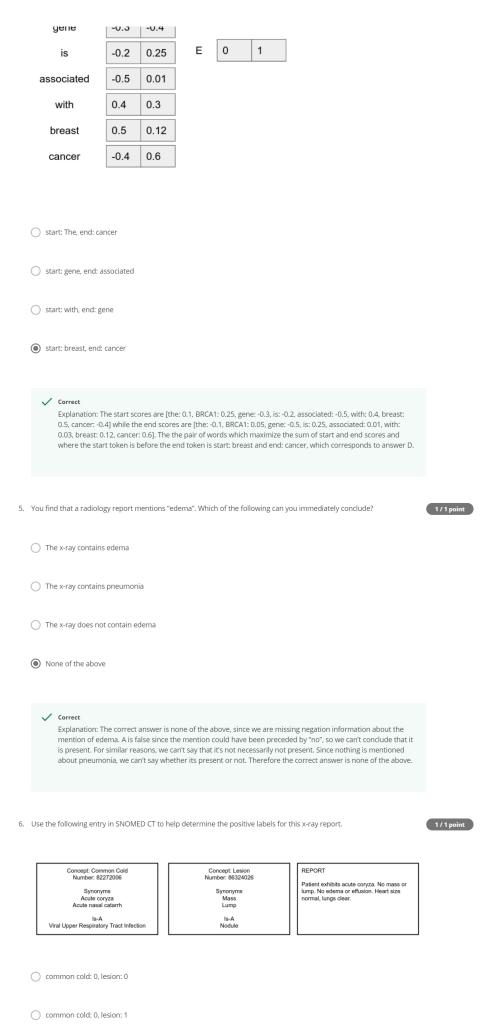
grade 80%

TO PASS 80% or higher

Quiz: Information Extraction with NLP

. Wh	ich of the following is not true about BERT's inner word representations?	1 / 1 point
•	Each unique word can have exactly one vector representation	
0	The representation of a word depends on the words around it	
0	Words which are similar in meaning are typically close as vector	
0	None of the above	
	Correct Explanation: Unlike typical word vectors, BERT uses contextualized word vectors. Therefore, since a given word's vector depends on the other vectors around it, it in general can correspond to representations. This affords BERT more flexibility, which contributes to its power.	
Tru	e or False: the start and end vectors are fixed throughout training	1/1 point
0	True False	
	Correct Explanation: This is false. The start and end vectors, which we dot product with our word vectors to get start and end scores, are in fact learned as well during training. They are fixed at test time, however.	
Wh	ich of the following is a difference between BERT and LSTM models?	0 / 1 point
0	BERT can be trained on multiple languages, while LSTMs cannot	
0	BERT is trained using backpropagation while LSTMs are not	
0	BERT takes entire sequences as input, while LSTM models process words one by one	
•	BERT uses regular word vectors, while LSTMs use contextualized word vectors	
	. Incorrect	
Giv	en the following word vectors and start and end vectors, determine the start and end of the sequence of interest.	1/1 point

S 1 0



	ommon cold: 1, lesion: 1	
	ommon cold: 1, lesion: 0	
	Correct Explanation: First, report mentions acute coryza, which we can see from the SNOMED CT cards is a synonym for the common cold. Since it is a positive mention, we can safely say that the patient has a common cold. However, while mass is synonymous mass and lump, which are mentioned, they are negated. Therefore the label should be common cold: 1, lesion: 0.	
7.	Let's see why F1 is used instead of the regular mean of precision and recall. Let's say the mean of precision and recall is at least 0.75. Which of the following could be the true value of the precision?	1/1 point
	O 0.75	
	O.5	
	Both	
	○ Neither	
	Correct Explanation: Here we see both are possible. If the precision is 0.75, then the recall just could be anything greater than 0.75, and if the precision is 0.5, then the recall could be 1 to keep the average at 0.75. Therefore a relatively high mean still permits quite a low precision.	
8.	Now let's say F1 score is at least 0.75. Now which of the following values of precision are possible?	0 / 1 point
	O 0.75	
	O 0.5	
	⊕ Both	
	○ Neither	
	Incorrect	
9.	Compute the F1 score for pneumonia and mass separately based on the following retrieved labels and ground truth:	1 / 1 point

	Label		Ground Truth	
Example	Pneumonia	Mass	Pneumonia	Mass
1	1	1	0	1
2	1	0	1	1
3	0	1	0	1
4	0	0	1	0

(0.5, 0.83)
(0.75, 0.8)
None of the above
Correct Explanation: Let's begin with pneumonia. Both precision and recall are 0.5. Therefore the F1 score is 2*0.5*0.5 / (0.5 + 0.5) = 0.5. Next let's do mass. Recall was 2/3, while precision was 1. Computing the F1 score, we get 2*9/*1 / (1 + 2/3) = 0.8. Therefore the correct answer is B. A was using the arithmetic mean, so be careful!

10. Now compute the F1 score for all labels jointly:

1 / 1 point

	Label		Ground Truth	
Example	Pneumonia	Mass	Pneumonia	Mass
1	1	1	0	1
2	1	0	1	1
3	0	1	0	1
4	0	0	1	0

0	1.35
0	0.61
•	0.66
0	None of the above



Explanation: The overall recall is $\frac{1}{2}$, while the overall precision is $\frac{3}{4}$. Therefore the F1 score is $2*\frac{1}{2}$ $\frac{1}{4}$ ($\frac{1}{2}$ + $\frac{3}{4}$) = 18/20/27/20 = 18/27 - 0.66. Therefore the correct answer is C. Note that it is not B, which is the harmonic mean of the individual class F1 scores, since 2*0.5*0.8/(0.5+0.8) - 0.62, and it is not A, which is the arithmetic mean of the overall recall and precision.