	0.00	0.00	2	
accura macro	avg	0.83			33 66	33
weighted	a avg	0.7	'δ (	0.73 0	.69	33

Sentence: what is restriction ap <unk>

True tags: PRON AUX NOUN PROPN NUM

Predicted tags: PRON AUX NOUN PROPN PROPN

р	recision	recall	f1-score	suppo	ort
1	0.50	1.00	0.67	1	
3	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
accurac	cy		0.80	5	
macro a	vg 0.	90 0	.80 0.	73	5
weighted a	avg 0	.90	0.80	.73	5

Sentence: what is restriction ap 80

True tags: PRON AUX NOUN PROPN NUM Predicted tags: PRON AUX NOUN PROPN VERB

Classification Report:

	precision	on re	call	t1-scc	re su	oport
1	1.0	0 1.	.00	1.00	) 1	
3	1.0	0 1.	.00	1.00	) 1	
4	0.0	0 1.	.00	0.00	) (	)
6	1.0	0 1.	.00	1.00	) 1	
8	1.0	0 1.	.00	1.00	) 1	
9	1.0	0 0.	.00	0.00	) 1	
accur	acy			0.80	5	
macro	avg	0.83	0	.83	0.67	5
weighted	d avg	1.00	(	08.0	0.80	5

Sentence: show me all flights from philadelphia to san francisco with one stop in dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP

NUM NOUN ADP PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 4 2 1.00 1.00 1.00 4 3 1.00 2 1.00 1.00 4 1 1.00 1.00 1.00 5 1.00 1.00 1 1.00 6 1.00 1.00 1.00 1 9 1.00 1.00 1.00 1 1.00 14 accuracy 1.00 macro avg 1.00 1.00 14 weighted avg 1.00 1.00 1.00 14 Sentence: show me the flights from miami to san diego with one stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM

NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP PROPN

Classification Report:

0.0000		upu				
	precis	sion	recall	f1-sco	ore supp	ort
1	1.	.00	1.00	1.00	) 4	
2	1.	.00	1.00	1.00	) 4	
3	1.	.00	1.00	1.00	2	
4	1.	.00	1.00	1.00	) 1	
5	1.	.00	1.00	1.00	) 1	
6	1.	.00	1.00	1.00	) 1	
9	1.	.00	1.00	1.00	) 1	
accur	асу			1.00	14	
macro weighted	•	1.0 1.		.00 1.00	1.00 1.00	14 14
•	_					

Sentence: do you have a flight from atlanta to charlotte north carolina next monday True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN ADV PROPN ADJ NOUN

Predicted tags: PRON PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN PROPN ADJ NOUN

Classification Report:

precision recall f1-score support

	p. 00.	0.011	ooan		no cap	, , , ,
1	0	.75	1.00	0.86	3	
2	1	.00	1.00	1.00	) 2	
3	1	.00	1.00	1.00	) 2	
4	1	.00	1.00	1.00	) 1	
5	1	.00	1.00	1.00	) 1	
6	0	.50	1.00	0.67	7 1	
7	1	.00	1.00	1.00	) 1	
8	1	.00	0.00	0.00	) 1	
11	1 1	1.00	0.00	0.0	0 1	
accur	acy			0.85	13	
macro	avg	0.92		.78	0.72	13
weighte	d avg	0.9	0 (	0.85	0.79	13

Sentence: i would like to book an early morning flight from tampa florida to charlotte north carolina on april sixth

True tags: PRON AUX VERB PART VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ

Predicted tags: PRON AUX VERB ADP VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP NOUN ADJ

Classification Report:

1	0.80	1.00	0.89	4
2	0.75	1.00	0.86	3
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	2
8	1.00	1.00	1.00	1
11	1.00	0.00	0.00	1
12	1.00	0.00	0.00	1

accuracy 0.89 19 macro avg 0.96 0.80 0.77 19 weighted avg 0.92 0.89 0.85 19

Sentence: now i <unk> like flights from philadelphia to pittsburgh leaving between 430 and 530 pm

True tags: ADV PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB ADP NUM CCONJ NUM NOUN

Predicted tags: VERB PRON AUX VERB NOUN ADP PROPN ADP PROPN VERB ADP PROPN CCONJ CCONJ NOUN

Classification Report:

pre	ecision	recall	f1-score	supp	ort
1	0.67	1.00	0.80	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	0.67	1.00	0.80	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	2	
10	0.50	1.00	0.67	1	
11	1.00	0.00	0.00	1	
accuracy	,		0.80	15	
macro av	g 0.8	B7 0	.78 0.7	<b>'</b> 0	15
weighted a	vg 0	.88	0.80 0.	72	15

Sentence: from sfo to denver

True tags: ADP PROPN ADP PROPN Predicted tags: ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 2 1 2 1.00 1.00 2 1.00 accuracy 1.00 1.00 1.00 macro avg 1.00

weighted avg 1.00 1.00 1.00 4

Sentence: what is the lowest fare from bwi to salt lake city

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

**PROPN** 

Classification Report:

	precision	n recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accur	acy		1.00	11
macro weighted	9			00 11 .00 11

Sentence: flight numbers from minneapolis to long beach on june twenty six

True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM NUM Predicted tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN ADJ ADJ

Classification Report:

	precis	ion	reca	all f	1-sc	ore	supp	ort
1 2	1.0 1.0		1.00 1.00		1.0		3 3	
3	1.0	00	1.00	0	1.0	0	3	
7	0.0	00	1.00	0	0.0	0	0	
9	1.0	00	0.0	0	0.0	0	2	
accur	•	0.0	00	0.0	0.82		11	44
macro weighted	•	0.8 1.	00	0.8	0 82	0.60		11 11

Sentence: which is the flight number for the us air flight from philadelphia to boston is it <unk> or is it <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP PROPN ADP PROPN AUX PRON NUM CCONJ AUX PRON NUM

Predicted tags: DET AUX DET NOUN NOUN ADP DET PROPN PROPN NOUN ADP

PROPN ADP PROPN VERB PRON AUX AUX AUX AUX AUX

pı	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	3
2	1 00	1 00	1 00	3

4	0.00	1.00	0.00	0	
5	0.67	1.00	0.80	2	
6	1.00	0.33	0.50	3	
8	0.33	0.67	0.44	3	
9	1.00	0.00	0.00	2	
10	1.00	0.00	0.00	1	
accuracy	/		0.71	21	
macro av	g 0.7	78 0.0	67 0.5	53	21

0.87

Sentence: how much would car rental cost in atlanta

True tags: ADV ADV AUX NOUN ADJ VERB ADP PROPN

0.71

Predicted tags: VERB AUX AUX NOUN NOUN PROPN ADP PROPN

0.69

21

Classification Report:

weighted avg

	precisi	on re	ecall	f1-sc	ore su	ipport
1	0.5	50 1	.00	0.6	7	1
2	1.0	0 1	.00	1.00	)	1
3	0.5	50 1	.00	0.6	7	1
4	0.0	0 0	.00	0.0	)	1
7	1.0	0 0	.00	0.0	)	1
8	0.5	50 1	.00	0.6	7	1
11	1.0	00 0	0.00	0.0	0	2
accura	асу			0.50	) (	3
macro	avg	0.64	0	.57	0.43	8
weighted	d avg	0.69	) (	0.50	0.37	8

Sentence: please list the prices for a rental car in pittsburgh

True tags: INTJ VERB DET NOUN ADP DET ADJ NOUN ADP PROPN

Predicted tags: VERB VERB DET NOUN ADP DET NOUN NOUN ADP PROPN

Classification Report:

	precision			ll f1-s	core	supp	ort
1	1	.00	1.00	1.	.00	1	
2	. 1	.00	1.00	1.	.00	2	
3	0	.67	1.00	0.	.80	2	
4	. 0	.50	1.00	0.	.67	1	
5	1	.00	1.00	1.00		2	
7	' 1	.00	0.00	0.	.00	1	
13	3 ′	1.00	0.0	0 0	.00	1	
accur	acy			0.	80	10	
macro weighte	•	0.8 0.	88 88	0.71 0.80	0.6 0.		10 10

Sentence: what does the restriction <unk> mean True tags: PRON AUX DET NOUN PROPN VERB Predicted tags: PRON AUX DET NOUN PROPN VERB

## Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.0	00	1.00	1.00	) 1	
3	1.0	00	1.00	1.00	) 1	
4	1.0	00	1.00	1.00	) 1	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
8	1.0	00	1.00	1.00	) 1	
accur	acy			1.00	6	
macro	avg	1.0	0 1	.00	1.00	6
weighted	d avg	1.0	00	1.00	1.00	6

Sentence: list nonstop flights from baltimore washington to oakland that arrive between <unk> and <unk> pm

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP NUM CCONJ NUM NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP PROPN CCONJ CCONJ NOUN

Classification Report:

		- 1					
	prec	ision	reca	II f1-	score	supp	ort
1	_	).75	1.00	) (	0.86	3	
•							
2		.00	1.00		1.00	4	
3	1	.00	1.00	) ′	1.00	3	
4	. 1	.00	1.00	) ′	1.00	2	
9	1	.00	0.00	) (	0.00	2	
10	)	0.50	1.0	0	0.67	1	
				_	. 0.7	4.5	
accur	•			_	.87	15	
macro	avg	0.8	88	0.83	0.7	<b>'</b> 5	15
weighte	d avg	0	.92	0.8	7 0.	82	15

Sentence: list all of the daily flights arriving in denver from 8 to 9 pm

True tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP NUM ADP

**NUM NOUN** 

Predicted tags: VERB DET ADP DET ADJ NOUN VERB ADP PROPN ADP PROPN

ADP NUM NOUN Classification Report:

	precision	recall	f1-score	support
1	0.50	1.00	0.67	1
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	2
7	1.00	1.00	1.00	1
9	1.00	0.50	0.67	2

accuracy		0.9	3 14	1
macro avg	0.93	0.93	0.90	14
weighted avg	0.96	0.93	0.93	14

Sentence: get flights from milwaukee to <unk>
True tags: VERB NOUN ADP PROPN ADP PROPN
Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on r	ecall	t1-sc	ore si	uppo	rt
1	1.0	00 -	1.00	1.0	0	2	
2			1.00	1.0		2	
3	1.0	00 1	1.00	1.0	0	1	
4	1.0	00 ′	1.00	1.0	0	1	
accur	acy			1.00	)	6	
macro	avg	1.00	1	.00	1.00		6
weighte	d avg	1.00	)	1.00	1.00		6

Sentence: what is the earliest flight from boston to bwi that serves a snack

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB

**DET ADJ** 

Classification Report:

precision recall f1-score support

	prodoic	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	Jan I	1 3001	с зарр	,O1 t
1	1.00	) 1.0	00	1.00	2	
2	1.00	) 1.0	00	1.00	3	
3	1.00	0.9	50	0.67	2	
4	1.00	) 1.0	00	1.00	1	
5	1.00	) 1.0	00	1.00	2	
6	1.00	) 1.0	00	1.00	1	
7	0.50	) 1.0	00	0.67	1	
8	1.00	) 1.0	00	1.00	1	
accur	асу			0.92	13	
macro	avg	0.94	0.9	4 (	0.92	13
weighted	d avg	0.96	0.9	92	0.92	13

Sentence: is bwi washington True tags: VERB PROPN PROPN Predicted tags: VERB PROPN PROPN

ŗ	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
accura	су		1.00	3

macro avg	1.00	1.00	1.00	3
weighted avg	1.00	1.00	1.00	3

Sentence: what are the cities that american airlines serves

True tags: PRON AUX DET NOUN ADP PROPN PROPN VERB

Predicted tags: PRON AUX DET NOUN PROPN PROPN VERB

Classification Report:

	precis	ion r	ecall	f1-sc	ore su	ıpport
1	0.6	67 ·	1.00	0.80	)	2
2	1.0	00 (	0.00	0.0	)	1
3	1.0	00	1.00	1.00	)	1
4	1.0	00	1.00	1.00	)	1
5	1.0	00	1.00	1.00	)	1
6	1.0	00	1.00	1.00	)	1
8	1.0	00	1.00	1.00	)	1
accur	acy			0.88	3 8	8
macro	avg	0.95	0	.86	0.83	8
weighted	d avg	0.9	2 (	38.0	0.82	8

Sentence: which cities are serviced by both american and delta airlines

True tags: DET NOUN AUX VERB ADP DET PROPN CCONJ PROPN PROPN Predicted tags: DET NOUN VERB VERB ADP NOUN PROPN CCONJ PROPN

**PROPN** 

Classification Report:

	preci	sion	reca	all f	1-sc	ore	supp	ort
1	1	.00	1.00	О	1.0	0	3	
2	1	.00	1.00	0	1.0	0	1	
3	0	.50	1.00	0	0.6	7	1	
4	0	.50	1.00	0	0.6	7	1	
5	1	.00	0.50	0	0.6	7	2	
8	1	.00	0.0	0	0.0	0	1	
10	) ′	1.00	1.0	0	1.0	00	1	
accur	•	0.0	00	0.7	0.80		10	10
macro weighted	_	9.0 0.	90	0.7	9 80	0.7 0.7	-	10 10

Sentence: show me all the us air flights to pittsburgh between 12 and 4 in the

afternoon

True tags: VERB PRON DET DET PROPN PROPN NOUN ADP PROPN ADP NUM CCONJ NUM ADP DET NOUN

Predicted tags: VERB PRON DET DET NOUN PROPN NOUN ADP PROPN ADP

NUM CCONJ CCONJ ADP DET NOUN

Classification Report:

precision recall f1-score support 1.00 0.67 0.80 3

2	1.00	1.0	00	1.0	0	3	
3	0.67	1.0	00	0.8	0	2	
4	1.00	1.0	00	1.0	0	1	
5	1.00	1.0	00	1.0	0	3	
6	1.00	1.0	00	1.0	0	1	
9	1.00	0.5	50	0.6	7	2	
10	0.50	1.	00	0.6	67	1	
accuracy	′			0.88	3	16	
macro av	g 0	.90	0.9	90	0.8	7	16
weighted av	vg	0.93	0	.88	3.0	38	16

Sentence: what is the cost of limousine service in philadelphia True tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP NOUN NOUN ADP PROPN

Classification Report:

		- 1	-			
	pred	ision	recall	f1-sco	re sup	port
1		1.00	1.00	1.00	1	
2		1.00	1.00	1.00	2	
3	,	1.00	1.00	1.00	3	
5	,	1.00	1.00	1.00	1	
6	;	1.00	1.00	1.00	1	
8	,	1.00	1.00	1.00	1	
accur	асу			1.00	9	
macro	avg	1.	.00 1	.00	1.00	9
weighte	d avg	1 1	1.00	1.00	1.00	9

Sentence: how much does the limousine service cost within pittsburgh True tags: ADV ADV AUX DET NOUN NOUN VERB ADP PROPN Predicted tags: VERB AUX AUX DET NOUN NOUN PROPN ADJ PROPN Classification Report:

0.0000		Op 0				
	precisi	on re	call	f1-sco	re supp	ort
1	0.5	0 1	.00	0.67	1	
2	1.0	0 0	.00	0.00	1	
3	1.0	0 1.	.00	1.00	2	
4	0.0	0 0	.00	0.00	1	
5	1.0	0 1.	.00	1.00	1	
7	0.0	0 1.	.00	0.00	0	
8	0.5	0 1	.00	0.67	1	
11	1.0	0 0	.00	0.00	2	
accur	асу			0.56	9	
macro	avg	0.62	0.	.62	0.42	9
weighte	d avg	0.78	C	).56	0.48	9

Sentence: on november twenty third of this <unk> 1991 i <unk> like to fly from atlanta to denver and i <unk> like to fly on delta

True tags: ADP NOUN NUM PROPN ADP DET NOUN NUM PRON AUX VERB PART VERB ADP PROPN ADP PROPN CCONJ PRON AUX VERB PART VERB ADP PROPN

Predicted tags: ADP NOUN ADJ ADJ ADP DET ADJ VERB PRON AUX VERB VERB VERB ADP PROPN ADP PROPN CCONJ PRON AUX ADP ADP VERB ADP PROPN

Classification Report:

	prec	ision	rec	call	f1-sc	ore	supp	ort
1		1.00	0.7	75	0.8	6	4	
2	! (	0.71	1.0	00	0.8	3	5	
3	,	1.00	0.5	50	0.6	7	2	
4	. (	0.60	0.7	75	0.6	7	4	
5	,	1.00	1.0	00	1.0	0	1	
6	;	1.00	1.0	00	1.0	0	2	
7	· (	00.0	1.0	00	0.0	0	0	
8	;	1.00	1.0	00	1.0	0	2	
9		1.00	0.0	00	0.0	0	2	
10	)	1.00	1.	.00	1.0	00	1	
12	2	1.00	0.	.00	0.0	00	2	
accur	•	0	. 0.5	•	0.72		25	05
macro weighte	•		0.85 0.88		.73 ).72	0.6	70	25 25

Sentence: can you tell me the flights on october fifteenth 1991 from boston to oakland

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADJ NUM ADP PROPN ADP PROPN

Predicted tags: PRON PRON VERB PRON DET NOUN ADP PROPN VERB VERB ADP PROPN ADP PROPN

Classification Report:

			CA		
pr	ecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	1	
4	0.33	1.00	0.50	1	
5	1.00	1.00	1.00	1	
6	0.67	1.00	0.80	2	
7	1.00	0.00	0.00	1	
8	1.00	0.00	0.00	1	
9	1.00	0.00	0.00	1	
accurac	V		0.79	14	
macro av	_	39 0	.67 0.5	59	14
weighted a	9			72	14
	9				• •

Sentence: show me all united flights from denver to san francisco for september first 1991

True tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN PROPN

ADP NOUN ADJ NUM

Predicted tags: VERB PRON DET PROPN NOUN ADP PROPN ADP PROPN

PROPN ADP NOUN ADJ ADJ

Classification Report:

	precisi	on re	call	f1-sc	ore	supp	ort
1	1.0	0 1.	.00	1.0	0	4	
2	1.0	0 1.	.00	1.0	0	3	
3	1.0	0 1.	.00	1.0	0	2	
4	1.0	0 1.	.00	1.0	0	1	
5	1.0	0 1.	.00	1.0	0	1	
6	1.0	0 1.	.00	1.0	0	1	
7	0.5	0 1.	.00	0.6	7	1	
9	1.0	0 0.	.00	0.0	0	1	
accur	асу			0.9	3	14	
macro	avg	0.94	0	.88	0.83	3	14
weighted	d avg	0.96	(	0.93	0.9	90	14

Sentence: information on american airline flights from washington to philadelphia early morning times of flight

True tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADJ NOUN NOUN ADP NOUN

Predicted tags: NOUN ADP PROPN PROPN NOUN ADP PROPN ADP PROPN NUM NOUN NOUN ADP NOUN

Classification Report:

precisi	on re	call	f1-sco	re supp	oort
1.0	0 1	.00	1.00	4	
1.0	0 1	.00	1.00	4	
1.0	0 1	.00	1.00	5	
1.0	0 0	.00	0.00	1	
0.0	00 1	.00	0.00	0	
асу			0.93	14	
avg d avg	0.80 1.00	_		0.60 0.93	14 14
	1.0 1.0 1.0 1.0 0.0 acy avg	1.00 1 1.00 1 1.00 1 1.00 0 0.00 1 acy avg 0.80	1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.00 0.00 1.00 acy avg 0.80 0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 4 1.00 1.00 1.00 4 1.00 1.00 1.00 5 1.00 0.00 0.00 1 0.00 1.00 0.00 0 acy 0.93 14 avg 0.80 0.80 0.60

Sentence: please give me the flight times i would like to fly from boston to baltimore in the morning before 8

True tags: INTJ VERB PRON DET NOUN NOUN PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NUM

Predicted tags: VERB VERB PRON DET NOUN NOUN PRON AUX ADP ADP VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NUM

р	recision	recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	0.67	1.00	0.80	4	

3	1.00	1.00	1.00	3	
4	0.67	0.67	0.67	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
8	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
12	1.00	0.00	0.00	) 1	
13	1.00	0.00	0.00	) 1	
accuracy	•		0.85	20	
macro av	g 0.9	93 C	).77	0.75	20
weighted av	/g 0.	.88	0.85	0.81	20

Sentence: please list the flight times for boston to pittsburgh

True tags: INTJ VERB DET NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	prec	ision	recall	f1-sco	re supp	oort
1		.00	1.00	1.00		
2		.00	1.00	1.00		
3		.00	1.00	1.00		
4		).50	1.00	0.67		
5	1	.00	1.00	1.00	) 1	
13	3	1.00	0.00	0.0	0 1	
accur	acy			0.89	9	
macro weighted	_	0.9 0.9		.83 ).89	0.78 0.85	9 9

Sentence: show me all flights and fares from dallas to san francisco

True tags: VERB PRON DET NOUN CCONJ NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON DET NOUN VERB NOUN ADP PROPN ADP PROPN

**PROPN** 

р	precision		f1-score	suppo	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
accurac	;V		0.91	11	
macro a	_	93 (	0.86	81	11
weighted a	•	.95	0.91 0	.88	11

Sentence: please list me the flights and their cost of all airlines flying from denver to baltimore

True tags: INTJ VERB PRON DET NOUN CCONJ DET NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: VERB VERB PRON DET NOUN VERB ADJ PROPN ADP DET NOUN VERB ADP PROPN ADP PROPN

Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1	(	0.67	1.0	00	0.8	0	2	
2	•	1.00	1.0	00	1.0	0	3	
3	•	1.00	0.6	67	0.8	0	3	
4	(	0.50	1.0	00	0.6	7	2	
5	•	1.00	0.6	37	8.0	0	3	
6	•	1.00	1.0	00	1.0	0	1	
7	(	0.00	1.0	00	0.0	0	0	
10	)	1.00	0.	00	0.0	00	1	
13	3	1.00	0.	00	0.0	00	1	
accur	acy				0.7	5	16	
macro	avg	0	.80	0	.70	0.5	6	16
weighted	d avg	(	0.90	(	0.75	0.	73	16

Sentence: give me the flights and fares on december twenty seventh from indianapolis to orlando

True tags: VERB PRON DET NOUN CCONJ NOUN ADP NOUN NUM ADJ ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN VERB NOUN ADP NOUN NUM ADJ ADP PROPN ADP PROPN

Classification Report:

	recision	recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
9	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
accura	су		0.93	14	
macro a	avg 0.9	94 0.	89 0.8	35 14	
weighted	avg 0	.96 0	0.93 0.	90 1	4

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

	precision		call	f1-sco	ore	supp	ort
1	1.00	0.	.00	0.00	)	1	
6	1.00	) 1.	.00	1.00	)	1	
8	0.50	) 1.	.00	0.6	7	1	
accura	асу			0.67	7	3	
macro weighted	_	0.83 0.83	_	67 ).67	0.56		3 3

Sentence: is there ground transportation from Iga into new york city

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN

**PROPN** 

Classification Report:

		- J					
	precisio	n re	call	f1-sc	ore s	uppo	ort
1	1.00	າ 1	.00	1.0	0	4	
2			.00	1.0		2	
3	1.00	) 1.	.00	1.0	0	2	
4	1.00	0 1.	.00	1.0	0	1	
6	1.00	) 1.	.00	1.0	0	1	
accur	асу			1.0	0	10	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00		10 10

Sentence: what is <unk>

True tags: PRON AUX PROPN Predicted tags: PRON AUX AUX

Classification Report:

	precisi	on re	ecall	f1-sc	ore	supp	ort
1	1.0	0 0	.00	0.0	0	1	
6	1.0	0 1	.00	1.0	0	1	
8	0.5	0 1	.00	0.6	7	1	
accur	асу			0.6	7	3	
macro weighted	_	0.83 0.83	_	.67 ).67	0.50	_	3 3

Sentence: how far is toronto international from downtown True tags: ADV ADV AUX PROPN PROPN ADP NOUN

Predicted tags: VERB AUX AUX PROPN PROPN ADP NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1

4	0.00	1.00	0.00	0	
8	0.50	1.00	0.67	1	
11	1.00	0.00	0.00	) 2	
accuracy	,		0.71	7	
macro av	g 0.	75 0	.83	0.61	7
weighted av	a C	.93	0.71	0.67	7

Sentence: how far is los angeles international from downtown True tags: ADV ADV AUX PROPN PROPN PROPN ADP NOUN

Predicted tags: VERB AUX AUX PROPN PROPN PROPN ADP NOUN

Classification Report:

precision recall f1-score support 1.00 1.00 1 1.00 3 2 1 1.00 1.00 1.00 3 1.00 1.00 1.00 1 4 0.00 1.00 0.00 0 8 0.50 0.67 1 1.00 2 11 1.00 0.00 0.00 0.75 8 accuracy 0.61 macro avg 0.75 0.83 8 weighted avg 0.94 0.75 0.71 8

Sentence: how long does a flight from baltimore to san francisco take

True tags: ADV ADV AUX DET NOUN ADP PROPN ADP PROPN PROPN VERB Predicted tags: VERB NOUN VERB DET NOUN ADP PROPN ADP PROPN PROPN

**PROPN** 

Classification Report:

	precis	sion	recal	l f1-s	core	supp	ort
1	0.	75	1.00	0.	.86	3	
2	1.	00	1.00	1.	.00	2	
3	0.	50	1.00	0.	.67	1	
4	0.	00	0.00	0.	.00	1	
5	1.	00	1.00	1.	.00	1	
8	1.	00	0.00	0.	.00	1	
11	1	.00	0.00	0	.00	2	
accur	•	0.7	_	_	64	11	44
macro weighted	_	0.7 0.8		0.57 0.64	0.5 0.	57	11 11

Sentence: what airport in new york is closest to downtown

True tags: DET NOUN ADP PROPN PROPN AUX ADJ ADP NOUN

Predicted tags: PRON NOUN ADP PROPN PROPN VERB VERB ADP NOUN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	0.00	1.00	0.00	0
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
7	1.00	0.00	0.00	1
8	1.00	0.00	0.00	1

accuracy		0.6	7 9	
macro avg	0.75	0.62	0.38	9
weighted avg	1.00	0.67	0.67	9

Sentence: houston airports True tags: PROPN NOUN Predicted tags: ADP NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore su	upport
1	1.	00	0.00	0.0	0	1
2	0.	00	1.00	0.0	0	0
3	1.	00	1.00	1.0	0	1
accur	асу			0.50	) ;	2
macro	avg	0.6	67 O	.67	0.33	2
weighted	d avg	1.	00	0.50	0.50	2

Sentence: give me a list of airports in baltimore

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore s	suppo	ort
1	1	.00	1.00	1.0	0	1	
2		.00	1.00	1.0		2	
3	1	.00	1.00	1.0	0	2	
4	1	.00	1.00	1.0	0	1	
5	1	.00	1.00	1.0	0	1	
6	1	.00	1.00	1.0	0	1	
accur	асу			1.0	0	8	
macro	avg	1.0	0 1	.00	1.00		8
weighte	d avg	1.	00	1.00	1.00	0	8

Sentence: where does delta fly to that american does not

True tags: ADV AUX PROPN VERB PART ADP PROPN AUX ADV

Predicted tags: VERB VERB PROPN VERB ADP PROPN PROPN VERB VERB

Classification Report:

precision recall f1-score support

1	0.6	7 1.	.00	0.80	) 2	2
2	0.0	0 0	.00	0.00	) 1	
4	0.2	0 1.	.00	0.33	3 1	
8	1.0	0 0	.00	0.00	) 2	2
11	1.0	0 0	.00	0.0	<b>C</b> C	2
12	1.0	00 0	0.00	0.0	0	1
accura	су			0.33	9	
macro	avg	0.64	0.3	33	0.19	9
weighted	avg	0.73	0.	33	0.21	9

Sentence: which airline has the smallest plane leaving pittsburgh and arriving in baltimore on july fourth

True tags: DÉT NOUN VERB DET ADJ NOUN VERB PROPN CCONJ VERB ADP PROPN ADP NOUN ADJ

Predicted tags: DET NOUN VERB DET ADJ NOUN VERB PROPN VERB VERB ADP PROPN ADP NOUN ADJ

Classification Report:

	precision	recall	t1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	3	
4	0.75	1.00	0.86	3	
5	1.00	1.00	1.00	2	
7	1.00	1.00	1.00	2	
10	1.00	0.00	0.00	1	
accura	ісу		0.93	15	
macro	avg 0	.96 (	).86 0.	84	15
weighted	avg	0.95	0.93 0	.90	15

Sentence: which flight from pittsburgh to baltimore carries the smallest number of passengers

True tags: DET NOUN ADP PROPN ADP PROPN VERB DET ADJ NOUN ADP NOUN

Predicted tags: DET NOUN ADP PROPN ADP PROPN NOUN DET ADJ ADJ ADP NOUN

pre	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	0.67	0.67	0.67	3	
4	1.00	0.00	0.00	1	
5	1.00	1.00	1.00	2	
7	0.50	1.00	0.67	1	
accuracy		ne 0	0.83	12	10
macro av	g 0.8	50 U	.78 0.7	2	12

weighted avg 0.88 0.83 0.81 12

Sentence: what is the first flight from boston to stapleton airport for tomorrow True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 3 3 2 1.00 1.00 1.00 5 1.00 1 1.00 1.00 1.00 6 1.00 1.00 1 7 1 1.00 1.00 1.00 8 1.00 1.00 1.00 1 1.00 12 accuracy macro avg 1.00 1.00 1.00 12 weighted avg 1.00 1.00 1.00 12

Sentence: list all the flights that arrive at general mitchell international

True tags: VERB DET DET NOUN ADP VERB ADP PROPN PROPN Predicted tags: VERB DET DET NOUN PROPN VERB ADP PROPN PROPN PROPN

Classification Report:

	precis	ion r	ecall	f1-sco	re sup	port
1	0.	75 1	1.00	0.86	3	
2	1.0	00 0	0.50	0.67	2	
3	1.0	00 1	00.1	1.00	) 1	
4	1.0	00 1	00.1	1.00	) 2	
5	1.0	00 1	00.1	1.00	) 2	
accur	•	0.95	0	0.90 .90	10 0.90	10
macro weighte	_	0.93	_	0.90	0.89	10

Sentence: how much does it cost to go from downtown to logan airport

True tags: ADV ADV AUX PRON VERB PART VERB ADP NOUN ADP PROPN

PROPN

Predicted tags: VERB AUX AUX VERB ADP VERB ADP NOUN ADP PROPN

PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2		1.00	0.80	2
3	1 00	1 00	1 00	1

12
12

Sentence: show me flights from all airports to love field

True tags: VERB PRON NOUN ADP DET NOUN ADP PROPN PROPN Predicted tags: VERB PRON NOUN ADP DET NOUN ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore su	pport
1	1.0	00	1.00	1.00	) 2	2
2	1.0	00	1.00	1.00	) 2	2
3	1.0	00	1.00	1.00	) 2	2
4	1.0	00	1.00	1.00	) 1	1
5	1.0	00	1.00	1.00	) 1	1
6	1.0	00	1.00	1.00	) 1	1
accur	acy			1.00	9	)
macro	avg	1.00	0 1	.00	1.00	9
weighted	d avg	1.0	00 ′	1.00	1.00	9

Sentence: flights from cincinnati to <unk> departing after 718 am american True tags: NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN PROPN Predicted tags: NOUN ADP PROPN ADP PROPN VERB ADP NOUN NOUN PROPN

Classification Report:

	pre	cisio	n r	ecall	f1-s	score	supp	ort
1		1.00	)	1.00	1	.00	3	
2		1.00		1.00		.00	3	
3	3	0.67	•	1.00	0	.80	2	
4	ļ	1.00	)	1.00	1	.00	1	
9	)	1.00	)	0.00	0	.00	1	
accur	acy				0.	90	10	
macro	avg		0.93	3 (	08.0	0.7	76	10
weighte	d av	g	0.9	3	0.90	0	.86	10

Sentence: show me all flights to dallas that are less than 1500 dollars round trip True tags: VERB PRON DET NOUN ADP PROPN ADP AUX ADJ ADP NUM NOUN NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN VERB VERB ADP

NOUN NOUN NOUN

	precis	ion	recall	f1-sc	ore sup	port
1	0.9	50	1.00	0.6	7 1	
2	1.0	00	0.67	0.8	3	
3	0.0	30	1.00	0.89	9 4	
4	0.3	33	1.00	0.5	0 1	
5	1.0	00	1.00	1.0	1	
6	1.0	00	1.00	1.0	1	
7	1.0	00	0.00	0.0	1	
8	1.0	00	0.00	0.0	1	
9	1.0	00	0.00	0.0	0 1	
accur	acy			0.71	14	
macro	avg	8.0	35 0	.63	0.54	14
weighted	d avg	0.	86	0.71	0.65	14

Sentence: round trip fares from pittsburgh to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN

Classification Report:

	precis	sion	rec	all	f1-sc	ore	supp	ort
1	0.	67	1.0	0	0.8	0	2	
2	1.	.00	0.6	7	0.8	0	3	
3	0.	.80	1.0	0	0.8	9	4	
9	1.	.00	0.0	0	0.0	0	1	
accur	acy				0.8	0	10	
macro	•	0.8	87	0.	67	0.6	2	10
weighted	d avg	0	.85	0	.80	0.	76	10

Sentence: round trip fares from baltimore to philadelphia under 1000 dollars True tags: NOUN NOUN NOUN ADP PROPN ADP PROPN ADP NUM NOUN Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore su	ıpport
1	0.6	67	1.00	0.8	0	2
2	1.0	00	0.67	0.8	0	3
3	0.8	30	1.00	0.8	9	4
9	1.0	00	0.00	0.0	0	1
accura	асу			0.80	) 1	0
macro	avg	0.8	7 0	.67	0.62	10
weighted	d avg	3.0	35	0.80	0.76	10

Sentence: all flights from baltimore to philadelphia less than 1000 dollars True tags: DET NOUN ADP PROPN ADP PROPN ADJ ADP NUM NOUN

Predicted tags: DET NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

Classification Report:

	precis	sion	reca	ıll	f1-sc	ore	supp	ort
1	1.	.00	1.00	)	1.0	0	2	
2	1.	.00	1.00	)	1.0	0	3	
3	1.	.00	1.00	)	1.0	0	2	
4	0.	.00	1.00	)	0.0	0	0	
5	1.	.00	1.00	)	1.0	0	1	
7	1.	.00	0.00	)	0.0	0	1	
9	1.	.00	1.00	)	1.0	0	1	
accur	acy				0.9	0	10	
macro	avg	0.	86	0.	86	0.7	1	10
weighte	d avg	1	.00	0	.90	0.	90	10

Sentence: how many seats in a 100

True tags: ADV ADJ NOUN ADP DET PROPN

Predicted tags: VERB NOUN NOUN ADP DET NOUN

Classification Report:

	• • • • • • • • • • • • • • • • • • • •					
	precisio	n re	call	f1-scc	re su	pport
1	1.00	0.	00	0.00	) .	1
2	1.00		00	1.00	)	1
3	0.33	3 1.	00	0.50	)	1
4	0.00	<b>)</b> 1.	00	0.00	) (	C
5	1.00	) 1.	00	1.00	)	1
7	1.00	0.	00	0.00	)	1
11	1.0	0 0	.00	0.0	)	1
					_	
accura	асу			0.50	6	<b>i</b>
macro	avg	0.76	0	.57	0.36	6
weighted	d avg	0.89	(	0.50	0.42	6

Sentence: how many passengers can a boeing 737 hold True tags: ADV ADJ NOUN AUX DET PROPN NUM VERB

Predicted tags: VERB NOUN NOUN AUX DET NOUN PROPN PROPN

pre	ecision	recall	f1-score	support
1	0.00	0.00	0.00	1
3	0.33	1.00	0.50	1
4	0.00	0.00	0.00	1
5	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1
11	1.00	0.00	0.00	1
accuracy			0.38	8

macro avg	0.67	0.38	0.31	8
weighted ava	0.67	0.38	0.31	8

Sentence: what is the seating capacity of a <unk>

True tags: PRON AUX DET NOUN NOUN ADP DET PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP DET ADJ

Classification Report:

0.0.00	precis	ion r	ecall	f1-scc	ore su	ipport
1	1.	00 (	00.0	0.00	)	1
2	1.	00 1	00.1	1.00	)	1
3	1.	00 1	00.1	1.00	)	2
5	1.	00 1	00.1	1.00	)	2
6	1.	00 1	00.1	1.00	)	1
7	0.	00 1	00.1	0.00	)	0
8	1.	00 1	00.1	1.00	)	1
accur	асу			0.88	3 8	3
macro	avg	0.86	0	.86	0.71	8
weighte	•	1.00	) (	88.0	0.88	8

Sentence: what is the seating capacity for delta be1

True tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN PROPN

Classification Report:

precisi	on re	call	f1-sco	re su	pport
1.0	nn 1	00	1 00	, ,	2
1.0	0 1.	.00	1.00		1
1.0	0 1.	.00	1.00	) :	2
1.0	0 1.	.00	1.00	,	1
1.0	0 1.	.00	1.00	,	1
1.0	0 1.	.00	1.00	,	1
acy			1.00	8	3
avg	1.00	1	.00	1.00	8
d avg	1.00	•	1.00	1.00	8
	1.0 1.0 1.0 1.0 1.0 1.0 acy avg	1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1.	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

Sentence: show me the flights from indianapolis to orlando with round trip fares less than <unk>

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN NOUN ADJ ADP NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ ADP PROPN

Classification Report:

1.00

3

precision recall f1-score support

1 0.67 1.00 0.80 2
2 1.00 1.00 1.00 4

1.00

1.00

4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
accuracy			0.93	15	
macro avo	a 0.	96 0.	3.0 88.	35	15

0.93

0.96

Sentence: show me what flights are available from baltimore to dallas with economy fares

15

True tags: VERB PRON DET NOUN AUX ADJ ADP PROPN ADP PROPN ADP

0.91

NOUN NOUN

weighted avg

Predicted tags: VERB PRON DET NOUN VERB ADJ ADP PROPN ADP NOUN NOUN

Classification Report:

	precis	ion	recal	l f1-s	score	supp	ort
1	1.0	00	1.00	1	.00	2	
2	1.0	00	1.00	1	.00	3	
3	1.0	00	1.00	1	.00	3	
4	0.	50	1.00	0	.67	1	
5	1.0	00	1.00	1	.00	1	
6	1.0	00	1.00	1	.00	1	
7	1.0	00	1.00	1	.00	1	
8	1.0	00	0.00	0	.00	1	
accura	асу			0.	92	13	
macro	avg	0.9	94	88.0	3.0	33	13
weighted	d avg	0.	96	0.92	0.	90	13

Sentence: baltimore to kansas city economy
True tags: PROPN ADP PROPN PROPN NOUN
Predicted tags: PROPN ADP PROPN PROPN NOUN

Classification Report:

5 5

Sentence: economy fares new york to miami round trip

True tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN Predicted tags: NOUN NOUN PROPN PROPN ADP PROPN NOUN NOUN

	precision		call 1	f1-sco	e supp	ort
1	1.0	00 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	1	
3	1.0	0 1.	.00	1.00	4	
accur	асу			1.00	8	
macro	avg	1.00	1.0	00	1.00	8
weighted	d avg	1.00	1	.00	1.00	8

Sentence: find me all the round trip flights from burbank to milwaukee stopping in <unk> louis

True tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN VERB ADP PROPN

Predicted tags: VERB PRON DET DET NOUN NOUN NOUN ADP PROPN ADP PROPN VERB ADP PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1	1.	00	1.00	1.0	0 4	
2	1.	00	1.00	1.0	0 3	3
3	1.	00	1.00	1.0	0 3	}
4	1.	00	1.00	1.0	0 2	<u>)</u>
5	1.	00	1.00	1.0	0 2	<u>)</u>
6	1.	00	1.00	1.0	0 1	
accur	acy			1.00	) 15	5
macro	avg	1.0	0 1	.00	1.00	15
weighted	d avg	1.	00	1.00	1.00	15

Sentence: i <unk> like to find a flight from charlotte to las vegas and make a stop in <unk> louis

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

lassilication	лткерс	/I L.		
pre	ecision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	0.75	1.00	0.86	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	3
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
12	1.00	0.00	0.00	1
accuracy	,		0.95	19

macro avg	0.97	0.89	0.87	19
weighted avg	0.96	0.95	0.92	19

Sentence: can you tell me which flights go from memphis to tacoma and make a stop in los angeles

True tags: AUX PRON VERB PRON DET NOUN VERB ADP PROPN ADP PROPN CCONJ VERB DET NOUN ADP PROPN PROPN

Predicted tags: PRON PRON VERB PRON AUX NOUN VERB ADP PROPN ADP PROPN VERB VERB DET NOUN ADP PROPN PROPN

Classification Report:

			P					
	pre	cisio	n re	call	f1-sc	ore	supp	ort
1		1.00	1.	.00	1.0	00	4	
2	)	1.00	1.	.00	1.0	00	3	
3	}	1.00	1.	.00	1.0	00	2	
4		0.75	1.	.00	3.0	36	3	
5	,	1.00	0.	.50	0.6	67	2	
6	<b>;</b>	0.67	1.	.00	3.0	30	2	
8	3	0.00	0.	.00	0.0	00	1	
10	0	1.00	0 0	00.0	0.	00	1	
accur	acy				0.8	3	18	
macro	avg		0.80	0	.69	0.6	7	18
weighte	d av	g	0.87	(	0.83	0.	81	18

Sentence: is there a flight between oakland and boston with a stopover in dallas fort worth on twa

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP DET NOUN ADP PROPN PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sco	ore su	ıpport	
1	1.0	00	1.00	1.00	)	6	
2	1.0	00	1.00	1.00	)	4	
3	1.0	00	1.00	1.00	)	2	
4	1.0	00	1.00	1.00	)	1	
5	1.0	00	1.00	1.00	)	2	
6	1.0	00	1.00	1.00	)	1	
10	) 1.	.00	1.00	1.0	0	1	
accur	acy			1.00	) 1	7	
macro	avg	1.00	0 1	.00	1.00	17	
weighte	d avg	1.0	00	1.00	1.00	17	7

Sentence: show me all direct flights from san francisco to boston departing before noon

True tags: VERB PRON DET ADJ NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN ADP PROPN

VERB ADP NOUN Classification Report:

	precis	ion	recall	f1-sco	ore sup	port
1	1.0	00	1.00	1.00	) 3	
2	1.0	00	1.00	1.00	) 3	
3	0.6	37	1.00	0.80	) 2	
4	1.0	00	1.00	1.00	) 2	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
7	1.0	00	0.00	0.00	) 1	
accur	асу			0.92	13	3
macro	avg	0.9	5 0	.86	0.83	13
weighted	d avg	0.9	95 (	0.92	0.89	13

Sentence: do you have an early morning direct flight from philadelphia to pittsburgh True tags: AUX PRON VERB DET ADJ NOUN ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON PRON VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	1.0	00	1.00	1.	.00	2	
2	1.0	00	1.00	1.	.00	2	
3	0.0	67	1.00	0.	.80	2	
4	1.0	00	1.00	1.	.00	1	
5	1.0	00	1.00	1.	.00	1	
6	0.	50	1.00	0.	67	1	
7	1.0	00	0.50	0.	67	2	
8	1.0	00	0.00	0.	.00	1	
accura	асу			0.8	83	12	
macro	avg	0.9	90	0.81	0.7	77	12
weighted	d avg	0.	90	0.83	0.	80	12

Sentence: which united flights from boston to san francisco make connections True tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN VERB NOUN Predicted tags: DET PROPN NOUN ADP PROPN ADP PROPN PROPN VERB ADP Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	0.67	1.00	0.80	2
3	1.00	0.50	0.67	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

accuracy		0.9	0 10	
macro avg	0.93	0.90	0.89	10
weighted avg	0.93	0.90	0.89	10

Sentence: nonstop or connecting flights from seattle to boston True tags: NOUN CCONJ VERB NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADJ VERB NOUN ADP PROPN ADP PROPN

manall #4 annua accusa and

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	0 1	.00	1.00	) :	2
2	1.0	0 1	.00	1.00	) ;	2
3	1.0	0 1	.00	1.00	) ;	2
4	1.0	0 1	.00	1.00		1
7	0.0	0 1	.00	0.00	) (	0
10	1.0	00 C	00.0	0.0	)	1
accur	acy			0.88	8	3
macro	avg	0.83	0	.83	0.67	8
weighted	d avg	1.00	(	0.88	0.88	8

Sentence: please give me direct morning flights from pittsburgh to atlanta True tags: INTJ VERB PRON ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB VERB PRON VERB NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	proc			1000	<i>a</i> 111	11 5	0010	Ju	ppc	<i>)</i> ( )
1		1.00	)	1.0	0	1.	00	2	2	
2	) -	1.00	)	1.0	0	1.	00	2	2	
3	}	1.00	)	1.0	0	1.	00	2	2	
4		0.33	}	1.0	0	0.	50	•	1	
6	;	1.00	)	1.0	0	1.	00	•	1	
7	•	1.00	)	0.0	0	0.	00	•	1	
13	3	1.0	0	0.0	00	0	.00		1	
accur	асу					9.0	30	10	0	
macro	avg		0.9	0	0.	71	0.	64		10
weighte	d avo	9	0.9	93	C	08.0	C	.75		10

precision recall f1-score support

Sentence: list the flights that leave from philadelphia to atlanta early thursday

morning before 8 am

True tags: VERB DET NOUN ADP VERB ADP PROPN ADP PROPN ADJ NOUN

NOUN ADP NUM NOUN

Predicted tags: VERB DET NOUN PROPN VERB ADP PROPN ADP PROPN NUM NOUN NOUN ADP NUM NOUN

Classification Report:

precision recall f1-score support

1 0.67 1.00 0.80 2
2 1.00 0.75 0.86 4

3	1.00	) 1.0	00	1.0	0	4	
4	1.00	) 1.0	00	1.0	0	2	
5	1.00	) 1.0	00	1.0	0	1	
7	1.00	0.0	00	0.0	0	1	
9	0.50	) 1.0	00	0.6	7	1	
accurac	у			0.87	7	15	
macro a	vg	0.88	0.8	82	0.76		15
weighted a	avg	0.92	0	.87	0.85	5	15

Sentence: give me the flights from boston to san francisco leaving early today

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADJ

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADJ NOUN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	2	
4	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
7	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: show me the continental flights leaving chicago early saturday morning True tags: VERB PRON DET PROPN NOUN VERB PROPN ADJ NOUN NOUN Predicted tags: VERB PRON DET NOUN NOUN VERB PROPN VERB NOUN NOUN

Classification Report:

	precis	ion	reca	all f	1-sc	ore	supp	ort
1	1.0	00	0.50	0	0.6	7	2	
3	0.7	75	1.00	0	0.8	6	3	
4	0.6	37	1.00	0	8.0	0	2	
5	1.0	00	1.00	0	1.0	0	1	
6	1.0	00	1.00	0	1.0	0	1	
7	1.0	00	0.0	0	0.0	0	1	
accur	acy				0.80	)	10	
macro weighte	•	0.9	90 86	0.7	'5 80	0.7		10 10
_	_							

Sentence: which flights are leaving from kansas city to atlanta early monday morning

True tags: DET NOUN AUX VERB ADP PROPN PROPN ADP PROPN ADJ NOUN NOUN

Predicted tags: DET NOUN VERB VERB ADP PROPN PROPN ADP PROPN NUM NOUN NOUN

Classification Report:

Ciaconio	auon i	<b>5</b> P O . C.				
	precisio	n re	call	f1-sco	ore sup	port
1	1.00	1	00	1.00	) 3	
2			00	1.00		
3	1.00	0 1.	00	1.00	3	
4	0.50	) 1.	00	0.67	7 1	
5			00	1.00		
7	1.00		00	0.00		
8			00	0.00		
9	0.00	0 1.	00	0.00	0	
				0.00		
accur	•			0.83		
macro	avg	0.81	0	.75	0.58	12
weighted	d avg	0.96	(	0.83	0.81	12

Sentence: i would like to find flights from columbus to minneapolis on monday june fourteenth early in the morning or in the evening sunday june thirteenth thank you True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP NOUN NOUN ADJ ADJ ADJ ADP DET NOUN CCONJ ADP DET NOUN NOUN ADJ VERB PRON

Predicted tags: PRON AUX VERB ADP VERB NOUN ADP PROPN ADP NOUN NOUN ADJ ADJ ADJ ADD DET NOUN NUM ADP DET NOUN NOUN ADJ ADJ PRON

Classification Report:

р	recision	recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	0.83	1.00	0.91	5	
3	1.00	1.00	1.00	7	
4	1.00	0.67	0.80	3	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
7	0.75	1.00	0.86	3	
8	1.00	1.00	1.00	1	
9	0.00	1.00	0.00	0	
10	1.00	0.00	0.00	1	
12	1.00	0.00	0.00	1	
accurac macro a weighted a	vg 0.8		0.89 .79 0.6 0.89 0.	27 9 27 87 2	

Sentence: and from milwaukee to atlanta before 10 am daily

True tags: CCONJ ADP PROPN ADP PROPN ADP NUM NOUN ADJ Predicted tags: PRON ADP PROPN ADP PROPN ADP NUM NOUN ADJ

## Classification Report:

	precis	ion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	) 1.	00	2	
2	1.	00	1.00	) 1.	.00	3	
3	1.	00	1.00	) 1.	.00	1	
6	0.	00	1.00	0.	.00	0	
7	1.	00	1.00	) 1.	.00	1	
9	1.	00	1.00	) 1.	.00	1	
10	) 1	.00	0.0	0 0	.00	1	
accur	асу			0.	89	9	
macro	avg	0.8	86	0.86	0.7	'1	9
weighted	d avg	1	.00	0.89	0.	89	9

Sentence: list daily flights from denver to boston

True tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB NOUN ADP PROPN ADP PROPN

Classification Report:

pr	ecision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	0.50	1.00	0.67	1	
7	1.00	0.00	0.00	1	
accuracy	/		0.86	7	
macro av	/g 0.9	90 0	.80 0.	73	7
weighted a	vg 0	.93	0.86	.81	7

Sentence: list flights from boston to pittsburgh daily True tags: VERB NOUN ADP PROPN ADP PROPN ADJ

Predicted tags: VERB NOUN ADP PROPN ADP PROPN NUM

Classification Report:

	precision	on re	call	f1-scc	re su	pport
1	1.0	0 1.	.00	1.00	) ;	2
2	1.0	0 1.	.00	1.00	) :	2
3	1.0	0 1.	.00	1.00	)	1
4	1.0	0 1.	.00	1.00	)	1
7	1.0	0 0.	.00	0.00	)	1
9	0.0	0 1.	.00	0.00	) (	0
accur	acy			0.86	7	7
macro	avg	0.83	0	.83	0.67	7
weighted	d avg	1.00	(	0.86	0.86	7

Sentence: show me all daily flights between milwaukee and orlando True tags: VERB PRON DET ADJ NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN CCONJ PROPN Classification Report:

	precis	sion	recall	f1-sc	ore :	suppo	ort
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	1	
3	0.	50	1.00	0.6	7	1	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
7	1.	00	0.00	0.0	0	1	
10	) 1	.00	1.00	1.0	00	1	
accur	acy			0.89	9	9	
macro	avg	0.9	94 C	.88	0.83	;	9
weighted	d avg	0	.94	0.89	0.8	5	9

Sentence: list daily flights from boston to oakland using continental airlines
True tags: VERB ADJ NOUN ADP PROPN ADP PROPN VERB PROPN PROPN
Predicted tags: VERB VERB NOUN ADP PROPN ADP PROPN VERB PROPN
PROPN

Classification Report:

0.0000	G. C. C	OPO						
	precisi	on	rec	all	f1-s	core	supp	ort
1	1.0	0	1.0	0	1.0	00	4	
2	1.0	0	1.0	0	1.0	00	2	
3	1.0	0	1.0	0	1.0	00	1	
4	0.6	7	1.0	0	0.8	30	2	
7	1.0	0	0.0	0	0.0	00	1	
accur	acy				0.9	90	10	
macro	avg	0.9	93	0	.80	0.7	<b>7</b> 6	10
weighted	d avg	0	.93	(	0.90	0.	86	10

Sentence: show me the flights arriving in baltimore on june fifteenth leaving either from denver or dallas

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ VERB CCONJ ADP PROPN CCONJ PROPN

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ VERB VERB ADP PROPN CCONJ PROPN

þ	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	0.75	1.00	0.86	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1

10 1.00 0.50 0.67 2

accuracy 0.94 16 macro avg 0.97 0.94 0.94 16 weighted avg 0.95 0.94 0.93 16

Sentence: list the flights from pittsburgh to baltimore arriving on july first

True tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN VERB ADP NOUN ADJ

Classification Report:

	precis	ion re	ecall	f1-scc	ore sup	port
1	1.0	00 1	.00	1.00	) 2	
2	1.0	00 1	.00	1.00	) 3	
3	1.0	00 1	.00	1.00	) 2	
4	1.0	00 1	.00	1.00	) 2	
5	1.0	00 1	.00	1.00	) 1	
7	1.0	00 1	.00	1.00	) 1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00	1.00	11
weighte	d avg	1.00	) .	1.00	1.00	11

Sentence: show me the flights arriving on baltimore on june fourteenth True tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP NOUN ADJ Classification Report:

o.acom.c	precis	•		l f1-s	core	supp	ort
1	1.0	00	1.00	1.	00	1	
2	1.0	00	1.00	1.	00	2	
3	1.0	00	1.00	1.	00	2	
4	1.0	00	1.00	1.	00	2	
5	1.0	00	1.00	1.	00	1	
6	1.0	00	1.00	1.	00	1	
7	1.0	00	1.00	1.	00	1	
				4.0	20	40	
accur	•			1.0		10	
macro	_	1.0		1.00	1.0		10
weighte	d avg	1.	.00	1.00	1.0	00	10

Sentence: show me the cheapest flight arriving in baltimore on june fourteenth starting from dallas

True tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN ADJ VERB ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN VERB ADP PROPN ADP NOUN ADJ ADJ ADP PROPN

Classification Report:

precision recall f1-score support

```
1.00
                   1.00
                           1.00
                                    2
      1
      2
                                    3
           1.00
                   1.00
                           1.00
      3
                           1.00
                                    2
           1.00
                   1.00
      4
                                    3
           1.00
                   0.67
                           0.80
      5
                                    1
           1.00
                   1.00
                          1.00
      6
           1.00
                   1.00
                           1.00
                                    1
      7
           0.67
                   1.00
                           0.80
                                    2
  accuracy
                          0.93
                                   14
 macro avg
               0.95
                       0.95
                              0.94
                                       14
weighted avg
                0.95
                        0.93
                               0.93
                                        14
```

Sentence: how many airlines fly from new york to los angeles by way of milwaukee True tags: ADV ADJ NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP NOUN ADP PROPN

Predicted tags: VERB NOUN NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	ipport
1	1.0	00	1.00	1.0	0	5
2	1.0	00	1.00	1.0	0	4
3	0.6	37	1.00	0.8	0	2
4	0.5	50	1.00	0.6	7	1
7	1.0	00	0.00	0.0	0	1
11	1.	00	0.00	0.0	0	1
accur	acy			0.86	3 1	4
macro	avg	0.8	6 0	.67	0.58	14
weighted	d avg	0.9	92 (	0.86	0.80	14

Sentence: how many flights does two have in business class

True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN

Predicted tags: VERB NOUN NOUN AUX PROPN VERB ADP NOUN NOUN

	precis	sion	recal	l †1-sc	core	supp	ort
1	1.	00	1.00	1.0	00	1	
2	1.	00	1.00	1.0	00	1	
3	0.	75	1.00	3.0	36	3	
4	0.	50	1.00	0.6	37	1	
7	1.	00	0.00	0.0	00	1	
8	1.	00	1.00	1.0	00	1	
11	1 1	.00	0.00	0.	00	1	
accur	acy			0.7	8	9	
macro	avg	9.0	39	0.71	0.6	5	9
weighte	d avg	0	.86	0.78	0.	69	9

Sentence: how many first class flights does delta have today

True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB NOUN

Predicted tags: VERB NOUN ADJ NOUN NOUN ADJ PROPN VERB VERB

Classification Report:

	precis	sion	recall	f1-sc	ore	supp	ort
1	1.	00	1.00	1.0	0	1	
3	0.	67	0.67	0.6	7	3	
4	0.	33	1.00	0.5	0	1	
7	0.	00	0.00	0.0	0	1	
8	1.	00	0.00	0.0	0	1	
11	1	.00	0.00	0.0	00	2	
accur	acy			0.4	4	9	
macro	avg	0.6	67 C	).44	0.36	3	9
weighted	d avg	0	.70	0.44	0.3	39	9

Sentence: how many flights does twa have with business class

precision recall f1-score support

True tags: ADV ADJ NOUN AUX PROPN VERB ADP NOUN NOUN

Predicted tags: VERB NOUN NOUN AUX PROPN VERB ADP NOUN NOUN

Classification Report:

	precis	SIOIT	1608		1-366	<i>n</i>	uppo	'I L
1	1.	00	1.00	)	1.00	)	1	
2	1.	00	1.00	)	1.00	)	1	
3	0.	75	1.00	)	0.86	3	3	
4	0.	50	1.00	)	0.67	7	1	
7	1.	00	0.00	)	0.00	)	1	
8	1.	00	1.00	)	1.00	)	1	
11	1	.00	0.0	0	0.0	0	1	
accur	acy				0.78		9	
macro	_	0.8		0.7		0.65		9
weighted	d avg	0.	.86	0.7	78	0.69	)	9

Sentence: how many first class flights does united have leaving from all cities today True tags: ADV ADJ ADV NOUN NOUN AUX PROPN VERB VERB ADP DET NOUN NOUN

Predicted tags: VERB NOUN ADJ NOUN NOUN ADJ PROPN VERB VERB ADP

DET NOUN NOUN Classification Report:

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	1.00	1.00	1.00	1
3	0.80	1.00	0.89	4
4	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1
7	0.00	0.00	0.00	1
8	1.00	0.00	0.00	1

11 1.00 0.00 0.00 2

accuracy 0.69 13 macro avg 0.81 0.62 0.59 13 weighted avg 0.81 0.69 0.63 13

Sentence: what time does the tuesday morning 755 flight leaving washington arrive in san francisco

True tags: DET NOUN AUX DET NOUN NOUN NUM NOUN VERB PROPN VERB ADP PROPN

Predicted tags: PRON NOUN AUX DET NOUN NOUN PROPN NOUN VERB PROPN VERB ADP PROPN PROPN

Classification Report:

	precisio	n re	call	f1-scor	e supp	ort
1	0.75	5 1.	00	0.86	3	
2	1.00	) 1.	00	1.00	1	
3	1.00	) 1.	00	1.00	4	
4	1.00	) 1.	00	1.00	2	
5	1.00	0.	50	0.67	2	
6	0.00	) 1.	00	0.00	0	
8	1.00	) 1.	00	1.00	1	
9	1.00	0.	00	0.00	1	
accur	асу			0.86	14	
macro	avg	0.84	0	.81 (	0.69	14
weighted	d avg	0.95	(	0.86	0.85	14

Sentence: i would like the time of your earliest flight in the morning from philadelphia to washington on american airlines

True tags: PRON AUX VERB DET NOUN ADP DET ADJ NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP DET ADJ NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN

	precisi	on re	recall f1-		re supp	ort
1	1.0	00 1	.00	1.00	4	
2	1.0	00 1	.00	1.00	5	
3	1.0	00 1	.00	1.00	3	
4	1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	3	
6	1.0	00 1	.00	1.00	1	
7	1.0	00 1	.00	1.00	1	
8	1.0	00 1	.00	1.00	1	
accur	acy			1.00	19	
macro	avg	1.00	1	.00	1.00	19
weighte	d avg	1.00	•	1.00	1.00	19

Sentence: when does continental fly from philadelphia to denver on sundays True tags: ADV AUX PROPN VERB ADP PROPN ADP PROPN ADP PROPN Predicted tags: VERB VERB PROPN VERB ADP PROPN ADP PROPN

Classification Report:

	precision		recall f1-score			e sup	port
1	1	.00	1.00	)	1.00	4	
2	1	.00	1.00	)	1.00	3	}
4	0	.33	1.00	)	0.50	1	
8	1	.00	0.00	)	0.00	1	
11	1	.00	0.0	)	0.00	1	1
accur	acy			(	08.0	10	)
macro		3.0		0.60		0.50	10
weighted	d avg	0.	93	8.0	0	0.75	10

Sentence: i would like a schedule of flights from san francisco to boston on wednesday

True tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

Classification Report:

	precisio	n re	call	f1-sco	ore sup	port
1	1.00	) 1.	00	1.00	) 3	
2	1.00	) 1.	00	1.00	) 4	
3	1.00	) 1.	00	1.00	) 3	
4	1.00	) 1.	00	1.00	) 1	
5	1.00	) 1.	00	1.00	) 1	
6	1.00	) 1.	00	1.00	) 1	
8	1.00	) 1.	00	1.00	) 1	
accura	асу			1.00	14	
macro	avg	1.00	1	.00	1.00	14
weighted	l avg	1.00	•	1.00	1.00	14

Sentence: in pittsburgh i <unk> like to rent a car

True tags: ADP PROPN PRON AUX VERB PART VERB DET NOUN Predicted tags: ADP PROPN PRON AUX ADP ADP VERB DET NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	0.33	1.00	0.50	1
3	1.00	1.00	1.00	1
4	1.00	0.50	0.67	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

Sentence: is there limousine service available at baltimore airport True tags: AUX PRON NOUN NOUN ADJ ADP PROPN PROPN

Predicted tags: VERB PRON NOUN NOUN NOUN ADP PROPN PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore su	pport
1	1.	.00	1.00	1.00	) 2	2
2	. 1.	.00	1.00	1.00	) 1	
3	0.	.67	1.00	0.80	) 2	2
4	0.	.00	1.00	0.00	) (	)
6	1.	.00	1.00	1.00	) 1	
7	<b>'</b> 1.	.00	0.00	0.00	) 1	
8	3 1.	.00	0.00	0.00	) 1	
accur	acy			0.75	5 8	1
macro	avg	3.0	31 0	.71	0.54	8
weighte	d avg	0.	.92 (	0.75	0.70	8

Sentence: may i have a listing of flights from long beach california to columbus ohio on wednesday

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN PROPN ADP NOUN

Predicted tags: NOUN PRON VERB DET NOUN ADP NOUN ADP PROPN PROPN

PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	precision		recall f1-score			supp	ort
1	1.	00	1.00	1.0	00	5	
2	1.	00	1.00	1.0	00	4	
3	0.	75	1.00	0.8	36	3	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	1	
6	1.	00	1.00	1.0	00	1	
8	1.	00	0.00	0.0	00	1	
accur	acv			0.9	14	16	
macro	•	0.9	6 (	).86	0.8	_	16
weighte	_	0.9		0.94	0.9		16

Sentence: i need a ticket from nashville tennessee to seattle

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN VERB ADP PROPN

	precisi	on re	call	f1-scc	re su	pport
1	1.0	0 0.	.67	0.80	) ;	3
2	1.0	0 1.	.00	1.00	) 2	2
3	1.0	0 1.	.00	1.00	) '	1
4	0.5	50 1.	.00	0.67	, ·	1
5	1.0	0 1.	.00	1.00	) '	1
6	1.0	0 1.	.00	1.00	) ′	1
accur	acy			0.89	g	)
macro	avg	0.92	0	.94	0.91	9
weighted	d avg	0.94	(	0.89	0.90	9

Sentence: i <unk> need information please on a flight from washington dc san francisco california

True tags: PRON AUX VERB NOUN INTJ ADP DET NOUN ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX VERB NOUN VERB ADP DET NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

	precision		recall f1-score		re supp	ort
1	1.0	0 1.	00	1.00	5	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	2	
4	0.5	0 1.	00	0.67	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
13	3 1.0	0 0	.00	0.00	) 1	
accura	асу			0.93	14	
macro weighted	_	0.94 0.96	_	88 ).93	0.83 0.90	14 14

Sentence: please list any flights from oakland california to philadelphia on tuesday True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN Predicted tags: VERB VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

pre	precision		f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	0.50	1.00	0.67	1
5	1.00	1.00	1.00	1
13	1.00	0.00	0.00	1
accuracy	1		0.91	11

macro avg	0.92	0.83	0.78	11
weighted avg	0.95	0.91	0.88	11

Sentence: can you tell me which flight from dallas to baltimore has the least

expensive fare

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN VERB

DET ADJ ADJ NOUN

Predicted tags: PRON PRON VERB PRON AUX NOUN ADP PROPN ADP PROPN

VERB DET ADJ ADJ NOUN

Classification Report:

	precis	ion r	ecall	f1-sco	ore sup	port
1	1.	00 1	1.00	1.00	) 2	
2	1.	00 1	00.1	1.00	2	
3	1.	00 1	00.1	1.00	2	
4	1.	00 1	00.1	1.00	2	
5	1.	00 (	0.50	0.67	7 2	
6	0.	67 1	00.1	0.80	2	
7	1.	00 1	00.1	1.00	2	
8	0.	00 (	0.00	0.00	) 1	
accur	acy			0.87	15	
macro	avg	0.83	0	.81	0.81	15
weighte	d avg	0.89	) (	0.87	0.86	15

Sentence: of the flights available from dallas to baltimore on august third which

airline has the least expensive flight

True tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ DET NOUN VERB DET ADJ ADJ NOUN

Predicted tags: ADP DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN ADJ

ADJ NOUN ADJ DET ADJ ADJ NOUN

Classification Report:

	pred	isior	n red	call	f1-so	core	supp	ort
1		1.00	1.0	00	1.0	00	2	
2	)	1.00	1.	00	1.0	00	4	
3	}	1.00	1.	00	1.0	00	4	
4		1.00	0.	00	0.0	00	1	
5	,	1.00	0.	67	0.8	30	3	
7	•	0.67	1.	00	3.0	30	4	
accur	асу				8.0	89	18	
macro	avg	(	0.94	0	.78	0.7	77	18
weighte	d avç	)	0.93	(	0.89	0.	87	18

Sentence: what are the most expensive first class tickets between boston and san

francisco

True tags: PRON AUX DET ADJ ADJ ADV NOUN NOUN ADP PROPN CCONJ

PROPN PROPN

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN CCONJ

PROPN PROPN Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	3	
2	•	1.00	1.0	00	1.0	0	1	
3		1.00	1.0	00	1.0	0	2	
5		1.00	1.0	00	1.0	0	1	
6		1.00	1.0	00	1.0	0	1	
7	(	).67	1.0	00	0.8	0	2	
8		1.00	1.0	00	1.0	0	1	
10	)	1.00	1.	00	1.0	00	1	
11		1.00	0.	00	0.0	00	1	
accur	асу				0.9	2	13	
macro	avg	0	.96	0	.89	3.0	37	13
weighte	d avg	(	0.95	(	0.92	0.	89	13

Sentence: what are the least expensive flights from denver to atlanta True tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re sup	port
1	1.0	00 1.	.00	1.00	2	
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	1	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	2	
8	1.0	00 1.	.00	1.00	1	
accur	acy			1.00	10	
macro	avg	1.00	1	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: what <unk> the price of the least expensive first class round trip ticket on us air from cleveland to miami

True tags: PRON AUX DET NOUN ADP DET ADJ ADV NOUN NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP DET ADJ ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 4 1 2 1.00 1.00 1.00 4 3 5 1.00 1.00 1.00 2 5 1.00 1.00 1.00

6	1.00	) 1.	00	1.0	0	1	
7	0.67	1.0	00	0.8	0	2	
8	1.00	1.0	00	1.0	0	1	
11	1.00	O.	.00	0.0	0	1	
accuracy	/			0.95	5	20	
macro av	g	0.96	0.0	38	0.85		20
weighted a	vg	0.97	0	.95	0.93	3	20

Sentence: great now what i want to find out is on april twentieth from washington to denver do you have a flight least expensive fare around 5 <unk> in the morning True tags: ADJ ADV PRON PRON VERB PART VERB ADV AUX ADP NOUN ADJ ADP PROPN AUX PRON VERB DET NOUN ADJ ADJ NOUN ADP NUM ADV ADP DET NOUN

Predicted tags: VERB NOUN DET PRON VERB ADP VERB ADP VERB ADP NOUN ADJ ADP PROPN ADP PROPN CCONJ PRON VERB DET NOUN NUM ADJ NOUN ADP NUM NUM ADP DET NOUN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	0.71	1.00	0.83	5	
3	0.80	1.00	0.89	4	
4	0.60	1.00	0.75	3	
5	0.67	1.00	0.80	2	
6	1.00	0.67	0.80	3	
7	1.00	0.50	0.67	4	
8	1.00	0.00	0.00	2	
9	0.33	1.00	0.50	1	
10	0.00	1.00	0.00	0	
11	1.00	0.00	0.00	3	
12	1.00	0.00	0.00	1	
accurac macro a	vg 0.7		0.70 .68 0.5		30
weighted a	avg u	.84 (	0.70 0.	64	30

Sentence: what ground transportation is available between milwaukee airport and downtown milwaukee

True tags: DET NOUN NOUN AUX ADJ ADP PROPN CCONJ NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN CCONJ NOUN PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	3
5	1.00	0.00	0.00	1

6	0.00	1.00	0.00	0	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accuracy			0.91	11	
macro av	g 0.8	38 0.	88 0.	75	11
weighted av	/a 1	.00 0	.91 0	.91	11

Sentence: please list all the takeoffs and landings for general mitchell international True tags: INTJ VERB DET DET NOUN CCONJ NOUN ADP PROPN PROPN **PROPN** 

Predicted tags: VERB VERB DET DET ADJ VERB PROPN ADP PROPN PROPN **PROPN** 

Classification Report:

	prec	cision	red	call	f1-sc	ore	supp	ort
1		0.75	1.	00	0.8	6	3	
2		1.00	1.	00	1.0	0	1	
3		1.00	0.	00	0.0	0	2	
4	(	0.33	1.	00	0.5	0	1	
5		1.00	1.	00	1.0	0	2	
7		0.00	1.	00	0.0	0	0	
10	)	1.00	0	.00	0.0	00	1	
13	3	1.00	0	.00	0.0	00	1	
accur	acy				0.6		11	
macro	avg	(	0.76	0	.62	0.4	2	11
weighte	d avç	)	0.87	(	0.64	0.	55	11

Sentence: what ground transportation is available from la guardia airport into new york city

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN ADP PROPN PROPN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN ADP PROPN PROPN

Olabbillio		•				
	precis	ion r	ecall	f1-scc	re sup	port
	•				•	•
1	1.0	00 1	1.00	1.00	) 6	
2						
2			1.00	1.00		
3	1.0	00 1	1.00	1.00	) 2	
5	1.0	00 (	0.00	0.00	) 1	
6	0.0	nn -	1.00	0.00	0	
_						
7	1.0	00 1	1.00	1.00	) 1	
8	1.0	nn 1	1.00	1.00	) 1	
U	1.0	,0	1.00	1.00	, ,	
accur	acy			0.92	13	
macro	ava	0.86	0	.86	0.71	13
	•				_	
weighted	u avg	1.00	) (	0.92	0.92	13

Sentence: what ground transportation is available from dallas fort worth airport to

downtown dallas

True tags: DET NOUN NOUN AUX ADJ ADP PROPN PROPN PROPN PROPN ADP

NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN PROPN

PROPN ADP NOUN PROPN

Classification Report:

	precis	ion re	ecall	f1-sco	re suppo	ort
1	1.0	00 1	.00	1.00	5	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	3	
5	1.0	0 00	.00	0.00	1	
6	0.0	00 1	.00	0.00	0	
7	1.0	00 1	.00	1.00	1	
8	1.0	00 1	.00	1.00	1	
accur	acy			0.92	13	
macro	avg	0.86	0	.86	0.71	13
weighte	d avg	1.00	(	0.92	0.92	13

Sentence: ground transportation please in the city of boston between airport and downtown

True tags: NOUN NOUN INTJ ADP DET PROPN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: NOUN NOUN VERB ADP DET PROPN ADP PROPN ADP NOUN CCONJ NOUN

Classification Report:

	pre	cisio	n re	ecall	f1-sc	core	supp	ort
	•						• •	
1		1.00	1	.00	1.0	00	2	
2	<u>-</u>	1.00	1	.00	1.0	00	3	
3	3	1.00	1	.00	1.0	00	4	
4	Ļ	0.00	1	.00	0.0	00	0	
5	5	1.00	1	.00	1.0	00	1	
10	0	1.00	) ′	1.00	1.	00	1	
13	3	1.00	) (	00.0	0.	00	1	
accur	асу				0.9	2	12	
macro	_	,	0.86	_	.86	0.7	'1	12
weighte	d av	g	1.00	) (	0.92	0.	92	12

Sentence: ground san francisco True tags: NOUN PROPN PROPN Predicted tags: NOUN PROPN PROPN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 2

3 1.00 1.00 1.00 1 1.00 accuracy macro avg 1.00 1.00 1.00 3 1.00 3 weighted avg 1.00 1.00

Sentence: tell me about ground transportation at san francisco True tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN Predicted tags: VERB PRON ADP NOUN NOUN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 2 1.00 1.00 2 3 1.00 1.00 1.00 4 1 1.00 1.00 1.00 6 1.00 1.00 1.00 1 1.00 8 accuracy macro avg 1.00 1.00 1.00 8 weighted avg 1.00 1.00 1.00 8

Sentence: now show me all the flights from <unk> louis to burbank

True tags: ADV VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN PROPN DET DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precision	recall	f1-score	support	
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accur	асу		0.91	11	
macro weighted	•		.86 0.8 0.91 0.	81 11 88 11	
macro	avg 0.9		.86 0.8	31 1	

Sentence: saturday or sunday flights between milwaukee and phoenix american

airlines

True tags: NOUN CCONJ NOUN NOUN ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: NOUN VERB NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.	00	1.0	00	4	
2	1.00	1.	00	1.0	00	1	
3	1.00	1.	00	1.0	00	3	
4	0.00	1.	00	0.0	00	0	
10	1.00	0	.50	0.	67	2	
accuracy	/			0.9	0	10	
macro av	g (	08.0	0.	90	0.7	73	10
weighted a	vg	1.00	C	0.90	0	.93	10

Sentence: show me all flights from denver or philadelphia or pittsburgh to baltimore True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN CCONJ PROPN ADP PROPN

Classification Report:

	prec	ision	rec	all	f1-sco	ore	supp	ort
1		1.00	1.0	0	1.0	0	4	
2		1.00	1.0	0	1.0	0	2	
3	•	1.00	1.0	0	1.00	0	1	
4		1.00	1.0	0	1.0	0	1	
5	,	1.00	1.0	0	1.0	0	1	
6	•	1.00	1.0	0	1.0	0	1	
10	)	1.00	1.0	00	1.0	0	2	
accur	acy				1.00	)	12	
macro	avg	1.	.00	1	.00	1.0	0	12
weighte	d avg	, 1	1.00	•	1.00	1.0	00	12

Sentence: what are the flights from cleveland to indianapolis on wednesday may twelfth on either twa delta or continental

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ ADP CCONJ PROPN PROPN CCONJ PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN NOUN ADJ ADP NUM PROPN PROPN VERB PROPN

	on Kopo		£1	
pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3
4	0.00	1.00	0.00	0
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
9	0.00	1.00	0.00	0
10	1.00	0.00	0.00	2

accuracy		0.8	9 18	3
macro avg	0.80	0.90	0.70	18
weighted avg	1.00	0.89	0.89	18

Sentence: list all flights that leave from baltimore or denver or pittsburgh and arrive in

philadelphia

True tags: VERB DET NOUN ADP VERB ADP PROPN CCONJ PROPN CCONJ

PROPN CCONJ VERB ADP PROPN

Predicted tags: VERB DET NOUN PROPN VERB ADP PROPN VERB PROPN

CCONJ PROPN CCONJ CCONJ ADP PROPN

Classification Report:

	precision		recal	l f1-s	core	supp	ort
1	0	.80	1.00	0.	89	4	
2	1	.00	0.67	0.	80	3	
3	1	.00	1.00	1.	00	1	
4	0	.67	0.67	0.	67	3	
5	1	.00	1.00	1.	00	1	
10	) (	).67	0.67	7 0	.67	3	
accur	acy			0.0	30	15	
macro	avg	3.0	36	0.83	8.0	34	15
weighted	d avg	0.	81	0.80	0.	80	15

Sentence: what does the fare code y mean

True tags: PRON AUX DET NOUN NOUN VERB

Predicted tags: PRON AUX DET NOUN NOUN PROPN VERB

Classification Report:

		-				
	precision	on re	call	f1-sco	re su	ıpport
1	0.0	0 1.	.00	0.00	)	0
3	1.0		67	0.80		3
4	1.0	0 1.	.00	1.00	)	1
5	1.0	0 1.	.00	1.00		1
6	1.0		.00	1.00		1
8	1.0	0 1.	.00	1.00		1
accur	acy			0.86	-	7
macro weighted	•	0.83 1.00	_	.94 ).86	0.80 0.91	7 7

Sentence: what does fare code qw mean

True tags: PRON AUX NOUN NOUN PROPN VERB Predicted tags: PRON AUX NOUN NOUN PROPN VERB

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
4	1 00	1 00	1 00	1

6	1.00	1.0	00 1	1.00	1	
8	1.00	1.0	00 1	1.00	1	
accuracy			1	.00	6	
macro avo	)	1.00	1.00	1.	00	6
weighted av	g	1.00	1.00	) 1	.00	6

Sentence: what is fare code gw

True tags: PRON AUX NOUN NOUN PROPN Predicted tags: PRON AUX NOUN NOUN PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore si	upport
1	1.	00	1.00	1.0	0	1
3	1.	00	1.00	1.0	0	2
6	1.	00	1.00	1.0	0	1
8	1.	00	1.00	1.0	0	1
accur	асу			1.00	)	5
macro	avg	1.0	0 1	.00	1.00	5
weighte	d avg	1.0	00	1.00	1.00	5

Sentence: what does fare code <unk> mean

True tags: PRON AUX NOUN NOUN PROPN VERB Predicted tags: PRON AUX NOUN NOUN PROPN VERB

Classification Report:

	precisi	on red	call f1-	score	suppo	rt
1	1.0	0 1.	00 1	1.00	1	
3	1.0	0 1.	00 1	1.00	2	
4	1.0	0 1.	00 1	1.00	1	
6	1.0	0 1.	00 1	1.00	1	
8	1.0	0 1.	00 1	1.00	1	
accur	асу		1	.00	6	
macro weighted	_	1.00 1.00	1.00 1.00	1.0 1.0		6 6

Sentence: what does the fare code yn mean

True tags: PRON AUX DET NOUN NOUN PROPN VERB Predicted tags: PRON AUX DET NOUN NOUN PROPN VERB

precision		recall f1-score		support
1	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		1.00 7					
macro avg	1.00	1.00	1.00	7			
weighted avg	1.00	1.00	1.00	7			

Sentence: list all flights on united from san francisco to boston with fare code qx True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN NOUN PROPN

Classification Report:

	precis	ion	recal	1 11-8	score	supp	ort
1	1.0	00	1.00	1	.00	5	
2	1.0	00	1.00	1	.00	4	
3	1.0	00	1.00	1	.00	3	
4	1.0	00	1.00	1	.00	1	
5	1.0	00	1.00	1	.00	1	
accur	acy			1.	00	14	
macro	avg	1.0	0	1.00	1.0	00	14
weighted	d avg	1.	00	1.00	1.	.00	14

Sentence: what is the latest flight from boston to denver that serves a meal

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN

Classification Report:

	precisio	n recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accur	асу		1.00	13
macro weighted	•	1.00 1 1.00		00 13 .00 13

Sentence: list all flights from chicago to seattle on continental which depart on saturday and serve meals

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN PRON VERB ADP NOUN CCONJ VERB NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN DET VERB ADP NOUN CCONJ VERB NOUN

## Classification Report:

	pred	ision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	0	1.0	0	3	
2		1.00	1.0	0	1.0	0	4	
3		1.00	1.0	0	1.0	0	3	
4	•	1.00	1.0	0	1.0	0	3	
5	(	0.50	1.0	0	0.6	7	1	
6		1.00	0.0	0	0.0	0	1	
10	)	1.00	1.0	00	1.0	00	1	
accur	acy				0.9	4	16	
macro	_		93	0	.86	0.8	1	16
weighte	d avç	j C	).97	(	0.94	0.	92	16

Sentence: could you tell me what the earliest flight that goes between atlanta and denver is which serves a meal

True tags: AUX PRON VERB PRON PRON DET ADJ NOUN ADP VERB ADP PROPN CCONJ PROPN AUX PRON VERB DET NOUN

Predicted tags: PRON PRON VERB PRON DET DET ADJ NOUN PROPN VERB ADP PROPN CCONJ PROPN CCONJ ADJ NOUN DET NOUN

Classification Report:

	J						-	-  -	
1		0.67	,	1.00	)	0.80	)	2	
2	)	1.00	)	0.50	)	0.67	7	2	
3	,	0.67	•	1.00	)	0.80	)	2	
4		1.00	)	0.67	7	0.80	)	3	
5	,	0.67	•	1.00	)	0.80	)	2	
6	;	0.67	•	0.50	)	0.57	7	4	
7	,	0.50	)	1.00	)	0.67	7	1	
8	}	1.00	)	0.00	)	0.00	)	2	
10	)	0.50	C	1.0	0	0.6	7	1	
accur	acy				(	0.68		19	
macro	avg		0.74	4	0.74	4	0.64		19
weighte	d av	g	0.7	7	0.6	8	0.64		19

precision recall f1-score support

Sentence: give me the saturday morning flights with meals from chicago to minneapolis

True tags: VERB PRON DET NOUN NOUN NOUN ADP NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 1.00 1.00 3 1.00 3 1.00 1.00 1.00 4

4 1.0	0 1.0	0.0	00 1	
5 1.0	0 1.0	00 1.0	00 1	
6 1.0	00 1.0	00 1.0	00 1	
accuracy		1.0	0 12	
macro avg	1.00	1.00	1.00	12
weighted ava	1.00	1.00	1.00	12

Sentence: list flights from seattle to salt lake city on delta I10

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN ADP

PROPN PROPN Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 6 2 3 1.00 1.00 1.00 3 1.00 1.00 1.00 1 4 1.00 1.00 1.00 1 11 accuracy 1.00 macro avg 1.00 1.00 1.00 11 weighted avg 1.00 1.00 11 1.00

Sentence: show me all flights from san diego to phoenix on a boeing 737

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET

PROPN NUM

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

DET NOUN PROPN Classification Report:

	precision	on red	call f1	-score	supp	ort
1	0.7	5 0.	75	0.75	4	
2	1.0	0 1.	00	1.00	3	
3	0.5	0 1.	00	0.67	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
9	1.0	0 0.	00	0.00	1	
accur	•			0.85	13	
macro	_	0.89	0.82			13
weighte	d avg	0.88	3.0	35 0	.82	13

Sentence: what is a d9s

True tags: PRON AUX DET PROPN Predicted tags: PRON AUX DET NOUN

Classification Report:

precision recall f1-score support

Sentence: what is the earliest flight between baltimore and oakland that serves breakfast

True tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN ADP VERB NOUN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN CCONJ PROPN PROPN VERB NOUN

Classification Report:

precisi	on red	call f1-s	core su	ıpport
0.6	7 1.	00 0.	80	2
1.0	0 0.	50 0.	67	2
1.0	0 1.	00 1.	00	2
1.0	0 1.	00 1.	00	1
1.0	0 1.	00 1.	00	1
1.0	0 1.	00 1.	00	1
1.0	0 1.	00 1.	00	1
1.0	0 1.	00 1.	00	1
1.0	00 1	.00 1	.00	1
асу		0.9	92 1	2
avg	0.96	0.94	0.94	12
d avg	0.94	0.92	0.91	12
	0.6 1.0 1.0 1.0 1.0 1.0 1.0	0.67 1. 1.00 0. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1.	0.67 1.00 0. 1.00 0.50 0. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1.	0.67 1.00 0.80 1.00 0.50 0.67 1.00 20 1.00 1.00 1.00 21 1.00 1.00 1.00

Sentence: a breakfast flight from denver to san francisco please

True tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN INTJ

Predicted tags: DET NOUN NOUN ADP PROPN ADP PROPN PROPN CCONJ

pre	ecision	recall	f1-score	support
1 2 3 5 10 13	1.00 1.00 1.00 1.00 0.00 1.00	1.00 1.00 1.00 1.00 1.00 0.00	1.00 1.00 1.00 1.00 0.00 0.00	3 2 2 1 0
accuracy macro av weighted a	g 0.		0.89 .83 0.6 0.89 0.	9 87 9 89 9

Sentence: list flights between boston and san francisco that serve breakfast

True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN ADP VERB NOUN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN PROPN VERB

NOUN

Classification Report:

	precision		reca	all	t1-scc	ore	supp	ort
				_		_	_	
1		0.75	1.0	0	0.86	3	3	
2	<u> </u>	1.00	0.5	0	0.67	7	2	
3	}	1.00	1.0	0	1.00	)	2	
4	ļ	1.00	1.0	0	1.00	)	2	
10	0	1.00	1.0	00	1.0	0	1	
accur	асу				0.90	)	10	
macro	avg	0.9	95	0.	90	0.90	0	10
weighte	d avg	<b>j</b> 0	.93	0	.90	3.0	39	10

Sentence: give me all flights from boston to philadelphia next week arriving after lunch

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADJ NOUN VERB ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN DET NOUN VERB ADP NUM

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	00	2	
2	1	.00	1.00	1.	.00	3	
3	1	.00	0.67	0.	.80	3	
4	. 1	.00	1.00	1.	.00	2	
5	0	.50	1.00	0.	67	1	
6	1	.00	1.00	1.	.00	1	
7	1	.00	0.00	0.	.00	1	
9	0	.00	1.00	0.	00	0	
accur	асу			0.	85	13	
macro	avg	3.0	31	0.83	0.6	8	13
weighte	d avg	0.	96	0.85	0.	85	13

Sentence: please show me flights from pittsburgh to atlanta on wednesday morning serving breakfast

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN NOUN VERB NOUN

Predicted tags: VERB VERB PRON NOUN ADP PROPN ADP NOUN

NOUN NOUN NOUN Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 2

2	1.00	1.0	0	1.00	)	3	
3	0.80	1.0	0	0.89	9	4	
4	0.50	0.5	0	0.50	)	2	
6	1.00	1.0	0	1.00	)	1	
13	1.00	0.0	00	0.0	0	1	
accuracy	/			0.85	<u>,</u>	13	
macro av	g 0	.88.	0.7	<b>'</b> 5	0.73	,	13
weighted a	vg (	0.86	0.	85	0.8	1	13

Sentence: what is the first flight that goes from atlanta to baltimore that serves

breakfast

True tags: PRON AUX DET ADJ NOUN ADP VERB ADP PROPN ADP PROPN ADP

**VERB NOUN** 

Predicted tags: PRON AUX DET ADJ NOUN NOUN VERB ADP PROPN ADP

PROPN ADP VERB NOUN

Classification Report:

	precisi	on re	ecall	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	) 2	
2	1.0	0 0	.75	0.86	6 4	
3	0.6	§7 1	.00	0.80	2	
4	1.0	00 1	.00	1.00	2	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
7	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accur	асу			0.93	14	
macro	avg	0.96	0	.97	0.96	14
weighted	d avg	0.95	5 (	0.93	0.93	14

Sentence: which flights arrive in <unk> louis from <unk> paul on thursday morning True tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN

Predicted tags: DET NOUN VERB ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN

	precis	ion	reca	II †1	-scc	re	supp	ort
						_		
1	1.0	)()	1.00	)	1.00	)	4	
2	1.0	00	1.00	)	1.00	)	3	
3	1.0	00	1.00	)	1.00	)	3	
4	1.0	00	1.00	)	1.00	)	1	
5	1.0	00	1.00	)	1.00	)	1	
accur	acy				1.00		12	
macro	avg	1.0	00	1.00	)	1.00	)	12
weighte	d avg	1.	00	1.0	0	1.0	0	12

Sentence: i would like one flight from kansas city to <unk> paul arriving around dinnertime 6 pm

True tags: PRON AUX VERB NUM NOUN ADP PROPN PROPN ADP PROPN PROPN VERB ADP NOUN NUM NOUN

Predicted tags: PRON AUX VERB VERB NOUN ADP PROPN PROPN ADP PROPN PROPN NUM NOUN

Classification Report:

Classilic	audiiite	JOI L.			
	precision	n recall	f1-score	support	
1	0.80	1.00	0.89	4	
2		1.00	1.00	3	
3	1.00	0.67	0.80	3	
4	0.67	1.00	0.80	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
9	1.00	0.50	0.67	2	
0001111	201		0.88	16	
accura	•			_	
macro	_		3.0 88.0		
weighted	d avg	0.91	0.88 0.	87 16	3

Sentence: list flights from dallas to houston arriving sunday afternoon True tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN VERB NOUN NOUN Classification Report:

O . O . O						
	preci	sion	recall	f1-scc	ore su	pport
	-					
1	1	.00	1.00	1.00	) 2	2
2	1	.00	1.00	1.00	) 2	2
3	1	.00	1.00	1.00	) (	3
4	1	.00	1.00	1.00	) 2	2
accur	acy			1.00	9	)
macro	avg	1.0	00 1	.00	1.00	9
weighted	d avg	1.	.00	1.00	1.00	9

Sentence: list nonstop flights from baltimore washington airport to oakland that depart in the afternoon

True tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

Predicted tags: VERB NOUN NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP DET NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1

accuracy		1.0	0 14	
macro avg	1.00	1.00	1.00	14
weighted avg	1.00	1.00	1.00	14

Sentence: i need flight information on thursday leaving pittsburgh and arriving in baltimore in the morning

True tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN CCONJ VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB PROPN VERB VERB ADP PROPN ADP DET NOUN

Classification Report:

	pred	cision	n red	call	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	2	
2	<u> </u>	1.00	1.0	00	1.0	0	3	
3	3	1.00	1.0	00	1.0	0	4	
4	ļ	0.75	1.0	00	3.0	86	3	
5	5	1.00	1.0	00	1.0	0	1	
6	6	1.00	1.0	00	1.0	0	1	
10	0	1.00	0.	.00	0.	00	1	
accur	асу				0.9	3	15	
macro weighte	•		0.96 0.95	_	.86 0.93	8.0 9.0		15 15

Sentence: morning flights out of san francisco arriving boston afternoon True tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Predicted tags: NOUN NOUN ADP ADP PROPN PROPN VERB PROPN NOUN Classification Report:

	precisi	on re	call	f1-sco	re su	oport
1	1.0	0 1	.00	1.00	) 3	3
2	1.0	0 1	.00	1.00	) 2	<u>-</u>
3	1.0	0 1	.00	1.00	) 3	}
4	1.0	0 1	.00	1.00	) 1	
accur	acy			1.00	9	
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00		1.00	1.00	9

Sentence: i would like to <unk> my flight in washington dc stop in denver with the destination city of san francisco

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN VERB ADP PROPN ADP DET NOUN PROPN ADP PROPN

Predicted tags: PRON AUX VERB ADP VERB VERB NOUN ADP PROPN PROPN NUM ADP PROPN ADP DET NOUN PROPN ADP PROPN PROPN Classification Report:

precision recall f1-score support

1 1.	.00	1.00	1.00	6	
2 0.	.80	1.00	0.89	4	
3 1.	.00	1.00	1.00	2	
4 0.	.67	0.67	0.67	3	
5 1.	.00	0.50	0.67	2	
6 1.	.00	1.00	1.00	1	
8 1.	.00	1.00	1.00	1	
9 0.	.00	1.00	0.00	0	
12 1	.00	0.00	0.00	1	
accuracy			0.85	20	
macro avg	0.83	0.8	0.6	9	20
weighted avg	0.9	1 0.8	35 0.8	34	20

Sentence: show me a list of flights on july twenty second leaving dc to dallas leaving dc after 6 pm

True tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP NOUN NUM ADJ VERB

VERB ADP PROPN VERB PROPN ADP NUM NOUN

Classification Report:

	precision	on re	call	f1-sco	re supp	ort
1	1.0	0 0.	67	0.80	3	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	4	
4	0.7	5 1.	00	0.86	3	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0 1.	00	1.00	1	
9	1.0	0 1.	00	1.00	2	
accura	асу			0.95	19	
macro weighted	•	0.97 0.96	_	96 ).95	0.96 0.95	19 19

Sentence: what airlines from washington dc to columbus True tags: DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1.00 1.00 3 1 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 0.86 accuracy 0.60 7 macro avg 0.80 0.80

weighted avg 1.00 0.86 0.86 7

Sentence: list flights from washington dc to boston

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisi	on re	call f1-	score	support	
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00 ′	1.00	2	
3	1.0	0 1.	00 ′	1.00	1	
4	1.0	0 1.	00 1	1.00	1	
accur	асу		1	.00	7	
macro	avg	1.00	1.00	1.00	7	
weighted	d avg	1.00	1.00	1.0	0 7	

Sentence: could you please give me information <unk> american airlines a flight from washington dc to philadelphia the earliest one in the morning as possible True tags: AUX PRON INTJ VERB PRON NOUN VERB PROPN PROPN DET NOUN ADP PROPN ADP PROPN ADP PROPN DET ADJ PRON ADP DET NOUN ADP ADJ

Predicted tags: PRON PRON VERB VERB PRON NOUN PROPN PROPN PROPN DET NOUN ADP PROPN PROPN ADP PROPN DET ADJ ADJ ADP DET NOUN PROPN NUM

Classification Report:

	pre	cisio	n	recal	l f′	l-sco	ore	supp	ort
1		0.71		1.00		0.83	3	5	
2	)	1.00	)	0.75		0.8	6	4	
3	,	1.00	)	1.00		1.00	C	3	
4		0.50	)	0.50		0.50	<b>C</b>	2	
5	,	1.00	)	1.00		1.00	<b>C</b>	3	
6	;	0.67	•	0.67		0.6	7	3	
7	•	0.50	)	0.50		0.50	C	2	
8	}	1.00	)	0.00		0.0	C	1	
9	)	0.00	)	1.00		0.0	C	0	
13	3	1.0	O	0.00	)	0.0	0	1	
accur macro	•		0.74	4 (	0.6	0.75 4	0.5		24
weighte	d av	g	8.0	32	0.7	75	0.7	73	24

Sentence: list flights from washington dc to pittsburgh

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

1

precision recall f1-score support

1.00 1.00 1.00 3

2 1.	00 1	.00 1	.00	2
3 1.	00 1	.00 1	.00	1
4 1.	00 1	.00 1	.00	1
accuracy		1.	.00	7
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: i need a flight from washington dc to san diego

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN

**PROPN** 

Classification Report:

	precis	ion	recall	f1-sco	re supp	oort
1	1.0	00	1.00	1.00	4	
2	1.0	00	1.00	1.00	2	
3	1.0	00	1.00	1.00	1	
4	1.0	00	1.00	1.00	1	
5	1.0	00	1.00	1.00	1	
6	1.0	00	1.00	1.00	1	
accur	асу			1.00	10	
macro weighted	_	1.00 1.0		.00 1.00	1.00 1.00	10 10

Sentence: i would like to fly from boston to baltimore please tell me what are the times of the flights

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN INTJ VERB PRON PRON AUX DET NOUN ADP DET NOUN

Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN VERB VERB PRON DET AUX DET NOUN ADP DET NOUN

Classification Report:

Olacomoa	aon i topo	,, .,			
p	recision	recall f1-score		supp	ort
1	1.00	1.00	1.00	2	
2	0.75	1.00	0.86	3	
3	1.00	1.00	1.00	2	
4	0.75	1.00	0.86	3	
5	0.67	1.00	0.80	2	
6	1.00	0.67	0.80	3	
8	1.00	1.00	1.00	2	
12	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accurac	•		0.84	19	
macro a	•		.74 0.7	-	19
weighted	avg 0	.89 (	0.84 0.	80	19

Sentence: does flight dl <unk> dl <unk> from boston to denver stop in philadelphia

True tags: AUX NOUN PROPN NUM PROPN NUM ADP PROPN ADP PROPN

**VERB ADP PROPN** 

Predicted tags: PRON NOUN PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

	precisi	on	reca	II f1	-score	e sup	port
1	0.6	62	1.00	) (	0.77	5	
2	1.0	00	1.00	)	1.00	3	
3	1.0	00	1.00	)	1.00	1	
4	1.0	00	0.00	) (	0.00	1	
6	0.0	00	1.00	) (	0.00	0	
8	1.0	00	0.00	) (	0.00	1	
9	1.0	00	0.00	) (	0.00	2	
accur	acy			(	0.69	13	
macro	avg	3.0	30	0.57	0	.40	13
weighted	d avg	0.	86	0.6	9 (	0.60	13

Sentence: what kind of airplane is flight ua 281 from boston to denver

True tags: DET NOUN ADP NOUN AUX NOUN PROPN NUM ADP PROPN ADP

**PROPN** 

Predicted tags: PRON NOUN ADP NOUN VERB NOUN PROPN VERB ADP

PROPN ADP PROPN Classification Report:

i	orecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
4	0.00	1.00	0.00	0	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
8	1.00	0.00	0.00	1	
9	1.00	0.00	0.00	1	
accura	су		0.75	12	
macro a weighted	•		.62 0.3 0.75 0.	38 75	12 12
•	•				

Sentence: what is the price of american airlines flight <unk> from new york to los angeles

True tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN NUM ADP PROPN PROPN PROPN PROPN

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN NOUN NUM ADP

PROPN PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 6

2	2	1.00	1.0	0	1.00		3	
3	3	1.00	1.0	0	1.00		2	
į	5	1.00	1.0	0	1.00		1	
6	3	1.00	1.0	0	1.00		1	
3	3	1.00	1.0	0	1.00		1	
(	9	1.00	1.0	0	1.00		1	
accu	racy			•	1.00	1	5	
macro	o avg	•	1.00	1.00	)	1.00		15
weighte	ed avg	9	1.00	1.0	0	1.00		15

Sentence: what is the first class fare on united flight <unk> from denver to boston True tags: PRON AUX DET ADV NOUN NOUN ADP PROPN NOUN NUM ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN NOUN NUM ADP

PROPN ADP PROPN Classification Report:

	preci	sion	reca	all	f1-sc	ore	supp	ort
1	1	.00	1.00	)	1.0	0	3	
2	1	.00	1.00	)	1.0	0	3	
3	1	.00	1.00	)	1.0	0	3	
5	1	.00	1.00	)	1.0	0	1	
6	1	.00	1.00	)	1.0	0	1	
7	0	.00	1.00	)	0.0	0	0	
8	1	.00	1.00	)	1.0	0	1	
9	1	.00	1.00	)	1.0	0	1	
11	1	.00	0.0	0	0.0	0	1	
accur	acy				0.93	3	14	
macro weighted	_		89 .00	_	.89 ).93	0.7 0.	'8 93	14 14

Sentence: how much does flight ua 281 from boston to denver cost

True tags: ADV ADV AUX NOUN PROPN NUM ADP PROPN ADP PROPN VERB Predicted tags: VERB AUX AUX NOUN PROPN VERB ADP PROPN ADP PROPN PROPN

2

Classification Report:

11

1.00

precision recall f1-score support 1 0.75 1.00 0.86 3 2 1.00 2 1.00 1.00 3 1.00 1.00 1 1.00 4 0.00 0.00 0.00 1 8 0.50 1.00 0.67 1 9 1.00 0.00 0.00 1

accuracy 0.64 11 macro avg 0.75 0.57 0.50 11

0.00

0.00

weighted avg 0.80 0.64 0.57 11

Sentence: does flight dl <unk> from philadelphia to denver fly on saturdays True tags: AUX NOUN PROPN PROPN ADP PROPN VERB ADP

**PROPN** 

Predicted tags: PRON NOUN PROPN PROPN ADP PROPN ADP PROPN VERB

ADP PROPN

Classification Report:

	precisio	on re	call	f1-sc	ore s	suppo	ort
1	1.0	0 1.	.00	1.0	0	5	
2	1.0	0 1.	.00	1.0	0	3	
3	1.0	0 1.	.00	1.0	0	1	
4	1.0	0 1.	.00	1.0	0	1	
6	0.0	0 1.	.00	0.0	0	0	
8	1.0	0 0.	.00	0.0	0	1	
accur	acy			$0.9^{\circ}$	1	11	
macro weighted	_	0.83 1.00		.83 ).91	0.67 0.9	1	11 11

Sentence: what airline is dI <unk>

True tags: DET NOUN AUX PROPN NUM

Predicted tags: PRON NOUN AUX PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	upport	
1	0	50	1.00	0.6	7	1	
•	_					1	
3		00	1.00	1.0	U	1	
5	1.	00	0.00	0.0	0	1	
6	0.	00	1.00	0.0	0	0	
8	1.	00	1.00	1.0	0	1	
9	1.	00	0.00	0.0	0	1	
accur	acy			0.60	)	5	
macro	avg	0.7	'5 C	.67	0.44	5	
weighted	d avg	0.	90	0.60	0.53	į	5

Sentence: what first class airplane goes from philadelphia to san francisco and stops in dallas in the afternoon on monday

True tags: DET ADV NOUN NOUN VERB ADP PROPN ADP PROPN PROPN CCONJ VERB ADP PROPN ADP DET NOUN ADP NOUN

Predicted tags: PRON AUX NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN CCONJ PROPN ADP PROPN ADP DET NOUN ADP NOUN

рі	recision	recall	f1-score	support
1	0.80	1.00	0.89	4
2	1.00	1.00	1.00	5
3	0.80	1.00	0.89	4

4	1.00	0.	.00	0.0	0	2	
5	1.00	0.	.50	0.6	7	2	
6	0.00	) 1.	.00	0.0	0	0	
8	0.00	) 1.	.00	0.0	0	0	
10	1.0	0 1	.00	1.0	0	1	
11	1.0	0 0	.00	0.0	0	1	
accurac	;y			0.79	9	19	
macro a	vg	0.73	0.	72	0.49		19
weighted a	avg	0.92	0	.79	0.76	3	19

Sentence: what planes are used by twa

True tags: DET NOUN AUX VERB ADP PROPN

Predicted tags: PRON NOUN VERB VERB ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re su	pport
1	1.0	00 1	.00	1.00	)	1
2	1.0	00 1	.00	1.00	) .	1
3	1.0	00 1	.00	1.00	) .	1
4	0.5	50 1	.00	0.67	7	1
5	1.0	0 0	.00	0.00	) .	1
6	0.0	00 1	.00	0.00	) (	)
8	1.0	0 0	.00	0.00	) .	1
accur	acy			0.67	' 6	3
macro	avg	0.79	0	.71	0.52	6
weighted	d avg	0.92	(	0.67	0.61	6

Sentence: <unk> leaving denver to san francisco before 10 am what type of aircraft is used

True tags: VERB VERB PROPN ADP PROPN PROPN ADP NUM NOUN DET NOUN ADP NOUN AUX VERB

Predicted tags: VERB VERB PROPN ADP PROPN ADP NUM NOUN DET NOUN ADP NOUN VERB VERB

	precision	n recal	l f1-sc	ore	supp	ort
1	1.00	1.00	1.0	00	3	
2	1.00	1.00	1.0	0	3	
3	1.00	1.00	1.0	0	3	
4	0.75	1.00	8.0	86	3	
5	1.00	1.00	1.0	0	1	
8	1.00	0.00	0.0	0	1	
9	1.00	1.00	1.0	0	1	
accura	асу		0.9	3	15	
macro	avg (	0.96	0.86	0.84	ļ	15
veighted	l avg	0.95	0.93	0.9	0	15

Sentence: what kinds of planes are used by midway airlines

True tags: DET NOUN ADP NOUN AUX VERB ADP NOUN PROPN

Predicted tags: PRON AUX ADP PROPN VERB VERB ADP NOUN PROPN

Classification Report:

	precisi	on re	call	f1-scc	ore su	pport
4	0.5		00	0.0	7	
1	0.5	0 1.	.00	0.67	1	1
2	1.0	0 1.	.00	1.00	) :	2
3	1.0	0 0.	.33	0.50	) ;	3
4	0.5	0 1.	.00	0.67	7	1
5	1.0	0 0.	.00	0.00	)	1
6	0.0	0 1.	.00	0.00	) (	0
8	0.0	0 0.	.00	0.00	)	1
accur	acy			0.56	5 9	9
macro	avg	0.57	0	.62	0.40	9
weighted	d avg	0.78	(	0.56	0.54	9

Sentence: what type of aircraft leaves from boston to washington dc at 9 am during a weekday

True tags: DET NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN ADP DET NOUN

Predicted tags: PRON NOUN ADP NOUN VERB ADP PROPN ADP PROPN PROPN ADP NUM NOUN DET NOUN

Classification Report:

	preci	sion	recal	l f1-s	core	supp	ort
1	1	.00	1.00	1.	00	3	
2	1	.00	0.80	0.	89	5	
3	0	.80	1.00	0.	89	4	
4	1	.00	1.00	1.	00	1	
5	1	.00	0.50	0.	67	2	
6	0	.00	1.00	0.	00	0	
9	1	.00	1.00	1.	00	1	
accur	асу			0.0	38	16	
macro weighted	_	0.8 0.	33 95	0.90 0.88	0.7 0.	'8 90	16 16

Sentence: what type of aircraft are flying from cleveland to dallas before noon True tags: DET NOUN ADP NOUN AUX VERB ADP PROPN ADP NOUN

Predicted tags: PRON NOUN ADP NOUN VERB VERB ADP PROPN ADP NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3

4	0.50	1.00	0	0.67	7	1	
5	1.00	0.0	0	0.00	)	1	
6	0.00	1.00	0	0.00	)	0	
8	1.00	0.0	0	0.00	)	1	
accuracy				0.83		12	
macro avg	0.7	<b>7</b> 9	0.7	1	0.52		12
weighted avo	<b>)</b> 0.	96	3.0	33	0.81		12

Sentence: what airplane types fly from pittsburgh to baltimore True tags: DET NOUN NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN NOUN VERB ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 2 1.00 1.00 1.00 2 2 1.00 1.00 1.00 3 1.00 2 1.00 1.00 4 1.00 1 1.00 1.00 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 accuracy 88.0 8 macro avg 0.83 0.67 8 0.83 weighted avg 1.00 88.0 88.0 8

Sentence: what is ground transportation between the san francisco airport and the city

True tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN CCONJ DET PROPN

Predicted tags: PRON AUX NOUN NOUN ADP DET PROPN PROPN CCONJ DET NOUN

Classification Report:

	pic	JIJIUI	1 10	Can	11-30	OIC	Supp	Oit
1		1.00	0.	75	0.8	6	4	
2	<u> </u>	1.00	1.	.00	1.0	0	1	
3	3	0.67	1.	.00	0.8	0	2	
5	5	1.00	1.	.00	1.0	0	2	
6	6	1.00	1.	.00	1.0	0	1	
8	3	1.00	1.	.00	1.0	0	1	
10	0	1.00	) 1	.00	1.0	00	1	
accur	acy				0.9	2	12	
macro	•	(	0.95	0	.96	0.9	5	12
weighte	d av	g	0.94	(	0.92	0.9	92	12

Sentence: what flights on united leave la guardia for san jose and arrive around 10 pm

True tags: DET NOUN ADP PROPN VERB PROPN PROPN ADP PROPN PROPN

CCONJ VERB ADP NUM NOUN

Predicted tags: PRON NOUN ADP PROPN VERB PROPN PROPN ADP PROPN PROPN CCONJ VERB ADP NUM NOUN

Classification Report:

	precisi	on re	call	f1-sco	ore sup	port
1	1.0	0 1	.00	1.00	) 5	
2	1.0	0 1	.00	1.00	3	
3	1.0	0 1	.00	1.00	) 2	
4	1.0	0 1	.00	1.00	) 2	
5	1.0	0 0	.00	0.00	) 1	
6	0.0	0 1	.00	0.00	0 (	
9	1.0	0 1	.00	1.00	) 1	
10	) 1.0	00 1	1.00	1.0	0 1	
accur	асу			0.93	15	
macro	avg	0.88	0	.88	0.75	15
weighted	d avg	1.00	(	0.93	0.93	15

Sentence: what ground transportation is available from the denver airport to

downtown denver

True tags: DET NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP DET PROPN PROPN ADP NOUN PROPN

Classification Report:

	precision	on re	call f	1-scor	e suppo	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	3	
5	1.0	0 0.	50	0.67	2	
6	0.0	0 1.	00	0.00	0	
7	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accura	асу			0.92	12	
macro weighted	•	0.86 1.00	0.9	-	).81 0.94	12 12

Sentence: list us air flights leaving saturday from charlotte airport around 1 pm True tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN ADP NUM NOUN

Predicted tags: VERB PROPN PROPN NOUN VERB NOUN ADP PROPN PROPN

PROPN CCONJ NOUN Classification Report:

precision recall f1-score support

0.80 1.00 0.89

2	1.00	0.5	50	0.67	7	2	
3	1.00	1.0	00	1.00	)	3	
4	1.00	1.0	00	1.00	)	2	
9	1.00	0.0	00	0.00	)	1	
10	0.00	1.	00	0.0	0	0	
accuracy				0.83	1	2	
macro avo	g 0	.80	0.7	75	0.59		12
weighted av	′g	0.93	0.	.83	0.82		12

Sentence: could you tell me about ground transportation arrangements from the dallas airport to downtown dallas

True tags: AUX PRON VERB PRON ADP NOUN NOUN ADP DET PROPN PROPN ADP NOUN PROPN

Predicted tags: PRON PRON VERB PRON ADP NOUN NOUN PROPN ADP DET PROPN PROPN ADP NOUN PROPN

Classification Report:

	pre	cisio	n re	call	f1-sc	ore	supp	ort
	ρ. σ	0.0.0.		ou	00	0.0	Сарр	0.1
1		0.75	1.	00	0.8	6	3	
2	2	1.00	1.	00	1.0	0	3	
3	3	1.00	0.	75	0.8	6	4	
4	1	1.00	1.	00	1.0	0	1	
5	5	1.00	1.	00	1.0	0	1	
6	3	0.67	1.	00	0.8	0	2	
8	3	1.00	0.	00	0.0	0	1	
accui	racy				0.8	7	15	
macro	avg		0.92	0	.82	0.79	)	15
weighte	d av	g	0.91	(	0.87	8.0	4	15

Sentence: please list the flights taking off and landing on general mitchell international airport

True tags: INTJ VERB DET NOUN VERB ADV CCONJ NOUN ADP PROPN PROPN PROPN

Predicted tags: VERB VERB DET NOUN ADJ VERB VERB VERB ADP NOUN PROPN PROPN

ı	precision	recall	f1-score	support
1	1.00	0.75	0.86	4
2	1.00	1.00	1.00	1
3	0.50	0.50	0.50	2
4	0.20	0.50	0.29	2
5	1.00	1.00	1.00	1
7	0.00	1.00	0.00	0
10	1.00	0.00	0.00	1
11	1.00	0.00	0.00	1
13	1.00	0.00	0.00	1

accuracy		0.5	4 13	
macro avg	0.74	0.53	0.40	13
weighted avg	0.80	0.54	0.54	13

Sentence: i <unk> like to fly from cleveland to indianapolis tomorrow morning as early as possible what <unk> available

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN ADP ADV ADP ADJ PRON AUX ADJ

Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN NOUN NOUN PROPN NUM ADP NUM DET ADJ ADJ

Classification Report:

	prec	ision	recal	f1-scor	e supp	ort
1	(	).67	1.00	0.80	2	
2	2 (	).75	0.75	0.75	4	
3	3 1	1.00	1.00	1.00	2	
4	. 1	1.00	1.00	1.00	2	
5	5 (	0.00	1.00	0.00	0	
6	6 1	1.00	0.50	0.67	2	
7	' (	0.50	0.50	0.50	2	
8	3 1	1.00	0.50	0.67	2	
Ę.	) (	0.00	1.00	0.00	0	
1	1	1.00	0.00	0.00	1	
1:	2	1.00	0.00	0.00	1	
accur	асу			0.67	18	
macro	_			0.66 (	0.49	18
weighte	d avg	0	.85	0.67	0.68	18

Sentence: i need a flight from logan to atlanta this afternoon

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN DET NOUN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN VERB NOUN Classification Report:

Ciaconic	alioni	oport.				
	precisi	on re	call	f1-scc	re su	pport
1	1.0	00 1	.00	1.00	) 2	2
2	1.0	00 1	.00	1.00	) 2	2
3	1.0	00 1	.00	1.00	) 2	2
4	0.5	50 1	.00	0.67	' 1	
5	1.0	0 0	.50	0.67	' 2	2
6	1.0	00 1	.00	1.00	) 1	
accur	acy			0.90	10	)
macro	•	0.92		.92	0.89	10
weighte	d avg	0.95	(	0.90	0.90	10

Sentence: give me the latest flight tomorrow on american airlines from milwaukee to tacoma

True tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADP PROPN

Predicted tags: VERB PRON DET ADJ NOUN NOUN ADP PROPN PROPN ADP

PROPN ADP PROPN Classification Report:

	precisi	on	recall	f1-sco	ore su	pport
1	1.0	00	1.00	1.00	) 4	1
2	1.0	00	1.00	1.00	) 3	3
3	1.0	00	1.00	1.00	) 2	2
4	1.0	00	1.00	1.00	) 1	1
5	1.0	00	1.00	1.00	) 1	1
6	1.0	00	1.00	1.00	) 1	1
7	1.0	00	1.00	1.00	) 1	1
						_
accur	acy			1.00	13	3
macro	avg	1.00	) 1	.00	1.00	13
weighted	d avg	1.0	00 .	1.00	1.00	13

Sentence: i <unk> like to fly from columbus to nashville tomorrow morning

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN NOUN Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN NOUN

NOUN

Classification Report:

precis	ion	recal	l f1-s	core	supp	ort
1.	00	1.00	1.	00	2	
0.	67	1.00	0.	80	2	
1.	00	1.00	1.	00	2	
1.	00	1.00	1.	.00	2	
1.	00	1.00	1.	00	1	
1.	00	1.00	1.	.00	1	
2 1	.00	0.00	0	.00	1	
асу			0.9	91	11	
avg d avg			0.86 0.91		-	11 11
	1. 0. 1. 1. 1. 2 1 acy avg	1.00 1.00 1.00 1.00 2 1.00 acy avg 0.9	1.00 1.00 0.67 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 0.00 acy avg 0.95	1.00 1.00 1. 0.67 1.00 0. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 1.00 1.00 1. 2 1.00 0.00 0.	1.00 1.00 1.00 0.67 1.00 0.80 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 0.00 0.00 acy 0.91 avg 0.95 0.86 0.8	1.00 1.00 1.00 2 0.67 1.00 0.80 2 1.00 1.00 1.00 2 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 2 1.00 0.00 0.00 1

Sentence: and what is the last flight from denver to boston for tomorrow evening True tags: CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP NOUN NOUN

Predicted tags: PRON PRON AUX DET ADJ NOUN ADP PROPN ADP NOUN NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3		1.00	1.00	3
5	1.00	1.00	1.00	1
6	0.50	1.00	0.67	1
7	1.00	1.00	1.00	1

8	1.00	1.0	00	1.00	1	
10	1.00	0.	00	0.00	)	1
				0.00	4.0	,
accuracy				0.92	13	3
macro avg	0.	94	0.8	8 (	0.83	13
weighted avo	g C	.96	0.9	92	0.90	13

Sentence: list evening flights tomorrow from phoenix to detroit True tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
accurac	;y		1.00	8	
macro a	vg 1.	.00 1	.00 1.	.00	8
weighted a	avg 1	1.00	1.00 1	.00	8

Sentence: show me the flights on continental from indianapolis to san diego in the afternoon tomorrow

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN ADP DET NOUN NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP PROPN

PROPN ADP DET NOUN NOUN

Classification Report:

	precis	sion	recal	l f1-so	core	supp	ort
1	1.	00	1.00	1.0	00	4	
2	1.	00	1.00	1.0	00	4	
3	1.	00	1.00	1.0	00	3	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	2	
6	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	15	
macro	avg	1.0	00	1.00	1.0	0	15
weighte	d avg	1	.00	1.00	1.0	00	15

Sentence: how many flights does northwest have leaving dulles True tags: ADV ADJ NOUN AUX PROPN VERB VERB PROPN

Predicted tags: VERB NOUN NOUN AUX PROPN VERB VERB PROPN

Classification Report:

1

precision recall f1-score support 2 1.00 1.00 1.00 3 0.50 1.00 0.67 1

4	0.67	1.00	3.0	30	2	
7	1.00	0.00	0.0	00	1	
8	1.00	1.00	1.0	00	1	
11	1.00	0.00	0.0	00	1	
accuracy	•		0.7	5	8	
macro av	g 0.8	36	0.67	0.58		8
weighted av	/g 0	.85	0.75	0.6	6	8

Sentence: nonstop flights from new york city to las vegas on sunday

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

ADP NOUN

Classification Report:

р	recision	reca	ll f1-sco	re supp	ort
1	1.00	1.00	1.00	5	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	3	
accurac	СУ		1.00	11	
macro a	vg 1.	.00	1.00	1.00	11
weighted	avg 1	1.00	1.00	1.00	11

Sentence: show me the flights from los angeles to pittsburgh which arrive at pittsburgh on monday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP PROPN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN DET VERB ADP PROPN ADP NOUN

Classification Report:

	pred	cisio	n re	call	f1-s	core	supp	ort
1		1.00	1.	.00	1.0	00	4	
2	)	1.00	0.	.80	0.8	39	5	
3	}	1.00	1.	.00	1.0	00	2	
4		1.00	1.	.00	1.0	00	2	
5	,	0.50	1.	.00	0.0	67	1	
6	;	1.00	1.	.00	1.0	00	1	
accur	асу				0.9	93	15	
macro	avg		0.92	0	.97	0.9	3	15
weighte	d avg	)	0.97	(	0.93	0.	94	15

Sentence: show me all flights from philadelphia to dallas which arrive in dallas before 3 <unk> pm on saturday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN DET VERB ADP PROPN ADP NOUN ADJ NOUN ADP NOUN

Classification Report:

	pred	cision	red	call	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	00	3	
2	)	1.00	0.	83	0.9	91	6	
3	,	0.75	1.	00	3.0	36	3	
4		1.00	1.	00	1.0	00	2	
5	,	0.50	1.	00	0.6	67	1	
6	;	1.00	1.	00	1.0	00	1	
7	•	0.00	1.	00	0.0	00	0	
9	)	1.00	0.	00	0.0	00	1	
11	1	1.00	0.	.00	0.0	00	1	
accur	acy				0.8	3	18	
macro	avg	(	).81	0	.76	0.6	60	18
weighte	d avg	)	0.93	(	0.83	0.	82	18

Sentence: what flights leave pittsburgh and arrive in los angeles after 5 pm on thursday

True tags: DET NOUN VERB PROPN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

Predicted tags: PRON NOUN VERB PROPN VERB VERB ADP PROPN PROPN ADP NUM NOUN ADP NOUN

Classification Report:

	prec	ision	rec	all	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	3	
2	•	1.00	1.0	00	1.0	0	3	
3		1.00	1.0	00	1.0	0	3	
4	(	0.67	1.0	00	3.0	80	2	
5	•	1.00	0.0	00	0.0	0	1	
6	(	0.00	1.0	00	0.0	0	0	
9	•	1.00	1.0	00	1.0	0	1	
10	)	1.00	0.	00	0.	00	1	
accur	acy				0.8	6	14	
macro	_		.83		.75	0.6	-	14
weighted	d avg	(	0.95	(	0.86	0.	83	14

Sentence: what is the earliest flight arriving in charlotte from <unk> louis on friday True tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN VERB ADP PROPN ADP PROPN

PROPN ADP NOUN Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 3

```
2
                                    3
           1.00
                   1.00
                          1.00
      3
           1.00
                   1.00
                           1.00
                                    2
      4
                                    1
           1.00
                   1.00
                           1.00
      5
           1.00
                   1.00
                           1.00
                                    1
      6
           1.00
                   1.00
                           1.00
                                    1
      7
                                    1
           1.00
                   1.00
                           1.00
      8
           1.00
                   1.00
                           1.00
                                    1
                          1.00
                                   13
  accuracy
 macro avg
               1.00
                       1.00
                               1.00
                                       13
weighted avg
                1.00
                        1.00
                               1.00
                                        13
```

Sentence: what flights do you have from boston to pittsburgh on wednesday of next week after 6 pm

True tags: DET NOUN AUX PRON VERB ADP PROPN ADP PROPN ADP NOUN ADP ADJ NOUN ADP NUM NOUN

Predicted tags: PRON NOUN AUX PRON VERB ADP PROPN ADP PROPN ADP NOUN ADP DET ADJ ADP NUM NOUN

Classification Report:

	pred	ision	recall	f1-score	suppo	ort
1		1.00	1.00	1.00	2	
2	<u> </u>	1.00	1.00	1.00	5	
3	}	1.00	0.75	0.86	4	
4	٠	1.00	1.00	1.00	1	
5	5 (	0.00	0.00	0.00	1	
6	6 (	0.50	1.00	0.67	1	
7	<b>7</b> (	0.00	0.00	0.00	1	
8	}	1.00	1.00	1.00	1	
9	)	1.00	1.00	1.00	1	
accur	асу			0.82	17	
macro weighte	_	0.° J 0	_	0.75 0.7 0.82 0	72 .83	17 17

Sentence: i <unk> like a flight from <unk> petersburg to miami on that next thursday True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP DET ADJ NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP NOUN DET NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	1
5	0.50	0.50	0.50	2
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1

8 1.00 1.00 1.00 1

accuracy 0.86 14 macro avg 0.90 0.81 0.79 14 weighted avg 0.88 0.86 0.83 14

Sentence: i <unk> like to travel from kansas city to chicago next wednesday

True tags: PRON AUX VERB PART VERB ADP PROPN PROPN ADP PROPN ADJ

**NOUN** 

Predicted tags: PRON AUX VERB ADP VERB ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Classification Report:

	precision		recall	f1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	0	3	
2	0.0	67	1.00	0.8	0	2	
3	0.	50	1.00	0.6	7	1	
4	1.0	00	1.00	1.0	0	2	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	0.00	0.0	0	1	
8	1.0	00	1.00	1.0	0	1	
12	2 1.	.00	0.00	0.0	00	1	
				0.0	_	4.0	
accur	•			0.8	_	12	
macro	_	0.9		).75	0.68	}	12
weighted	d avg	0.	90	0.83	0.7	7	12

Sentence: i would like to fly from boston to philadelphia next thursday

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADJ NOUN Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN DET

NOUN

Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.67	1.00	0.80	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	2
5	0.00	1.00	0.00	0
6	1.00	1.00	1.00	1
7	1.00	0.00	0.00	1
8	1.00	1.00	1.00	1
12	1.00	0.00	0.00	1
accura macro	_	85 0	0.82 .78 0.6	11 64 11
weighted	lavg 0	.94 (	0.82 0.	78 11

Sentence: tell me about flights from atlanta to charlotte next monday

True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN ADJ NOUN

Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN NOUN NOUN Classification Report:

	precis	ion	recall	†1-sc	ore s	suppo	rt
1	1.0	00	1.00	1.0	00	2	
2	1.0	00	1.00	1.0	00	3	
3	0.6	37	1.00	3.0	30	2	
4	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
7	1.0	00	0.00	0.0	00	1	
accur	acy			0.9	0	10	
macro	avg	0.9	4 0	.83	0.80	•	10
weighted	d avg	0.	93	0.90	0.86	3	10

Sentence: what flights go from pittsburgh to baltimore after 8 <unk> next wednesday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV ADJ NOUN Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NUM NUM ADJ NOUN

Classification Report:

	precisio	on re	call	f1-score	e supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
7	1.0	0 1.	00	1.00	1	
9	0.5	0 1.	00	0.67	1	
11	1.0	0 0	.00	0.00	1	
accura	асу			0.83	12	
macro weighted	•	0.83 0.96	_		.63 0.81	12 12
•	•					

Sentence: give me the fares for round trip flights from cleveland to miami next wednesday

True tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP NOUN NOUN ADP PROPN ADP PROPN NOUN NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	0.83	1.00	0.91	5
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

Sentence: i want to leave chicago next tuesday and arrive in detroit around 6 pm True tags: PRON VERB PART VERB PROPN ADJ NOUN CCONJ VERB ADP PROPN ADP NUM NOUN

Predicted tags: PRON VERB VERB VERB PROPN NOUN NOUN CCONJ VERB ADP PROPN ADP NUM NOUN

Classification Report:

				_		
	precisi	ion r	ecall	f1-sco	re supp	oort
	-					
1	1.0	00	1.00	1.00	2	
2	1.0	00	1.00	1.00	2	
3	0.6	67	1.00	0.80	2	
4	0.7	75 ·	1.00	0.86	3	
6	1.0	00	1.00	1.00	1	
7	1.0	00 (	0.00	0.00	1	
9	1.0	00	1.00	1.00	1	
10	) 1.	00	1.00	1.0	1	
12	2 1.	00	0.00	0.0	0 1	
accura	acy			0.86	14	
macro	avg	0.94	. 0	.78	0.74	14
weighted	d avg	0.9	0 (	0.86	0.80	14

Sentence: i want a flight from montreal to washington dc

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN Classification Report:

	precision	on re	call	f1-sco	ore su	pport
1	1.0	0 1.	00	1.00	) ;	3
2	1.0	0 1.	00	1.00	) :	2
3	1.0	0 1.	00	1.00	)	1
4	1.0	0 1.	00	1.00	)	1
5	1.0	0 1.	00	1.00	)	1
6	1.0	0 1.	00	1.00	)	1
accur	acy			1.00	) (	)
macro	avg	1.00	1.	.00	1.00	9
veighte	d avg	1.00	•	1.00	1.00	9

Sentence: show me the flights leaving from atlanta for washington dc on thursday morning

True tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN ADP NOUN NOUN

Predicted tags: VERB PRON DET NOUN VERB ADP PROPN ADP PROPN PROPN

ADP NOUN NOUN Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	1.0	0 1.	00	1.00	) 3	
2	1.0	0 1.	00	1.00	) 3	
3	1.0	0 1.	00	1.00	) 3	
4	1.0	0 1.	00	1.00	) 2	
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	
accur	acy			1.00	13	
macro	avg	1.00	1	.00	1.00	13
weighted	d avg	1.00	•	1.00	1.00	13

Sentence: show me flights from denver to dc on wednesday

True tags: VERB PRON NOUN ADP PROPN ADP NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precision		recall	f1-scc	re sup	port
1	1.	00	1.00	1.00	) 2	
2	1.	00	1.00	1.00	) 3	
3	1.	00	1.00	1.00	) 2	
4	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	) 1	
accur	acy			1.00	9	
macro	avg	1.0	0 1	.00	1.00	9
weighted	d avg	1.0	00	1.00	1.00	9

Sentence: please give me the flights from san francisco to washington dc True tags: INTJ VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

PROPN

	pred	cision	recall	t1-score	supp	ort
1		1.00	1.00	1.00	4	
2		1.00	1.00	1.00	2	
3		1.00	1.00	1.00	1	
4		0.50	1.00	0.67	1	
5		1.00	1.00	1.00	1	
6		1.00	1.00	1.00	1	
13	3	1.00	0.00	0.00	1	
accur	асу			0.91	11	
macro	avg	0.	93 C	0.86	81	11

weighted avg 0.95 0.91 0.88 11

Sentence: show me the prices of all flights from atlanta to washington dc

True tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP PROPN

PROPN

Predicted tags: VERB PRON DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precis	sion	recall	t1-sc	ore	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	3	
3	1.	00	1.00	1.0	0	2	
4	1.	00	1.00	1.0	00	1	
5	1.	00	1.00	1.0	00	2	
6	1.	00	1.00	1.0	00	1	
accur	acy			1.0	0	12	
macro	avg	1.0	00 1	.00	1.00	)	12
weighted	d avg	1.	00	1.00	1.0	00	12

Sentence: what is the latest flight on wednesday going from atlanta to washington dc True tags: PRON AUX DET ADJ NOUN ADP NOUN VERB ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP NOUN NUM ADP PROPN ADP

PROPN PROPN

Classification Report:

	precision		recal	f1-scc	re supp	oort
1	1	.00	1.00	1.00	3	
2	1	.00	1.00	1.00	3	
3	1	.00	1.00	1.00	2	
4	. 1	.00	0.00	0.00	) 1	
5	1	.00	1.00	1.00	) 1	
6	1	.00	1.00	1.00	) 1	
7	1	.00	1.00	1.00	) 1	
8	1	.00	1.00	1.00	) 1	
9	0	.00	1.00	0.00	0	
accur macro	avg	0.8	39 ( .00	0.92 ).89 0.92	13 0.78 0.92	13 13
weighte	u avy	1.	.00	0.92	0.92	13

Sentence: list flights from toronto to washington dc saturday am

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN NOUN NOUN

Classification Report:

precision recall f1-score support
1 1.00 1.00 1.00 3

2	1.00	1.	00	1.00	2	
3	1.00	1.	00	1.00	3	}
4	1.00	1.	00	1.00	1	
accuracy				1.00	9	
macro avo		1.00	1.0	0 ′	1.00	9
weighted av	/g	1.00	1.0	00	1.00	9

Sentence: i <unk> like to see the flights from atlanta to washington dc

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.	00	1.00	1.0	0	3	
2	0.	67	1.00	0.8	0	2	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	2	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
8	1.	00	1.00	1.0	0	1	
12	2 1	.00	0.00	0.0	00	1	
accur	асу			0.92	2	12	
macro	avg	0.9	96 C	.88	0.85	•	12
weighted	d avg	0.	94	0.92	0.88	}	12

Sentence: i <unk> sorry i want to book a flight from atlanta to denver colorado

True tags: PRON AUX ADJ PRON VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX VERB PRON VERB VERB DET NOUN ADP

PROPN ADP PROPN PROPN

	precision	on re	call f1-	score	support
1	1.0	0 1.	00 1	.00	3
2	1.0	0 0.	67 C	08.0	3
3	1.0	0 1.	00 1	.00	1
4	0.5	0 1.	00 0	).67	2
5	1.0	0 1.	00 1	.00	1
6	1.0	0 1.	00 1	.00	2
7	1.0	0 0.	00 0	0.00	1
8	1.0	0 1.	00 1	.00	1
accur	асу		0	.86	14
macro weighted	_	0.94 0.93	0.83 0.86	0.81 0.8	

Sentence: i would like a list of round trip flights between indianapolis and orlando florida for the twenty seventh and the twenty eighth of december

True tags: PRON AUX VERB DET NOUN ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET NUM ADJ CCONJ DET NUM ADJ ADP NOUN Predicted tags: PRON AUX VERB DET NOUN ADP NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN ADP DET ADJ ADJ VERB DET ADJ ADJ ADP NOUN

Classification Report:

	preci	sion	recall	f1-sco	re supp	ort
1	1	.00	1.00	1.00	3	
2	1	.00	1.00	1.00	4	
3	1	.00	1.00	1.00	5	
4	0	.50	1.00	0.67	1	
5	1	.00	1.00	1.00	3	
6	1	.00	1.00	1.00	1	
7	0	.50	1.00	0.67	2	
8	1	.00	1.00	1.00	1	
9	1	.00	0.00	0.00	2	
10	) 1	.00	0.50	0.6	7 2	
accur	acy			0.88	24	
macro	•	0.9	0 0	.85	0.80	24
weighte	•	0.9	94 (	0.88	0.85	24

Sentence: may i have a listing of flights on monday from minneapolis to long beach california please

True tags: AUX PRON VERB DET NOUN ADP NOUN ADP NOUN ADP PROPN ADP PROPN PROPN INTJ

Predicted tags: NOUN PRON VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN PROPN PROPN VERB

Classification Report:

	precis	ion re	ecall	f1-sco	ore sup	port
1	1.0	00 1	.00	1.00	) 4	
2	1.0	00 1	.00	1.00	) 4	
3	0.7	75 1	.00	0.86	3	
4	0.5	50 1	.00	0.67	7 1	
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
8	1.0	00 0	.00	0.00	) 1	
13	3 1.	00	0.00	0.0	0 1	
accur	асу			0.88	3 16	
macro weighte	_	0.91 0.92		.75 ).88	0.69 0.83	16 16

Sentence: please give all flights from dallas to oakland california monday True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN Predicted tags: VERB VERB DET NOUN ADP PROPN ADP PROPN PROPN NOUN

## Classification Report:

ŗ	precision		f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	1	
5	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accura	су		0.90	10	
macro a	avg 0	.92 (	0.83	78	10
weighted	avg (	0.95	0.90 0	.87	10

Sentence: on tuesday the twenty third flights from philadelphia to san francisco on american airlines

True tags: ADP NOUN DET NUM ADJ NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

Predicted tags: ADP NOUN DET ADJ ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN

Classification Report:

		- p				
	precisi	on r	ecall	f1-sco	ore sup	port
1	1.0	n ,	1.00	1.00	) 5	
•						
2	1.0	0 '	1.00	1.00	) 4	
3	1.0	0 '	1.00	1.00	) 2	
5	1.0	0 '	1.00	1.00	) 1	
7	0.5	0 ′	1.00	0.67	7 1	
9	1.0	0 (	0.00	0.00	) 1	
accur	асу			0.93	3 14	
macro	avg	0.92	0	.83	0.78	14
weighted	•	0.9	6 (	0.93	0.90	14

Sentence: what is the cheapest first class fare from cleveland to miami on us air on february twenty fourth

True tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	3
8	1.00	1.00	1.00	1

9 1.00 1.00 1.00 1 1.00 18 accuracy macro avg 1.00 1.00 1.00 18 weighted avg 1.00 1.00 1.00 18

Sentence: cheapest round trip fare from or indianapolis to orlando on december

twenty fifth

True tags: ADJ NOUN NOUN NOUN ADP CCONJ PROPN ADP PROPN ADP **NOUN NUM ADJ** 

Predicted tags: DET NOUN NOUN NOUN ADP PROPN ADP PROPN ADP

**NOUN NUM ADJ** Classification Report:

	prec	ision	rec	call	f1-sc	ore	supp	ort
1	(	0.67	1.0	00	0.8	80	2	
2		1.00	1.0	00	1.0	0	3	
3	}	1.00	1.0	00	1.0	0	4	
5	, (	0.00	1.0	00	0.0	0	0	
7	•	1.00	0.	50	0.6	57	2	
9	)	1.00	1.0	00	1.0	0	1	
10	)	1.00	0.	.00	0.0	00	1	
						_		
accur	acy				0.8	5	13	
macro	_		.81		.79	0.6		13
weighte	d avg	j (	0.95	(	0.85	0.	84	13

Sentence: i would like to fly from dallas to denver on the morning of august twenty seventh leaving at <unk>

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN NUM ADJ VERB ADP NUM

Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN ADP DET NOUN ADP NOUN ADJ ADJ VERB ADP PROPN

	precision		recall	f1-score	e supp	ort
1	0	.67	1.00	0.80	2	
2	0	.83	1.00	0.91	5	
3	1	.00	1.00	1.00	2	
4	. 1	.00	1.00	1.00	3	
5	1	.00	1.00	1.00	1	
6	1	.00	1.00	1.00	1	
7	0	.50	1.00	0.67	1	
8	1	.00	1.00	1.00	1	
9	1	.00	0.00	0.00	2	
12	2 '	1.00	0.00	0.00	1	
accur	асу			0.84	19	
macro weighte	_	0.9			.74 0.78	19 19
. 5		-				_

Sentence: give me the flights from indianapolis to orlando on december twenty seventh and twenty eighth

True tags: VERB PRON DET NOUN ADP PROPN ADP NOUN NUM

ADJ CCONJ NUM ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN NUM ADJ VERB VERB ADJ

Classification Report:

	precis	ion	recall	f1-sco	re supp	ort
1	1.0	00	1.00	1.00	2	
2	1.0	00	1.00	1.00	3	
3	1.0	00	1.00	1.00	2	
4	0.3	33	1.00	0.50	1	
5	1.0	00	1.00	1.00	1	
6	1.0	00	1.00	1.00	1	
7	1.0	00	1.00	1.00	2	
9	1.0	00	0.50	0.67	2	
10	) 1.	.00	0.00	0.0	0 1	
accura	асу			0.87	15	
macro	avg	0.9	3 0	.83	0.80	15
weighted	d avg	0.9	96 (	0.87	0.86	15

Sentence: i would like to book a flight going from tampa to seattle on may twenty sixth i would like to stop in milwaukee on the way

True tags: PRON AUX VERB PART VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN NUM ADJ PRON AUX VERB PART VERB ADP PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADJ ADJ PRON AUX VERB VERB VERB ADP PROPN ADP DET NOUN

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	0.83	1.00	0.91	5	
3	1.00	1.00	1.00	3	
4	0.83	1.00	0.91	5	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	2	
7	0.50	1.00	0.67	1	
8	1.00	1.00	1.00	2	
9	1.00	0.00	0.00	1	
12	1.00	0.00	0.00	2	
accura	асу		0.88	26	
macro	avg 0	.92 0	.80 0.7	75	26
weighted	l avg (	0.92	0.88 0.	.84	26

Sentence: what is the cheapest one way fare from san francisco to boston on wednesday august twenty first

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN NUM ADJ

Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN ADD NOUN NOUN ADJ ADJ

Classification Report:

	precisio	n re	call f	1-scor	e supp	oort
1	1.00	) 1.	00	1.00	3	
2	1.00	) 1.	00	1.00	3	
3	1.00	) 1.	00	1.00	4	
5	1.00	) 1.	00	1.00	1	
6	1.00	) 1.	00	1.00	1	
7	0.50	) 1.	00	0.67	2	
8	1.00	) 1.	00	1.00	1	
9	1.00	0.	00	0.00	2	
accur	acy			88.0	17	
macro	avg	0.94	0.8	88 (	0.83	17
weighted	d avg	0.94	0.	88	0.84	17

Sentence: which flights are available from tacoma to san jose in the morning on april twenty second

True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP NOUN NUM ADJ

Predicted tags: DET NOUN VERB ADJ ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP NOUN NUM ADJ

Classification Report:

	pred	cisio	n re	call	f1-sc	ore	supp	ort
1		1.00	1.	00	1.0	0	3	
2	)	1.00	1.	00	1.0	0	4	
3	}	1.00	1.	00	1.0	0	3	
4		0.00	1.	00	0.0	0	0	
5	•	1.00	1.	00	1.0	0	2	
7	•	1.00	1.	00	1.0	0	2	
8	}	1.00	0.	00	0.0	0	1	
9	)	1.00	1.	00	1.0	0	1	
accur	acy				0.9	4	16	
macro	avg		0.88	0	.88	0.7	5	16
weighte	d av	9	1.00	(	0.94	0.9	94	16

Sentence: list all round trip flights between indianapolis and orlando on the twenty seventh of december

True tags: VERB DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN ADP DET NUM ADJ ADP NOUN

Predicted tags: VERB DET NOUN NOUN ADP PROPN CCONJ PROPN ADP DET ADJ ADJ ADP NOUN

## Classification Report:

pre	cision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	4	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	2	
7	0.50	1.00	0.67	1	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
accuracy			0.93	15	
macro avo	9.0	94 0	8.0 88.	3	15

15

Sentence: what is hp

True tags: PRON AUX PROPN Predicted tags: PRON AUX PROPN

weighted avg 0.97 0.93 0.91

Classification Report:

precision recall f1-score suppo	rt
4 400 400 400	
1 1.00 1.00 1.00 1	
6 1.00 1.00 1.00 1	
8 1.00 1.00 1.00 1	
accuracy 1.00 3	
macro avg 1.00 1.00 1.00	3
weighted avg 1.00 1.00 1.00	3

Sentence: define airline us True tags: VERB NOUN PROPN Predicted tags: VERB NOUN PROPN

Classification Report:

Ciaconic	auon	i top	OI C.					
	prec	ision	rec	all	f1-s	core	supp	ort
1	1	1.00	1.0	00	1.0	00	1	
3	1	1.00	1.0	00	1.0	00	1	
4	1	1.00	1.0	00	1.0	00	1	
accur	асу				1.0	00	3	
macro	avg	1	.00	1	.00	1.0	0	3
weighte	d avg		1.00	•	1.00	1.0	00	3

Sentence: code ff

True tags: NOUN PROPN Predicted tags: NOUN NOUN

Classification Report:

precision recall f1-score support

1	1.00	0.00	0.00	)	1
3	0.50	1.00	0.67	7	1
accuracy			0.50	) 2	
macro avg	0.7	5 0	.50	0.33	2
weighted avo	g 0.	75	0.50	0.33	2

Sentence: from las vegas to new york a nonstop twa and fare

True tags: ADP PROPN PROPN ADP PROPN PROPN DET NOUN PROPN CCONJ

NOUN

Predicted tags: ADP PROPN PROPN ADP PROPN PROPN DET NOUN PROPN

**CCONJ NOUN** 

Classification Report:

	preci	sion	reca	III †1	-sco	re s	uppo	ort
1	1	.00	1.00	)	1.00	)	5	
2	1	.00	1.00	)	1.00	)	2	
3	1	.00	1.00	)	1.00	)	2	
5	1	.00	1.00	)	1.00	)	1	
10	) 1	1.00	1.0	0	1.00	)	1	
accur	acy				1.00		11	
macro	avg	1.0	0	1.00	0	1.00		11
weighted	d avg	1.	00	1.0	00	1.00	)	11

Sentence: airline that stands for dl

True tags: NOUN ADP VERB ADP PROPN

Prodicted tags: NOUN NOUN VERB ADP NO

Predicted tags: NOUN NOUN VERB ADP NOUN

Classification Report:

	pred	isior	n re	call	f1-s	core	supp	ort
1 2		1.00 1.00		00 50		00 67	1 2	
3	. (	0.33	1.	00		50	1	
4		1.00	1.	00	1.	00	1	
accur	•				0.6	-	5	
macro weighte	_		0.83 0.87		.62 0.60	0.9 0	54 .57	5 5

Sentence: list round trip flights between boston and oakland using twa

True tags: VERB NOUN NOUN NOUN ADP PROPN CCONJ PROPN VERB

**PROPN** 

Predicted tags: VERB NOUN NOUN ADP PROPN CCONJ PROPN CCONJ

**PROPN** 

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	1

3	1.00	1.00	1.00	3
4	1.00	0.50	0.67	2
10	0.50	1.00	0.67	1

accuracy		0.9	0 10	
macro avg	0.90	0.90	0.87	10
weighted avg	0.95	0.90	0.90	10

Sentence: i <unk> like a twa flight from las vegas to new york nonstop

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN PROPN ADP

PROPN PROPN NOUN

Predicted tags: PRON AUX VERB DET NOUN NOUN ADP PROPN PROPN ADP

13

PROPN PROPN NOUN Classification Report:

p	recision	recall	f1-score	supp	ort
1	1.00	0.80	0.89	5	
2	1.00	1.00	1.00	2	
3	0.67	1.00	0.80	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	Су		0.92	13	
macro a	vg 0.9	95 0	.97 0.9	96	13

0.92

0.93

Sentence: what airline is <unk>
True tags: DET NOUN AUX PROPN
Predicted tags: PRON NOUN AUX VERB

0.95

Classification Report:

weighted avg

	precis	sion	recal	l f1-sc	ore s	suppo	ort
1	1.	00	0.00	0.0	0	1	
3	1.	00	1.00	1.0	0	1	
4	0.	00	1.00	0.0	0	0	
5	1.	00	0.00	0.0	0	1	
6	0.	00	1.00	0.0	0	0	
8	1.	00	1.00	1.0	0	1	
accur	асу			0.5	0	4	
macro weighted	•	0.6 1.	67 ( 00	0.67 0.50	0.33		4 4

Sentence: what airline is dl

True tags: DET NOUN AUX PROPN

Predicted tags: PRON NOUN AUX PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.00	) .	1
3	1.00	1.00	1.00	) .	1
5	1.00	0.00	0.00	) .	1
6 (	0.00	1.00	0.00	) (	)
8	1.00	1.00	1.00	) .	1
accuracy			0.75	5 4	ļ
macro avg	0.8	0 (	08.0	0.60	4
weighted avo	1.0	00	0.75	0.75	4

Sentence: find a flight between denver and oakland the flight should leave in the afternoon and arrive near 5 pm the flight should also be nonstop

True tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN AUX VERB ADP DET NOUN CCONJ VERB ADP NUM NOUN DET NOUN AUX ADV AUX NOUN

Predicted tags: VERB DET NOUN ADP PROPN CCONJ PROPN DET NOUN ADJ VERB ADP DET NOUN CCONJ VERB PROPN ADJ NOUN DET NOUN ADJ ADJ VERB NOUN

Classification Report:

	precision		call f1-	score s	upport
1	0.6	7 1.	00 0	0.80	2
2	1.0	0 0.	67 C	08.0	3
3	1.0	0 1.	00 1	.00	6
4	0.7	5 1.	00 C	).86	3
5	1.0	0 1.	00 1	.00	4
7	0.0	0 1.	00 C	0.00	0
8	1.0	0 0.	00 C	0.00	3
9	1.0	0 0.	00 C	0.00	1
10	1.0	00 1	.00	1.00	2
11	1.0	0 0	.00 (	0.00	1
accura	асу		0	.76	25
macro	_	0.84	0.67	0.55	25
weighted	l avg	0.94	0.76	6 0.74	1 25

Sentence: i need a flight on american airlines from miami to chicago that arrives around 5 pm

True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	5
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2

5	1.0	00	1.0	0	1.00	)	1	
6	1.0	00	1.0	0	1.00	)	1	
9	1.0	00	1.0	0	1.00	)	1	
accur	acy				1.00		16	
macro	avg	1.0	0	1.0	0	1.00		16
weighted	d avg	1.	00	1.0	00	1.00	)	16

Sentence: flights from kansas city to cleveland on wednesday arriving before 5 pm True tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Predicted tags: NOUN ADP PROPN PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN

Classification Report:

	precis	ion	recal	l f1-s	score	supp	ort
1	1.	00	1.00	1	.00	3	
2	1.	00	1.00	1	.00	4	
3	1.	00	1.00	1	.00	3	
4	1.	00	1.00	1	.00	1	
9	1.	00	1.00	1	.00	1	
accur	acy			1.	00	12	
macro	avg	1.0	0	1.00	1.0	00	12
weighted	d avg	1.	00	1.00	1.	.00	12

Sentence: what flights depart baltimore on friday and arrive in san francisco by 8 pm True tags: DET NOUN VERB PROPN ADP NOUN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB PROPN ADP NOUN CCONJ VERB ADP PROPN PROPN ADP NUM NOUN

Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	2
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
9	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accura	асу		0.93	14
macro weighted	9		.88 0.7 0.93 0.	75 14 93 14

Sentence: i <unk> like a nonstop flight from atlanta to baltimore that <unk> in around 7 pm

True tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP VERB ADP ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN NOUN ADP PROPN ADP VERB ADP ADP NUM NOUN

Classification Report:

Olacollic	a	<i>,</i> p o				
	precisio	n re	call	f1-scc	ore su	pport
1	1.00	) 1.	00	1.00	) 2	<u> </u>
2	1.00	) 1.	00	1.00	) 5	5
3	1.00	) 1.	00	1.00	) 3	3
4	1.00	) 1.	00	1.00	) 2	2
5	1.00	) 1.	00	1.00	) 1	
6	1.00	) 1.	00	1.00	) 1	
8	1.00	) 1.	00	1.00	) 1	
9	1.00	) 1.	00	1.00	) 1	l
accura	асу			1.00	16	3
macro	avg	1.00	1.	.00	1.00	16
weighted	d avg	1.00	•	1.00	1.00	16

Sentence: what nonstop flights between boston and washington arrive after 5 < unk> pm

True tags: DET NOUN NOUN ADP PROPN CCONJ PROPN VERB ADP NUM ADV NOUN

Predicted tags: PRON NOUN NOUN ADP PROPN CCONJ PROPN CCONJ ADP NUM ADJ NOUN

Classification Report:

	precisi	on re	call f	1-scor	e supp	ort
1	1.0	00 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	3	
4	1.0	0 0.	.00	0.00	1	
5	1.0	0 0.	.00	0.00	1	
6	0.0	0 1.	.00	0.00	0	
7	0.0	0 1.	.00	0.00	0	
9	1.0	0 1.	.00	1.00	1	
10	0.	50 1	.00	0.67	1	
11	1.0	0 00	.00	0.00	1	
accura macro weighted	avg	0.75 0.96	0.7 0	-	12 ).47 0.72	12 12
Jigi itot	. u • 9	0.00	٥.		0.1 <u>L</u>	

Sentence: all flights pittsburgh to baltimore on thursday arrival by 10 am

True tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP NUM NOUN Predicted tags: DET NOUN PROPN ADP PROPN ADP NOUN NOUN ADP NUM

NOUN

Classification Report:

precision recall f1-score support

Sentence: show me all flights direct and connecting from boston to pittsburgh that arrive in pittsburgh before 10 am

True tags: VERB PRON DET NOUN ADJ CCONJ VERB ADP PROPN ADP PROPN ADP VERB ADP PROPN ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN PROPN VERB VERB ADP PROPN ADP PROPN ADP NUM NOUN

Classification Report:

	precision	recall	f1-score	supp	ort
	•			• •	
1	0.75	1.00	0.86	3	
2	1.00	1.00	1.00	5	
3	1.00	1.00	1.00	2	
4	0.75	1.00	0.86	3	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	0.00	0.00	1	
9	1.00	1.00	1.00	1	
10	1.00	0.00	0.00	1	
accura	асу		0.89	18	
macro	-	_	.78 0.7	<b>'</b> 5	18
weighted	lavg C	).92	0.89 0.	84	18

Sentence: cleveland to miami on wednesday arriving before 4 pm True tags: PROPN ADP PROPN ADP NOUN VERB ADP NUM NOUN Predicted tags: PROPN ADP PROPN ADP NOUN VERB ADP VERB NOUN Classification Report:

	precision		rec	recall f1-score			e support		
							_		
1	1	.00	1.0	)()	1.0	00	2		
2	: 1	.00	1.0	00	1.	00	3		
3	1	.00	1.0	00	1.	00	2		
4		).50	1.0	00	0.	67	1		
9	1	.00	0.0	00	0.	00	1		
accur	acy				3.0	39	9		
macro	avg	0	.90	0	.80	0.	73	9	
weighte	d avg	(	0.94	(	0.89	0	.85	9	

Sentence: show me airlines between boston and san francisco

True tags: VERB PRON NOUN ADP PROPN CCONJ PROPN PROPN PROPN PROPN CCONJ PROPN PROPN PROPN

Classification Report:

	precision		recall f1-so		l-sco	re si	uppor	t
1	1	.00	1.00	)	1.00		3	
2	1	.00	1.00	)	1.00		1	
3	1	.00	1.00	)	1.00		1	
4	1	.00	1.00	)	1.00		1	
6	1	.00	1.00	)	1.00		1	
10	)	1.00	1.0	0	1.00	)	1	
accur	acy				1.00		8	
macro	_	1.0		1.0		1.00	8	3
weighted	d avg	1.	.00	1.0	)()	1.00		8

Sentence: show me the airlines that fly from san francisco to boston

True tags: VERB PRON DET NOUN ÅDP VERB ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN PROPN VERB ADP PROPN PROPN ADP

**PROPN** 

Classification Report:

0.0000	G. (1. G. )	٠٠р٠.	••			
	precis	ion	recall	f1-scc	re sup	port
					_	
1	0.7	75	1.00	0.86	3	
2	1.0	00	0.67	0.80	) 3	
3	1.0	00	1.00	1.00	) 1	
4	1.0	00	1.00	1.00	) 2	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
accura	acy			0.91	11	
macro	avg	0.9	6 0	.94	0.94	11
weighted	d avg	0.9	93 (	0.91	0.91	11

Sentence: what airlines fly from boston to denver

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
accurac	CV		0.86	7	
macro a	•	33 0	.83 0.6	67	7

weighted avg 1.00 0.86 0.86 7

Sentence: what airlines have flights from baltimore to seattle True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	pred	cision	red	call	f1-s	core	supp	ort
1		1.00		00	1.0		2	
3	3	1.00 1.00		00 00	1.0 1.0	00	2 2	
5		1.00		00 00	1.0 0.0		1 1	
6	6	0.00	1.	00	0.0	00	0	
accui	racy				0.8		8	
macro weighte	_		0.83 1.00		.83 ).88	0.6 0.	67 88	8 8

Sentence: what airlines have flights from boston to philadelphia that leave before 630 am

True tags: DET NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON NOUN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP VERB NOUN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	3	
4	0.6	7 1.	00	0.80	2	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
9	1.0	0 0.	00	0.00	1	
accura macro	•	0.81	0.	0.85	13 0.54	13
weighted	_	0.95	_	.85	0.82	13

Sentence: are there any airlines that have flights from boston to philadelphia that leave before 630 am

True tags: VERB PRON DET NOUN ADP VERB NOUN ADP PROPN ADP VERB ADP NUM NOUN

Predicted tags: VERB PRON DET NOUN PROPN VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP VERB NOUN

Classification Report:

precision recall f1-score support

1 0.67 1.00 0.80 2

2	1.0	0 0	08.0	0.	89	5	
3	1.0	0 1	.00	1.	00	3	
4	0.7	5 1	.00	0.	86	3	
5	1.0	0 1	.00	1.	00	1	
6	1.0	0 1	.00	1.	00	1	
9	1.0	0 0	00.0	0.	00	1	
accuracy	/			3.0	38	16	
macro av	g	0.92	C	.83	0.	79	16
weighted a	vg	0.91		88.0	0	.85	16

Sentence: show me airlines that have flights between toronto and detroit between detroit and <unk> louis and between <unk> louis and toronto

True tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ PROPN CCONJ ADP PROPN PROPN CCONJ PROPN

Predicted tags: VERB PRON NOUN ADP VERB NOUN ADP PROPN CCONJ PROPN ADP PROPN CCONJ CCONJ PROPN CCONJ ADP PROPN PROPN CCONJ PROPN

Classification Report:

	precision		n re	call	†1-s	core	supp	ort
1		1.00	0.	.88	0.9	93	8	
2	)	1.00	1.	.00	1.0	00	4	
3	}	1.00	1.	.00	1.0	00	2	
4	Ī	1.00	1.	.00	1.0	00	2	
6	;	1.00	1.	.00	1.0	00	1	
10	)	0.80	) 1	.00	0.	.89	4	
accur	асу				0.9	95	21	
macro	avg	(	0.97	0	.98	0.9	7	21
weighte	d avg	)	0.96	(	0.95	0.	95	21

Sentence: which airlines fly between boston and baltimore True tags: DET NOUN VERB ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB ADP PROPN CCONJ PROPN

	precision		recall	f1-sc	ore s	uppo	rt
1	1.	00	1.00	1.0	0	2	
2	1.	00	1.00	1.0	0	1	
3	1.	00	1.00	1.0	0	1	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
10	) 1	.00	1.00	1.0	00	1	
accur	acy			1.00	)	7	
macro	avg	1.00	0 1	.00	1.00		7
weighte	d avg	1.0	00	1.00	1.00	,	7

Sentence: does any airline have an early afternoon flight from boston to pittsburgh True tags: AUX DET NOUN VERB DET ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: PRON DET NOUN VERB DET ADJ NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precisio	n red	call	f1-scc	re sup	port
1	1.00	) 1.	00	1.00	) 2	
2	1.00	) 1.	00	1.00	) 2	
3	1.00	) 1.	00	1.00	) 3	
4	1.00	) 1.	00	1.00	) 1	
5	1.00	) 1.	00	1.00	) 2	
6	0.00	) 1.	00	0.00	0	
7	1.00	) 1.	00	1.00	) 1	
8	1.00	0.	00	0.00	) 1	
accura	асу			0.92	12	
macro	avg	0.88	0.	.88	0.75	12
weighted	d avg	1.00	(	).92	0.92	12

Sentence: please show me airlines with flights from philadelphia to dallas True tags: INTJ VERB PRON NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB VERB PRON NOUN ADP NOUN ADP PROPN Classification Report:

-					
ŀ	recision	recall	f1-score	suppo	rt
4	4.00	4.00	4.00	0	
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	1	
6	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accura	су		0.90	10	
macro a	avg 0.	92 0	.83 0.7	<sup>7</sup> 8 1	0
weighted	avg 0	.95	0.90 0.	.87	10

Sentence: which airlines fly from boston to san francisco

True tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN Predicted tags: DET NOUN VERB ADP PROPN ADP PROPN PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1

accuracy		1.0	8 0	
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: which airlines have flights between charlotte and newark True tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: DET NOUN VERB NOUN ADP PROPN CCONJ PROPN

Classification Report:

precis	sion	recall	f1-sco	re sup	oort
1	.00	1.00	1.00	2	
		1.00			
1	.00	1.00	1.00	2	
1	.00	1.00	1.00	1	
1	.00	1.00	1.00	1	
) 1	.00	1.00	1.00	1	
acy			1.00	8	
avg	1.0	00 1	.00	1.00	8
d avg	1	.00	1.00	1.00	8
	1 1 1 1 1 ) 1 acy avg	1.00 1.00 1.00 1.00 1.00 1.00 acy	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.00 1.00 acy 1.00 avg 1.00 1.00	1.00 1.00 1.00 1 1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 1 0 1.00 1.0

Sentence: show me all flights from san francisco to new york nonstop

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

PROPN NOUN

Classification Report:

	precision		recall f1-score		re supp	ort
1	1.0	00 1	.00	1.00	4	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	2	
4	. 1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	1	
6	1.0	00 1	.00	1.00	1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00	1.00	11
weighte	d avg	1.00		1.00	1.00	11

Sentence: show me nonstop flights from toronto to <unk> petersburg
True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN PROPN
Classification Report:

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

	6	1.00	1.00	1.0	0	1	
accı	ıracy			1.0	0	9	
macr	o avg	1.	.00	1.00	1.00	ç	)
weight	ed av	g ´	1.00	1.00	1.00	)	9

Sentence: show me all round trip flights from miami to new york nonstop

True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN ADP PROPN

PROPN NOUN

Classification Report:

	precisi	on re	ecall	f1-sc	ore s	upport	t
1	1.0	0 1	.00	1.0	0	3	
2	1.0	0 1	.00	1.0	0	2	
3	1.0	0 1	.00	1.0	0	4	
4	1.0	0 1	.00	1.0	0	1	
5	1.0	0 1	.00	1.0	0	1	
6	1.0	0 1	.00	1.0	0	1	
accur	acy			1.0	0 ′	12	
macro	avg	1.00	1	.00	1.00	12	2
weighted	d avg	1.00		1.00	1.00	1	2

Sentence: nonstop flights seattle to kansas city

True tags: NOUN NOUN PROPN ADP PROPN PROPN PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

	precisi	on red	call f1-	-score	supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	1	
3	1.0	0 1.	00	1.00	2	
accur	асу		1	1.00	6	
macro	avg	1.00	1.00	1.0	0	6
weighted	d avg	1.00	1.0	0 1.	00	6

Sentence: i want to fly from atlanta to philadelphia nonstop

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN

Predicted tags: PRON VERB VERB VERB ADP PROPN ADP PROPN NOUN

precision	recall	f1-score	support
1.00	1.00	1.00	2
1.00	1.00	1.00	2
1.00	1.00	1.00	1
0.67	1.00	0.80	2
1.00	1.00	1.00	1
	1.00 1.00 1.00 0.67	1.00 1.00 1.00 1.00 1.00 1.00 0.67 1.00	1.00 1.00 1.00 1.00 1.00 1.00 0.67 1.00 0.80

12 1.00 0.00 0.00 1

accuracy 0.89 9

macro avg 0.94 0.83 0.80 9

weighted avg 0.93 0.89 0.84 9

Sentence: what is the earliest nonstop flight from washington to san francisco True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN PROPN
PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore	supp	ort
1	1.	.00	1.00	1.0	0	3	
2	1.	.00	1.00	1.0	00	2	
3	1.	.00	1.00	1.0	00	2	
5	1.	.00	1.00	1.0	0	1	
6	1.	.00	1.00	1.0	00	1	
7	1.	.00	1.00	1.0	0	1	
8	1.	.00	1.00	1.0	00	1	
accur	acy			1.0	0	11	
macro weighted	•	1.0 1.	00 ´ .00	1.00 1.00	1.00 1.0		11 11

Sentence: please list nonstop flights from las vegas to new york on america west True tags: INTJ VERB NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB VERB NOUN NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	precision		n	reca	III	†1-sc	core	supp	ort
1		1.00	)	1.00	)	1.0	00	6	
2	<u>)</u>	1.00		1.00		1.0		3	
3	}	1.00	)	1.00	)	1.0	00	2	
4	Ļ	0.50	)	1.00	)	0.6	67	1	
13	3	1.0	0	0.0	0	0.	00	1	
accur	acy					0.9	2	13	
macro	_		0.9			80	0.7		13
weighte	d av	g	0.9	96	C	).92	0.	90	13

Sentence: show me first class round trip flights from new york to miami i want the cheapest first class fare please

True tags: VERB PRON ADJ NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN INTJ

Predicted tags: VERB PRON AUX NOUN NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN PRON VERB DET ADJ ADJ NOUN NOUN NUM Classification Report:

	precisio	on re	call	f1-sc	ore	supp	ort
1	1.0	0 1.	00	1.0	0	3	
2	1.0	0 1.	00	1.0	0	2	
3	1.0	0 1.	00	1.0	0	6	
4	1.0	0 1.	00	1.0	0	2	
5	1.0	0 1.	00	1.0	0	1	
6	1.0	0 1.	00	1.0	0	2	
7	1.0	0 0.	67	8.0	0	3	
8	0.0	0 1.	00	0.0	0	0	
9	0.0	0 1.	00	0.0	0	0	
13	1.0	0 0	.00	0.0	00	1	
accura	асу			0.90	)	20	
macro	avg	0.80	0.	.87	0.6	8	20
weighted	l avg	1.00	(	0.90	0.9	92	20

Sentence: show me which flights from san francisco to pittsburgh on a monday are first class

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN AUX ADJ NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN NUM ADJ NOUN

Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	3
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	0.00	0.00	1
9	0.00	1.00	0.00	0
accura	асу		0.93	15
macro weighted	9		89 0.7 ).93 0.	'8 15 93 15

Sentence: give me flights from baltimore to denver on united that offer first class True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN ADJ NOUN

Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP PROPN PROPN VERB ADJ NOUN

р	recision	recall	f1-score	support
1	0.75	1.00	0.86	3
2	1 00	0.75	0.86	4

3	1.00	0.6	7 (	08.0	3	
4	0.50	1.0	0 (	0.67	1	
6	1.00	1.0	0	1.00	1	
7	1.00	1.0	0	1.00	1	
accuracy			(	0.85	13	
macro avg	0.	88	0.90	C	).86	13
weighted avo	g C	0.90	0.8	5	0.85	13

Sentence: first class flights pittsburgh to newark monday morning True tags: ADJ NOUN NOUN PROPN ADP PROPN NOUN NOUN Predicted tags: DET NOUN NOUN PROPN ADP PROPN NOUN NOUN

Classification Report:

pro	ecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	4	
5	0.00	1.00	0.00	0	
7	1.00	0.00	0.00	1	
accuracy	/		0.88	8	
macro av	g 0.8	80 0	.80 0.	60	8
weighted a	vg 1	.00	0 88.0	.88.	8

Sentence: first class fares from dallas to baltimore please True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN INTJ

Predicted tags: DET NOUN NOUN ADP PROPN ADP PROPN VERB

Classification Report:

	prec	ision	recal	l f1-sc	ore	supp	ort
1	-	1.00	1.00	1.0	0	2	
2	. 1	1.00	1.00	1.0	00	2	
3	1	1.00	1.00	1.0	0	2	
4	. (	0.00	1.00	0.0	0	0	
5	(	0.00	1.00	0.0	00	0	
7	1	1.00	0.00	0.0	00	1	
1;	3	1.00	0.00	0.0	00	1	
accur	асу			0.7	5	8	
macro weighte	_	0.1 1	71 ( .00	0.71 0.75	0.4	-	8 8

Sentence: show me all united airlines first class flights

True tags: VERB PRON DET PROPN PROPN ADJ NOUN NOUN Predicted tags: VERB PRON DET PROPN PROPN ADJ NOUN NOUN

Classification Report:

1

precision recall f1-score support

1.00 1.00 1.00 2

	3	1.0	U	1.00	١.	UU		
	4	1.0	0 ′	1.00	1.	.00	1	
	5	1.0	0 ′	1.00	1.	.00	1	
	6	1.0	0 ′	1.00	1.	00	1	
	7	1.0	0 ′	1.00	1.	.00	1	
ac	ccurac	У			1.	00	8	
ma	acro av	√g	1.00	1	.00	1.0	00	8
weig	hted a	avg	1.00	)	1.00	1	.00	8

1 00

Sentence: first class price san francisco pittsburgh round trip

1 00 1 00

True tags: ADJ NOUN NOUN PROPN PROPN NOUN NOUN Predicted tags: DET NOUN NOUN PROPN PROPN NOUN NOUN

Classification Report:

			••			
	precis	sion	recall	f1-sc	ore si	upport
1	1.	00	1.00	1.0	0	3
3	1.	00	1.00	1.0	0	4
5	0.	00	1.00	0.0	0	0
7	1.	00	0.00	0.0	0	1
accur	асу			0.88	3	8
macro	avg	0.7	5 (	).75	0.50	8
weighted	d avg	1.0	00	0.88	0.88	8

Sentence: how much is a first class ticket from baltimore to san francisco True tags: ADV ADV AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: VERB AUX AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	0.00	1.00	0.00	0	
5	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	0.50	1.00	0.67	1	
11	1.00	0.00	0.00	2	
accura	асу		0.83	12	
macro weighted	3	_	.88 0.7 0.83 0.	'1 81	12 12
5	5				

Sentence: first class american flight from philadelphia to dallas on wednesday True tags: ADJ NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: DET NOUN PROPN NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precis	sion	reca	II f1	-sco	re sı	nbbo	rt
1	1.	00	1.00	)	1.00		3	
2	1.	00	1.00	)	1.00		3	
3	1.	00	1.00	)	1.00		3	
5	0.	00	1.00	)	0.00		0	
7	1.	00	0.00	)	0.00		1	
accur	acy			(	0.90	1	10	
macro	avg	8.0	30	0.80	)	0.60	•	10
weighte	d avg	1.	00	0.9	0	0.90		10

Sentence: show flights first class on american airlines between dallas and

philadelphia

True tags: VERB NOUN ADJ NOUN ADP PROPN PROPN ADP PROPN CCONJ

**PROPN** 

Predicted tags: VERB NOUN DET NOUN ADP PROPN PROPN ADP PROPN

CCONJ PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore s	upport
1	1.	00	1.00	1.0	0	4
2	1.	00	1.00	1.0	0	2
3	1.	00	1.00	1.0	0	2
4	1.	00	1.00	1.0	0	1
5	0.	00	1.00	0.0	0	0
7	1.	00	0.00	0.0	0	1
10	) 1	.00	1.00	1.0	00	1
accur	асу			0.9	1 '	11
macro	avg	8.0	6 (	0.86	0.71	11
weighted	d avg	1.	00	0.91	0.91	11

Sentence: what are the first class fares from dallas to baltimore

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN ADP PROPN

	precisio	n rec	all f1-s	core	suppo	rt
1	1.00	0 1.0	0 1.	.00	2	
2	1.00	1.0	0 1.	.00	2	
3	1.00	1.0	0 1.	.00	2	
5	1.00	1.0	0 1.	.00	1	
6	1.00	1.0	0 1.	.00	1	
7	1.00	1.0	0 1.	.00	1	
8	1.00	1.0	0 1.	.00	1	
accur	асу		1.0	00	10	
macro weighte	•	1.00 1.00	1.00 1.00	1.00 1.0		10 10

Sentence: show me one way flights from tampa to <unk> louis departing before 10 am first class

True tags: VERB PRON NUM NOUN NOUN ADP PROPN ADP PROPN PROPN VERB ADP NUM NOUN ADJ NOUN

Predicted tags: VERB PRON VERB NOUN NOUN ADP PROPN ADP PROPN PROPN VERB ADP NUM NOUN ADJ NOUN

Classification Report:

	prec	ision	rec	all	†1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	3	
2		1.00	1.0	00	1.0	0	3	
3	•	1.00	1.0	00	1.0	0	4	
4	. (	0.67	1.0	00	8.0	0	2	
6	•	1.00	1.0	00	1.0	0	1	
7	•	1.00	1.0	00	1.0	0	1	
9	•	1.00	0.5	50	0.6	7	2	
accur	acy				0.9	4	16	
macro	avg	0	.95	0	.93	0.9	2	16
weighte	d avg	(	0.96	(	0.94	0.	93	16

Sentence: what flights leave san francisco on monday night and arrive at atlanta later in the evening

True tags: DET NOUN VERB PROPN PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN ADJ ADP DET NOUN

Predicted tags: PRON NOUN VERB PROPN PROPN ADP NOUN PROPN CCONJ VERB ADP PROPN NUM ADP DET NOUN

Classification Report:

	precision		recall f1-score		re sup	oort
1	0.	75 <i>^</i>	1.00	0.86	3	
2	1.	00 ′	1.00	1.00	3	
3	1.	00 (	0.75	0.86	4	
4	1.	00 ′	1.00	1.00	2	
5	1.	00 (	0.50	0.67	2	
6	0.	00 ′	1.00	0.00	0	
7	1.	00 (	0.00	0.00	1	
9	0.	00 ′	1.00	0.00	0	
10	) 1	.00	1.00	1.00	) 1	
accur	•			0.81	16	
macro weighted	_	0.75 0.9		.81 ).81	0.60 0.83	16 16

Sentence: please list all flights into denver before noon on united airlines and northwest airlines

True tags: INTJ VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN PROPN CCONJ PROPN PROPN

Predicted tags: VERB VERB DET NOUN ADP PROPN ADP NOUN ADP PROPN

PROPN CCONJ PROPN PROPN

Classification Report:

	precision	n reca	all f1-s	core s	support	t
1	1.00	1.0	0 1.	.00	5	
2	1.00	1.0	0 1.	00	3	
3	1.00	1.0	0 1.	00	2	
4	0.50	1.0	0 0.	67	1	
5	1.00	1.0	0 1.	.00	1	
10	1.00	1.0	00 1	.00	1	
13	1.00	0.0	0 0	.00	1	
accura	ісу		0.9	93	14	
macro	avg	0.93	0.86	0.81	14	4
weighted	avg	0.96	0.93	0.90	) 1	4

Sentence: what are the coach fares for flights from pittsburgh to denver

True tags: PRON AUX DET PROPN NOUN ADP NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN NOUN ADP NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	preci	sion	recall	f1-sc	ore sup	port
1	1	.00	0.67	0.8	0 3	,
2	1	.00	1.00	1.0	0 3	
3	0	.67	1.00	0.8	0 2	1
5	1	.00	1.00	1.0	0 1	
6	1	.00	1.00	1.0	0 1	
8	1	.00	1.00	1.0	0 1	
accur	асу			0.91	l 11	
macro	avg	0.9	4 0	.94	0.93	11
weighte	d avg	0.9	94	0.91	0.91	11

Sentence: what are the flights on tuesday october first from atlanta to baltimore True tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET NOUN ADP NOUN PROPN ADJ ADP PROPN ADP

**PROPN** 

precision		recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		1.0	0 12	
macro avg	1.00	1.00	1.00	12
weighted avg	1.00	1.00	1.00	12

Sentence: what are the coach fares from la to charlotte monday morning

True tags: PRON AUX DET PROPN NOUN ADP PROPN ADP PROPN NOUN

NOUN

Predicted tags: PRON AUX DET NOUN NOUN ADP PROPN ADP PROPN NOUN

NOUN

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 0.	67	0.80	3	
2	1.0	00 1.	00	1.00	2	
3	0.7	'5 1.	00	0.86	3	
5	1.0	00 1.	00	1.00	1	
6	1.0	00 1.	00	1.00	1	
8	1.0	00 1.	00	1.00	1	
accur	acy			0.91	11	
macro	avg	0.96	0	.94 0	.94	11
weighte	d avg	0.93	(	0.91	0.91	11

Sentence: show me dallas ground transport True tags: VERB PRON PROPN NOUN NOUN Predicted tags: VERB PRON PROPN NOUN NOUN

Classification Report:

	precision	on re	call f1-	score	suppo	rt
1	1.0	0 1.	00 1	1.00	1	
3	1.0	0 1.	00 1	.00	2	
4	1.0	0 1.	00 1	.00	1	
6	1.0	0 1.	00 1	.00	1	
accur	acy		1	.00	5	
macro	avg	1.00	1.00	1.00	)	5
weighted	d avg	1.00	1.00	1.0	0	5

Sentence: show me ground transportation in denver True tags: VERB PRON NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

accuracy		1.0	0 6	
macro avg	1.00	1.00	1.00	6
weighted avg	1.00	1.00	1.00	6

Sentence: what ground transport is available in minneapolis

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN VERB ADJ ADP PROPN

Classification Report:

	precisio	n rec	all f1-s	core su	ipport
1	1.00	) 1.0	00 1.	00	1
2	1.00	) 1.0	00 1.	00	1
3	1.00	) 1.0	00 1.	00	2
4	0.00	) 1.0	0.	00	0
5	1.00	0.0	0.	00	1
6	0.00	) 1.0	0.	00	0
7	1.00	) 1.0	00 1.	00	1
8	1.00	0.0	0.	00	1
accur	acy		0.7	71 7	7
macro weighted	_	0.75 1.00	0.75 0.71	0.50 0.71	7 7
_	_				

Sentence: please show me ground transportation in denver True tags: INTJ VERB PRON NOUN NOUN ADP PROPN

Predicted tags: VERB VERB PRON NOUN NOUN ADP PROPN

Classification Report:

i	orecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	1	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	1	
6	1.00	1.00	1.00	1	
13	1.00	0.00	0.00	1	
accura	су		0.86	7	
macro a	avg 0.	92 0	.83 0.7	<b>'</b> 8	7
weighted	avg C	).93 (	0.86 0.	81	7

Sentence: what kind of ground transportation is there in dallas

True tags: DET NOUN ADP NOUN NOUN VERB PRON ADP PROPN

Predicted tags: PRON NOUN ADP NOUN NOUN AUX PRON ADP PROPN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	1
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	3

4	1.00	0.0	0.00	00	1
5	1.00	0.0	0.00	00	1
6	0.50	1.0	0.00	67	1
8	0.00	1.0	0.00	00	0
accura	асу		0.	78	9
macro	avg	0.79	0.71	0.52	9
weighted	lavg	0.94	0.78	0.74	9
macro	avg	-	0.71	0.52	9 9

Sentence: what ground transportation is available in charlotte

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

precision recall f1-score support

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

	p. 0.	5.0.0.		<b>-</b>		0.0	очрр	٠. د
1		1.00	1.	00	1.0	0	1	
2	) -	1.00	1.	00	1.0	0	1	
3	}	1.00	1.	00	1.0	0	2	
5	,	1.00	0.	00	0.0	0	1	
6	;	0.00	1.	00	0.0	0	0	
7	•	1.00	1.	00	1.0	0	1	
8	}	1.00	1.	00	1.0	0	1	
accur	асу				0.86	3	7	
macro	avg	(	0.86	0	.86	0.7	1	7
weighte	d av	g	1.00	(	0.86	0.8	36	7

Sentence: what <unk> the ground transportation like at pittsburgh True tags: PRON AUX DET NOUN NOUN VERB ADP PROPN

Predicted tags: PRON AUX DET NOUN NOUN PROPN ADP PROPN

Classification Report:

	prec	isio	n re	call	f1-sc	ore	supp	ort
1	(	0.50	1.	00	0.6	67	1	
2	<u> </u>	1.00	1.	00	1.0	00	1	
3	3	1.00	1.	00	1.0	00	2	
4	, '	1.00	0.	00	0.0	00	1	
5	5	1.00	1.	00	1.0	00	1	
6	6	1.00	1.	00	1.0	00	1	
8	} '	1.00	1.	00	1.0	00	1	
accur	acy				0.8	8	8	
macro	avg		0.93	0	.86	8.0	1	8
weighte	d avg	l	0.94	(	0.88	0.	83	8

Sentence: ground transportation in baltimore

True tags: NOUN NOUN ADP PROPN

Predicted tags: NOUN NOUN ADP PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.0	0 1.0	00	1	
2	1.00	1.0	0 1.0	00	1	
3	1.00	1.0	00 1.0	00	2	
				_		
accurac	y		1.0	00	4	
macro av	/g	1.00	1.00	1.00		4
weighted a	να	1 00	1 00	1 00		4

Sentence: what ground transportation is there in dallas True tags: DET NOUN NOUN AUX PRON ADP PROPN

Predicted tags: PRON NOUN NOUN AUX PRON ADP PROPN

Classification Report:

precision recall f1-score support 1.00 1 1.00 1.00 2 1.00 1.00 1.00 1 3 2 1.00 1.00 1.00 5 1.00 0.00 0.00 1 6 0.50 1.00 0.67 1 8 1.00 1.00 1.00 accuracy 0.86 7 0.83 macro avg 0.92 0.78 7 7 weighted avg 0.93 0.86 0.81

Sentence: what ground transportation is available in baltimore

True tags: DET NOUN NOUN AUX ADJ ADP PROPN

Predicted tags: PRON NOUN NOUN AUX ADJ ADP PROPN

Classification Report:

	precision	on re	call	t1-sco	ore su	upport
1	1.0	<b>Λ</b> 1	.00	1.00	<b>1</b>	1
2			.00	1.00		1
3	1.0	-	.00	1.00		2
5	1.0	0 0.	.00	0.00	)	1
6	0.0		.00	0.00		0
7	1.0	-	.00	1.00		1
8	1.0	0 1.	.00	1.00	)	1
				0.00		<b>-</b>
accur	•	0.00	^	0.86		/
macro	•	0.86		.86	0.71	
weighted	d avg	1.00	(	0.86	0.86	7

Sentence: ground transport phoenix True tags: NOUN NOUN PROPN Predicted tags: NOUN NOUN PROPN

Classification Report:

precision recall f1-score support

1 1.0	0 1.0	0 1.0	0	1
3 1.0	0 1.0	0 1.0	0 :	2
accuracy		1.0	0 3	3
macro avg	1.00	1.00	1.00	3
weighted avg	1.00	1.00	1.00	3

Sentence: show me information on ground transportation for dallas True tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN Predicted tags: VERB PRON NOUN ADP NOUN NOUN ADP PROPN

Classification Report:

alioni	(CPO	٠.				
precis	ion	recall	f1-sc	ore :	suppo	ort
1.0	00	1.00	1.0	0	1	
		1.00			2	
1.0	00	1.00	1.0	0	3	
1.0	00	1.00	1.0	0	1	
1.0	00	1.00	1.0	0	1	
acy			1.00	)	8	
avg	1.0	0 1	.00	1.00		8
d avg	1.	00	1.00	1.0	0	8
֡֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜֜	precis 1.0 1.0 1.0 1.0 acy avg	1.00 1.00 1.00 1.00 1.00 1.00 acy avg 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 acy avg 1.00 1	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	recision recall f1-score s  1.00	precision         recall f1-score         support           1.00         1.00         1.00         1           1.00         1.00         1.00         2           1.00         1.00         1.00         3           1.00         1.00         1.00         1           1.00         1.00         1.00         1           acy         1.00         8           avg         1.00         1.00

Sentence: i would like an american flight from toronto to san diego with a stopover in denver please

True tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN INTJ

Predicted tags: PRON AUX VERB DET PROPN NOUN ADP PROPN ADP PROPN PROPN ADP DET NOUN ADP PROPN CCONJ

Classification Report:

	pred	ision	red	call	f1-sc	ore	supp	ort
1		1.00	1.0	00	1.0	0	5	
2	)	1.00	1.	00	1.0	0	4	
3	,	1.00	1.	00	1.0	0	2	
4		1.00	1.	00	1.0	0	1	
5		1.00	1.	00	1.0	0	2	
6	;	1.00	1.	00	1.0	0	1	
8	}	1.00	1.	00	1.0	0	1	
10	)	0.00	1	.00	0.0	00	0	
13	3	1.00	0	.00	0.0	00	1	
accur	•	0	. 00	0	0.94		17	17
macro weighte	_		).89 1.00	_	.89 ).94	0.7 0.	8 94	17 17

Sentence: can i go from boston to san francisco with a stopover in denver True tags: AUX PRON VERB ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Predicted tags: PRON PRON VERB ADP PROPN ADP PROPN PROPN ADP DET

NOUN ADP PROPN Classification Report:

	precisio	n red	all 1	1-sco	re sup	port
1	1.00	) 1.0	00	1.00	4	
2	1.00	) 1.0	00	1.00	4	
3	1.00	) 1.0	00	1.00	1	
4	1.00	) 1.0	00	1.00	1	
5	1.00	) 1.0	00	1.00	1	
6	0.50	) 1.0	00	0.67	1	
8	1.00	0.0	00	0.00	1	
accura	асу			0.92	13	
macro	avg	0.93	0.8	36	0.81	13
weighted	lavg	0.96	0	.92	0.90	13

Sentence: please show me flights from boston to denver with a stopover in philadelphia

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Predicted tags: VERB VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN ADP PROPN

Classification Report:

prec	sion	recal	l f1-so	core	supp	ort
1	.00	1.00	1.0	00	3	
1	.00	1.00	1.0	00	4	
1	.00	1.00	1.0	00	2	
C	.50	1.00	0.0	67	1	
1	.00	1.00	1.0	00	1	
1	.00	1.00	1.0	00	1	
3	1.00	0.00	0.	.00	1	
асу			0.9	92	13	
avg d avg			0.86 0.92			13 13
	1 1 1 0 1 1 3 acy avg	1.00 1.00 1.00 0.50 1.00 1.00 3 1.00 acy avg 0.9	1.00 1.00 1.00 1.00 1.00 1.00 0.50 1.00 1.00 1.00 1.00 1.00 3 1.00 0.00	1.00 1.00 1.0 1.00 1.00 1.0 1.00 1.00 1.0 0.50 1.00 0.0 1.00 1.00 1.0 1.00 1.00 1.0 3 1.00 0.00 0.0 acy 0.9 avg 0.93 0.86	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 4 1.00 1.00 1.00 2 0.50 1.00 0.67 1 1.00 1.00 1.00 1 1.00 1.00 1.00 1 3 1.00 0.00 0.00 1 acy 0.92 13 avg 0.93 0.86 0.81

Sentence: show me the flights from new york to los angeles with stop in milwaukee True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NUM ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	5
2	1.00	1.00	1.00	4
3	1.00	0.50	0.67	2
4	1 00	1 00	1 00	1

5	1.00	) 1.0	JU 1	.00	1	
6	1.00	) 1.0	00 1	.00	1	
9	0.00	) 1.0	0 00	.00	0	
accurac	СУ		0.	.93	14	
macro a	vg	0.86	0.93	0.8	1	14
weighted	avg	1.00	0.93	0.9	95	14

Sentence: are there any flights from denver to pittsburgh with stops in atlanta True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sco	re sup	oort
1	1.	00	1.00	1.00	3	
2	1.	00	1.00	1.00	4	
3	1.	00	1.00	1.00	2	
4	1.	00	1.00	1.00	1	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	1	
accur	acy			1.00	12	
macro	_	1.0			1.00	12
weighted	d avg	1.0	00	1.00	1.00	12

Sentence: are there any flights from boston to san francisco which stop in denver True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN DET ADJ ADP PROPN

Classification Report:

	precisio	on re	call f1	l-score	suppo	ort
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 0.	50	0.67	2	
5	0.5	0 1.	00	0.67	1	
6	1.0	0 0.	50	0.67	2	
7	0.0	0 1.	00	0.00	0	
accura	•	0.70		0.85	13	4.0
macro weighted	_	0.79 0.96	8.0 3.0	-	.71 ).87	13 13

Sentence: all do you have a flight from washington to boston that stops in philadelphia

True tags: DET AUX PRON VERB DET NOUN ADP PROPN ADP PROPN ADP

**VERB ADP PROPN** 

Predicted tags: DET AUX PRON VERB DET NOUN ADP PROPN ADP PROPN

PROPN VERB ADP PROPN

Classification Report:

Ciassilloc	ation i tope	<i>)</i> 1 t.			
1	precision	recall	f1-score	supp	ort
1	0.75	1.00	0.86	3	
-					
2	1.00	0.75	0.86	4	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
			0.00	4.4	
accura	су		0.93	14	
macro a	avg 0.	96 0	.96 0	.96	14
weighted	avg 0	.95	0.93 (	0.93	14

Sentence: show me the flights from san diego to newark by way of houston True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN ADP PROPN** 

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN ADP PROPN Classification Report:

	- 10.00 m - 1 m -						
	precis	ion	recall	f1-sc	ore sup	port	
4	4 (	20	4 00	4.00	2 4		
1	1.0	JU	1.00	1.00	) 4		
2	1.0	00	1.00	1.00	) 4		
3	1.0	00	1.00	1.00	2		
4	1.0	00	1.00	1.00	1		
5	1.0	00	1.00	1.00	1		
6	1.0	00	1.00	1.00	1		
accura	асу			1.00	) 13		
macro	avg	1.0	00 1	.00	1.00	13	
weighted	d avg	1.	00	1.00	1.00	13	

Sentence: find a flight on american airlines from boston to san francisco that makes a stopover in denver

True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN DET NOUN ADP PROPN

precision		recall	f1-score	support
1	0.75	1.00	0.86	6
2	1.00	0.80	0.89	5
3	1 00	1 00	1 00	2

Sentence: i <unk> looking for a flight that goes from ontario to westchester and stops in chicago

True tags: PRON AUX VERB ADP DET NOUN ADP VERB ADP PROPN ADP

PROPN CCONJ VERB ADP PROPN

Predicted tags: PRON AUX VERB ADP DET NOUN PROPN VERB ADP PROPN

ADP PROPN VERB PROPN ADP PROPN

Classification Report:

	precis	sion	recal	f1-s	core	supp	ort
1	0.	60	1.00	0.	.75	3	
2	1.	00	0.80	0.	.89	5	
3	1.	00	1.00	1.	.00	1	
4	0.	67	0.67	0.	.67	3	
5	1.	00	1.00	1.	.00	1	
6	1.	00	1.00	1.	.00	1	
8	1.	00	1.00	1.	.00	1	
10	) 1	.00	0.00	0	.00	1	
accur	асу			0.	81	16	
macro	avg	0.9	)1 (	0.81	0.7	<b>'</b> 9	16
weighted	d avg	0.	86	0.81	0.	79	16

Sentence: list the flights from philadelphia to san francisco via dallas

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN ADP PROPN ADP PROPN

Classification Report:

	precisio	on re	call	f1-score	e supp	ort
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
accura macro weighted	avg	1.00 1.00			10 .00 1.00	10 10

Sentence: are there any flights from denver to atlanta with stops in pittsburgh True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN ADP PROPN

## Classification Report:

	precision	on re	call	f1-scoı	e supp	ort
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.00	1.	00	1.00	12
weighte	d avg	1.00	1	.00	1.00	12

Sentence: i need a flight from baltimore to seattle that stops in minneapolis

True tags: PRON VERB DET NOUN ADP PROPN ADP VERB ADP

**PROPN** 

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB

ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	ipport
1	1.	00	1.00	1.0	0	3
2	1.	00	1.00	1.0	0	4
3	1.	00	1.00	1.0	0	1
4	1.	00	1.00	1.0	0	2
5	1.	00	1.00	1.0	0	1
6	1.	00	1.00	1.0	0	1
accur	acy			1.00	) 1	2
macro	avg	1.0	0 1	.00	1.00	12
weighte	d avg	1.0	00	1.00	1.00	12

Sentence: i would like a flight that leaves on friday from philadelphia to dallas that makes a stop in atlanta

True tags: PRON AUX VERB DET NOUN ADP VERB ADP NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN NOUN VERB ADP NOUN ADP PROPN ADP PROPN ADP VERB DET NOUN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	0.83	0.91	6
3	0.75	1.00	0.86	3
4	1.00	1.00	1.00	3
5	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		0.9	5	19
macro avg	0.96	0.98	0.97	19
weighted avg	0.96	0.95	0.95	19

Sentence: list flights from philadelphia to dallas that stop in atlanta

True tags: VERB NOUN ADP PROPN ADP PROPN ADP VERB ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN VERB ADP

**PROPN** 

Classification Report:

	precision		reca	III †1-	-score	e supp	ort
1	0	75	1.00	) (	0.86	3	
2	_	00	0.75		0.86	4	
3	1.	00	1.00	) .	1.00	1	
4	1.	00	1.00	)	1.00	2	
accur	асу			C	0.90	10	
macro	avg	0.9	94	0.94	0	.93	10
weighte	d avg	0.	93	0.9	0	0.90	10

Sentence: what is the available ground transportation between san francisco and downtown

True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN CCONJ NOUN

Classification Report:

	preci	sion	recal	l f1-s	core	supp	ort
1	1	.00	1.00	1.	00	2	
2	1	.00	1.00	1.	00	1	
3	1	.00	1.00	1.	00	3	
5	1	.00	1.00	1.	00	1	
6	1	.00	1.00	1.	00	1	
7	1	.00	1.00	1.	00	1	
8	1	.00	1.00	1.	00	1	
10	) ′	1.00	1.00	) 1	.00	1	
accur	асу			1.0	00	11	
macro weighted	•	1.0 1.	00 .00	1.00 1.00	1.00 1.0		11 11

Sentence: what ground transportation is there from the airport in atlanta to downtown True tags: DET NOUN NOUN VERB PRON ADP DET NOUN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN NOUN AUX PRON ADP DET NOUN ADP PROPN

ADP NOUN

Classification Report:

precision recall f1-score support

1.00 1.00 1.00 1

	2	1.00	)	1.0	)	1.0	)0	3	
	3	1.00	)	1.0	C	1.0	00	4	
	4	1.00	)	0.0	C	0.0	00	1	
	5	1.00	)	0.5	0	0.6	67	2	
	6	0.50	)	1.0	0	0.6	67	1	
	8	0.00	)	1.0	0	0.0	00	0	
accı	uracy					8.0	3	12	
macı	ro avç	)	0.79	9	0.7	9	0.6	32	12
weight	ed av	g	0.9	96	0.	83	0	.83	12

Sentence: what flights go from dallas to denver leaving after 3 pm

True tags: DET NOUN VERB ADP PROPN ADP PROPN VERB ADP NUM NOUN Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN NOUN

Classification Report:

	precisi	on re	call	f1-scc	ore sup	port
1	1.0	00 1	.00	1.00	) 2	
2	1.0	00 1	.00	1.00	) 3	
3	0.6	<sup>37</sup> 1	.00	0.80	) 2	
4	1.0	00 1	.00	1.00	) 2	
5	1.0	0 0	.00	0.00	) 1	
6	0.0	00 1	.00	0.00	0 0	
9	1.0	0 0	.00	0.00	) 1	
accur	acy			0.82	! 11	
macro	avg	0.81	0	.71	0.54	11
weighted	d avg	0.94	(	0.82	0.78	11

Sentence: can you list all flights from chicago to <unk> louis that depart after 12 noon

True tags: AUX PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB ADP NUM NOUN

Predicted tags: PRON PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP VERB ADP NUM NOUN

	prec	ision	reca	ıll f1-	score	supp	ort
1		1.00	1.00	) 1	.00	3	
2	•	1.00	1.00	) 1	.00	4	
3	•	1.00	1.00	) 1	.00	2	
4	•	1.00	1.00	) 1	.00	2	
5	•	1.00	1.00	) 1	.00	1	
6	(	0.50	1.00	) (	.67	1	
8	•	1.00	0.00	) (	.00	1	
9	•	1.00	1.00	) 1	.00	1	
accur	асу			0	.93	15	
macro	avg	0	.94	0.88	0	.83	15

weighted avg 0.97 0.93 0.91 15

Sentence: is there a flight between philadelphia and denver that leaves philadelphia around 2 <unk> in the afternoon

True tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN ADP VERB PROPN ADP NUM ADV ADP DET NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN CCONJ PROPN PROPN VERB PROPN ADP VERB VERB ADP DET NOUN

Classification Report:

pr	ecision	recall	f1-score	suppo	rt
1	0.75	1.00	0.86	3	
2	1.00	0.75	0.86	4	
3	1.00	1.00	1.00	2	
4	0.50	1.00	0.67	2	
5	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accurac	y		0.82	17	
macro av weighted a	•		.75 0.7 0.82 0.	'1 ´ 78	17 17

Sentence: what flights leaving pittsburgh arrive in denver and leave after say 6 <unk> at night

True tags: DET NOUN VERB PROPN VERB ADP PROPN CCONJ VERB ADP VERB NUM ADV ADP NOUN

Predicted tags: PRON NOUN VERB PROPN VERB ADP PROPN CCONJ VERB ADP PROPN NUM NUM ADP PROPN

Classification Report:

ŗ	recision	recall	f1-score	supp	ort
1	0.50	1.00	0.67	2	
2	1.00	1.00	1.00	3	
3	1.00	0.50	0.67	2	
4	1.00	0.75	0.86	4	
5	1.00	0.00	0.00	1	
6	0.00	1.00	0.00	0	
9	0.50	1.00	0.67	1	
10	1.00	1.00	1.00	1	
11	1.00	0.00	0.00	1	
accura		70 0	0.73	15	45
macro a weighted	•		.69 0.5 0.73 0.	72	15 15

Sentence: dallas to houston after <unk> am

True tags: PROPN ADP PROPN ADP NUM NOUN

Predicted tags: PROPN ADP PROPN ADP PROPN NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	ort
1	0.0	37	1.00	0.8	0	2	
2			1.00	1.0		2	
3	1.0	00	1.00	1.0	0	1	
9	1.0	00	0.00	0.0	0	1	
						_	
accur	acy			0.83	3	6	
macro	avg	0.9	2 0	.75	0.70		6
weighted	d avg	0.8	89	0.83	0.77	,	6

Sentence: is there a flight around 3 pm from charlotte to minneapolis

True tags: VERB PRON DET NOUN ADP NUM NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN PROPN NOUN NOUN ADP PROPN ADP

PROPN

Classification Report:

Ciacomic	ation i topo	,, ,,		
I	orecision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	0.67	0.80	3
3	0.67	1.00	0.80	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1
accura	су		0.82	11
macro a	avg 0.9	90 0	.81 0.7	77 11
weighted	avg 0	.88	0.82	.78 11

Sentence: i like to see the information for flights from pittsburgh to san francisco leaving pittsburgh after 12 pm

True tags: PRON VERB PART VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB PROPN ADP NUM NOUN

Predicted tags: PRON VERB VERB VERB DET NOUN ADP NOUN ADP PROPN ADP PROPN VERB PROPN ADP NUM NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	3
4	0.75	1.00	0.86	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
9	1.00	1.00	1.00	1
12	2 1.00	0.00	0.00	1

accuracy		0.9	4 18	3
macro avg	0.97	0.88	0.86	18
weighted avg	0.96	0.94	0.92	18

Sentence: a listing of all flights from boston to baltimore before 10 am on thursday True tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP NUM **NOUN ADP NOUN** 

Predicted tags: DET NOUN ADP DET NOUN ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Classification Report:

	precis	sion	reca	all	f1-sc	ore	supp	ort
1	1.	00	1.0	0	1.0		2	
2	1.	00	1.0	0	1.0	0	5	
3	1.	00	1.0	0	1.0	0	4	
5	1.	00	1.0	0	1.0	0	2	
9	1.	00	1.0	0	1.0	0	1	
accur	асу				1.00	)	14	
macro	avg	1.0	00	1.	.00	1.0	0	14
weighte	d avg	1	.00	1	00.1	1.0	00	14

Sentence: i <unk> like a flight from san diego to toronto on alaska airlines leaving around 1 pm

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP PROPN PROPN VERB ADP VERB NOUN

Classification Report:

	prec	ision	recall	f1-score	supp	ort
1	1	1.00	1.00	1.00	5	
2	. 1	00.1	1.00	1.00	4	
3	1	.00	1.00	1.00	2	
4	. (	0.67	1.00	0.80	2	
5	1	.00	1.00	1.00	1	
6	1	.00	1.00	1.00	1	
8	1	.00	1.00	1.00	1	
9	1	1.00	0.00	0.00	1	
accur	•	0	06 (	0.94	17	17
macro weighte	_			0.88 0.8 0.94 0	.92	17 17

Sentence: i want a flight from atlanta to washington that leaves after 3 pm

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP

**NUM NOUN** 

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADP NOUN NOUN Classification Report:

pre	ecision	recall	f1-sco	re supp	ort
1	0.67	1.00	0.80	2	
2	1.00	0.75	0.86	4	
3	0.67	1.00	0.80	2	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
9	1.00	0.00	0.00	1	
accuracy	,		0.85	13	
macro av	g 0.9	90 0	.82	0.78	13
weighted av	/g 0	.90	0.85	0.82	13

Sentence: list all flights going from boston to atlanta on wednesday after 6 <unk> pm on wednesday

True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NUM NOUN ADP NOUN

Classification Report:

	preci	31011	1608		SCOLE	Supp	Οιι
1	1	.00	1.00	) 1	1.00	2	
2	1	.00	1.00	) 1	1.00	5	
3	1	.00	1.00	) 1	1.00	4	
4	1	.00	1.00	) 1	1.00	2	
5	1	.00	1.00	) 1	1.00	1	
9	0	.50	1.00	) (	0.67	1	
11	1 1	1.00	0.0	0 (	0.00	1	
accur	acy			0	.94	16	
macro	avg	0.9	93	0.86	0.	.81	16
weighted	d avg	0.	.97	0.94	4 (	).92	16

precision recall f1-score support

Sentence: i need flight information for a flight departing from cleveland to milwaukee wednesday after 6 pm

True tags: PRON VERB NOUN NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP DET NOUN VERB ADP PROPN ADP PROPN NOUN ADP NUM NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	4
3	1.00	1.00	1.00	5
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

9 1.00 1.00 1.00 1 16 accuracy 1.00 macro avg 1.00 1.00 1.00 16 1.00 1.00 16 weighted avg 1.00

Sentence: what flights go from boston to denver before 10 am

True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 3 1.00 1.00 1.00 2 3 1.00 1.00 1.00 4 1 1.00 1.00 1.00 5 1.00 0.00 0.00 1 6 0.00 1.00 0.00 0 1.00 9 1.00 1.00 1 0.90 10 accuracy 0.71 10 macro avg 0.86 0.86 weighted avg 1.00 0.90 0.90 10

Sentence: list all flights from boston to atlanta after 6 <unk> pm on wednesday True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM ADV NOUN ADP NOUN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NUM NUM NOUN ADP NOUN

Classification Report:

	precis	ion re	call	f1-scor	e supp	ort
1	1.0	00 1	.00	1.00	2	
2	1.0	00 1	.00	1.00	4	
3	1.0	00 1	.00	1.00	3	
4	1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	1	
9	0.5	50 1	.00	0.67	1	
11	l 1.	00 0	00.0	0.00	1	
accur	•			0.92	13	
macro weighte	_	0.93 0.96	_	.86 ( ).92	0.81 0.90	13 13

Sentence: i <unk> looking for flights from pittsburgh to philadelphia leaving before 9 am

True tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

Predicted tags: PRON AUX VERB ADP NOUN ADP PROPN ADP PROPN VERB ADP NUM NOUN

## Classification Report:

	precisi	on re	ecall	f1-sc	ore su	ıpport
1	1.0	0 1	.00	1.00	)	2
2	1.0	0 1	.00	1.0	)	4
3	1.0	0 1	.00	1.0	)	2
4	1.0	0 1	.00	1.0	)	2
6	1.0	0 1	.00	1.0	C	1
8	1.0	0 1	.00	1.0	C	1
9	1.0	0 1	.00	1.0	)	1
accur	acy			1.00	) 1	3
macro weighted	•	1.00 1.00		.00 1.00	1.00 1.00	13 13

Sentence: list all flights going from boston to atlanta before 7 am on thursday True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM NOUN ADP NOUN

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN NOUN ADP NOUN

Classification Report:

			-				
	prec	ision	reca	ıll f1-:	score	supp	ort
_			4.04		00	0	
1	1	00.1	1.00	) 1	.00	2	
2	2 1	.00	1.00	) 1	.00	4	
3	3 (	).75	1.00	0 (	.86	3	
4	. 1	.00	1.00	) 1	.00	2	
5	5 1	.00	1.00	) 1	.00	1	
S	) 1	00.1	0.00	0 0	.00	1	
accui	racy			0	.92	13	
macro	avg	0.	.96	0.83	3.0	31	13
weighte	d avg	(	0.94	0.92	2 0.	89	13

Sentence: i need flight information for flights departing from cleveland to milwaukee on wednesday after 5 pm

True tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

Predicted tags: PRON VERB NOUN NOUN ADP NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	5
3	1.00	1.00	1.00	5
4	1.00	1.00	1.00	2
6	1.00	1.00	1.00	1
9	1.00	1.00	1.00	1

accuracy		1.0	0 16	3
macro avg	1.00	1.00	1.00	16
weighted avg	1.00	1.00	1.00	16

Sentence: can you find me another flight from cincinnati to new york on saturday before 6 pm

True tags: AUX PRON VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN ADP NUM NOUN

Predicted tags: PRON PRON VERB PRON NOUN NOUN ADP PROPN ADP PROPN ADP NOUN ADP NUM NOUN

Classification Report:

р	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	4	
3	0.75	1.00	0.86	3	
4	1.00	1.00	1.00	1	
5	1.00	0.00	0.00	1	
6	0.67	1.00	0.80	2	
8	1.00	0.00	0.00	1	
9	1.00	1.00	1.00	1	
accurac	СУ		0.88	16	
macro a	vg 0.9	93 0	.75 0.7	71	16
weighted	avg 0	.91 (	0 88.0	.82	16

Sentence: i would like a flight from san francisco to pittsburgh on friday morning after 10 <unk>

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN ADP NUM ADV

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP NOUN NOUN ADP NUM NUM

Classification Report:

Olabbillo	auon i	op 0. t.				
	precisio	on re	call	f1-scor	e sup	port
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	3	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
9	0.5	0 1.	00	0.67	1	
11	1.0	0 0	.00	0.00	1	
accur	асу			0.94	16	
macro weighted	•	0.94 0.97	_	.89 ( ).94	0.85 0.92	16 16
5.9.110	~ ~·9	0.01	•		5.5 <b>_</b>	

Sentence: list all flights going from boston to atlanta before 5 <unk> am on thursday

True tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM ADV

**NOUN ADP NOUN** 

Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN ADP NUM

NUM NOUN ADP NOUN Classification Report:

ŗ	recision	recall	f1-sc	ore supp	ort
1	1.00	1.00	1.0	0 2	
2	1.00	1.00	1.0	0 4	
3	1.00	1.00	1.0	0 3	
4	1.00	1.00	1.0	0 2	
5	1.00	1.00	1.0	0 1	
9	0.50	1.00	0.6	7 1	
11	1.00	0.00	0.0	0 1	
accura	су		0.93	3 14	
macro a	avg 0.9	93 (	0.86	0.81	14
weighted	avg 0	.96	0.93	0.90	14

Sentence: what is the last flight from baltimore to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on red	call f	1-sco	re su	pport
1	1.0	0 1.	00	1.00	2	2
2	1.0	0 1.	00	1.00	2	2
3	1.0	0 1.	00	1.00		1
5	1.0	0 1.	00	1.00	•	1
6	1.0	0 1.	00	1.00	•	1
7	1.0	0 1.	00	1.00	•	1
8	1.0	0 1.	00	1.00	•	1
accur	acy			1.00	9	)
macro	avg	1.00	1.0	)0	1.00	9
weighted	d avg	1.00	1.	.00	1.00	9

Sentence: what <unk> the latest flight from san jose to houston

True tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

accuracy		1.0	0 10	
macro avg	1.00	1.00	1.00	10
weighted avg	1.00	1.00	1.00	10

Sentence: what is the earliest flight from pittsburgh to san francisco

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	sion	recal	f1-sc	ore s	upport
1	1	.00	1.00	1.0	0	3
2	1	.00	1.00	1.0	0	2
3	1	.00	1.00	1.0	0	1
5	1	.00	1.00	1.0	0	1
6	1	.00	1.00	1.0	0	1
7	1	.00	1.00	1.0	0	1
8	1	.00	1.00	1.0	0	1
accur	acy			1.0	0	10
macro	avg	1.0	00	1.00	1.00	10
weighted	d avg	1	.00	1.00	1.00	10

Sentence: show first flight from philadelphia to dallas True tags: VERB ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	ore su	oddr	rt
1	1.0	0 1	.00	1.00	)	2	
2	1.0	0 1	.00	1.00	)	2	
3	1.0	0 1	.00	1.00	)	1	
4	0.5	50 1	.00	0.67	7	1	
7	1.0	0 0	.00	0.00	)	1	
accur	acy			0.86	i '	7	
macro	avg	0.90	0	.80	0.73		7
weighted	d avg	0.93	(	0.86	0.81		7

Sentence: what <unk> the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

precision	recall	f1-score	support
1.00	1.00	1.00	2
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

7 1.	00 1	.00 1	.00	1
8 1.	00 1	.00 1	.00	1
accuracy		1.	00	9
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: what is the shortest flight from milwaukee to <unk> petersburg
True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

Ola a differentiate Description

Classification Report:

	precisi	on re	call	f1-scc	re sup	port
1	1.0	00 1	.00	1.00	) 3	
2	1.0	00 1.	.00	1.00	) 2	
3	1.0	00 1.	.00	1.00	) 1	
5	1.0	00 1.	.00	1.00	) 1	
6	1.0	00 1.	.00	1.00	) 1	
7	1.0	00 1.	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accur	асу			1.00	10	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	10 10

Sentence: shortest evening flight from tampa to cincinnati True tags: ADJ NOUN NOUN ADP PROPN ADP PROPN

Predicted tags: NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

precis	sion	recall	t1-sc	ore su	pport
1 1.	00	1.00	1.00	) 2	2
2 1.	00	1.00	1.00	) 2	2
3 0.	67	1.00	0.80	) 2	2
7 1.	00	0.00	0.0	o ,	1
accuracy			0.86	5 7	,
macro avg	0.9	2 0	.75	0.70	7
weighted avg	0.9	90	0.86	0.80	7

Sentence: what is the earliest flight you have leaving boston heading to philadelphia True tags: PRON AUX DET ADJ NOUN PRON VERB VERB PROPN VERB ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN AUX VERB VERB PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1 0.67 1.00 0.80 2
2 1.00 1.00 1.00 1

3	}	1.00	) 1	1.00	•	1.00	)	1	
4	ļ	1.00	(	0.67	(	08.0	)	3	
5	5	1.00	) 1	1.00	•	1.00	)	1	
6	6	1.00	(	0.50	(	0.67	7	2	
7	7	1.00	) 1	1.00	•	1.00	)	1	
8	3	0.50	) 1	1.00	(	0.67	7	1	
accur	acy				C	0.83	}	12	
macro	avg		0.90		0.90		0.87		12
weighte	d av	g	0.90	)	0.8	3	0.83	3	12

Sentence: what is the earliest flight from boston to san francisco

precision recall f1-score support

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN AUX DET ADJ NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	p. 0 0						• • •
1	1	.00	1.00	) 1.	00	3	
2	1	.00	1.00	1.	00	2	
3	1	.00	1.00	1.	00	1	
5	1	.00	1.00	1.	00	1	
6	1	.00	1.00	1.	00	1	
7	1	.00	1.00	1.	00	1	
8	1	.00	1.00	1.	00	1	
accur	acy			1.0	00	10	
macro	avg	1.0	00	1.00	1.0	0	10
weighte	d avg	1	.00	1.00	1.	00	10

Sentence: flights from denver to westchester county new york weekdays
True tags: NOUN ADP PROPN ADP PROPN PROPN PROPN NOUN
Predicted tags: NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN CCONJ
Classification Report:

рі	recisior	n red	call	f1-sco	ore	supp	ort
1	1.00	1.0	00	1.00	)	5	
2	1.00	1.0	00	1.00	C	2	
3	1.00	0.	50	0.6	7	2	
10	0.00	1.	.00	0.0	0	0	
accurac	У			0.89	)	9	
macro a	vg (	0.75	0.	88	0.6	7	9
weighted a	avg	1.00	0	.89	0.9	93	9

Sentence: what is the last flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support

	1	1.0	0	1.0	0	1.0	0	2	
	2	1.0	0	1.0	0	1.0	0	2	
	3	1.0	0	1.0	0	1.0	0	1	
	5	1.0	0	1.0	0	1.0	0	1	
	6	1.0	0	1.0	0	1.0	0	1	
	7	1.0	0	1.0	0	1.0	0	1	
	8	1.0	0	1.0	0	1.0	0	1	
acc	curacy	,				1.0	0	9	
mad	cro av	g	1.0	0	1.0	0	1.0	00	9
weigh	ited av	√g	1.0	00	1.	00	1.	.00	9

Sentence: what is the earliest flight leaving denver going to boston

True tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN VERB PROPN VERB ADP PROPN

Classification Report:

	precisi	on r	ecall	f1-sc	ore s	suppo	ort
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	1	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	2	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
7	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	00	1	
accur	асу			1.0	0	10	
macro	avg	1.00	1	.00	1.00		10
weighted	d avg	1.0	0	1.00	1.00	)	10

Sentence: what is the earliest flight from ontario to memphis

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

O.a.com.c	precis	ion re	ecall	f1-sco	ore s	upport
1	1.0	00 1	1.00	1.00	)	2
2	1.0	00 1	.00	1.00	)	2
3	1.0	00 1	.00	1.00	)	1
5	1.0	00 1	.00	1.00	)	1
6	1.0	00 1	.00	1.00	)	1
7	' 1.0	00 1	.00	1.00	)	1
8	1.0	00 1	.00	1.00	)	1
accur	acy			1.00		9
macro	avg	1.00	1	.00	1.00	9
weighte	d avg	1.00	)	1.00	1.00	9

Sentence: what is the earliest flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-sc	ore s	uppo	rt
1	1.0	0 1.	00	1.0	0	2	
2	1.0	0 1.	00	1.0	0	2	
3	1.0	0 1.	00	1.0	0	1	
5	1.0	0 1.	00	1.0	0	1	
6	1.0	0 1.	00	1.0	0	1	
7	1.0	0 1.	00	1.0	0	1	
8	1.0	0 1.	00	1.0	0	1	
accura	асу			1.00	)	9	
macro	avg	1.00	1	.00	1.00	!	9
weighted	l avg	1.00	•	1.00	1.00	)	9

Sentence: what is the last flight leaving san francisco going to washington on friday True tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP PROPN ADP NOUN

Predicted tags: PRON AUX DET ADJ NOUN VERB PROPN PROPN VERB ADP PROPN ADP NOUN

Classification Report:

	precis	sion	recall	f1-scc	re supp	ort
1	1.	.00	1.00	1.00	) 3	
2		.00	1.00	1.00	_	
3	1.	.00	1.00	1.00	) 2	
4	. 1.	.00	1.00	1.00	) 2	
5	1.	.00	1.00	1.00	) 1	
6	1.	.00	1.00	1.00	) 1	
7	' 1.	.00	1.00	1.00	) 1	
8	1.	.00	1.00	1.00	) 1	
accur	acy			1.00	13	
macro	•	1.0		.00	1.00	13
weighte	d avg	1	.00	1.00	1.00	13

Sentence: what is the earliest morning flight from san francisco to boston True tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1

7 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 accuracy 1.00 11 macro avg 1.00 1.00 1.00 11 weighted avg 1.00 1.00 1.00 11

Sentence: what <unk> the earliest flight from dallas to houston True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 2 1 1.00 1.00 1.00 2 1.00 1.00 1.00 2 3 1 1.00 1.00 1.00 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 7 1.00 1.00 1.00 1 8 1.00 1.00 1.00 1 9 accuracy 1.00 macro avg 1.00 1.00 1.00 9 weighted avg 1.00 1.00 9 1.00

Sentence: i <unk> like to find the earliest flight possible from san francisco to atlanta True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADJ ADP PROPN PROPN

Predicted tags: PRON AUX VERB ADP VERB DET ADJ NOUN ADJ ADP PROPN

PROPN ADP PROPN Classification Report:

	precis	sion	recall	f1-scc	re supp	ort
1	1.	00	1.00	1.00	) 3	
2	0.	67	1.00	0.80	) 2	
3	1.	00	1.00	1.00	) 1	
4	1.	00	1.00	1.00	2	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
7	1.	00	1.00	1.00	) 2	
8	1.	00	1.00	1.00	) 1	
12	2 1	.00	0.00	0.0	0 1	
accur macro	•	0.9	6 0	0.93 ).89	14 0.87	14
weighte	d avg	0.9	95	0.93	0.90	14

Sentence: what is the latest evening flight leaving san francisco for washington True tags: PRON AUX DET ADJ NOUN NOUN VERB PROPN PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN VERB PROPN PROPN ADP

**PROPN** 

Classification Report:

	precisio	n reca	ıll f1-so	core su	oport
1	1.00	1.00	) 1.0	00 3	3
2	1.00	1.00	) 1.0	00 1	
3	1.00	1.00	) 1.0	00 2	2
4	1.00	1.00	) 1.0	00 1	
5	1.00	1.00	) 1.0	00 1	
6	1.00	1.00	) 1.0	00 1	
7	1.00	1.00	) 1.0	00 1	
8	1.00	1.00	) 1.0	00 1	
accura	асу		1.0	0 11	
macro	avg	1.00	1.00	1.00	11
weighted	d avg	1.00	1.00	1.00	11

Sentence: what is the first flight from boston to atlanta and what is the last flight from atlanta to boston

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN CCONJ PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	recal	l f1-sc	ore s	support	
1	1	.00	1.00	1.0	00	4	
2	1	.00	1.00	1.0	00	4	
3	1	.00	1.00	1.0	00	2	
5	1	.00	1.00	1.0	00	2	
6	1	.00	1.00	1.0	00	2	
7	´ 1	.00	1.00	1.0	00	2	
8	1	.00	1.00	1.0	00	2	
10	) 1	1.00	1.00	1.	00	1	
accur	асу			1.0	0	19	
macro	avg	1.0	00	1.00	1.00	19	
weighte	d avg	1.	.00	1.00	1.00	) 19	

Sentence: what <unk> the cheapest one way ticket from baltimore to atlanta True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN Classification Report:

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1

```
6
           1.00
                   1.00
                          1.00
                                    1
      7
           0.50
                   1.00
                          0.67
                                    1
      8
           1.00
                   1.00
                          1.00
                                    1
      9
                          0.00
           1.00
                   0.00
                                    1
                                   11
                          0.91
  accuracy
 macro avg
               0.94
                       0.88
                              0.83
                                       11
weighted avg
                0.95
                        0.91
                               88.0
                                        11
```

Sentence: what <unk> the cheapest round trip fare between boston and washington True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN

Classification Report:

0.0.000	precision		f1-score	support
	<b>P</b> • • • • • • • • • • • • • • • • • • •			
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accura	асу		1.00	11
macro	avg 1.	00 1	.00 1.0	00 11
weighted	davg 1	.00	1.00 1.	00 11

Sentence: what is the cheapest round trip fare between boston and san francisco True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

O la comit	nrecisi	•	call	f1-score	e supp	ort
	prodisi	011 10	oan	11 3001	о очер	, OI C
1	1.0	00 1.	.00	1.00	3	
2	1.0	00 1.	.00	1.00	1	
3	1.0	00 1.	.00	1.00	3	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
10	) 1.	00 1	.00	1.00	1	
accur	acy			1.00	12	
macro	avg	1.00	1	.00 1	.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: what is the cheapest round trip fare from atlanta to pittsburgh

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precis	ion	recall	f1-sc	ore s	suppo	ort
1	1.	00	1.00	1.0	00	2	
2	1.	00	1.00	1.0	0	2	
3	1.	00	1.00	1.0	0	3	
5	1.	00	1.00	1.0	0	1	
6	1.	00	1.00	1.0	0	1	
7	1.	00	1.00	1.0	0	1	
8	1.	00	1.00	1.0	0	1	
accur	acy			1.0	0	11	
macro	avg	1.0	00 1	1.00	1.00		11
weighted	d avg	1.	.00	1.00	1.0	0	11

Sentence: what is the cheapest fare from baltimore to dallas in any class
True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP DET NOUN
Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP DET

NOUN

Classification Report:

	precis	ion i	recall	f1-sc	ore supp	oort
1	1.0	00	1.00	1.0	0 2	
2	1.0	00	1.00	1.0	0 3	
3	1.0	00	1.00	1.0	0 2	
5	1.0	00	1.00	1.0	0 2	
6	1.0	00	1.00	1.0	0 1	
7	1.0	00	1.00	1.0	0 1	
8	1.0	00	1.00	1.0	0 1	
accur	асу			1.00	) 12	
macro weighted	•	1.00 1.0		.00 1.00	1.00 1.00	12 12

Sentence: what is the cheapest one way fare from boston to washington True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3		1.00	1.00	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
7	0.50	1.00	0.67	1

8 1	.00	1.00	)	1.00	)	1	
9 1	.00	0.00	)	0.00	)	1	
accuracy				0.91		11	
macro avg	0.9	94	0.8	8	0.83		11
weighted avg	0.	95	0.9	91	0.88	3	11

Sentence: i <unk> interested in the cheapest fare from washington to fort worth True tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN PROPN

Predicted tags: PRON AUX VERB ADP DET ADJ NOUN ADP PROPN PROPN

Classification Report:

	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
				4.0	
accura	•		1.00	12	
macro	avg 1.0	00 1	.00 1.0	00	12
weighted	avg 1	.00	1.00 1.	.00	12

Sentence: i would like to book a flight from denver to pittsburgh on july fifteenth i <unk> like it to be the cheapest flight

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN ADJ PRON AUX VERB PRON PART AUX DET ADJ NOUN Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP PROPN ADJ PRON AUX ADP AUX VERB VERB DET ADJ NOUN Classification Report:

	preci	sion	recal	l f1-so	core	supp	ort
1	1	.00	1.00	1.0	00	2	
2	0	.60	1.00	0.	75	3	
3	1	.00	1.00	1.0	00	3	
4	0	.50	0.67	0.	57	3	
5	1	.00	1.00	1.0	00	2	
6	1	.00	0.67	0.8	80	3	
7	1	.00	1.00	1.0	00	2	
8	0	.67	0.67	0.0	67	3	
12	2 '	1.00	0.00	0.	.00	2	
accur	acy			0.7	<b>7</b> 8	23	
macro	avg	3.0	36	0.78	0.7	5	23
weighte	d avg	0.	84	0.78	0.	75	23

Sentence: what is the cheapest fare from dallas to denver on delta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN ADP

PROPN

Classification Report:

0.0000	G	· ·OPO				
	precis	sion	recall	f1-sco	ore sup	port
1	1.	00	1.00	1.00	3	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	) 1	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
7	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	) 1	
accur	асу			1.00	) 11	
macro weighted	•	1.0 1.		.00 1.00	1.00 1.00	11 11

Sentence: can you show me the cheapest round trip flights between denver and pittsburgh

True tags: AUX PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

Predicted tags: PRON PRON VERB PRON DET ADJ NOUN NOUN ADP PROPN CCONJ PROPN

Classification Report:

precision		f1-score	supp	ort
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
1.00	1.00	1.00	3	
1.00	1.00	1.00	1	
1.00	1.00	1.00	1	
0.67	1.00	0.80	2	
1.00	1.00	1.00	1	
1.00	0.00	0.00	1	
1.00	1.00	1.00	1	
су		0.92	13	
0				13 13
	1.00 1.00 1.00 1.00 1.00 0.67 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.67 1.00 1.00 1.00 1.00 0.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0.67 1.00 0.80 1.00 1.00 1.00 1.00 0.00 0.00 1.00 1.00 1.00 cy 0.92 avg 0.96 0.89 0.8	1.00 1.00 1.00 2 1.00 1.00 1.00 1 1.00 1.00 1.00 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: what <unk> the lowest round trip fare from denver to atlanta

True tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN NOUN NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

precision recall f1-score support

	1	1.0	0	1.0	00	1.0	00	2	
	2	1.0	0	1.0	00	1.0	00	2	
	3	1.0	0	1.0	00	1.0	00	3	
	5	1.0	0	1.0	00	1.0	00	1	
	6	1.0	0	1.0	00	1.0	00	1	
	7	1.0	0	1.0	00	1.0	00	1	
	8	1.0	0	1.0	00	1.0	00	1	
ac	curac	У				1.0	0	11	
	acro av	_	1.0	00	1.	00	1.0	0	11
weig	hted a	avg	1	.00	1	.00	1.	00	11

Sentence: what is the cheapest flight from boston to atlanta

True tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore s	upport	
1	1.0	0 1.	.00	1.0	0	2	
2	1.0	0 1.	.00	1.0	0	2	
3	1.0	0 1.	.00	1.0	0	1	
5	1.0	0 1.	.00	1.0	0	1	
6	1.0	0 1.	.00	1.0	0	1	
7	1.0	0 1.	.00	1.0	0	1	
8	1.0	0 1.	.00	1.0	0	1	
accur	acy			1.00	)	9	
macro	avg	1.00	1	.00	1.00	9	
weighted	d avg	1.00	•	1.00	1.00		9

Sentence: i <unk> like to find the cheapest fare from atlanta to dallas

True tags: PRON AUX VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB ADP VERB DET ADJ NOUN ADP PROPN ADP

PROPN

- iacomoano					
pre	cision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	0.67	1.00	0.80	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	0.00	0.00	1	
accuracy			0.92	12	
macro avo	g 0.9	96 0	.89 0.8	37	12

weighted avg 0.94 0.92 0.88 12

Sentence: lowest fare from san francisco to los angeles

True tags: ADJ NOUN ADP PROPN PROPN ADP PROPN PROPN

Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scc	ore su	pport
1	1.0		.00	1.00		4
2	1.0	0 1.	.00	1.00	) :	2
3	1.0	0 1.	.00	1.00	)	1
4	0.0	0 1.	.00	0.00	)	0
7	1.0	0 0	.00	0.00	)	1
accur	асу			0.88	8	3
macro	avg	0.80	0	.80	0.60	8
weighted	d avg	1.00	(	38.0	0.88	8

Sentence: i <unk> like the lowest fare from denver to pittsburgh

True tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB DET ADJ NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	call	f1-scor	e supp	ort
1	1.0	00 1	.00	1.00	2	
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	1	
4	1.0	00 1.	.00	1.00	1	
5	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
7	1.0	00 1.	.00	1.00	1	
8	1.0	00 1.	.00	1.00	1	
accur	асу			1.00	10	
macro	avg	1.00	1.	.00 1	1.00	10
weighte	d avg	1.00	1	1.00	1.00	10

Sentence: okay i <unk> want to know the cheapest fare from atlanta to boston True tags: INTJ PRON ADV VERB PART VERB DET ADJ NOUN ADP PROPN ADP

**PROPN** 

Predicted tags: VERB PRON AUX VERB ADP VERB DET ADJ NOUN ADP PROPN

ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.67	1.00	0.80	2
3	1.00	1.00	1.00	1
4	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1

6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	0.00	1.00	0.00	0	
11	1.00	0.00	0.00	1	
12	1.00	0.00	0.00	1	
13	1.00	0.00	0.00	1	
accuracy	1		0.77	13	
macro av	g 0.8	35 0	.73 0.	60	13
weighted av	vg 0.	.90 (	0.77	.71	13

Sentence: what are the lowest one way fares from atlanta to denver

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sco	ore sup	port
1	1.	00	1.00	1.00	) 2	)
2	1.	00	1.00	1.00	) 2	1
3	1.	00	1.00	1.00	) 2	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
7	0.	50	1.00	0.67	7 1	
8	1.	00	1.00	1.00	) 1	
9	1.	00	0.00	0.00	) 1	
accur	асу			0.91	11	
macro	avg	0.94	4 0	.88	0.83	11
weighted	d avg	0.9	95 (	0.91	0.88	11

Sentence: what is the cheapest one way fare from any city to another

True tags: PRON AUX DET ADJ NUM NOUN NOUN ADP DET PROPN ADP DET Predicted tags: PRON AUX DET ADJ ADJ NOUN NOUN ADP NUM PROPN ADP

**PROPN** 

	precisio	n rec	all f1-s	core su	ıpport
1	0.50	) 1.0	0 0.	67	1
2	1.00	1.0	0 1.	00	2
3	1.00	1.0	0 1.	00	2
5	1.00	0.3	3 0.	50	3
6	1.00	1.0	0 1.	00	1
7	0.50	1.0	0.00	67	1
8	1.00	1.0	0 1.	00	1
9	0.00	0.0	0 0.	00	1
accur	асу		0.7	75 1	2
macro	avg	0.75	0.79	0.73	12
weighted	d avg	0.83	0.75	0.74	12

Sentence: i <unk> like the cheapest cost fare to fort worth from boston

True tags: PRON AUX VERB DET ADJ NOUN NOUN ADP PROPN PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB DET ADJ NOUN NOUN ADP PROPN PROPN

ADP PROPN

Classification Report:

Ciacomic	ation i topo				
ı	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
accura	су		1.00	12	
macro a	•		.00 1.0	-	12
weighted	avg 1	.00 ′	1.00 1.	00	12

Sentence: show me the cheapest one way fares from san diego to miami

True tags: VERB PRON DET ADJ NUM NOUN NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB PRON DET ADJ ADJ NOUN NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	proo	0.011	1000	۷11	00	010	очрр	011
1	1	.00	1.0	0	1.0	0	3	
2	1	.00	1.0	0	1.0	0	2	
3	1	.00	1.0	0	1.0	0	2	
4	1	.00	1.0	0	1.0	0	1	
5	1	.00	1.0	0	1.0	0	1	
6	1	.00	1.0	0	1.0	0	1	
7	C	.50	1.0	0	0.6	7	1	
9	1	.00	0.0	0	0.0	0	1	
accur	acy				0.92	2	12	
macro	•		94		.88	0.8		12
weighte	a avg	Ĺ	).96	(	).92	0.8	89	12

precision recall f1-score support

Sentence: what flights leave philadelphia for dallas and depart before noon on

american airlines

True tags: DET NOUN VERB PROPN ADP PROPN CCONJ VERB ADP NOUN ADP PROPN PROPN

Predicted tags: PRON NOUN VERB PROPN ADP PROPN CCONJ VERB ADP

NOUN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.00	1.0	0 4	
2	1.00	1.00	1.0	0 3	}
3	1.00	1.00	1.0	0 2	<u> </u>
4	1.00	1.00	1.0	0 2	) -
5	1.00	0.00	0.0	0 1	
6	0.00	1.00	0.0	0 0	)
10	1.00	1.00	1.0	00	1
accuracy			0.92	2 13	3
macro av	g 0.8	36 (	0.86	0.71	13
weighted av	/g 1.	.00	0.92	0.92	13

Sentence: i need a flight from cleveland to dallas that leaves before noon see if too much information

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP VERB ADP NOUN VERB ADP ADV ADV NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADP NOUN NUM ADP DET ADJ NOUN

Classification Report:

	precis	sion	recall	f1-sco	ore supp	oort
1	0.	67	1.00	0.80	) 2	
2	. 1.	00	0.80	0.89	9 5	
3	1.	00	1.00	1.00	3	
4	. 1.	00	0.67	0.80	3	
5	0.	50	1.00	0.6	7 1	
6	1.	00	1.00	1.00	) 1	
7	0.	00	1.00	0.00	0 0	
9	0.	00	1.00	0.00	0 0	
11	1 1	.00	0.00	0.0	0 2	
accur	acy			0.76	5 17	
macro weighte	_	0.6 0.	93 93	).83 0.76	0.57 0.77	17 17

Sentence: list all flights leaving denver on continental on sunday after 2134 True tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP NUM Predicted tags: VERB DET NOUN VERB PROPN ADP PROPN ADP NOUN ADP PROPN

p	recision	recall	f1-score	support
1	0.67	1.00	0.80	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	2
5	1.00	1.00	1.00	1
9	1.00	0.00	0.00	1

accuracy		0.9	1 11	
macro avg	0.94	0.83	0.80	11
weighted avg	0.94	0.91	0.87	11

Sentence: all flights from san francisco to boston leaving before noon

True tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN Predicted tags: DET NOUN ADP PROPN PROPN ADP PROPN VERB ADP NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1	1.0	00	1.00	1.0	0 ;	3
2	1.0	00	1.00	1.0	0 ;	3
3	1.0	00	1.00	1.0	0 :	2
4	1.0	00	1.00	1.0	0	1
5	1.0	00	1.00	1.0	0	1
accur	acy			1.00	) 1	0
macro	avg	1.0	0 1	.00	1.00	10
weighted	d avg	1.0	00	1.00	1.00	10

Sentence: i need a flight from cincinnati to san jose leaving after 6 in the evening True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB ADP NUM ADP DET NOUN

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB

ADP NUM ADP DET NOUN

Classification Report:

	precision	on re	call	f1-scc	re sup	port
1	1.0	0 1.	00	1.00	) 3	
2	1.0	0 1.	00	1.00	) 4	
3	1.0	0 1.	00	1.00	) 2	
4	1.0	0 1.	00	1.00	) 2	
5	1.0	0 1.	00	1.00	) 2	
6	1.0	0 1.	00	1.00	) 1	
9	1.0	0 1.	00	1.00	) 1	
accur	асу			1.00	_	
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	15 15

Sentence: flights from milwaukee to orlando one way True tags: NOUN ADP PROPN ADP PROPN NUM NOUN Predicted tags: NOUN ADP PROPN ADP PROPN NUM NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
a	1 00	1 00	1 00	1

accuracy		1.0	0 7	
macro avg	1.00	1.00	1.00	7
weighted avg	1.00	1.00	1.00	7

Sentence: i want to fly from baltimore to dallas round trip

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN NOUN NOUN Predicted tags: PRON VERB VERB VERB ADP PROPN ADP PROPN NOUN NOUN

Classification Report:

	precisio	n rec	all f1-s	core s	support
1	1.00	1.0	0 1.	00	2
2	1.00	1.0	0 1.	00	2
3	1.00	1.0	0 1.	00	2
4	0.67	1.0	0 0.	80	2
6	1.00	1.0	0 1.	00	1
12	1.0	0.0	00 0	.00	1
accura	ісу		0.9	90	10
macro	avg	0.94	0.83	0.80	10
weighted	avg	0.93	0.90	0.86	5 10

Sentence: hi i want a round trip ticket to dallas

True tags: INTJ PRON VERB DET NOUN NOUN NOUN ADP PROPN

Predicted tags: PRON PRON VERB DET NOUN NOUN NOUN ADP PROPN

Classification Report:

	precis	sion	recall	f1-sc	ore s	uppo	rt
1	1.	00	1.00	1.00	0	1	
2	1.	00	1.00	1.0	0	1	
3	1.	00	1.00	1.0	0	3	
4	1.	00	1.00	1.0	0	1	
5	1.	00	1.00	1.0	0	1	
6	0.	50	1.00	0.6	7	1	
13	3 1	.00	0.00	0.0	00	1	
accur	acy			0.89	)	9	
macro weighte	_	0.9	-	.86 0.89	0.81 0.85		9
	~ ~ v 9	0.0	<b>.</b>	0.00	0.00		Ü

Sentence: what would be cost of a round trip from pittsburgh to san francisco True tags: PRON AUX AUX NOUN ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX AUX VERB ADP DET NOUN NOUN ADP PROPN ADP

PROPN PROPN Classification Report:

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3

Sentence: show me round trip fares from toronto to detroit on delta northwest us air and united airlines

True tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB PRON NOUN NOUN NOUN ADP PROPN ADP

PROPN PROPN PROPN CCONJ PROPN PROPN

Classification Report:

precision		recall	recall f1-score		oort
1.	00	1.00	1.00	8 (	
1.	00	1.00	1.00	) 3	
1.	00	1.00	1.00	) 3	
1.	00	1.00	1.00	) 1	
1.	00	1.00	1.00	) 1	
) 1	.00	1.00	1.0	0 1	
асу			1.00	17	
_				1.00 1.00	17 17
	1. 1. 1. 1. 1.	1.00 1.00 1.00 1.00 1.00 1.00 0 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.00 1.00 acy 1.00 avg 1.00	1.00 1.00 1.00 8 1.00 1.00 1.00 3 1.00 1.00 1.00 3 1.00 1.00 1.00 1 1.00 1.00 1.00 1 0 1.00 1.00 1.00 1 acy 1.00 1.00 1.00

Sentence: give me all the flights from new york to miami round trip

True tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Predicted tags: VERB PRON DET DET NOUN ADP PROPN PROPN ADP PROPN

**NOUN NOUN** 

Classification Report:

	precis	ion re	call	f1-sco	re sup	port
1	1.0	00 1	.00	1.00	3	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	3	
4	1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	2	
6	1.0	00 1	.00	1.00	1	
accur	асу			1.00	12	
macro weighte	_	1.00 1.00		.00 1.00	1.00 1.00	12 12

Sentence: how much is a round trip fare from nashville to seattle

True tags: ADV ADV AUX DET NOUN NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB AUX AUX DET NOUN NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

Ciacomic	ation i top	Oi t.			
	precision	recall	f1-score	support	
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	3	
4	0.00	1.00	0.00	0	
5	1.00	1.00	1.00	1	
8	0.50	1.00	0.67	1	
11	1.00	0.00	0.00	2	
accura	•		0.82	11	
macro	U		.86 0.6		
weighted	avg (	0.95	0.82 0.	79 11	l

Sentence: what is the fare going from baltimore to boston one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN PROPN ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Classification Report:

	pred	isior	n red	call	f1-sc	ore s	suppo	ort
1	(	0.67	1.0	00	0.8	0	2	
2	<u> </u>	1.00	1.0	00	1.0	0	3	
3	3	1.00	1.0	00	1.0	0	3	
4	١ ٠	1.00	0.0	00	0.0	0	1	
5	5	1.00	1.0	00	1.0	0	1	
6	3	1.00	1.0	00	1.0	0	1	
7	7	1.00	1.0	00	1.0	0	1	
8	3	1.00	1.0	00	1.0	0	1	
9	)	1.00	1.0	00	1.0	0	1	
accur	racy				0.93	3	14	
macro	avg	(	0.96	0	.89	0.87		14
weighte	d avg	l	0.95	(	0.93	0.90	)	14

Sentence: show me the round trip flights between phoenix and salt lake city True tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ PROPN PROPN

Predicted tags: VERB PRON DET NOUN NOUN NOUN ADP PROPN CCONJ

PROPN PROPN PROPN Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 4

	2	1.0	0	1.0	0	1.0	0	1	
	3	1.0	0	1.0	0	1.0	0	3	
	4	1.0	0	1.0	0	1.0	0	1	
	5	1.0	0	1.0	0	1.0	0	1	
	6	1.0	0	1.0	0	1.0	0	1	
	10	1.0	00	1.0	00	1.0	00	1	
ac	curacy	/				1.00	)	12	
ma	cro av	g	1.0	0	1.0	0	1.00	)	12
weigl	hted a	vg	1.0	00	1.	00	1.0	0	12

Sentence: what is the fare going from baltimore to atlanta one way on november seventh

True tags: PRON AUX DET NOUN VERB ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Predicted tags: PRON AUX DET NOUN PROPN ADP PROPN ADP PROPN NUM NOUN ADP NOUN ADJ

Classification Report:

	precisio	n rec	all f1-s	core s	upport
1	0.6	7 1.0	0 0.	80	2
2	1.00	) 1.0	00 1.	.00	3
3	1.00	) 1.0	00 1.	.00	3
4	1.00	0.0	0.	.00	1
5	1.00	) 1.0	00 1.	.00	1
6	1.00	) 1.0	00 1.	.00	1
7	1.00	) 1.0	00 1.	.00	1
8	1.00	) 1.0	00 1.	.00	1
9	1.00	) 1.0	00 1.	00	1
accur	acy		0.9	93	14
macro	avg	0.96	0.89	0.87	14
weighte	d avg	0.95	0.93	0.90	14

Sentence: now i want to see return flights from miami to new york

True tags: ADV PRON VERB PART VERB NOUN NOUN ADP PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB PRON VERB VERB VERB NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 2 3 2 1.00 1.00 1.00 4 0.50 1.00 0.67 2 6 1.00 1.00 1.00 1 11 1.00 0.00 0.00 1 12 1.00 0.00 0.00 1

accuracy		0.8	3 12	<u> </u>
macro avg	0.93	0.71	0.67	12
weighted avg	0.92	0.83	0.78	12

Sentence: do you have an <unk> flight from denver to san francisco

True tags: AUX PRON VERB DET NUM NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON PRON VERB DET ADJ NOUN ADP PROPN ADP PROPN

PROPN

Classification Report:

0.0000	augn rope	J. 1.			
	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	0.50	1.00	0.67	1	
7	0.00	1.00	0.00	0	
8	1.00	0.00	0.00	1	
9	1.00	0.00	0.00	1	
accura	•		0.82	11	
macro	U		.78 0.6		11
weighted	davg 0	).95 (	0.82 0.	79	11

Sentence: i would like to book a flight from chicago to seattle on june fourth

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

ADP NOUN ADJ

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN ADP NOUN ADJ Classification Report:

0.0000							
	prec	ision	reca	ll f1-so	core	supp	ort
1		1.00	1.00	1.0	00	2	
2		).75	1.00			3	
3		1.00	1.00	1.0	00	2	
4		1.00	1.00	1.0	00	2	
5	•	1.00	1.00	1.0	00	1	
6	•	1.00	1.00	1.0	00	1	
7	•	1.00	1.00	1.0	00	1	
8		1.00	1.00	1.0	00	1	
12	2	1.00	0.00	0.	00	1	
accur	acy			0.9	_	14	
macro	_		_	0.89	0.8		14
weighte	d avg	C	).95	0.93	0.9	90	14

Sentence: are there any flights from long beach to columbus on wednesday april sixth

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN NOUN ADJ** 

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN ADJ Classification Report:

	precis	sion	recal	I f1-s	core	supp	ort
			4 00			•	
1	1.	00	1.00	1.	00	3	
2	1.	00	1.00	1.	00	3	
3	1.	00	1.00	1.	00	3	
4	1.	00	1.00	1.	00	1	
5	1.	00	1.00	1.	00	1	
6	1.	00	1.00	1.	00	1	
7	1.	00	1.00	1.	00	1	
accur	acy			1.0	00	13	
macro	avg	1.0	00	1.00	1.0	0	13
weighte	d avg	1	.00	1.00	1.	00	13
_	•						

Sentence: i <unk> like flights going from boston to atlanta leaving on august sixth in the afternoon

True tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN ADJ ADP DET NOUN

Predicted tags: PRON AUX VERB NOUN VERB ADP PROPN ADP PROPN VERB ADP NOUN ADJ ADP DET NOUN

Classification Report:

	prec	ision	rec	all	f1-scc	re s	uppo	ort
1	1	.00	1.0	0	1.00	)	2	
2	1	.00	1.0	0	1.00	)	4	
3	. 1	.00	1.0	0	1.00	)	3	
4	1	00.1	1.0	0	1.00	)	3	
5	1	.00	1.0	0	1.00	)	1	
6	1	.00	1.0	0	1.00	)	1	
7	1	.00	1.0	0	1.00	)	1	
8	1	.00	1.0	0	1.00	)	1	
accur	acy				1.00		16	
macro	avg	1	.00	1	.00	1.00		16
weighte	d avg		1.00	•	1.00	1.00	)	16

Sentence: i would like to find out what flights there are on friday june eleventh from <unk> petersburg to milwaukee and then from milwaukee to tacoma thank you True tags: PRON AUX VERB PART VERB ADV DET NOUN PRON VERB ADP NOUN NOUN ADJ ADP PROPN PROPN ADP PROPN CCONJ ADV ADP PROPN ADP PROPN VERB PRON

Predicted tags: PRON AUX VERB ADP VERB ADP DET NOUN PRON VERB ADP NOUN NOUN ADP PROPN PROPN ADP PROPN CCONJ NUM ADP PROPN ADP PROPN VERB PRON

	precis	ion	recall	f1-sco	re sup	port
1	1.	00	1.00	1.00	5	
2	0.	71	1.00	0.83	5	
3	0.	75	1.00	0.86	3	
4	1.	00	1.00	1.00	4	
5	1.	00	1.00	1.00	1	
6	1.	00	1.00	1.00	3	
7	1.	00	0.00	0.00	1	
8	1.	00	1.00	1.00	1	
9	0.	00	1.00	0.00	0	
10	) 1	.00	1.00	1.0	0 1	
11	1.	.00	0.00	0.00	) 2	
12	2 1	.00	0.00	0.0	0 1	
accur	асу			0.85	27	
macro	•	0.87		.75	0.64	27
weighted	d avg	0.9	)2 (	0.85	0.81	27

Sentence: i need a flight from chicago to dallas on continental on june fifth

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN ADP

NOUN ADJ

Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN

ADP NOUN ADJ

Classification Report:

precision recall f1-score support

·					•	•
1	1.0	0 1.	00	1.00	) 3	
2	1.0	0 1.	00	1.00	) 4	
3	1.0	0 1.	00	1.00	) 2	
4	1.0	0 1.	00	1.00	) 1	
5	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	
7	1.0	0 1.	00	1.00	) 1	
accurac	СУ			1.00	13	
macro a	ıvg	1.00	1.0	00	1.00	13
weighted	avg	1.00	1	.00	1.00	13

Sentence: i <unk> like a flight on july ninth from orlando to kansas city in the

afternoon

True tags: PRON AUX VERB DET NOUN ADP NOUN ADJ ADP PROPN ADP

PROPN PROPN ADP DET NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP NOUN ADJ ADP PROPN ADP

PROPN PROPN ADP DET NOUN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
)	1 00	1 00	1 00	1

	3	1.0	0	1.0	0	1.0	0	3	
	4	1.0	0	1.0	0	1.0	0	1	
	5	1.0	0	1.0	0	1.0	0	2	
	6	1.0	0	1.0	0	1.0	0	1	
	7	1.0	0	1.0	0	1.0	0	1	
	8	1.0	0	1.0	0	1.0	0	1	
aco	curac	;y				1.00	)	16	
mad	cro a	vg	1.	00	1.0	00	1.00	)	16
weigh	nted a	avg	1	.00	1.	.00	1.0	00	16

Sentence: i <unk> like to arrange a trip to baltimore on january first

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP NOUN

ADJ

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP NOUN

ADJ

Classification Report:

F	orecision	recall	f1-score	suppo	ort
1	1.00	1.00	1.00	1	
2	0.67	1.00	0.80	2	
3	1.00	1.00	1.00	2	
4	1.00	1.00	1.00	2	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	0.00	0.00	1	
accura	•		0.92	12	
macro a	•		.89 0.8		12
weighted	avg 0	.94 (	0.92 0.	88	12

Sentence: okay and then from pittsburgh i <unk> like to travel to atlanta on

september fourth

True tags: INTJ CCONJ ADV ADP PROPN PRON AUX VERB PART VERB ADP

PROPN ADP NOUN ADJ

Predicted tags: VERB VERB VERB ADP PROPN PRON VERB ADP ADP VERB

ADP PROPN ADP NOUN ADJ

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.60	1.00	0.75	3
3	1.00	1.00	1.00	1
4	0.20	0.50	0.29	2
6	1.00	1.00	1.00	1
7	1.00	1.00	1.00	1
8	1.00	0.00	0.00	1
10	1.00	0.00	0.00	1

11	1.00	0.	00	0.00	1	
12	1.00	0.	00	0.00	1	
13	1.00	0.	00	0.00	1	
accuracy				0.60	15	
macro avg	, 0	.89	0.50	0 0	).46	15
weighted av	g (	0.81	0.6	60	0.52	15

Sentence: list the flights from westchester county to denver on june seventh True tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ Predicted tags: VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN ADJ

Classification Report:

	precis	ion r	ecall	f1-sc	ore su	pport
1	1.0	00 .	1.00	1.00	0 3	3
2	1.0	00 ′	1.00	1.0	0 3	3
3	1.0	00 '	1.00	1.0	0 2	2
4	1.0	00 '	1.00	1.0	0 ′	1
5	1.0	00 '	1.00	1.0	0 ′	1
7	1.0	00 ′	1.00	1.0	0 ′	1
accur	acy			1.00	) 1	1
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	0 '	1.00	1.00	11

Sentence: flights from atlanta august second True tags: NOUN ADP PROPN NOUN ADJ Predicted tags: NOUN ADP PROPN NOUN ADJ

Classification Report:

	precis	ion	recall	f1-sc	core	supp	ort
1	1.0	00	1.00	1.0	00	1	
2	1.0	00	1.00	1.0	00	1	
3	1.0	00	1.00	1.0	00	2	
7	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	0	5	
macro	avg	1.0	0 1	1.00	1.0	0	5
weighted	d avg	1.0	00	1.00	1.0	00	5

Sentence: what are the flights between pittsburgh and baltimore on august tenth True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN ADJ Predicted tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN ADP NOUN NUM

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2

Sentence: on april first i need a flight going from phoenix to san diego

True tags: ADP NOUN ADJ PRON VERB DET NOUN VERB ADP PROPN ADP

PROPN PROPN

Predicted tags: ADP NOUN DET PRON VERB DET NOUN VERB ADP PROPN ADP

PROPN PROPN Classification Report:

	precis	ion	recall	f1-s	core	supp	ort
1	1.0	00	1.00	1.0	00	3	
2	1.0	00	1.00	1.0	00	3	
3	1.0	00	1.00	1.0	00	2	
4	1.0	00	1.00	1.0	00	2	
5	0.5	50	1.00	0.0	67	1	
6	1.0	00	1.00	1.0	00	1	
7	1.0	00	0.00	0.0	00	1	
accura	асу			0.9	92	13	
macro	avg	0.9	3 (	).86	8.0	1	13
weighted	d avg	0.	96	0.92	0.9	90	13

Sentence: show me a list of flights from denver to baltimore on united for august third True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP PROPN ADD

Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN ADP NOUN ADJ

pre	cision	recall	f1-score	supp	ort
1 2	1.00 1.00	1.00 1.00	1.00 1.00	3 5	
3	1.00	1.00	1.00	3	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
7	1.00	1.00	1.00	1	
accuracy			1.00	15	
macro avo	j 1.0	00 1	.00 1.0	00	15

weighted avg 1.00 1.00 1.00 15

Sentence: what are the flights from san jose to nashville on thursday the twentieth True tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

**DET ADJ** 

Predicted tags: PRON AUX DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN DET ADJ

Classification Report:

	precis	sion	recal	l f1-so	core	supp	ort
1	1.	00	1.00	1.0	00	3	
2	1.	00	1.00	1.0	00	3	
3	1.	00	1.00	1.0	00	2	
5	1.	00	1.00	1.0	00	2	
6	1.	00	1.00	1.0	00	1	
7	1.	00	1.00	1.0	00	1	
8	1.	00	1.00	1.0	00	1	
accur	acy			1.0	00	13	
macro	avg	1.0	00	1.00	1.0	0	13
weighted	d avg	1	.00	1.00	1.	00	13

Sentence: i need a ticket from nashville to seattle

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-sco	re su	pport
1	1.00	) 1.	.00	1.00	) :	2
2	1.00	) 1.	.00	1.00	) ;	2
3	1.00	) 1.	.00	1.00	)	1
4	1.00	) 1.	.00	1.00	)	1
5	1.00	) 1.	.00	1.00	)	1
6	1.00	) 1.	.00	1.00	)	1
accur	асу			1.00	3	3
macro weighted	•	1.00		.00 1.00	1.00	8 8
weignie	avy	1.00		1.00	1.00	O

Sentence: how much does it cost to fly on delta from dallas to baltimore

True tags: ADV ADV AUX PRON VERB PART VERB ADP PROPN ADP PROPN

ADP PROPN

Predicted tags: VERB AUX AUX VERB ADP VERB ADP PROPN ADP PROPN

ADP PROPN

precision		recall	f1-score	support
1	1.00	1.00	1.00	3
2	0.75	1.00	0.86	3
1	0.67	1 00	0.80	2

	6	1.00	)	0.00	J	0.00	U	1	
	8	0.33	3	1.00	0	0.5	0	1	
	11	1.0	0	0.0	0	0.0	0	2	
	12	1.0	0	0.0	0	0.0	0	1	
acc	uracy					0.69	)	13	
mac	ro avo	)	0.8	2	0.5	57	0.45	,	13
weight	ted av	'g	0.8	34	0.	69	0.5	9	13

Sentence: what are the fares for flights from charlotte to newark on tuesday and wednesday

True tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP NOUN CCONJ NOUN

Predicted tags: PRON AUX DET NOUN ADP NOUN ADP PROPN ADP

NOUN CCONJ NOUN Classification Report:

precisi	ion re	ecall	f1-sco	re supp	ort
1.0	00 1	.00	1.00	2	
1.0	00 1	.00	1.00	4	
1.0	00 1	.00	1.00	4	
1.0	00 1	.00	1.00	1	
1.0	00 1	.00	1.00	1	
1.0	00 1	.00	1.00	1	
1.	00	1.00	1.00	) 1	
асу			1.00	14	
_	1.00 1.00			1.00 1.00	14 14
	1.0 1.0 1.0 1.0 1.0 1.0	1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 1.00 1 0 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 0 1.00 1.0	1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 2 1.00 1.00 1.00 4 1.00 1.00 1.00 4 1.00 1.00 1.00 1 1.00 1.00 1.00 1 1.00 1.00

Sentence: show fares and flights from denver to oakland

True tags: VERB NOUN CCONJ NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN VERB NOUN ADP PROPN ADP PROPN

Classification Report:

			-				
	precisi	on i	recall	f1-sco	ore s	suppo	ort
1	1.0		1.00	1.00		2	
2	1.0	00	1.00	1.00	)	2	
3	1.0	00	1.00	1.00	)	2	
4	0.5	50	1.00	0.67	7	1	
10	1.	00	0.00	0.0	0	1	
accura	асу			0.88	3	8	
macro weighted	_	0.90		.80 0.88	0.73 0.83	3	8 8

Sentence: what is the airfare between denver and pittsburgh
True tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN
Predicted tags: PRON AUX DET NOUN ADP PROPN CCONJ PROPN

рі	recision	recall	f1-score	e supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	1	
3	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
10	1.00	1.00	1.00	1	
accurac	у		1.00	8	
macro av	vg 1.0	00 1	.00 1	.00	8
weighted a	avg 1	.00	1.00 ′	1.00	8

Sentence: what does it cost to fly from boston to oakland on united airlines

True tags: PRON AUX PRON VERB PART VERB ADP PROPN ADP PROPN ADP

PROPN PROPN

Predicted tags: PRON AUX AUX VERB ADP VERB ADP PROPN ADP PROPN ADP

PROPN PROPN

Classification Report:

precision		call	f1-sco	re sup	port
1.0	0 1.	00	1.00	) 4	
0.7	5 1.	00	0.86	3	1
1.0	0 1.	00	1.00	) 2	
1.0	0 0.	50	0.67	' 2	
0.5	0 1.	00	0.67	' 1	
1.0	0 0	.00	0.0	0 ′	1
асу			0.85	13	3
avg I avg	0.88 0.90	_	_	0.70 0.81	13 13
	1.0 0.7 1.0 1.0 0.5 1.0	1.00 1. 0.75 1. 1.00 1. 1.00 0. 0.50 1. 1.00 0	1.00 1.00 0.75 1.00 1.00 1.00 1.00 0.50 0.50 1.00 1.00 0.00	1.00 1.00 1.00 0.75 1.00 0.86 1.00 1.00 1.00 1.00 0.50 0.67 0.50 1.00 0.67 1.00 0.00 0.00 acy 0.85 avg 0.88 0.75	1.00 1.00 1.00 4 0.75 1.00 0.86 3 1.00 1.00 1.00 2 1.00 0.50 0.67 2 0.50 1.00 0.67 1 1.00 0.00 0.00

Sentence: get saturday fares from washington to montreal True tags: VERB NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

pr	precision		call	f1-sco	ore s	uppo	ort
1	1.0	0 1.	.00	1.00	)	2	
2	1.0	0 1.	.00	1.00	)	2	
3	1.0	0 1.	.00	1.00	)	2	
4	1.0	0 1.	.00	1.00	)	1	
accurac	y			1.00	)	7	
macro av	/g	1.00	1	.00	1.00		7
weighted a	ıvg	1.00	•	1.00	1.00	)	7

Sentence: give me fares from atlanta to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precision	on re	call	f1-sco	re su	pport
1	1.0	0 1.	00	1.00	) 2	2
2	1.0	0 1.	00	1.00	) 2	2
3	1.0	0 1.	00	1.00	) 1	
4	1.0	0 1.	00	1.00	) 1	
6	1.0	0 1.	00	1.00	) 1	1
accur	acy			1.00	7	,
macro	avg	1.00	1	.00	1.00	7
weighted	d avg	1.00		1.00	1.00	7

Sentence: continental airlines on saturday from chicago to seattle True tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN Predicted tags: PROPN PROPN ADP NOUN ADP PROPN ADP PROPN

Classification Report:

Ciaconic	auoni	(Opoi	٠.				
	precis	sion	recall	f1-sc	ore si	uppo	rt
1	1.	00	1.00	1.0	0	4	
2	1.	00	1.00	1.0	0	3	
3	1.	00	1.00	1.0	0	1	
accur	асу			1.00	)	8	
macro	avg	1.0	0 1	.00	1.00		8
weighted	d avg	1.	00	1.00	1.00		8

Sentence: does eastern airlines fly between boston and washington True tags: AUX PROPN PROPN VERB ADP PROPN CCONJ PROPN Predicted tags: PRON PROPN PROPN VERB ADP PROPN CCONJ PROPN

Classification Report:

	pred	cisio	n	reca	all	f1-s	core	e si	นตอด	ort
	ρ.σ.	3.0.0		. 000			00.		чрр.	
1		1.00		1.0	0	1.	00		4	
2	<u> </u>	1.00		1.0	0	1.	00		1	
4	Ļ	1.00		1.0	0	1.	00		1	
6	6	0.00		1.0	0	0.	00		0	
8	3	1.00		0.0	0	0.	00		1	
10	0	1.00	)	1.0	0	1	.00		1	
accur	acy					0.8	88		8	
macro	avg		0.83	3	0.	.83	0	.67		8
weighte	d av	9	1.0	00	(	0.88	(	0.88		8

Sentence: i would like some information on a flight from denver to san francisco on united airlines

True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN PROPN

Predicted tags: PRON AUX VERB AUX NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP PROPN PROPN

Classification Report:

	precision	on re	call	f1-sc	ore s	uppo	ort
1	1.0	0 1.	00	1.0	0	5	
2	1.0	0 1.	00	1.0	0	4	
3	1.0	0 1.	00	1.0	0	2	
4	1.0	0 1.	00	1.0	0	1	
5	1.0	0 0.	50	0.6	7	2	
6	1.0	0 1.	00	1.0	0	1	
8	0.5	0 1.	00	0.6	7	1	
accura	acy			0.94	1	16	
macro	avg	0.93	0	.93	0.90		16
weighted	d avg	0.97	(	0.94	0.94	1	16

Sentence: american airlines from denver to milwaukee True tags: PROPN PROPN ADP PROPN

Predicted tags: PROPN PROPN ADP PROPN

Classification Report:

Sentence: i need a flight delta airlines kansas city to salt lake

True tags: PRON VERB DET NOUN PROPN PROPN PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: PRON VERB DET NOUN PROPN PROPN PROPN PROPN ADP

PROPN PROPN Classification Report:

	nroci	cion	roca	ll f1 c	coro	supp	ort
	preci	51011	ieca	11 11-5	COLE	Supp	Οιι
		0.0	4 0 0		00	•	
1	1	.00	1.00	1.	00	6	
2	1	.00	1.00	1.	00	1	
3	3 1	.00	1.00	1.	00	1	
4	. 1	.00	1.00	1.	00	1	
5	5 1	.00	1.00	1.	00	1	
6	5 1	.00	1.00	1.	00	1	
accur	acy			1.0	00	11	
macro	avg	1.	00	1.00	1.0	00	11
weighte	d avg	1	.00	1.00	1.	00	11

Sentence: list the alaska airlines flights a departing from burbank

True tags: VERB DET PROPN PROPN NOUN DET VERB ADP PROPN Predicted tags: VERB DET NOUN PROPN NOUN DET ADJ ADP PROPN Classification Report:

Classillo	auoni	(Cho	1				
	precis	ion	recall	f1-sc	core	supp	ort
1	1.	00	0.67	0.8	30	3	
2		00	1.00	1.0		1	
3	0.	50	1.00	0.6	67	1	
4	1.	00	0.50	0.6	67	2	
5	1.	00	1.00	1.0	00	2	
7	0.	00	1.00	0.0	00	0	
accur	acy			0.7	8	9	
macro	avg	0.7	75 (	0.86	0.6	9	9
weighted	d avg	0.	.94	0.78	3.0	32	9

Sentence: give me all the flights from miami to chicago on american airlines

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

PROPN

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN ADP

PROPN PROPN

Classification Report:

	precisi	on re	call	f1-scor	e supp	ort
1	1.0	0 1.	.00	1.00	4	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	1	
4	1.0	0 1.	.00	1.00	1	
5	1.0	0 1.	.00	1.00	2	
6	1.0	0 1.	.00	1.00	1	
accur	асу			1.00	12	
macro	avg	1.00	1.	00 1	.00	12
weighted	d avg	1.00	1	.00	1.00	12

Sentence: i <unk> like united airlines flights from denver to baltimore

True tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB PROPN PROPN NOUN ADP PROPN ADP

**PROPN** 

	precision	recall	f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1
accur	асу		1.00	10

macro avg	1.00	1.00	1.00	10
weighted ava	1.00	1.00	1.00	10

Sentence: i <unk> like a flight from new york to los angeles on saturday morning on us air

True tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN ADP PROPN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN PROPN ADP PROPN PROPN ADP NOUN NOUN ADP PROPN PROPN

Classification Report:

	prodis	1011	rccan	11-30	,010	Supp	OIL
1	1.0	00	1.00	1.0	00	6	
2	1.0	00	1.00	1.0	00	4	
3	1.0	00	1.00	1.0	00	3	
4	1.0	00	1.00	1.0	00	1	
5	1.0	00	1.00	1.0	00	1	
6	1.0	00	1.00	1.0	00	1	
8	1.0	00	1.00	1.0	00	1	
accur	acy			1.0	0	17	
macro	avg	1.0	0 1	.00	1.00	0	17
weighted	d avg	1.0	00	1.00	1.0	00	17

precision recall f1-score support

Sentence: show me the southwest airlines flights from san diego to san francisco True tags: VERB PRON DET PROPN PROPN NOUN ADP PROPN PROPN PROPN PROPN PROPN

Predicted tags: VERB PRON DET NOUN PROPN NOUN ADP PROPN PROPN PROPN PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore su	ıppoı	t
1	1.0	0 0	.83	0.9	1	6	
2	1.0	0 1.	.00	1.0	0	2	
3	0.5	0 1.	.00	0.6	7	1	
4	1.0	0 1.	.00	1.0	0	1	
5	1.0	0 1.	.00	1.0	0	1	
6	1.0	0 1.	.00	1.0	0	1	
accur	асу			0.92	2 1	2	
macro	avg	0.92	0	.97	0.93	1	2
weighted	d avg	0.96	(	0.92	0.93		12

Sentence: what flights does american airlines have from boston to dallas True tags: DET NOUN AUX PROPN PROPN VERB ADP PROPN ADP PROPN PROPN VERB ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1	1.0	0 1	00.1	1.	00	4	
2	1.0	0 1	00.1	1.	00	2	
3	1.0	0 1	00.1	1.	00	1	
4	1.0	0 1	00.1	1.	00	1	
5	1.0	0 (	0.00	0.	00	1	
6	0.0	0 1	00.1	0.	00	0	
8	1.0	0 1	00.1	1.	00	1	
accurac	y			0.9	90	10	
macro av	/g	0.86	(	0.86	0.	71	10
weighted a	vg	1.00	)	0.90	C	0.90	10

Sentence: what flights go from chicago to seattle on continental airlines on saturday True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP PROPN ADP NOUN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP PROPN

PROPN ADP NOUN Classification Report:

		-	• •			
	precisi	on	recall	f1-sc	ore su	ıpport
1	1.0	Λ	1.00	1.0	Λ	4
2			1.00	1.0		4
3	1.0		1.00	1.0		2
4	1.0	-	1.00	1.0		1
5	1.0		0.00	0.0		1
6	0.0	-	1.00	0.0		0
•						
accur	acy			0.92	2 1	2
macro	avg	0.83	3 0	.83	0.67	12
weighted	d avg	1.0	00	0.92	0.92	12

Sentence: list the flights from dallas to san francisco on american airlines

True tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

**PROPN** 

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP PROPN

**PROPN** 

Classification Report:

precision		n re	call	f1-s	core	supp	ort	
1		1.00	1.	00	1.	00	5	
2		1.00		00		00	3	
3	,	1.00	1.	00	1.	00	1	
4	. •	1.00	1.	00	1.	00	1	
5	,	1.00	1.	00	1.	00	1	
accur	асу				1.0	00	11	
macro weighte	_		1.00 1.00		.00 1.00	1.0 1.	00 .00	11 11

Sentence: what flights go from chicago to seattle on saturday on continental airlines

True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP PROPN

**PROPN** 

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN ADP NOUN ADP

PROPN PROPN

Classification Report:

	precision		call	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	4	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 0.	00	0.00	1	
6	0.0	0 1.	00	0.00	0	
accur	acy			0.92	12	
macro	avg	0.83	0.	83	0.67	12
weighted	d avg	1.00	C	.92	0.92	12

Sentence: show me the flight classes for delta airlines

True tags: VERB PRON DET NOUN NOUN ADP PROPN PROPN

Predicted tags: VERB PRON DET NOUN PROPN ADP PROPN PROPN

Classification Report:

Ciaconio	auoni	(Opoi	٠.			
	precis	ion	recall	f1-sco	ore su	oport
1	0.0	<b>3</b> 7	1.00	0.80	) 2	)
1						
2	1.0	JU	1.00	1.00	) 1	
3	1.0	00	0.50	0.67	7 2	<u> </u>
4	1.0	00	1.00	1.00	) 1	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
				0.00	. 0	
accur	acy			0.88	8	
macro	avg	0.9	4 0	.92	0.91	8
weighted	d avg	0.9	92 (	38.0	0.87	8

Sentence: please list the flights from cincinnati to burbank on american airlines True tags: INTJ VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN Predicted tags: VERB VERB DET NOUN ADP PROPN ADP PROPN PROPN

pr	precision		f1-score	support
1	1.00	1.00	1.00	4
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	1
4	0.50	1.00	0.67	1
5	1.00	1.00	1.00	1
13	1.00	0.00	0.00	1
accuracy	/		0.91	11

macro avg	0.92	0.83	0.78	11
weighted avg	0.95	0.91	0.88	11

Sentence: show me all the flights from indianapolis to san diego on us air

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN ADP

PROPN PROPN

Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN PROPN

ADP PROPN PROPN Classification Report:

	precision		recal	l f1-s	core	supp	ort
1	1.	00	1.00	1	.00	5	
2	1.	00	1.00	1	.00	3	
3	1.	00	1.00	1	.00	1	
4	1.	00	1.00	1	.00	1	
5	1.	00	1.00	1	.00	2	
6	1.	00	1.00	1	.00	1	
accur	acy			1.	00	13	
macro	avg	1.0	00	1.00	1.0	00	13
weighte	d avg	1.	.00	1.00	1.	00	13

Sentence: i would like to fly delta airlines from atlanta to pittsburgh

True tags: PRON AUX VERB PART VERB PROPN PROPN ADP PROPN ADP

**PROPN** 

Predicted tags: PRON AUX VERB ADP VERB PROPN PROPN ADP PROPN ADP

PROPN

Classification Report:

0.0000		vopo.	••			
	precision		recall	f1-sco	re sup	port
1	1 (	00	1.00	1.00	) 4	
2			1.00	0.80		
4	1.0	00	1.00	1.00	) 2	
6		00	1.00	1.00		
8		00	1.00	1.00		
12	2 1.	.00	0.00	0.0	0 1	
accur	асу			0.91	11	
macro weighted	•	0.9 0.9		.83 0.91	0.80 0.87	11 11
•	_					

Sentence: what flights are available wednesday afternoon from denver to san

francisco

True tags: DET NOUN AUX ADJ NOUN NOUN ADP PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 3

2	1.00	1.00	1.0	0 2	
3	1.00	1.00	1.0	0 3	
4	0.00	1.00	0.0	0 0	
5	1.00	0.00	0.0	0 1	
6	0.00	1.00	0.0	0 0	
7	1.00	1.00	1.0	0 1	
8	1.00	0.00	0.0	0 1	
accuracy	1		0.82	2 11	
macro av	g 0.	.75	0.75	0.50	11
weighted av	vg ´	1.00	0.82	0.82	11

Sentence: show me all flights to philadelphia in the evening

True tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP DET NOUN

Classification Report:

	precisi	on red	call	f1-sco	re supp	ort
1	1.0	0 1.	00	1.00	1	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	2	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
accur	асу			1.00	9	
macro	avg	1.00	1.	00	1.00	9
weighted	d avg	1.00	1	.00	1.00	9

Sentence: flights from chicago to denver on continental on saturday morning True tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precision		rec	call	f1-s	core	supp	ort
1	1	1.00	1.0	00	1.	00	3	
2	1	1.00	1.0	00	1.	00	4	
3	1	00.1	1.0	00	1.	00	3	
accur	асу				1.0	00	10	
macro weighted			.00 1.00		.00 1.00	1.0 1.	00 00	10 10

Sentence: what flights from san jose to dallas on friday afternoon

True tags: DET NOUN ADP PROPN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN ADP PROPN PROPN ADP PROPN ADP NOUN

NOUN

Classification Report:

precision recall f1-score support

2 3 5 6	1.0 1.0 1.0 0.0	0 1. 0 0.	00 00 00 00	1.00 1.00 0.00 0.00	3 1	
accura macro weighted	avg	0.80 1.00	0.8	0.90 30 .90	10 0.60 0.90	10 10

1.00 1.00 1.00

Sentence: what are the flights and prices from la to charlotte for monday morning True tags: PRON AUX DET NOUN CCONJ NOUN ADP PROPN ADP NOUN NOUN

3

Predicted tags: PRON AUX DET NOUN VERB PROPN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

1

	precision		reca	II f1-	score	supp	ort
1	0.	67	1.00	) (	08.0	2	
2	1.	00	1.00	) 1	.00	3	
3	1.	00	0.75	5 (	0.86	4	
4	0.	00	1.00	(	00.0	0	
5	1.	00	1.00	) 1	.00	1	
6	1.	00	1.00	) 1	.00	1	
8	1.	00	1.00	) 1	.00	1	
10	) 1	.00	0.00	0	0.00	1	
				_			
accur	acy			0	.85	13	
macro	avg	3.0	33	0.84	0.	71	13
weighte	d avg	0.	95	0.85	5 C	.85	13

Sentence: on friday night i would like a flight from newark to los angeles

True tags: ADP NOUN NOUN PRON AUX VERB DET NOUN ADP PROPN ADP

PROPN PROPN

Predicted tags: ADP NOUN PROPN PRON AUX VERB DET NOUN ADP PROPN ADP PROPN

	precisi	on re	call	f1-scor	e supp	ort
1	0.7	5 1.	00	0.86	3	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 0.	67	0.80	3	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	•	0.06	0	0.92	13	12
macro weighted	_	0.96 0.94	_	95 ( ).92	0.95 0.92	13 13
5	3					

Sentence: <unk> paul to kansas city friday night

True tags: PROPN PROPN ADP PROPN PROPN NOUN NOUN Predicted tags: VERB PROPN ADP PROPN PROPN NOUN PROPN

Classification Report:

	precisio	n red	call f1	-scor	e suppo	rt
1	0.75	0.	75	0.75	4	
2	1.00	1.0	00	1.00	1	
3	1.00	0.9	50	0.67	2	
4	0.00	1.0	00	0.00	0	
accura	асу			0.71	7	
macro	avg	0.69	0.8	1 (	0.60	7
weighted	lavq	0.86	0.7	71	0.76	7

Sentence: show me the flights from philadelphia to baltimore in the morning True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	nred	rision	recall	f1-scc	re sup	nort
	pic	5131011	rccan	11-300	ne sup	port
·	1	1.00	1.00	1.00	) 2	
2	2	1.00	1.00	1.00	) 3	
;	3	1.00	1.00	1.00	) 2	
4	4	1.00	1.00	1.00	) 1	
!	5	1.00	1.00	1.00	) 2	
(	6	1.00	1.00	1.00	) 1	
accu	racy			1.00	11	
macro	o avg	1	.00 1	.00	1.00	11
weighte	ed av	g '	1.00	1.00	1.00	11

Sentence: what flights from chicago to denver in the morning

True tags: DET NOUN ADP PROPN ADP PROPN ADP DET NOUN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN

	precisi	ion re	call	f1-scc	re su	upport
1	1.0	00 1	.00	1.00	)	2
2	1.0	00 1	.00	1.00	)	3
3	1.0	00 1	.00	1.00	)	2
5	1.0	0 0	.50	0.67	7	2
6	0.0	00 1	.00	0.00	)	0
accur	acy			0.89		9
macro	avg	0.80	0	.90	0.73	9
weighte	d avg	1.00	(	0.89	0.93	9

Sentence: now i need a flight from detroit to san diego leaving tuesday evening

True tags: ADV PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN VERB NOUN NOUN

Predicted tags: VERB PRON VERB DET NOUN ADP PROPN ADP PROPN PROPN

VERB NOUN NOUN Classification Report:

	precis	ion	recall	f1-sc	ore s	suppo	ort
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	3	
4	0.0	37	1.00	0.8	0	2	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
11	1.	00	0.00	0.0	00	1	
accur	acy			0.9	2	13	
macro	avg	0.9	5 0	.86	0.83		13
weighted	d avg	0.9	95	0.92	0.89	9	13

Sentence: how about flights from dallas to atlanta on wednesday morning True tags: ADV ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Predicted tags: VERB ADP NOUN ADP PROPN ADP PROPN ADP NOUN NOUN Classification Report:

	precis	ion	recall	f1-sc	ore si	upport
1 2	1.	00 00	1.00 1.00	1.0 1.0		2 4
3	1.	00	1.00	1.0	0	3
4	0.	00	1.00	0.0	0	0
11	1	.00	0.00	0.0	00	1
accur	асу			0.90	) 1	10
macro	avg	0.8	0 (	08.0	0.60	10
weighted	d avg	1.0	00	0.90	0.90	10

Sentence: show me the evening flights from baltimore to atlanta

True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
accur	асу		1.00	9

macro avg	1.00	1.00	1.00	9
weighted ava	1.00	1.00	1.00	9

Sentence: which flights go from pittsburgh to atlanta in the evening

True tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: DET NOUN VERB ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precis	sion	reca	all	f1-scoi	e sup	port
1	1.	.00	1.00	)	1.00	2	
2		.00	1.00		1.00	3	,
3	1.	.00	1.00	)	1.00	2	
4	1.	.00	1.00	)	1.00	1	
5	1.	.00	1.00	)	1.00	2	
accur	acy				1.00	10	)
macro	avg	1.0	00	1.	00	1.00	10
weighted	d avg	1.	.00	1	.00	1.00	10

Sentence: from toronto to atlanta in the afternoon

True tags: ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precis	on re	ecall	11-SC	ore su	ıppor	τ
1	1.0	00 1	1.00	1.00	Λ	2	
•							
2	1.0	)0 1	.00	1.0	0	3	
3	1.0	00 1	.00	1.0	0	1	
5	1.0	00 1	.00	1.0	0	1	
accur	acy			1.00	)	7	
macro	avg	1.00	1	.00	1.00	7	7
weighte	d avg	1.00	)	1.00	1.00		7

Sentence: i need to fly from pittsburgh to oakland and depart in the afternoon True tags: PRON VERB PART VERB ADP PROPN ADP PROPN CCONJ VERB

ADP DET NOUN

Predicted tags: PRON VERB VERB VERB ADP PROPN ADP PROPN VERB VERB

ADP DET NOUN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	1
4	0.60	1.00	0.75	3
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
10	1.00	0.00	0.00	1
12	1.00	0.00	0.00	1

accuracy		0.8	5 13	
macro avg	0.95	0.75	0.72	13
weighted avg	0.91	0.85	0.79	13

Sentence: i need a flight from los angeles to pittsburgh on monday afternoon True tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

**NOUN NOUN** 

Predicted tags: PRON VERB DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN NOUN

Classification Report:

	precisi	on re	call	f1-sc	ore su	upport
1	1.0	0 1.	.00	1.0	0	3
2	1.0	0 1.	.00	1.0	0	3
3	1.0	0 1.	.00	1.0	0	3
4	1.0	0 1.	.00	1.0	0	1
5	1.0	0 1.	.00	1.0	0	1
6	1.0	0 1.	.00	1.0	0	1
accur	acy			1.00	) 1	12
macro	avg	1.00	1	.00	1.00	12
weighted	d avg	1.00	•	1.00	1.00	12

Sentence: show me the evening flights from atlanta to boston

True tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	prec	ision	red	call	f1-sc	ore	supp	ort
1		1.00		00	1.0		2	
2	. 1	1.00	1.0	00	1.0	00	2	
3	,	1.00	1.0	00	1.0	00	2	
4		1.00	1.0	00	1.0	00	1	
5	,	1.00	1.0	00	1.0	00	1	
6	•	1.00	1.0	00	1.0	00	1	
accur	асу				1.0	0	9	
macro weighte	_		1.00 1.00		.00 1.00	1.0 1.	0 00	9 9
	9							•

Sentence: i need to know what flights leave atlanta on sunday evening and arrive in baltimore

True tags: PRON VERB PART VERB DET NOUN VERB PROPN ADP NOUN NOUN CCONJ VERB ADP PROPN

Predicted tags: PRON VERB VERB VERB DET NOUN VERB PROPN ADP NOUN

NOUN CCONJ VERB ADP PROPN

Classification Report:

precision recall f1-score support

5
15

Sentence: what flights are there from boston to denver on monday morning True tags: DET NOUN VERB PRON ADP PROPN ADP NOUN NOUN Predicted tags: PRON NOUN VERB PRON ADP PROPN ADP PROPN ADP NOUN

NOUN

Classification Report:

	precisi	on re	ecall	f1-sc	ore	suppo	ort
1	1.0	0 1	.00	1.0	00	2	
2	1.0	0 1	.00	1.0	0	3	
3	1.0	0 1	.00	1.0	0	3	
4	1.0	0 1	.00	1.0	0	1	
5	1.0	0 0	00.0	0.0	0	1	
6	0.5	0 1	.00	0.6	67	1	
accur	acy			0.9	1	11	
macro	avg	0.92	0	.83	0.78	}	11
weighted	d avg	0.95	5 (	0.91	0.8	8	11

Sentence: give me morning flights from atlanta to baltimore

True tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re supp	ort
4	4.0	00 4	00	4.00	0	
1	1.0	)) 1.	.00	1.00		
2	1.0	00 1.	.00	1.00	2	
3	1.0	00 1.	.00	1.00	2	
4	1.0	00 1.	.00	1.00	1	
6	1.0	00 1.	.00	1.00	1	
accur	acy			1.00	8	
macro	avg	1.00	1.	00	1.00	8
weighte	_	1.00	1	.00	1.00	8

Sentence: flights from atlanta to dallas in the afternoon

True tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: NOUN ADP PROPN ADP PROPN ADP DET NOUN

## Classification Report:

	precisi	on re	call f1	-score	suppo	ort
1	1.0	0 1.	.00	1.00	2	
2	1.0	0 1.	.00	1.00	3	
3	1.0	0 1.	.00	1.00	2	
5	1.0	0 1.	.00	1.00	1	
accur	acy		•	1.00	8	
macro	avg	1.00	1.00	1.0	00	8
weighted	d avg	1.00	1.0	0 1.	00	8

Sentence: morning flights from pittsburgh to atlanta on wednesday True tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

precision recall f1-score support 1.00 1.00 2 1 1.00 2 1.00 1.00 1.00 3 3 1.00 1.00 1.00 3 accuracy 1.00 8 macro avg 1.00 8 1.00 1.00 weighted avg 1.00 1.00 1.00 8

Sentence: what are the flights dallas to boston on monday morning True tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN Predicted tags: PRON AUX DET NOUN PROPN ADP PROPN ADP NOUN NOUN Classification Report:

Ciaconne	ationit	opoit.				
	precisi	on re	ecall	f1-sc	ore su	ıpport
1	1.0	0 1	.00	1.0	0	2
2			.00	1.0		2
3	1.0	0 1	.00	1.0	0	3
5	1.0	0 1	.00	1.0	0	1
6	1.0	0 1	.00	1.0	0	1
8	1.0	0 1	.00	1.0	0	1
accur	асу			1.00	) 1	0
macro weighte	_	1.00 1.00		.00 1.00	1.00 1.00	10 10
	_					

Sentence: am flights from atlanta to philadelphia True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

1.00

2

Classification Report:

1.00

1

precision recall f1-score support

1.00

2	1.00	0 1.	00	1.00	2	2
3	1.00	0 1.	00	1.00	2	2
accuracy				1.00	6	8
macro av		1.00	1.0	0	1.00	6
weighted av	/g	1.00	1.	00	1.00	6

Sentence: tampa to charlotte sunday morning True tags: PROPN ADP PROPN NOUN NOUN Predicted tags: NOUN ADP PROPN NOUN NOUN

Classification Report:

	prec	ision	recall	t1-sc	ore su	ıpport
1	1	.00	0.50	0.6	7	2
2	2 1	.00	1.00	1.0	0	1
3	3 (	).67	1.00	0.8	0	2
accui	racy			0.80	) !	5
macro	avg	0.8	39 0	.83	0.82	5
weighte	d avg	0	.87	08.0	0.79	5

Sentence: show flights saturday evening from <unk> louis to burbank
True tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN NOUN NOUN ADP PROPN PROPN ADP PROPN
Classification Report:

	precis	ion re	call	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	) :	3
2	1.0	00 1	.00	1.00	)	2
3	1.0	00 1	.00	1.00	)	3
4	1.0	00 1	.00	1.00	)	1
accur	acy			1.00	ç	9
macro	avg	1.00	1.	.00	1.00	9
weighted	d avg	1.00	1	.00	1.00	9

Sentence: what pm flights are available from philadelphia to pittsburgh True tags: DET NOUN NOUN AUX ADJ ADP PROPN ADP PROPN

Predicted tags: PRON NOUN NOUN VERB ADJ ADP PROPN ADP PROPN

ķ	orecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	2
4	0.00	1.00	0.00	0
5	1.00	0.00	0.00	1
6	0.00	1.00	0.00	0
7	1.00	1.00	1.00	1
8	1.00	0.00	0.00	1

accuracy		0.7	8 9	)
macro avg	0.75	0.75	0.50	9
weighted avg	1.00	0.78	0.78	9

Sentence: what are the flights from milwaukee to orlando on wednesday night True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN PROPN ADP PROPN ADP NOUN PROPN

PROPN

Classification Report:

	precisi	on re	call	f1-sco	ore su	pport
1	0.6		.00	0.80		
2			.00	1.00		
3			.67	0.80		3
5	1.0	00 1	.00	1.00	) 1	
6	1.0	00 1	.00	1.00	) 1	
8	1.0	00 1	.00	1.00	) 1	
accur	acy			0.91	11	I
macro	avg	0.94	0	.94	0.93	11
weighte	d avg	0.94	(	0.91	0.91	11

Sentence: show me the flights from san francisco to dallas

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	3	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
accur	acy			1.00	)	9	
macro	avg	1.0	0 1	.00	1.00	!	9
weighted	d avg	1.0	00	1.00	1.00		9

Sentence: show flights from san francisco to denver on a thursday

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN ADP DET NOUN Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

5	1.00	1.00	1.00	)	1
accuracy			1.00	) 1	0
macro avg	1.0	00	1.00	1.00	10

Sentence: from las vegas to phoenix

1.00

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

1.00

1.00

10

Classification Report:

weighted avg

precision recall f1-score support 1 1.00 1.00 1.00 3 2 2 1.00 1.00 1.00 1.00 accuracy macro avg 1.00 1.00 1.00 5 5 1.00 weighted avg 1.00 1.00

Sentence: show me all flights from san diego to los angeles

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN PROPN PROPN ADP PROPN ADP PROPN ADP PROPN

PROPN

Classification Report:

	precisi	on re	call	f1-sco	e supp	ort
1	1.0	0 1.	00	1.00	4	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
accura	асу			1.00	10	
macro	avg	1.00	1	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: show flights from kansas city to minneapolis True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

				11	£4			
	prec	ision	rec	all	TT-SC	ore	supp	ort
						_	_	
1		1.00	1.0	)0	1.0	0	3	
2		1.00	1.0	00	1.0	0	2	
3		1.00	1.0	00	1.0	0	1	
4		1.00	1.0	00	1.0	0	1	
accura	асу				1.00	)	7	
macro	avg	1	.00	1	.00	1.0	0	7

weighted avg 1.00 1.00 7

Sentence: list flights from las vegas to phoenix

True tags: VERB NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisio	n reca	all f1-so	core su	pport
1	1.00	1.0	0 1.0	00 3	3
2	1.00	1.0	0 1.0	00 2	2
3	1.00	1.0	0 1.0	00 ′	1
4	1.00	1.0	0 1.0	00 ′	1
accura	асу		1.0	00 7	•
macro	avg	1.00	1.00	1.00	7
weighted	l avg	1.00	1.00	1.00	7

Sentence: flights from las vegas to montreal

True tags: NOUN ADP PROPN PROPN ADP PROPN Predicted tags: NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

precis	ion re	ecall	f1-sco	ore su	ıppor	t
1 1.	00 1	.00	1.00	)	3	
2 1.	00 1	.00	1.00	)	2	
3 1.	00 1	.00	1.00	)	1	
accuracy			1.00	) (	6	
macro avg	1.00	1.	.00	1.00	6	3
weighted avg	1.00	) 1	1.00	1.00		6

Sentence: i am also interested in a flight that <unk> from <unk> louis to las vegas True tags: PRON AUX ADV VERB ADP DET NOUN ADP VERB ADP PROPN PROPN ADP PROPN

Predicted tags: PRON AUX NOUN VERB ADP DET NOUN PROPN VERB ADP

PROPN PROPN ADP PROPN PROPN

	preci	sion	reca	II f1∹	score	supp	ort
1	0	.80	1.00	) C	.89	4	
2	1	.00	0.75	<b>C</b>	.86	4	
3	0	.50	1.00	) C	.67	1	
4	1	.00	1.00	) 1	.00	2	
5	1	.00	1.00	) 1	.00	1	
6	1	.00	1.00	) 1	.00	1	
8	1	.00	1.00	) 1	.00	1	
11	1	.00	0.00	) (	0.00	1	
accur	асу			0	.87	15	
macro	avg	0.9	91	0.84	0.	80	15

weighted avg 0.91 0.87 0.84 15

Sentence: <unk> petersburg to detroit
True tags: PROPN PROPN ADP PROPN
Predicted tags: VERB PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 0.67 0.80 3 2 1.00 1.00 1.00 1 0.00 1.00 0.00 0 accuracy 0.75 0.67 0.60 4 macro avg 0.89 weighted avg 1.00 0.85 0.75

Sentence: show me flights from san francisco to minneapolis

True tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

p	recision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	3	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
6	1.00	1.00	1.00	1	
accura	СУ		1.00	8	
macro a	ivg 1.	00 1	.00 1.0	00	8
weighted	avg 1	.00	1.00 1	.00	8

Sentence: what flights from salt lake city to las vegas

True tags: DET NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

	precision		call	f1-sco	re su	port
1	1.0	0 1.	00	1.00	) 5	;
2	1.0	0 1.	00	1.00	) 2	) -
3	1.0	0 1.	00	1.00	) 1	
5	1.0	0 0.	00	0.00	) 1	
6	0.0	0 1.	00	0.00	) C	)
accur	acy			0.89	9	
macro	avg	0.80	0.	80	0.60	9
weighted	•	1.00	0	.89	0.89	9
•	•					

Sentence: show me all flights from san francisco to pittsburgh

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precisio	n re	call	f1-scc	re su	pport
1	1.00	) 1.	00	1.00	) ;	3
2	1.00	) 1.	00	1.00	) 2	2
3	1.00	) 1.	00	1.00	) '	1
4	1.00	) 1.	00	1.00	) '	1
5	1.00	) 1.	00	1.00	) '	1
6	1.00	) 1.	00	1.00	) '	1
accur	acy			1.00	g	)
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00		1.00	1.00	9

Sentence: do you have flights from <unk> petersburg to toronto on monday

True tags: AUX PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: PRON PRON VERB NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Classification Report:

			•••			
	precisi	on	recall	f1-sco	ore supp	oort
4	4.6		4.00	4.04		
1	1.0	)()	1.00	1.00	) 3	
2	1.0	00	1.00	1.00	3	
3	1.0	00	1.00	1.00	) 2	
4	1.0	00	1.00	1.00	) 1	
6	0.5	50	1.00	0.67	7 1	
8	1.0	00	0.00	0.00	) 1	
accur	acy			0.91	11	
macro	avg	0.9	2 0	.83	0.78	11
weighted	d avg	0.	95	0.91	0.88	11

Sentence: what are all the flights on delta in and out of fort worth

True tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ ADP ADP

PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADP PROPN ADP CCONJ PROPN

ADP PROPN PROPN Classification Report:

precision	recall	f1-score	support
0.75	1.00	0.86	3
1.00	0.75	0.86	4
1.00	1.00	1.00	1
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	0.75 1.00 1.00 1.00 1.00 1.00	0.75	1.00     0.75     0.86       1.00     1.00     1.00       1.00     1.00     1.00       1.00     1.00     1.00       1.00     1.00     1.00

accuracy		0.9	2 13	3
macro avg	0.96	0.96	0.96	13
weighted avg	0.94	0.92	0.92	13

Sentence: show flights from <unk> petersburg to charlotte
True tags: VERB NOUN ADP PROPN PROPN ADP PROPN
Predicted tags: VERB NOUN ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion	recall	†1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	00	3	
2			1.00	1.0		2	
3	1.0	00	1.00	1.0	0	1	
4	1.0	00	1.00	1.0	0	1	
accur	acy			1.0	0	7	
macro	avg	1.0	0 1	.00	1.0	0	7
weighted	d avg	1.0	00	1.00	1.0	00	7

Sentence: i <unk> like flight information from dallas fort worth to boston on tuesday True tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB NOUN NOUN ADP PROPN PROPN PROPN ADP

PROPN ADP NOUN Classification Report:

	prec	ision	reca	ll f1-s	core	supp	ort
1	1 1	.00	1.00	) 1.	.00	4	
2	2 1	.00	1.00	) 1.	.00	3	
3	3 1	.00	1.00	) 1.	.00	3	
2	1 1	.00	1.00	) 1.	.00	1	
6	6 1	.00	1.00	) 1.	.00	1	
3	3 1	.00	1.00	) 1.	.00	1	
accui	racy			1.	00	13	
macro	avg	1.	00	1.00	1.0	00	13
weighte	d avg	1	.00	1.00	1.	00	13

Sentence: show me all flights from san francisco to pittsburgh on friday

True tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN PROPN ADP PROPN ADP

NOUN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

5 1.0	00 1.C	0 1.0	00	1
6 1.0	00 1.0	0 1.0	00	1
			_	
accuracy		1.0	0 1	1
macro avg	1.00	1.00	1.00	11
weighted avg	1.00	1.00	1.00	11

Sentence: from las vegas to montreal

True tags: ADP PROPN PROPN ADP PROPN Predicted tags: ADP PROPN PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 3 1.00 1.00 2 1.00 1.00 1.00 2 accuracy 1.00 5 macro avg 1.00 1.00 1.00 5 weighted avg 1.00 1.00 1.00

Sentence: sunday flights from new york city to las vegas

True tags: NOUN NOUN ADP PROPN PROPN PROPN ADP PROPN PROPN

Classification Report:

9
9

Sentence: please find a flight from kansas city to newark

True tags: INTJ VERB DET NOUN ADP PROPN PROPN ADP PROPN

Predicted tags: VERB VERB DET NOUN ADP PROPN PROPN ADP PROPN

Classification (Cport.						
recision	recall	f1-score	support			
1.00	1.00	1.00	3			
1.00	1.00	1.00	2			
1.00	1.00	1.00	1			
0.50	1.00	0.67	1			
1.00	1.00	1.00	1			
1.00	0.00	0.00	1			
су		0.89	9			
avg 0.	92 0	.83 0.7	<b>7</b> 8 9			
avg 0	).94 (	0.89 0.	85 9			
	1.00 1.00 1.00 0.50 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 0.50 1.00 1.00 1.00 1.00 0.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00			

Sentence: i want to go from san francisco to denver

True tags: PRON VERB PART VERB ADP PROPN PROPN ADP PROPN Predicted tags: PRON VERB VERB VERB ADP PROPN PROPN ADP PROPN

Classification Report:

	precis	ion re	ecall	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	) :	3
2	1.0	00 1	.00	1.00	)	2
4	0.6	<b>57</b> 1	.00	0.80	)	2
6	1.0	00 1	.00	1.00	)	1
12	2 1.	00	0.00	0.0	0	1
accura	асу			0.89	9	9
macro weighted	_	0.93 0.93		.80 ).89	0.76 0.84	9 9

Sentence: list all flights on continental leaving denver on monday True tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN VERB PROPN ADP NOUN Classification Report:

	precisi	ion re	ecall	f1-sco	re sup	port
1	1.0	nn 1	.00	1.00	2	
ı						
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	2	
4	1.0	00 1	.00	1.00	2	
5			.00	1.00		
accur	acy			1.00	9	
macro	avg	1.00	1	.00	1.00	9
weighted	_	1.00	)	1.00	1.00	9

Sentence: only show continental flights True tags: ADV VERB PROPN NOUN

Predicted tags: VERB VERB PROPN NOUN

Classification Report:

pr	ecision	recall	f1-sco	re supp	ort
1	1.00	1.00	1.00	) 1	
3	1.00	1.00	1.00	) 1	
4	0.50	1.00	0.67	' 1	
11	1.00	0.00	0.00	) 1	
accuracy	<i>(</i>		0.75	4	
macro av		88 (	).75	0.67	4
veighted a	vg 0	.88	0.75	0.67	4

Sentence: find a flight on delta from philadelphia to san francisco

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN

Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP PROPN PROPN

Classification Report:

1	precision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	4	
2	1.00	1.00	1.00	3	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
5	1.00	1.00	1.00	1	
accura	су		1.00	10	
macro	avg 1.	.00 1	.00 1.	00	10
weighted	avq 1	1.00	1.00 1	.00	10

Sentence: all delta flights to <unk> if you can

True tags: DET PROPN NOUN ADP NOUN ADP PRON AUX

Predicted tags: DET PROPN NOUN ADP PROPN PROPN PRON VERB

Classification Report:

0.0000	G. C. C	, p U				
	precisio	n re	call	f1-scc	ore su	pport
1	0.33	3 1.	00	0.50	)	1
2	1.00	0.	50	0.67	7	2
3	1.00	0.	50	0.67	7	2
4	0.00	) 1.	00	0.00	) (	0
5	1.00	) 1.	00	1.00	)	1
6	1.00	) 1.	00	1.00	)	1
8	1.00	0.	00	0.00	)	1
accura	acv			0.62	. 8	3
macro	•	0.76	0	.71	0.55	8
weighted	d avg	0.92	(	0.62	0.65	8

Sentence: show me all the flights from toronto on nationair

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	1.	.00	2	
2	1.	00	1.00	1.	.00	2	
3	1.	00	1.00	1.	.00	1	
4	1.	00	1.00	1.	.00	1	
5	1.	00	1.00	1.	.00	2	
6	1.	00	1.00	1.	.00	1	
accur	acy			1.	00	9	
macro	avg	1.0	00	1.00	1.0	00	9
weighte	d avg	1.	.00	1.00	1.	.00	9

Sentence: show me all the united flights from boston to denver

True tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET PROPN NOUN ADP PROPN ADP PROPN Classification Report:

	preci	sion	reca	ıll f1-	score	e supp	ort
1	1	.00	1.00	) 1	1.00	3	
2	1	.00	1.00	) 1	1.00	2	
3	1	.00	1.00	) 1	1.00	1	
4	1	.00	1.00	) 1	1.00	1	
5	1	.00	1.00	) 1	1.00	2	
6	1	.00	1.00	) 1	1.00	1	
accur	acy			1	.00	10	
macro	avg	1.	00	1.00	1	.00	10
weighte	d avg	1	.00	1.00	) '	1.00	10

Sentence: show me all the flights on united leaving from boston

True tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN VERB ADP PROPN Classification Report:

	precisio	n re	call	f1-scor	e supp	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	2	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	2	
5	1.0	0 1.	00	1.00	2	
6	1.0	0 1.	00	1.00	1	
accur	acy			1.00	10	
macro weighted	_	1.00 1.00		00 1 .00	1.00 1.00	10 10

Sentence: when are the american flights from phoenix to milwaukee True tags: ADV AUX DET PROPN NOUN ADP PROPN ADP PROPN

Predicted tags: VERB VERB DET PROPN NOUN ADP PROPN ADP PROPN

	precis	ion re	ecall	f1-sco	re suppor	t
1	1.0	00 1	.00	1.00	3	
2	1.0	00 1	.00	1.00	2	
3	1.0	00 1	.00	1.00	1	
4	0.0	00 1	.00	0.00	0	
5	1.0	00 1	.00	1.00	1	
8	1.0	0 00	.00	0.00	1	
11	1.	00 0	00.0	0.00	) 1	
				0.70	0	
accur	•	0.00	_	0.78	9	
macro	_	0.86	_		0.57 9	_
weighte	d avg	1.00	(	0.78	0.78	9

Sentence: please list all united flights between pittsburgh and baltimore True tags: INTJ VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB VERB DET PROPN NOUN ADP PROPN CCONJ PROPN Classification Report:

	precisio	n red	call	f1-sco	re su	oport
1	1.00	1.0	00	1.00	3	3
2	1.00	1.0	00	1.00	1	
3	1.00	1.0	00	1.00	1	
4	0.50	1.0	00	0.67	<sup>'</sup> 1	
5	1.00	1.0	00	1.00	1	
10	1.00	0 1.	.00	1.00	)	1
13	1.00	0.0	.00	0.00	)	1
accura	су			0.89	9	
macro	avg	0.93	0.	86	0.81	9
weighted	avg	0.94	0	.89	0.85	9

Sentence: please list all flights between boston and philadelphia <unk> on sundays True tags: INTJ VERB DET NOUN ADP PROPN CCONJ PROPN VERB ADP PROPN

Predicted tags: VERB VERB DET NOUN ADP PROPN CCONJ PROPN PROPN ADP NUM

Classification Report:

ecision	recall	f1-score	suppo	ort
0.67	0.67	0.67	3	
1.00	1.00	1.00	2	
1.00	1.00	1.00	1	
0.50	0.50	0.50	2	
1.00	1.00	1.00	1	
0.00	1.00	0.00	0	
1.00	1.00	1.00	1	
1.00	0.00	0.00	1	
y		0.73	11	
0			_	11 11
	0.67 1.00 1.00 0.50 1.00 0.00 1.00 1.00	0.67	0.67 0.67 0.67 1.00 1.00 1.00 1.00 1.00 1.00 0.50 0.50 0.50 1.00 1.00 1.00 0.00 1.00 0.00 1.00 1.00 1.00 1.00 0.00 0.00	0.67  0.67  0.67  3 1.00  1.00  1.00  2 1.00  1.00  1.00  1 0.50  0.50  0.50  2 1.00  1.00  1.00  1 0.00  1.00  0.00  0 1.00  1.00  1.00  1 1.00  0.00  0.00  1

Sentence: list all flights from baltimore to san francisco on friday

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN Classification Report:

precision		recall	f1-score	support
1	1.00 1.00	1.00 1.00	1.00 1.00	3 3
3	1.00	1.00	1.00	2
4	1.00	1.00	1.00	1

5	1.00	1.00	1.00	)	1
accuracy			1.00	1	0
macro avg	1.	00 ′	1.00	1.00	10
weighted avo	1	.00	1.00	1.00	10

Sentence: show me flights from philadelphia to denver on a monday

True tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN ADP DET NOUN

Classification Report:

	precis	sion	recall	f1-sc	ore su	pport
					_	_
1	1.	00	1.00	1.0	0 :	2
2	1.	00	1.00	1.0	0 :	3
3	1.	00	1.00	1.0	0 :	2
4	1.	00	1.00	1.0	0	1
5	1.	00	1.00	1.0	0	1
6	1.	00	1.00	1.0	0	1
accur	acy			1.00	) 1	0
macro	avg	1.0	00 1	.00	1.00	10
weighte	d avg	1	.00	1.00	1.00	10

Sentence: show me the flights from denver to atlanta on friday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
1	1	.00	1.00	1.	.00	2	
2	1	.00	1.00	1.	.00	3	
3	1	.00	1.00	1.	.00	2	
4	. 1	.00	1.00	1.	.00	1	
5	1	.00	1.00	1.	.00	1	
6	1	.00	1.00	1.	.00	1	
accur	асу			1.	00	10	
macro	avg	1.0	00	1.00	1.0	00	10
weighte	d avg	1	.00	1.00	1.	00	10

Sentence: flights that go from oakland to philadelphia on friday

True tags: NOUN ADP VERB ADP PROPN ADP PROPN ADP NOUN

Predicted tags: NOUN NOUN VERB ADP PROPN ADP PROPN ADP NOUN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	0.75	0.86	4
3	0.67	1.00	0.80	2
4	1.00	1 00	1 00	1

accuracy		0.8	9	9
macro avg	0.92	0.94	0.91	9
weighted avg	0.93	0.89	0.89	9

Sentence: baltimore to philadelphia wednesday

True tags: PROPN ADP PROPN NOUN Predicted tags: PROPN ADP PROPN NOUN

Classification Report:

	precis	ion	recall	f1-sc	ore	supp	ort
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	1	
3	1.0	00	1.00	1.0	0	1	
accur	acv			1.00	)	4	
macro weighte	avg	1.0 1.0		.00 1.00	1.0 1.0		4 4

Sentence: i <unk> like a flight from montreal to san diego for sunday

True tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP PROPN ADP PROPN PROPN

ADP NOUN

Classification Report:

precision recall f1-score support

	prodio	1011	rcoan	11 300	ne sup	port
1	1.0	00	1.00	1.00	) 3	
2	1.0	00	1.00	1.00	) 3	
3	1.0	00	1.00	1.00	) 2	
4	1.0	00	1.00	1.00	) 1	
5	1.0	00	1.00	1.00	) 1	
6	1.0	00	1.00	1.00	) 1	
8	1.0	00	1.00	1.00	) 1	
accur	асу			1.00	) 12	)
macro	•	1.0	0 1	.00	1.00	12
weighte	d avg	1.	00	1.00	1.00	12
_	_					

Sentence: what flights are available friday from philadelphia to oakland True tags: DET NOUN AUX ADJ NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADJ NOUN ADP PROPN ADP PROPN

precision	recall	f1-score	support
1.00	1.00	1.00	2
1.00	1.00	1.00	2
1.00	1.00	1.00	2
0.00	1.00	0.00	0
1.00	0.00	0.00	1
	1.00 1.00 1.00 0.00	1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

6	0.00	1.0	0 0	.00	0	
7	1.00	1.0	00 1	.00	1	
8	1.00	0.0	0 0	.00	1	
accuracy	/		0.	.78	9	
macro av	g (	0.75	0.75	0.5	50	9
weighted a	va	1.00	0.78	0	.78	9

Sentence: i would like to see the flights available from pittsburgh to san francisco for monday

True tags: PRON AUX VERB PART VERB DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADJ ADP PROPN ADP PROPN ADP NOUN

Classification Report:

auon R	eport.				
precisi	on re	call	f1-sco	re sup	port
1.0	0 1.	.00	1.00	3	
0.7	5 1.	.00	0.86	3	
1.0	0 1.	.00	1.00	2	
1.0	0 1.	.00	1.00	2	
1.0	0 1.	.00	1.00	1	
1.0	0 1.	.00	1.00	1	
1.0	0 1.	.00	1.00	1	
1.0	0 1.	.00	1.00	1	
2 1.0	0 00	.00	0.00	) 1	
асу			0.93	15	
avg	0.97	0.	.89	0.87	15
d avg	0.95	(	0.93	0.90	15
	1.0 0.7 1.0 1.0 1.0 1.0 1.0	1.00 1. 0.75 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 1.00 1. 2 1.00 0	1.00 1.00 0.75 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 2 1.00 0.00	1.00 1.00 1.00 0.75 1.00 0.86 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	precision         recall f1-score         sup           1.00         1.00         1.00         3           0.75         1.00         0.86         3           1.00         1.00         1.00         2           1.00         1.00         1.00         2           1.00         1.00         1.00         1           1.00         1.00         1.00         1           1.00         1.00         1.00         1           2         1.00         0.00         0.00         1           acy         0.93         15           avg         0.97         0.89         0.87

Sentence: show me the flights on sunday from tampa to charlotte

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN ADP PROPN Classification Report:

	precis	sion	reca	all f	1-sc	ore	supp	ort
1	1.	.00	1.00	0	1.0	00	2	
2	1.	.00	1.00	0	1.0	0	3	
3	1.	.00	1.00	0	1.0	0	2	
4	1.	.00	1.00	0	1.0	0	1	
5	1.	.00	1.00	0	1.0	00	1	
6	1.	.00	1.00	0	1.0	00	1	
accur	асу				1.0	0	10	
macro weighted	_	1.0 1	00 .00	1.0 1.	00 00	1.0 1.0		10 10

Sentence: what are all flights from denver to philadelphia on saturday True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precis	sion	recall	t1-scc	ore sup	port
1	1.	00	1.00	1.00	) 2	
2	1.	00	1.00	1.00	3	
3	1.	00	1.00	1.00	2	
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	) 1	
accur	acy			1.00	10	
macro	avg	1.0	00 1	.00	1.00	10
weighted	d avg	1.	00	1.00	1.00	10

Sentence: what flights are available from denver to philadelphia on wednesday True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN ADP NOUN Predicted tags: PRON NOUN VERB ADJ ADP PROPN ADP PROPN ADP NOUN Classification Report:

Olabolille		•	call	f1-sco	e supp	ort
1	1.0	00 1	.00	1.00	2	
2	1.0	00 1	.00	1.00	3	
3	1.0	00 1	.00	1.00	2	
4	0.0	00 1	.00	0.00	0	
5	1.0	0 0	.00	0.00	1	
6	0.0	00 1	.00	0.00	0	
7	1.0	00 1	.00	1.00	1	
8	1.0	0 0	.00	0.00	1	
accur	acy			0.80	10	
macro	avg	0.75	0	.75 (	0.50	10
weighte	d avg	1.00	(	08.0	0.80	10

Sentence: i want to go from boston to washington on a saturday

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN ADP DET NOUN Predicted tags: PRON VERB VERB VERB ADP PROPN ADP PROPN ADP DET NOUN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	1
4	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
12	1.00	0.00	0.00	1
accurac	;y		0.91	11

macro avg	0.95	0.86	0.83	11
weighted ava	0.94	0.91	0.87	11

Sentence: show flights from burbank to <unk> louis on monday

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NOUN Predicted tags: VERB NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

p	recision	recall	t1-score	supp	ort
1 2 3 4	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00	3 3 2 1	
accurac macro a weighted	vg 1.0		1.00 .00 1.0 1.00 1.	9 00 .00	9

Sentence: please show me flights from dallas to atlanta on monday

True tags: INTJ VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

Predicted tags: VERB VERB PRON NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	pred	cisio	n ı	reca	ll f	1-sc	ore	supp	ort
1		1.00	)	1.00		1.0	00	2	
2		1.00	)	1.00		1.0	00	3	
3		1.00	)	1.00		1.0	00	2	
4		0.50	)	1.00		0.6	67	1	
6		1.00	)	1.00		1.0	00	1	
13	3	1.00	)	0.00	)	0.	00	1	
accur	acy					0.9	0	10	
macro	avg		0.92	2	9.0	33	0.7	'8	10
weighted	d avo	3	0.9	5	0.	90	0.	87	10

Sentence: show me the flights from pittsburgh to los angeles on thursday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN ADP

NOUN

precision	recall	f1-score	support
1.00	1.00	1.00	3
1.00	1.00	1.00	3
1.00	1.00	1.00	2
1.00	1.00	1.00	1
1.00	1.00	1.00	1
1.00	1.00	1.00	1
	1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 1.00 1.00

accuracy		1.0	0 11	
macro avg	1.00	1.00	1.00	11
weighted avg	1.00	1.00	1.00	11

Sentence: i <unk> like a list of the flights from oakland to dallas fort worth on sunday

True tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP

PROPN PROPN ADP NOUN

Predicted tags: PRON AUX VERB DET NOUN ADP DET NOUN ADP PROPN ADP PROPN PROPN ADP NOUN

Classification Report:

	pre	cision	n re	call	f1-sc	ore	supp	ort
,	1	1.00	1.	00	1.0	0	4	
2	2	1.00	1.	00	1.0	0	4	
3	3	1.00	1.	00	1.0	0	3	
4	1	1.00	1.	00	1.0	0	1	
5	5	1.00	1.	00	1.0	0	2	
6	3	1.00	1.	00	1.0	0	1	
8	3	1.00	1.	00	1.0	0	1	
						_		
accu	racy				1.0	0	16	
macro	avg	•	1.00	1	.00	1.0	0	16
weighte	d av	9	1.00	•	1.00	1.	00	16

Sentence: show me the flights from boston to pittsburgh on wednesday True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Classification Report:

	precis	ion	recall	f1-sc	ore su	upport
1	1.0	00	1.00	1.0	0	2
2	1.0	00	1.00	1.0	0	3
3	1.0	00	1.00	1.0	0	2
4	1.0	00	1.00	1.0	0	1
5	1.0	00	1.00	1.0	0	1
6	1.0	00	1.00	1.0	0	1
accur	acy			1.0	0 1	0
macro	avg	1.0	0 1	.00	1.00	10
weighted	d avg	1.0	00	1.00	1.00	10

Sentence: list all flights from nashville to cleveland on sunday

True tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN ADP NOUN

	precision		f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3
3	1.00	1.00	1.00	2

4 1.	.00 1	.00 1	.00	1
5 1.	.00 1	.00 1	.00	1
accuracy		1.	.00	9
macro avg	1.00	1.00	1.00	9
weighted avg	1.00	1.00	1.00	9

Sentence: give me a flight from tampa to charlotte on sunday

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP NOUN

Classification Report:

	precisi	on re	call	f1-sc	ore su	pport
1	1.0	0 1.	.00	1.0	0 2	2
2	1.0	0 1.	.00	1.0	0 ;	3
3	1.0	0 1.	.00	1.0	0 2	2
4	1.0	0 1.	.00	1.0	0 .	1
5	1.0	0 1.	.00	1.0	0 .	1
6	1.0	0 1.	.00	1.0	0 .	1
accur	acy			1.00	) 1	0
macro	avg	1.00	1	.00	1.00	10
weighted	d avg	1.00	•	1.00	1.00	10

Sentence: show flights from denver to san francisco

True tags: VERB NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	preci	sion	recall	f1-sc	ore sup	port
1	1	.00	1.00	1.00	) 3	
2	1	.00	1.00	1.0	) 2	
3	1	.00	1.00	1.0	) 1	
4	. 1	.00	1.00	1.0	0 1	
accur	•			1.00		
macro weighte	_	1.0 1.		.00 1.00	1.00 1.00	7 7

Sentence: what are all the flights available between pittsburgh and dallas fort worth True tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: PRON AUX DET DET NOUN ADJ ADP PROPN CCONJ PROPN PROPN

Classification Report:

precision recall f1-score support

1 1.00 1.00 1.00 4
2 1.00 1.00 1.00 1
3 1.00 1.00 1.00 1

5	1.00	1.	00	1.00	)	2	
6	1.00	1.	00	1.00	)	1	
7	1.00	1.	00	1.00	)	1	
8	1.00	1.	00	1.00	)	1	
10	1.00	) 1	.00	1.0	0	1	
accuracy				1.00	)	12	
macro avo	7	1.00	1.0	00	1.00		12
weighted av	g	1.00	1	.00	1.00	)	12

Sentence: what flights from seattle to salt lake city

True tags: DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precis	ion	recal	l f1-s	core	supp	ort
1	1.	00	1.00	1.	00	4	
2	1.	00	1.00	1.	00	2	
3	1.	00	1.00	1.	00	1	
5	1.	00	0.00	0.	00	1	
6	0.	00	1.00	0.	00	0	
accur	acy			3.0	38	8	
macro	avg	0.8	80	0.80	0.6	0	8
weighted	d avg	1.	00	0.88	0.0	38	8

Sentence: what are the flights from memphis to las vegas

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN AUX DET NOUN ADP PROPN ADP PROPN PROPN PROPN

Classification Report:

Olabolille	audii i	(Opo				
	precis	sion	recall	f1-sc	ore su	pport
1	1.	00	1.00	1.00	0 :	3
2		00	1.00	1.0		2
3	1.	00	1.00	1.0	0 .	1
5	1.	00	1.00	1.0	0 .	1
6	1.	00	1.00	1.0	0 .	1
8	1.	00	1.00	1.00	0	1
accur	acy			1.00	) 9	)
macro	_	1.0		.00	1.00	9
weighted	d avg	1.	.00	1.00	1.00	9

Sentence: what flights are there from pittsburgh to los angeles

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN VERB PRON ADP PROPN ADP PROPN PROPN

Classification Report:

precision recall f1-score support

1.00 1.00 1.00 3

_	1.0		00	1.00	,	_	
3	1.00	) 1.	00	1.00	)	1	
4	1.00	) 1.	00	1.00	)	1	
5	1.00	0.	00	0.00	)	1	
6	0.50	) 1.	00	0.67	7	1	
accura	асу			0.89	)	9	
macro	avg	0.92	0.	83	0.78		9
weighted	l avg	0.94	0	.89	0.85		9

1.00 1.00 1.00

Sentence: i <unk> looking for a flight from pittsburgh to san francisco

True tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: PRON AUX VERB ADP DET NOUN ADP PROPN ADP PROPN

2

**PROPN** 

Classification Report:

2

	precisio	n re	call	f1-sco	re sup	port
1	1.0	0 1.	00	1.00	3	
2	1.0	0 1.	00	1.00	3	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	1	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
8	1.0	0 1.	00	1.00	1	
accur	acy			1.00	11	
macro	avg	1.00	1	.00	1.00	11
weighted	d avg	1.00	•	1.00	1.00	11

Sentence: show me the flights from dallas to san francisco

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN Classification Reports

Classification Report:

Ciaconic	auoni	oport.				
	precision	on re	call	f1-sco	re sup	port
1	1.0	0 1	.00	1.00	3	
2			.00	1.00	2	
3	1.0	0 1.	.00	1.00	1	
4	1.0		.00	1.00	1	
5			.00	1.00	1	
6	1.0	0 1.	.00	1.00	1	
accur	асу			1.00	9	
macro weighted	•	1.00 1.00		.00	1.00 1.00	9 9

Sentence: what are the flights from boston to san francisco

True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN AUX DET NOUN ADP PROPN ADP PROPN PROPN PROPN

	precisio	n red	call	f1-sc	ore	supp	ort
1	1.00	) 1.	00	1.0	0	3	
2	1.00	) 1.	00	1.0	00	2	
3	1.00	) 1.	00	1.0	0	1	
5	1.00	) 1.	00	1.0	0	1	
6	1.00	) 1.	00	1.0	00	1	
8	1.00	) 1.	00	1.0	00	1	
accur	acy			1.0	0	9	
macro	avg	1.00	1	.00	1.00	)	9
weighted	d avg	1.00	•	1.00	1.0	00	9

Sentence: what flights do you have leaving boston going to san francisco True tags: DET NOUN AUX PRON VERB VERB PROPN VERB ADP PROPN PROPN

Predicted tags: PRON NOUN AUX PRON VERB VERB PROPN VERB ADP PROPN PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 3 2 1.00 1.00 1.00 1 3 1.00 1.00 1.00 1 4 3 1.00 1.00 1.00 5 1.00 0.00 0.00 1 6 0.67 1 0.50 1.00 8 1.00 1.00 1 1.00 11 0.91 accuracy 0.93 0.81 11 macro avg 0.86 weighted avg 0.95 0.91 88.0 11

Sentence: list all flights please from washington to san francisco True tags: VERB DET NOUN INTJ ADP PROPN ADP PROPN PROPN Predicted tags: VERB DET NOUN VERB ADP PROPN ADP PROPN PROPN Classification Report:

ŗ	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	0.50	1.00	0.67	1
5	1.00	1.00	1.00	1
13	1.00	0.00	0.00	1
accura	CV		0.89	9
macro a	•	.92	0.83	78 9
weighted	•	0.94	0.89 0	.85 9
-	-			

Sentence: list flights between oakland and san francisco

True tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN PROPN

Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	1.00	1.00	1.00	1
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	1
10	1.00	1.00	1.00	1
accura	CV		1.00	7
macro	•	.00 1	.00 1.0	00 7
weighted	0		1.00 1.	00 7
- J	- 3			

Sentence: interested in a flight from washington to fort worth

True tags: VERB ADP DET NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PROPN ADP DET NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

0.0000		·OP O						
	precis	sion	reca	II f1	-scc	ore s	uppo	rt
1	0.	75	1.00	)	0.86	6	3	
2	1.	00	1.00	)	1.00	)	3	
3	1.	00	1.00	)	1.00	)	1	
4	1.	00	0.00	)	0.00	)	1	
5	1.	00	1.00	)	1.00	)	1	
accur	acy				0.89	)	9	
macro	avg	0.9	95	0.8	0	0.77		9
weighted	d avg	0.	92	3.0	39	0.84		9

Sentence: what flights are <unk> available between boston and dallas fort worth True tags: DET NOUN AUX ADV ADJ ADP PROPN CCONJ PROPN PROPN PROPN

Predicted tags: PRON NOUN VERB VERB ADJ ADP PROPN CCONJ PROPN PROPN

precision	recall	f1-score	support
1.00	1.00	1.00	4
1.00	1.00	1.00	1
1.00	1.00	1.00	1
0.00	1.00	0.00	0
1.00	0.00	0.00	1
0.00	1.00	0.00	0
1.00	1.00	1.00	1
1.00	0.00	0.00	1
1.00	1.00	1.00	1
1.00	0.00	0.00	1
	1.00 1.00 1.00 0.00 1.00 0.00 1.00 1.00	1.00 1.00 1.00 1.00 1.00 1.00 0.00 1.00 1.00 0.00 0.00 1.00 1.00 1.00 1.00 0.00	1.00     1.00     1.00       1.00     1.00     1.00       0.00     1.00     0.00       1.00     0.00     0.00       0.00     1.00     0.00       1.00     1.00     1.00       1.00     1.00     1.00       1.00     1.00     1.00

accuracy		0.7	3 11	
macro avg	0.80	0.70	0.50	11
weighted avg	1.00	0.73	0.73	11

Sentence: what about flights from boston to san diego

True tags: PRON ADP NOUN ADP PROPN ADP PROPN PROPN

Predicted tags: PRON NOUN NOUN ADP PROPN ADP PROPN PROPN

Classification Report:

	precisi	on re	call f	1-sco	re suppo	rt
1	1.0	0 1.	00	1.00	3	
2	1.0	0 0.	67	0.80	3	
3	0.5	0 1.	00	0.67	1	
6	1.0	0 1.	00	1.00	1	
accur	асу			0.88	8	
macro	avg	0.88	0.9	92	0.87	8
weighted	d avg	0.94	0.	.88	0.88	8

Sentence: flights from baltimore to san francisco True tags: NOUN ADP PROPN ADP PROPN PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call f	1-score	suppo	ort
1	1.0	00 1.	.00	1.00	3	
2	1.0	0 1.	.00	1.00	2	
3	1.0	0 1.	.00	1.00	1	
accur	acy			1.00	6	
macro	avg	1.00	1.0	0 1.	00	6
weighted	d avg	1.00	1.0	00 1	.00	6

Sentence: i live in washington and i would like to make a trip to san francisco can you tell me which airlines connect with those two cities

True tags: PRON VERB ADP PROPN CCONJ PRON AUX VERB PART VERB DET NOUN ADP PROPN PROPN AUX PRON VERB PRON DET NOUN VERB ADP DET NUM NOUN

Predicted tags: PRON VERB ADP PROPN VERB PRON AUX ADP ADP VERB DET NOUN ADP PROPN PROPN VERB PRON VERB PRON ADJ NOUN VERB ADP NOUN VERB VERB

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	3
2	0.60	1.00	0.75	3
3	0.67	0.67	0.67	3
4	0.50	0.80	0.62	5
5	1.00	0.33	0.50	3

6	1.00	1.00	1.00	4	
7	0.00	1.00	0.00	0	
8	1.00	0.50	0.67	2	
9	1.00	0.00	0.00	1	
10	1.00	0.00	0.00	1	
12	1.00	0.00	0.00	1	
accuracy			0.69	26	
macro av	g 0.8	30 0	.57 0	.47	26
weighted av	/g 0	.82 (	0.69 (	0.66	26

Sentence: show me the flights from detroit to las vegas

precision recall f1-score support

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN PROPN PROPN PROPN ADP PROPN PROPN PROPN

Classification Report:

	p. 00.0.	··· ··	oou		J. 0	APPO	
1	1.0	00 1	1.00	1.00	)	3	
2	1.0	0 1	00.1	1.0	)	2	
3	1.0	00 1	00.1	1.00	)	1	
4	1.0	00 1	00.1	1.00	)	1	
5	1.0	00 1	00.1	1.0	)	1	
6	1.0	00 1	00.1	1.0	)	1	
accur	acy			1.00	) !	9	
macro	avg	1.00	1	.00	1.00	!	9
weighted	d avg	1.00	)	1.00	1.00		9

Sentence: what flights go from denver to atlanta

True tags: DET NOUN VERB ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADP PROPN ADP PROPN

Classification Report:

	pre	cisio	n re	ecall	f1-sc	core	supp	ort
	1 2	1.00	) 1	.00.	1.( 1.(	00	2	
	3	1.00		.00	1.0		1	
	4	1.00		.00	1.0		1	
	5	1.00		.00	0.0		1	
	6	0.00	) 1	.00	0.0	)()	0	
	uracy ro avç	1	0.83	0	0.8 .83	86 0.6	7 57	7
weight	_		1.00	) (	0.86	0.	86	7

Sentence: show me the flights from montreal to philly

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.0	0 1.	00	2	
2	1.00	1.0	0 1.	00	2	
3	1.00	1.0	0 1.	00	1	
4	1.00	1.0	0 1.	00	1	
5	1.00	1.0	0 1.	00	1	
6	1.00	1.0	0 1.	00	1	
accuracy	/		1.0	00	8	
macro av	g ´	1.00	1.00	1.00	)	8
weighted a	vq	1.00	1.00	1.0	00	8

Sentence: flight from denver to philadelphia True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1.00 2 1 1.00 1.00 2 1.00 1.00 1.00 2 3 1.00 1.00 1.00 1 accuracy 1.00 5 1.00 5 macro avg 1.00 1.00 weighted avg 1.00 1.00 1.00 5

Sentence: give me the flights from baltimore to pittsburgh True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

Ciassilic	auon	ı vope	/I C.			
	precis	sion	recall	f1-sc	ore sup	port
1	1	.00	1.00	1.0	0 2	
2	1	.00	1.00	1.0	0 2	
3	1	.00	1.00	1.0	0 1	
4	1	.00	1.00	1.0	0 1	
5	1	.00	1.00	1.0	0 1	
6	1	.00	1.00	1.0	0 1	
accur	acy			1.00	8 (	
macro	_			.00	1.00	8
weighte	d avg	1	.00	1.00	1.00	8

Sentence: i would like to fly from boston to baltimore

True tags: PRON AUX VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB ADP VERB ADP PROPN ADP PROPN

Classification Report:

1

precision recall f1-score support

1.00 1.00 1.00 2

2	0.67	1.00	0.80	2	
4	1.00	1.00	1.00	2	
6	1.00	1.00	1.00	1	
8	1.00	1.00	1.00	1	
12	1.00	0.00	0.00	1	
accuracy			0.89	9	
macro avo	0.94	1 0.83	3 0.80		9

0.93

Sentence: tell me the flights that leave philadelphia and go to dallas

0.89

True tags: VERB PRON DET NOUN ADP VERB PROPN CCONJ VERB ADP

0.84

PROPN

weighted avg

Predicted tags: VERB PRON DET NOUN PROPN VERB PROPN VERB VERB ADP

9

**PROPN** 

Classification Report:

	preci	sion	reca	ll f1-s	core	supp	ort
1	0	.67	1.00	0.	80	2	
2	1	.00	0.50	0.	67	2	
3	1	.00	1.00	) 1.	00	1	
4	0	.75	1.00	0.	86	3	
5	1	.00	1.00	) 1.	.00	1	
6	1	.00	1.00	) 1.	.00	1	
10	) ′	1.00	0.0	0 0	.00	1	
accur	асу			0.	82	11	
macro	avg	0.9	92	0.79	0.7	'6	11
weighte	d avg	0	.87	0.82	0.	77	11

Sentence: flight information from oakland to denver True tags: NOUN NOUN ADP PROPN ADP PROPN Predicted tags: NOUN NOUN ADP PROPN ADP PROPN

Classification Report:

	precision		rec	recall f1-sco		core	ore suppo	
1	1	.00	1.0	00	1.	00	2	
2	1	.00	1.0	00	1.	00	2	
3	1	.00	1.0	00	1.	00	2	
accur	асу				1.0	00	6	
macro weighte	_		.00 1.00		.00 I.00	1.0 1.	00 00	6 6

Sentence: the flight will <unk> from boston

True tags: DET NOUN AUX VERB ADP PROPN Predicted tags: DET NOUN ADJ VERB ADP PROPN

Classification Report:

precision recall f1-score support

1	1.00	1.	00	1.0	0	1	
2	1.00	1.	00	1.0	0	1	
3	1.00	1.	00	1.0	0	1	
4	1.00	1.	00	1.0	0	1	
5	1.00	1.	00	1.0	0	1	
7	0.00	1.	00	0.0	0	0	
8	1.00	0.	00	0.0	0	1	
accuracy	/			0.83	3	6	
macro av	g (	0.86	0.	.86	0.71		6
weighted a	vg	1.00	(	0.83	0.83	3	6

Sentence: what are the flights from pittsburgh to oakland True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore s	uppo	rt
1	1.0	00	1.00	1.0	0	2	
2	1.0	00	1.00	1.0	0	2	
3	1.0	00	1.00	1.0	0	1	
5	1.0	00	1.00	1.0	0	1	
6	1.0	00	1.00	1.0	0	1	
8	1.0	00	1.00	1.0	0	1	
accur	acy			1.0	0	8	
macro	avg	1.0	0 1	.00	1.00		8
weighted	d avg	1.0	00	1.00	1.00	)	8

Sentence: what flights are there from baltimore to newark

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB PRON ADP PROPN ADP PROPN

Classification Report:

Ciaconic	auoni	(Opoi	٠.				
	precis	ion	recal	l f1-s	core	supp	ort
1	1.	00	1.00	1.	00	2	
2	1.	00	1.00	1.	.00	2	
3	1.	00	1.00	1.	.00	1	
4	1.	00	1.00	1.	.00	1	
5	1.	00	0.00	0.	.00	1	
6	0.	50	1.00	0.	67	1	
accur	acy			0.8		8	
macro weighted	•	0.9		0.83 0.88	0.7 0.	'8 83	8 8

Sentence: flights from columbus to milwaukee True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

	precision	on re	call	f1-sco	re su	pport
1	1.0	0 1.	00	1.00	) 2	2
2	1.0	0 1.	00	1.00	) 2	2
3	1.0	0 1.	00	1.00	) 1	
accur	асу			1.00	5	
macro	avg	1.00	1.	00	1.00	5
weighted	d avg	1.00	1	.00	1.00	5

Sentence: i <unk> like information on boston to washington
True tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN
Predicted tags: PRON AUX VERB NOUN ADP PROPN ADP PROPN
Observious Property

Classification Report:

	precisi	on re	call	f1-scc	re su	pport
1	1.0	0 1	.00	1.00	) 2	2
2	1.0	0 1	.00	1.00	) 2	2
3	1.0	0 1	.00	1.00	) 1	l
4	1.0	0 1	.00	1.00	) 1	1
6	1.0	0 1	.00	1.00	) 1	1
8	1.0	0 1	.00	1.00	) 1	l
accur	acy			1.00	8	1
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00	•	1.00	1.00	8

Sentence: list flights from houston to phoenix

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precision			†1-sc	ore su	upport
1 2 3	1.	.00 .00	1.00 1.00 1.00	1.00 1.00 1.00	0	2 2 1
4		.00	1.00	1.00		1
accur macro	•	1.0	00 1	1.00 .00	1.00	6
weighte	d avg	1.	.00	1.00	1.00	6

Sentence: information of a flight from atlanta to pittsburgh True tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP DET NOUN ADP PROPN ADP PROPN

рі	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	3

3 1.0	00 1.0	00 1.0	00	2
5 1.0	00 1.0	00 1.0	00	1
00011001		1.0	Λ (	3
accuracy		1.0	0 (	)
macro avg	1.00	1.00	1.00	8
weighted avg	1.00	1.00	1.00	8

Sentence: i need to go to pittsburgh and denver

True tags: PRON VERB PART VERB ADP PROPN CCONJ PROPN Predicted tags: PRON VERB VERB VERB ADP PROPN VERB PROPN

Classification Report:

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	1
4	0.50	1.00	0.67	2
6	1.00	1.00	1.00	1
10	1.00	0.00	0.00	1
12	1.00	0.00	0.00	1
accura	асу		0.75	8
macro	avg C	.92 0	.67 0.6	81 8
weighted	l avg	0.88	0.75 0.	.67 8

Sentence: what flights from philadelphia to atlanta True tags: DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on	recall	f1-sc	ore :	suppo	ort
1	1.0	00	1.00	1.0	0	2	
2	1.0		1.00	1.0		2	
3	1.0	0	1.00	1.0	0	1	
5	1.0	0	0.00	0.0	0	1	
6	0.0	00	1.00	0.0	0	0	
				0.0	^	0	
accura	acy			0.8		6	
macro	avg	0.8	0 0	.80	0.60	)	6
weighted	d avg	1.0	00	0.83	0.8	3	6

Sentence: flight from milwaukee to denver True tags: NOUN ADP PROPN ADP PROPN Predicted tags: NOUN ADP PROPN ADP PROPN

pr	ecision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1

accuracy		1.0	0 5	
macro avg	1.00	1.00	1.00	5
weighted avg	1.00	1.00	1.00	5

Sentence: tell me the flights from baltimore to dallas

True tags: VERB PRON DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sc	ore si	upport
1	1.0	0 1.	.00	1.00	0	2
2	1.0	0 1.	.00	1.0	0	2
3	1.0	0 1.	.00	1.0	0	1
4	1.0	0 1.	.00	1.0	0	1
5	1.0	0 1.	.00	1.0	0	1
6	1.0	0 1.	.00	1.0	0	1
accur	acy			1.00	)	8
macro	avg	1.00	1	.00	1.00	8
weighte	d avg	1.00	•	1.00	1.00	8

Sentence: i <unk> like to book a flight from atlanta to denver

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

**PROPN** 

Classification Report:

	precis	sion	recall	f1-sco	ore sup	oport
1	1.	00	1.00	1.00	) 2	) -
2	0.	67	1.00	0.80	) 2	) -
3	1.	00	1.00	1.00	) 1	
4	1.	00	1.00	1.00	) 2	<u>)</u>
5	1.	00	1.00	1.00	) 1	
6	1.	00	1.00	1.00	) 1	
8	1.	00	1.00	1.00	) 1	
12	2 1	.00	0.00	0.0	0	1
accur	асу			0.91	11	
macro	avg	0.9	6 0	.88	0.85	11
weighte	d avg	0.9	94 (	0.91	0.87	11

Sentence: now get me from pittsburgh to denver

True tags: ADV VERB PRON ADP PROPN ADP PROPN

Predicted tags: VERB VERB PRON ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score support 1 1.00 1.00 1.00 2 2 2 1.00 1.00 1.00 0.50 1.00 0.67 1

6 1.	.00 1.	00 1.	00	1
11 1	.00 0	.00 0	.00	1
accuracy		0.8	26	7
accuracy macro avg	0.90	0.80	0.73	7
weighted avg	0.93	0.86	0.81	7

Sentence: what flights are there from boston to dallas

True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB PRON ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-scc	re sup	oport
1	1.0	00 1	.00	1.00	) 2	)
2	1.0	0 1	.00	1.00	) 2	) -
3	1.0	0 1	.00	1.00	) 1	
4	1.0	0 1	.00	1.00	) 1	
5	1.0	0 0	.00	0.00	) 1	
6	0.5	50 1	.00	0.67	' 1	
accur	acy			0.88	8	
macro	avg	0.92	0	.83	0.78	8
weighted	d avg	0.94	(	0.88	0.83	8

Sentence: show me flights from pittsburgh to philadelphia True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	recal	l f1-sc	ore	supp	ort
1	1.	.00	1.00	1.0	0	2	
2	1.	.00	1.00	1.0	0	2	
3	1.	.00	1.00	1.0	0	1	
4	1.	.00	1.00	1.0	0	1	
6	1	.00	1.00	1.0	00	1	
accur	acy			1.0	0	7	
macro	avg	1.0	00	1.00	1.0	0	7
weighte	d avg	1.	.00	1.00	1.0	00	7

Sentence: show flights from philadelphia to boston True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
4	1 00	1 00	1 00	1

accuracy		1.0	0 6	
macro avg	1.00	1.00	1.00	6
weighted avg	1.00	1.00	1.00	6

Sentence: i <unk> like to see flights from pittsburgh to philadelphia

True tags: PRON AUX VERB PART VERB NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX VERB ADP VERB NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-sc	ore su	pport
1	1.0	00	1.00	1.00	O :	2
2	0.0	67	1.00	0.8	) :	2
3	1.0	00	1.00	1.0	)	1
4	1.0	00	1.00	1.0	<b>)</b> (	2
6	1.0	00	1.00	1.0	)	1
8	1.0	00	1.00	1.0	)	1
12	2 1.	.00	0.00	0.0	0	1
accur	acy			0.90	) 1	0
macro	avg	0.9	5 0	.86	0.83	10
weighted	d avg	0.9	93	0.90	0.86	10

Sentence: give me flights from pittsburgh to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	t1-sco	re su	pport
1	1.0	0 1.	00	1.00	) ;	2
2	1.0	0 1.	00	1.00	) ;	2
3	1.0	0 1.	00	1.00	)	1
4	1.0	0 1.	00	1.00	,	1
6	1.0	0 1.	00	1.00	)	1
				4.00	_	-
accur	acy			1.00	- 1	<b>'</b>
macro	avg	1.00	1	.00	1.00	7
weighted	d avg	1.00	•	1.00	1.00	7

Sentence: i need to go from philadelphia to dallas

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB VERB VERB ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
4	0.67	1.00	0.80	2
6	1.00	1.00	1.00	1
12	2 1.00	0.00	0.00	1

accuracy		0.8	8 8	
macro avg	0.93	0.80	0.76	8
weighted avg	0.92	0.88	0.82	8

Sentence: show flights from pittsburgh to oakland True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

Classification Report:

0.0000		J P O				
	precisio	n re	call	f1-sco	re su	pport
1	1.0	0 1.	.00	1.00	) 2	2
2	1.0	0 1.	.00	1.00	) 2	2
3	1.0	0 1.	.00	1.00	,	1
4	1.0	0 1.	.00	1.00	)	1
accur	acv			1.00	ε	6
macro	•	1.00	1	.00	1.00	6
weighted	d avg	1.00	•	1.00	1.00	6

Sentence: what are the flights from chicago to indianapolis True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX DET NOUN ADP PROPN ADP PROPN

Classification Report:

precision recall f1-score	support
1 1.00 1.00 1.00	2
2 1.00 1.00 1.00	2
3 1.00 1.00 1.00	1
5 1.00 1.00 1.00	1
6 1.00 1.00 1.00	1
8 1.00 1.00 1.00	1
accuracy 1.00	8
macro avg 1.00 1.00 1.00	8 (
weighted avg 1.00 1.00 1.0	8 0

Sentence: get flights from toronto to milwaukee True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

pre	cision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
accuracy			1.00	6	
macro avo	g 1.0	00 1	.00 1.0	00	6

weighted avg 1.00 1.00 1.00 6

Sentence: what are the different classes that an airline offers True tags: PRON AUX DET ADJ NOUN ADP DET NOUN VERB

Predicted tags: PRON AUX DET NOUN PROPN PROPN DET NOUN NOUN

Classification Report:

0.0000	G. 1. G. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.	p 0				
	precisio	n rec	all f1-	score	suppo	ort
1	0.00	1.0	0 0	.00	0	
2	1.00	0.0	0 0	.00	1	
3	0.33	0.5	50 0	.40	2	
4	1.00	0.0	0 0	.00	1	
5	1.00	1.0	00 1	.00	2	
6	1.00	1.0	00 1	.00	1	
7	1.00	0.0	0 0	.00	1	
8	1.00	1.0	00 1	.00	1	
accura	асу		0	.56	9	
macro	avg	0.79	0.56	0.4	2	9
weighted	l avg	0.85	0.56	0.5	53	9

Sentence: show flights between boston and denver True tags: VERB NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB NOUN ADP PROPN CCONJ PROPN

Classification Report:

	pre	cisior	n re	call	f1-s	core	supp	ort
1		1.00	1	.00	1.0	00	2	
2	)	1.00	1	.00	1.0	00	1	
3	}	1.00	1	.00	1.0	00	1	
4		1.00	1	.00	1.0	00	1	
10	)	1.00	) 1	.00	1.	.00	1	
accur	асу				1.0	00	6	
macro	avg	•	1.00	1	.00	1.0	0	6
weighte	d av	g	1.00	•	1.00	1.	00	6

Sentence: show flights from dallas to oakland

True tags: VERB NOUN ADP PROPN ADP PROPN Predicted tags: VERB NOUN ADP PROPN ADP PROPN

pre	cision	recall	f1-score	supp	ort
1	1.00	1.00	1.00	2	
2	1.00	1.00	1.00	2	
3	1.00	1.00	1.00	1	
4	1.00	1.00	1.00	1	
accuracy			1.00	6	
macro avo	g 1.0	00 1	.00 1.0	00	6

weighted avg 1.00 1.00 1.00 6

Sentence: show me flights from baltimore to dallas

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	re su	pport
1	1.0	0 1.	.00	1.00	) :	2
2	1.0	0 1.	.00	1.00	) ;	2
3	1.0	0 1.	.00	1.00	)	1
4	1.0	0 1.	.00	1.00	)	1
6	1.0	0 1.	.00	1.00	)	1
accur	acy			1.00	7	7
macro	avg	1.00	1	.00	1.00	7
weighted	d avg	1.00	•	1.00	1.00	7

Sentence: give me all the flights from memphis to charlotte

precision recall f1-score support

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precisi	011 10	Juli	11-300	ne su	pport
1	1.0	0 1	.00	1.00	) 2	2
2	1.0		.00	1.00		
3	1.0	0 1	.00	1.00	) 1	l
4	1.0	0 1	.00	1.00	) 1	1
5	1.0	0 1	.00	1.00	) 2	2
6	1.0	0 1	.00	1.00	) 1	1
accura	асу			1.00	9	)
macro	avg	1.00	1	.00	1.00	9
weighted	d avg	1.00	•	1.00	1.00	9

Sentence: i would like to see the flights from baltimore to philadelphia please True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN INTJ

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

PROPN VERB

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.67	1.00	0.80	2
3	1.00	1.00	1.00	1
4	0.67	1.00	0.80	2
5	1.00	1.00	1.00	1
6	1.00	1.00	1.00	1
8	1.00	1.00	1.00	1

12	1.00	0.0	00	0.0	0	1	
13	1.00	0.0	00	0.0	0	1	
accuracy				0.83		12	
macro avg	0.9	93	0.7	8	0.73		12
weighted avg	<b>)</b> 0.	.89	0.8	83	0.77	•	12

Sentence: what flights are there from indianapolis to orlando True tags: DET NOUN VERB PRON ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB PRON ADP PROPN ADP PROPN

Classification Report:

	precisi	on re	call	f1-sco	ore su	pport
1	1.0	0 1.	.00	1.00	) :	2
2	1.0	0 1.	.00	1.00	) :	2
3	1.0	0 1.	.00	1.00	)	1
4	1.0	0 1.	.00	1.00	)	1
5	1.0	0 0.	.00	0.00	)	1
6	0.5	0 1.	.00	0.67	7	1
accur	acv			0.88	3 8	2
macro	•	0.92	0	.83	0.78	8
weighted	_	0.94		0.88	0.83	8

Sentence: no i want to go from denver to oakland

True tags: DET PRON VERB PART VERB ADP PROPN ADP PROPN

Predicted tags: VERB PRON VERB VERB VERB ADP PROPN ADP PROPN

Classification Report:

	preci	sion	recall	f1-sco	ore su	nbbo	rt
1	1	.00	1.00	1.00	0	2	
2	1	.00	1.00	1.0	0	2	
4	0	.50	1.00	0.6	7	2	
5	1	.00	0.00	0.0	0	1	
6	1	.00	1.00	1.0	0	1	
12	2 1	.00	0.00	0.0	0	1	
accur	acy			0.78	3	9	
macro	avg	0.9	92 0	.67	0.61		9
weighted	d avg	0.	.89	0.78	0.70		9

Sentence: show me flights from milwaukee to orlando

True tags: VERB PRON NOUN ADP PROPN ADP PROPN

Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

р	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1 00	1 00	1 00	1

4	1.00	1.00	1.00	) 1	
6	1.00	1.00	1.00	) 1	
accuracy			1.00	7	
macro avg	1.0	00 1	.00	1.00	7
weighted av	g 1	.00	1.00	1.00	7

Sentence: give me a list of flights between denver and oakland

True tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN

Classification Report:

	precis	sion	reca	II f1-	score	supp	ort
1	1.	00	1.00	1	.00	2	
2	1.	00	1.00	1	.00	2	
3	1.	00	1.00	) 1	.00	2	
4	1.	00	1.00	) 1	.00	1	
5	1.	00	1.00	) 1	.00	1	
6	1.	00	1.00	) 1	.00	1	
10	) 1	.00	1.00	)	1.00	1	
accur	acy			1	.00	10	
macro	avg	1.0	00	1.00	1.0	00	10
weighted	d avg	1	.00	1.00	) 1	.00	10

Sentence: show me all the flights from charlotte to cleveland

True tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON DET DET NOUN ADP PROPN ADP PROPN

Classification Report:

Ciaccino	auon re	ροι				
	precisio	n re	call	f1-sco	re su	pport
1	1.00	) 1.	00	1.00	2	2
2			00	1.00		2
3	1.00	) 1.	00	1.00	•	1
4	1.00	1.	00	1.00	•	1
5	1.00	1.	00	1.00	2	2
6	1.00	1.	00	1.00	•	1
accur	асу			1.00	9	)
macro weighted	_	1.00 1.00		.00 1.00	1.00 1.00	9 9
=	_					

Sentence: give me flights from denver to baltimore

True tags: VERB PRON NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON NOUN ADP PROPN ADP PROPN

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1 00	1 00	1 00	2

3	1.00	1.	00	1.00	)	1	
4	1.00	1.	00	1.00	)	1	
6	1.00	1.	00	1.00	)	1	
accuracy	/			1.00		7	
macro av	′g	1.00	1.0	0	1.00		7
weighted a	vg	1.00	1.	00	1.00		7

Sentence: tell me about flights from indianapolis to houston True tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN Predicted tags: VERB PRON ADP NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	sion	reca	ll f1-s	core	supp	ort
1	1.	00	1.00	) 1.	.00	2	
2	1.	00	1.00	) 1.	.00	3	
3	1.	00	1.00	) 1.	.00	1	
4	1.	00	1.00	) 1.	.00	1	
6	1.	00	1.00	) 1.	.00	1	
accur	асу			1.0	00	8	
macro	avg	1.0	00	1.00	1.0	0	8
weighte	d avg	1.	00	1.00	1.	00	8

Sentence: oakland to philadelphia True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

precisi	on rec	all f1-so	ore su	pport
1 1.0				<u> </u>
2 1.0	0 1.0	0 1.0	00 1	
accuracy		1.0	0 3	
macro avg	1.00	1.00	1.00	3
weighted avg	1.00	1.00	1.00	3

Sentence: what are your flights from denver to baltimore True tags: PRON AUX DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON AUX AUX NOUN ADP PROPN ADP PROPN

	precision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	1.00	1.00	1.00	2
3	1.00	1.00	1.00	1
5	1.00	0.00	0.00	1
6	1.00	1.00	1.00	1
8	0.50	1.00	0.67	1

accuracy		0.8	8 8	
macro avg	0.92	0.83	0.78	8
weighted avg	0.94	0.88	0.83	8

Sentence: list all flights from baltimore to philadelphia True tags: VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	preci	sion	recall	f1-scc	ore su	pport
1	1	.00	1.00	1.00	) 2	2
2	1	.00	1.00	1.00	) 2	<u> </u>
3	1	.00	1.00	1.00	) 1	
4	1	.00	1.00	1.00	) 1	
5	1	.00	1.00	1.00	) 1	
accur	acy			1.00	7	
macro	avg	1.0	00 1	.00	1.00	7
weighte	d avg	1.	.00	1.00	1.00	7

Sentence: what flights are available from boston to dallas True tags: DET NOUN AUX ADJ ADP PROPN ADP PROPN

Predicted tags: PRON NOUN VERB ADJ ADP PROPN ADP PROPN

Classification Report:

	precis	ion	recall	f1-scc	re sup	port
1	1.	00	1.00	1.00	) 2	
2	1.	00	1.00	1.00	) 2	
3	1.	00	1.00	1.00	) 1	
4	0.	00	1.00	0.00	0	
5	1.	00	0.00	0.00	) 1	
6	0.	00	1.00	0.00	0	
7	1.	00	1.00	1.00	) 1	
8	1.	00	0.00	0.00	) 1	
accur	асу			0.75	8	
macro weighted	_	0.75 1.0		.75 ).75	0.50 0.75	8 8

Sentence: i would like to see all flights from denver to philadelphia

True tags: PRON AUX VERB PART VERB DET NOUN ADP PROPN ADP PROPN

Predicted tags: PRON AUX VERB ADP VERB DET NOUN ADP PROPN ADP

**PROPN** 

p	recision	recall	f1-score	support
1	1.00	1.00	1.00	2
2	0.67	1.00	0.80	2
3	1.00	1.00	1.00	1
4	1.00	1.00	1.00	2

	5	1.00	1.00	1.00	1
	6	1.00	1.00	1.00	1
	8	1.00	1.00	1.00	1
	12	1.00	0.00	0.00	1
accı	uracy	y		0.91	11

88.0

0.85

11

11

weighted avg 0.94 0.91 0.87

Sentence: atlanta to pittsburgh

0.96

True tags: PROPN ADP PROPN Predicted tags: PROPN ADP PROPN

Classification Report:

macro avg

precision recall f1-score support 1.00 1.00 1.00 2 2 1.00 1.00 1.00 1 1.00 3 accuracy 1.00 macro avg 1.00 1.00 3 weighted avg 1.00 1.00 1.00 3

Sentence: give me a flight from baltimore to newark that arrives as early as possible True tags: VERB PRON DET NOUN ADP PROPN ADP ADV ADD ADV

ADV ADP ADJ

Predicted tags: VERB PRON DET NOUN ADP PROPN ADP PROPN ADP VERB

ADP NUM ADP NUM Classification Report:

	precisi	on re	call f1	-score	suppo	ort
1	1.0	0 1.	00	1.00	2	
2	1.0	0 1.	00	1.00	5	
3	1.0	0 1.	00	1.00	1	
4	1.0	0 1.	00	1.00	2	
5	1.0	0 1.	00	1.00	1	
6	1.0	0 1.	00	1.00	1	
7	1.0	0.00	00	0.00	1	
9	0.0	0 1.	00	0.00	0	
11	1.0	0 00	.00	0.00	1	
accur	•	0.00		0.86	14	4.4
macro weighte	_	0.89 1.00	0.78	-	.67 ).86	14 14

Sentence: what flights are there between atlanta and denver

True tags: DET NOUN VERB PRON ADP PROPN CCONJ PROPN

Predicted tags: PRON NOUN VERB PRON ADP PROPN CCONJ PROPN

Classification Report:

precision recall f1-score support

	1	1.00	) 1.	00	1.00	)	2	
	2	1.00	) 1.	00	1.00	)	1	
	3	1.00	) 1.	00	1.00	)	1	
	4	1.00	) 1.	00	1.00	)	1	
	5	1.00	0.	00	0.00	)	1	
	6	0.50	) 1.	00	0.6	7	1	
	10	1.0	0 1	.00	1.0	0	1	
ac	curac	y			0.88	3	8	
ma	acro av	/g	0.93	0.	86	0.81		8
weig	hted a	ıvg	0.94	0	.88	0.83	,	8

Sentence: i need a flight from phoenix to atlanta

True tags: PRON VERB DET NOUN ADP PROPN ADP PROPN Predicted tags: PRON VERB DET NOUN ADP PROPN ADP PROPN

Classification Report:

	precis	ion re	call	f1-sco	re su	pport
1	1.0	00 1	.00	1.00	2	2
2	1.0	00 1	.00	1.00	2	<u> </u>
3	1.0	00 1	.00	1.00	1	
4	1.0	00 1	.00	1.00	1	
5	1.0	00 1	.00	1.00	1	
6	1.0	00 1	.00	1.00	1	
accur	асу			1.00	8	
macro	avg	1.00	1	.00	1.00	8
weighted	d avg	1.00	•	1.00	1.00	8

Sentence: i want to fly from atlanta to philadelphia

True tags: PRON VERB PART VERB ADP PROPN ADP PROPN Predicted tags: PRON VERB VERB VERB ADP PROPN ADP PROPN

Classification Report:

ķ	precision	rec	call	f1-scc	ore s	suppo	ort
1	1.00	1.0	00	1.00	)	2	
2	1.00	1.0	00	1.00	)	2	
4	0.67	1.0	00	0.80	)	2	
6	1.00	1.0	00	1.00	)	1	
12	1.00	0.	00	0.0	0	1	
accura	су			0.88	,	8	
macro a	avg (	0.93	0.	80	0.76		8
weighted	avg	0.92	C	88.0	0.82	2	8

Sentence: also give me a list of flights between oakland and boston

True tags: ADV VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ PROPN Predicted tags: VERB VERB PRON DET NOUN ADP NOUN ADP PROPN CCONJ

**PROPN** 

## precision recall f1-score support 1 1.00 1.00 2 1.00 2 2 1.00 1.00 1.00 3 1.00 1.00 1.00 2 4 0.50 1.00 0.67 1 5 1.00 1.00 1.00 1 6 1.00 1.00 1.00 1 10 1.00 1.00 1.00 1 11 1.00 0.00 0.00 1 accuracy 0.91 11 0.94 macro avg 88.0 0.83 11 weighted avg 11 88.0 0.95 0.91

Average Loss: 0.3366 Average Accuracy: 90.15 %