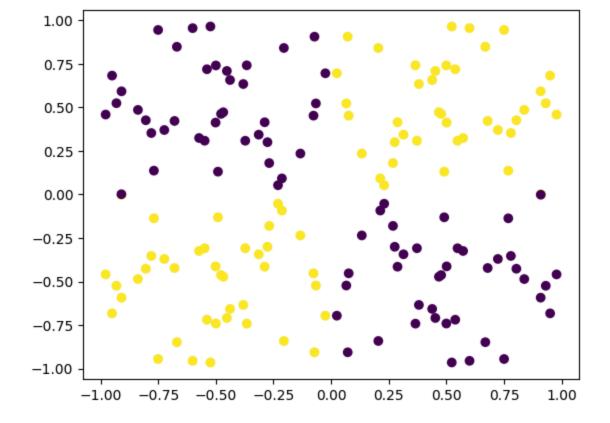
## **Neural Networks - intro**

## Part 1 - XOR

- 1. Using the XOR dataset below, train (400 epochs) a neural network (NN) using 2, 3, 4, and 5 hidden layers (where each layer has only 2 neurons). For each n layers, store the resulting accuracy along with n. Plot the results to find what the optimal number of layers is.
- 2. Repeat the above with 3 neurons in each Hidden layers. How do these results compare to the 2 neuron layers?
- 3. Repeat the above with 4 neurons in each Hidden layers. How do these results compare to the 2 and 3 neuron layers?

```
!pip3 install tensorflow keras
In [1]: from keras.models import Sequential
        from keras.layers import Dense
        from keras.optimizers import SGD #Stochastic Gradient Descent
        import numpy as np
        # fix random seed for reproducibility
        np.random.seed(7)
        import matplotlib.pyplot as plt
        %matplotlib inline
In [2]: n = 40
        xx = np.random.random((n,1))
        yy = np.random.random((n,1))
In [3]: X = np.array([np.array([xx,-xx,-xx,xx]),np.array([yy,-yy,yy,-yy])]).reshape(2,4*n).T
        y = np.array([np.ones([2*n]),np.zeros([2*n])]).reshape(4*n)
In [4]: plt.scatter(*zip(*X), c=y)
Out[4]: <matplotlib.collections.PathCollection at 0x29660e8b2d0>
```



## **Test for Optimal Configuration**

Only running 100 epochs due to computer memory issues.

```
In [5]:
        num_layers = [1,2,3,4,5]
        neurons = [2, 3, 4]
        sgd = SGD(learning_rate=0.1)
        def XOR(num_layers, neurons, epochs=100):
            model = Sequential()
            model.add(Dense(neurons, input_dim=2, activation='tanh'))
            for _ in range(num_layers -1):
                model.add(Dense(neurons, activation = 'tanh'))
            model.add(Dense(1, activation='sigmoid'))
            model.compile(loss='binary_crossentropy', optimizer='sgd', metrics=['accuracy'])
            model.fit(X, y, batch_size = 10, epochs=100)
            scores = model.evaluate(X, y)
            return scores[1]
        res = \{\}
        for n in neurons:
            scores = []
            for num_layer in num_layers:
                score = XOR(num_layer, n)
                scores.append(score)
            res[n] = scores
```

Epoch 1/100

C:\Users\rober\AppData\Local\Programs\Python\Python311\Lib\site-packages\keras\src\layers\core\de
nse.py:87: UserWarning: Do not pass an `input\_shape`/`input\_dim` argument to a layer. When using
Sequential models, prefer using an `Input(shape)` object as the first layer in the model instead.
 super().\_\_init\_\_(activity\_regularizer=activity\_regularizer, \*\*kwargs)

16/16		<b>0</b> s	1ms/step -	ac	ccuracy: 0.	5028 -	10	oss: 0.	6992
	2/100								
		0s	878us/step	-	accuracy:	0.5691	-	loss:	0.6895
	3/100								
		0s	736us/step	-	accuracy:	0.6057	-	loss:	0.6862
	4/100	0.0	900us /ston		2664102644	0 4062		10001	0.7000
	5/100	05	800us/step	-	accuracy:	0.4962	-	1088:	0.7098
16/16		<b>0</b> s	825us/step	_	accuracy:	0.6287	_	loss:	0.6893
	6/100		ошо, о сор		,				
16/16		0s	799us/step	-	accuracy:	0.6542	-	loss:	0.6826
	7/100								
		0s	800us/step	-	accuracy:	0.6905	-	loss:	0.6786
	8/100	۵c	703us/step	_	accuracy.	0 6359	_	1000	0 68/13
	9/100	03	703u3/3cep		accur acy.	0.0555		1033.	0.0043
•		0s	730us/step	_	accuracy:	0.6288	-	loss:	0.6894
	10/100								
		0s	668us/step	-	accuracy:	0.6388	-	loss:	0.6883
Epoch	11/100	0-	667/-+			0 6631		1	0 (05)
	12/100	05	667us/step	-	accuracy:	0.6621	-	1055:	0.6853
		0s	668us/step	_	accuracv:	0.5895	_	loss:	0.6941
	13/100		, ,		,				
16/16		0s	700us/step	-	accuracy:	0.7190	-	loss:	0.6776
•	14/100	0 -	024 / 1			0 6670		,	0 6700
	15/100	ØS	834us/step	-	accuracy:	0.66/2	-	loss:	0.6789
		0s	933us/step	_	accuracv:	0.7443	_	loss:	0.6694
	16/100		, ,		,				
		0s	995us/step	-	accuracy:	0.6795	-	loss:	0.6803
	17/100	_							0 4005
	18/100	ØS	667us/step	-	accuracy:	0.5858	-	loss:	0.6905
		0s	668us/step	_	accuracy:	0.6719	_	loss:	0.6764
Epoch	19/100		•		,				
16/16		0s	600us/step	-	accuracy:	0.6886	-	loss:	0.6739
	20/100	00	667us/step		2661102611	0 6507		10001	0 6756
	21/100	03	007us/step	_	accuracy.	0.0397	-	1055.	0.0730
		0s	644us/step	_	accuracy:	0.6739	-	loss:	0.6786
	22/100								
	22/402	0s	716us/step	-	accuracy:	0.6433	-	loss:	0.6708
16/16	23/100	۵c	810us/step	_	accuracy.	0 6955	_	1000	0 6667
	24/100	03	010и3/3сер		accui acy.	0.0555		1033.	0.0007
		0s	702us/step	-	accuracy:	0.6072	-	loss:	0.6786
•	25/100								
		0s	2ms/step -	ac	curacy: 0	.7187 -	10	ss: 0.	.6625
	26/100	۵s	870us/step	_	accuracy.	0 6841	_	1055.	0 6635
	27/100	03	070и3/3сср		accuracy.	0.0041		1033.	0.0055
		0s	800us/step	-	accuracy:	0.7150	-	loss:	0.6667
	28/100								
		0s	667us/step	-	accuracy:	0.6944	-	loss:	0.6667
	29/100	۵c	707us/step	_	accuracy.	0 6112	_	10551	0 6790
	30/100	J3	, σ, ασ, στερ		accar acy.	0.0113		1033.	3.0750
16/16		0s	735us/step	-	accuracy:	0.6905	-	loss:	0.6646
Epoch	31/100					_		_	
	22/100	0s	742us/step	-	accuracy:	0.6955	-	loss:	0.6638
⊧poch	32/100								

16/16		0s	744us/step	_	accuracv:	0.7162	_	loss:	0.6597
	33/100	0.5	, т. шэ, эсср		accar acy.	0.,101		1033.	0.0337
		0s	721us/step	-	accuracy:	0.6697	-	loss:	0.6697
Epoch	34/100								
		0s	736us/step	-	accuracy:	0.6768	-	loss:	0.6615
	35/100	_						_	
		0s	693us/step	-	accuracy:	0.6552	-	loss:	0.6669
16/16	36/100	۵c	735us/step		accupacy.	0 7020		1000	0 6585
	37/100	03	733u3/3cep	_	accuracy.	0.7020	_	1033.	0.000
		0s	600us/step	_	accuracy:	0.6711	_	loss:	0.6613
Epoch	38/100		·		•				
		0s	677us/step	-	accuracy:	0.6807	-	loss:	0.6618
	39/100	_						_	
		0s	634us/step	-	accuracy:	0.6108	-	loss:	0.6746
	40/100	۵c	1ms/step -	2.0	cunacy: 0	6056 -	10	دد٠ ۵	6533
	41/100	03	тіііз/ з сер	a	cui acy. o.	.0550 -	10	33. 0	.0555
		0s	937us/step	_	accuracy:	0.6748	_	loss:	0.6582
Epoch	42/100		·		•				
		0s	828us/step	-	accuracy:	0.6566	-	loss:	0.6678
	43/100	_	/ .					_	
		0s	621us/step	-	accuracy:	0.6482	-	loss:	0.6628
	44/100	0s	736us/step	_	accuracy:	0 6884	_	1055.	0 6545
	45/100	03	, 30u3, 3ccp		accui acy.	0.0004		1033.	0.0545
•		0s	667us/step	_	accuracy:	0.6950	_	loss:	0.6507
	46/100								
		0s	600us/step	-	accuracy:	0.6959	-	loss:	0.6618
	47/100	0-	745/-+			0 7441		1	0 6460
	48/100	05	745us/step	-	accuracy:	0.7441	-	1055:	0.6460
		05	745us/step	_	accuracy:	0.7023	_	loss:	0.6554
	49/100		,						
		0s	899us/step	-	accuracy:	0.6811	-	loss:	0.6534
•	50/100								
16/16		0s	699us/step	-	accuracy:	0.7277	-	loss:	0.6473
•	51/100	Q.c	770us/step		accupacy:	0 7027		1000	0 6520
	52/100	03	770u3/3cep	_	accuracy.	0.7027	_	1033.	0.0329
•		0s	733us/step	_	accuracy:	0.7173	_	loss:	0.6431
	53/100								
		0s	1ms/step -	ad	ccuracy: 0	.6382 -	10	ss: 0.	6614
Epoch	54/100	0-	4	_		6024	1.	0	CE12
	55/100	05	1ms/step -	a	ccuracy: 0	.6921 -	10	SS: 0.	.6512
		0s	800us/step	_	accuracv:	0.7336	_	loss:	0.6424
	56/100				,				
16/16		0s	775us/step	-	accuracy:	0.6962	-	loss:	0.6470
•	57/100								
		0s	867us/step	-	accuracy:	0.6884	-	loss:	0.6497
	58/100	00	967us /ston		2661102614	0 7004		10001	0 6474
	59/100	05	867us/step	-	accuracy:	0.7094	-	1022:	0.0474
•		0s	802us/step	_	accuracy:	0.7309	_	loss:	0.6427
	60/100	-	, <b>F</b>		- , •				
		0s	870us/step	-	accuracy:	0.6848	-	loss:	0.6462
	61/100	_	074					-	0.655=
	62/100	ØS	8/4us/step	-	accuracy:	<b>0.</b> 7374	-	TOSS:	0.6285
16/16	62/100	95	664us/sten	_	accuracy.	0.7168	_	1055.	0.6419
	63/100	03	σο <sub>τ</sub> ασ/ στ <del>ε</del> ρ		accui acy.	3.7100		2033.	J. U-17
L	•								

16/16		0s	668us/step	_	accuracv:	0.7242	_	loss:	0.6376
	64/100		, , , , , , , , , ,						
		0s	666us/step	-	accuracy:	0.7416	-	loss:	0.6385
	65/100		6 <b>7</b> 0 / 1			0 6460		,	0.4540
	66/100	ØS.	679us/step	-	accuracy:	0.6462	-	TOSS:	0.6512
•		0s	667us/step	_	accuracv:	0.6793	_	loss:	0.6379
	67/100		, ,		,				
16/16		0s	802us/step	-	accuracy:	0.7369	-	loss:	0.6345
	68/100	0-	025/			0 7330		1	0 6240
<b>16/16</b> Enoch	69/100	65	835us/step	-	accuracy:	0.7329	-	1055:	0.6349
•		0s	867us/step	_	accuracy:	0.7377	_	loss:	0.6314
•	70/100								
		0s	741us/step	-	accuracy:	0.7288	-	loss:	0.6326
-	71/100	۵s	709us/step	_	accuracy:	0 7065	_	1055.	0 6372
	72/100	03	703u3/3ccp		accuracy.	0.7003		1033.	0.0372
		0s	670us/step	-	accuracy:	0.7301	-	loss:	0.6349
Epoch	73/100	_							
	74/100	0s	755us/step	-	accuracy:	0.7431	-	loss:	0.6299
•		0s	776us/step	_	accuracy:	0.7315	_	loss:	0.6328
•	75/100				,				
16/16		0s	728us/step	-	accuracy:	0.7021	-	loss:	0.6404
	76/100	۵s	601us/step	_	accuracy:	0 7068	_	1055.	0 6385
	77/100	03	оотиз/ эсср		accur acy.	0.7000		1033.	0.0303
16/16		0s	672us/step	-	accuracy:	0.7100	-	loss:	0.6380
	78/100	0-	600/-+			0 7762		1	0 (100
	79/100	05	688us/step	-	accuracy:	0.7762	-	1055:	0.6199
		0s	736us/step	-	accuracy:	0.7149	-	loss:	0.6278
•	80/100								
		0s	745us/step	-	accuracy:	0.7844	-	loss:	0.6208
16/16	81/100	0s	667us/step	_	accuracv:	0.6757	_	loss:	0.6382
-	82/100				, , ,				
		0s	810us/step	-	accuracy:	0.7572	-	loss:	0.6115
-	83/100	Q.c	674us/step		accunacy:	0 7027		1000	0 6176
	84/100	03	074u3/3cep	_	accur acy.	0.7327	_	1033.	0.0170
		0s	667us/step	-	accuracy:	0.7163	-	loss:	0.6317
Epoch	85/100	_							
	86/100	0s	667us/step	-	accuracy:	0.7248	-	loss:	0.6252
		0s	600us/step	_	accuracy:	0.7497	_	loss:	0.6130
Epoch	87/100				_				
		0s	663us/step	-	accuracy:	0.7080	-	loss:	0.6296
	88/100 	95	655us/step	_	accuracy:	0 7446	_	loss	0 6231
	89/100	03	033и3/ 3 сср		accuracy.	0.7440		1033.	0.0231
		0s	666us/step	-	accuracy:	0.7197	-	loss:	0.6283
-	90/100	•	CE1 / 1			0.7001		1	0.6070
	91/100	US	651us/step	-	accuracy:	0./821	-	TOSS:	0.60/0
		0s	736us/step	_	accuracy:	0.7796	_	loss:	0.6053
	92/100		•		-				
	02/100	0s	867us/step	-	accuracy:	0.7311	-	loss:	0.6160
16/16	93/100	05	847us/sten	_	accuracy:	0.7743	_	loss:	0.6108
	94/100		, э сер			2.7.13			

16/16		95	993us/step	_	accuracy:	0.7761	- loss	. 0.6199
	95/100	03	эээиз, эсср		accur acy.	0.7701	1033	. 0.0133
		0s	666us/step	-	accuracy:	0.7414	- loss	: 0.6153
Epoch	96/100							
		0s	669us/step	-	accuracy:	0.7924	- loss	: 0.6035
•	97/100	_					-	0 (117
		0s	733us/step	-	accuracy:	0.///0	- loss	: 0.611/
16/16	98/100	95	600us/sten	_	accuracy:	0 7450	- loss	· 0 6135
	99/100	03	оооиз, зеер		accuracy.	0.7430	1033	. 0.0133
		0s	600us/step	-	accuracy:	0.7909	- loss	: 0.5993
	100/100							
16/16		0s	679us/step	-	accuracy:	0.7665	- loss	: 0.6081
	09	5 1n	ns/step - ac	CL	uracy: 0.70	967 - lo	oss: 0.	6348
	1/100	00	1ms/ston	2.0	scupacy. A	E10E	10551	0 6041
	2/100	05	1ms/step -	ac	curacy: 0	. 2102 -	1055:	0.0941
•		0s	801us/step	_	accuracy:	0.4902	- loss	: 0.6932
Epoch	3/100							
16/16		0s	800us/step	-	accuracy:	0.5273	- loss	: 0.6919
	4/100						_	
•		0s	734us/step	-	accuracy:	0.5355	- loss	: 0.6925
	5/100	۵c	869us/step	_	acciinacy:	0 5074	- 1055	• 0 6024
	6/100	03	809из/з сер	_	accuracy.	0.3074	- 1033	. 0.0324
		0s	667us/step	_	accuracy:	0.5287	- loss	: 0.6927
Epoch	7/100		·		•			
		0s	800us/step	-	accuracy:	0.5539	- loss	: 0.6904
•	8/100	_					_	
		0s	667us/step	-	accuracy:	0.4452	- loss	: 0.6968
	9/100	۵s	701us/step	_	accuracy.	0 4869	- 1055	· 0 6951
	10/100	03	701и3/3 сер		accuracy.	0.4005	- 1033	. 0.0551
		0s	669us/step	-	accuracy:	0.4683	- loss	: 0.6957
	11/100							
		0s	733us/step	-	accuracy:	0.4525	- loss	: 0.6944
	12/100	0 -	722 / 1			0 5003	,	0.6020
	13/100	0s	733us/step	-	accuracy:	0.5083	- loss	: 0.6928
		95	1ms/step -	ac	curacy: 0.	5521 -	loss:	9.6917
	14/100		э, э сер	-				
		0s	1ms/step -	ac	ccuracy: 0	.5163 -	loss:	0.6933
	15/100							
	15/100	0s	1ms/step -	ac	ccuracy: 0	.4830 -	loss:	0.6936
	16/100	00	735us/step		2661182674	0 5470	1000	. 0 6024
	17/100	62	/33us/step	-	accuracy.	0.5470	- 1055	. 0.0924
		0s	733us/step	_	accuracy:	0.5171	- loss	: 0.6937
	18/100		, ,		,			
16/16		0s	800us/step	-	accuracy:	0.4933	- loss	: 0.6948
	19/100							
	20/100	0s	679us/step	-	accuracy:	0.4964	- loss	: 0.6942
•	20/100	۵c	740us/step	_	acciinacy:	0 1731	- 1055	• 0 6028
	21/100	US	, 40us/step	_	accui acy.	U.4/3I	- 1022	. 0.0320
		0s	711us/step	-	accuracy:	0.5396	- loss	: 0.6922
Epoch	22/100		•		•			
		0s	802us/step	-	accuracy:	0.5555	- loss	: 0.6926
	23/100	^	600. / :			0 4333	7	. 0
	24/100	US	oyous/step	-	accuracy:	0.4333	- 10SS	. 0.6956
•		95	820us/step	_	accuracy:	0.4886	- 1055	: 0.6949
10/10		<b>U</b> 3	52003/31EP	_	accui acy.	J. 7000	1033	• 0.0543

Epoch	25/100								
		0s	867us/step	-	accuracy:	0.5084	-	loss:	0.6936
	26/100	0-	056/-+			0 5736		1	0 6013
	27/100	05	856us/step	-	accuracy:	0.5/36	-	1055:	0.6913
		0s	768us/step	_	accuracy:	0.5711	_	loss:	0.6917
Epoch	28/100		•						
		0s	801us/step	-	accuracy:	0.5800	-	loss:	0.6927
	29/100	0-	774/ 2+ 2.2			0 5602		1	0 6035
	30/100	05	774us/step	-	accuracy:	0.5602	-	1055:	0.6935
•		0s	800us/step	_	accuracy:	0.5392	_	loss:	0.6925
Epoch	31/100		•		•				
16/16		0s	733us/step	-	accuracy:	0.5156	-	loss:	0.6935
	32/100	00	757us/step		2661182671	0 4042		10001	0 6022
-	33/100	62	/5/us/step	-	accuracy.	0.4942	-	1055.	0.0932
•		0s	669us/step	-	accuracy:	0.5336	-	loss:	0.6942
•	34/100								
		0s	800us/step	-	accuracy:	0.5144	-	loss:	0.6940
	35/100	95	1ms/step -	ac	curacy: 0	5361 -	10	nss: 0	6938
Epoch	36/100	0.5	тэ, эсср	<u>.</u>	cai acy: o	. 3301		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.0330
		0s	972us/step	-	accuracy:	0.4850	-	loss:	0.6951
•	37/100	0 -	4 / 1			F224	,	•	6024
-	38/100	ØS.	1ms/step -	ac	ccuracy: 0	5224 -	Τ(	oss: 0.	.6931
16/16		0s	805us/step	_	accuracy:	0.5220	_	loss:	0.6930
	39/100		, ,						
		0s	841us/step	-	accuracy:	0.5527	-	loss:	0.6941
•	40/100	۵c	936us/step	_	accuracy.	0 5355	_	1000	0 6926
	41/100	03	930u3/3Cep	_	accuracy.	0.5555	_	1033.	0.0920
•		0s	741us/step	-	accuracy:	0.5397	-	loss:	0.6929
	42/100	_	/ .						
	43/100	0s	906us/step	-	accuracy:	0.5349	-	loss:	0.6927
		0s	901us/step	_	accuracy:	0.4920	_	loss:	0.6943
Epoch	44/100		•						
		0s	930us/step	-	accuracy:	0.4159	-	loss:	0.6968
•	45/100 	00	836us/step		2661182671	0 5022		10001	0 6020
-	46/100	03	obous/step	-	accuracy.	0.3022	-	1055.	0.0555
•		0s	732us/step	-	accuracy:	0.6003	-	loss:	0.6908
	47/100	_						_	
	48/100	0s	662us/step	-	accuracy:	0.5401	-	loss:	0.6936
<b>16/16</b>		0s	807us/step	_	accuracy:	0.5105	_	loss:	0.6931
Epoch	49/100		, ,		,				
		0s	729us/step	-	accuracy:	0.5075	-	loss:	0.6948
	50/100	00	716us/step		2661182614	0 5513		10551	0 6020
	51/100	62	/ious/step	-	accuracy.	0.5512	-	1055.	0.0920
•		0s	676us/step	-	accuracy:	0.4449	-	loss:	0.6954
•	52/100					_		_	_
		0s	700us/step	-	accuracy:	0.5320	-	loss:	0.6925
•	53/100	05	733us/step	_	accuracy.	0.5467	_	loss:	0.6932
	54/100		, стер						
		0s	795us/step	-	accuracy:	0.5215	-	loss:	0.6935
•	55/100	0-	071/		0.000	0 5536		1655	0 6027
16/16		ØS	871us/step	-	accuracy:	0.5536	-	TOSS:	0.6927

Epoch	56/100								
•		0s	1ms/step -	a	ccuracy: 0	.5086 -	10	oss: 0.	6948
Epoch	57/100								
-		0s	1ms/step -	a	ccuracy: 0	.5873 -	10	oss: 0	.6922
Epoch	58/100	0-	006/			0 5356		1	0 (022
	59/100	05	996us/step	-	accuracy:	0.5256	-	1055:	0.6922
•		05	733us/step	_	accuracy:	0.5118	_	loss:	0.6923
=	60/100		, ээшэ, эсср			010110			0.002
16/16		0s	807us/step	-	accuracy:	0.5664	-	loss:	0.6923
	61/100								
16/16		0s	661us/step	-	accuracy:	0.5703	-	loss:	0.6922
•	62/100	00	669us /ston		2661102614	0 5655		10001	0 6025
	63/100	05	668us/step	_	accuracy.	0.5055	-	1055.	0.0923
•		0s	941us/step	_	accuracy:	0.5019	_	loss:	0.6943
	64/100								
		0s	735us/step	-	accuracy:	0.5800	-	loss:	0.6915
•	65/100	_	4 / /			5064		•	
	66/100	0s	1ms/step -	a	ccuracy: 0	.5061 -	10	oss: 0.	6941
16/16		<b>0</b> s	1ms/step -	ac	curacy: 0	.5931 -	10	oss: 0.	.6918
	67/100		у стер						
16/16		0s	867us/step	-	accuracy:	0.6038	-	loss:	0.6917
•	68/100	_						_	
		0s	936us/step	-	accuracy:	0.5014	-	loss:	0.6926
	69/100	95	938us/step	_	accuracy:	0 5099	_	1055.	0 6937
	70/100	0.5	330u3, 3 ccp		accar acy.	0.3033		1033.	0.0337
16/16		0s	937us/step	-	accuracy:	0.5197	-	loss:	0.6944
•	71/100	_						_	
	72/100	0s	938us/step	-	accuracy:	0.4854	-	loss:	0.6950
		0s	801us/step	_	accuracv:	0.5974	_	loss:	0.6918
Epoch	73/100		·						
		0s	867us/step	-	accuracy:	0.5493	-	loss:	0.6929
•	74/100	0-	057 / a + a a			0 4007		1	0 (05)
	75/100	05	957us/step	-	accuracy:	0.4887	-	1055:	0.6952
		0s	800us/step	_	accuracy:	0.6014	_	loss:	0.6925
Epoch	76/100		•		-				
		0s	899us/step	-	accuracy:	0.5637	-	loss:	0.6926
•	77/100	0-	020/=+==			0 5246		1	0 6040
=	78/100	05	820us/step	_	accuracy.	0.5546	-	1055.	0.0340
16/16		0s	802us/step	_	accuracy:	0.5526	_	loss:	0.6926
	79/100				-				
		0s	909us/step	-	accuracy:	0.5227	-	loss:	0.6949
	80/100	0.0	COOus/ston		2661182614	0 5700		10001	0 (022
	81/100	65	689us/step	-	accuracy:	0.5/90	_	1055:	0.6923
•		0s	871us/step	_	accuracy:	0.5739	_	loss:	0.6928
	82/100		, ,		,				
		0s	903us/step	-	accuracy:	0.5945	-	loss:	0.6924
•	83/100	<b>~</b> =	000			0 5055		1	0 6035
	84/100	ØS	902us/step	-	accuracy:	0.5965	-	TOSS:	0.6925
		0s	801us/step	_	accuracv:	0.5822	_	loss:	0.6925
	85/100	-	, p		, •			•	
		0s	736us/step	-	accuracy:	0.4496	-	loss:	0.6967
Epoch	86/100	_	750 / /			0 5505		1	0.6033
16/16		ØS	758us/step	-	accuracy:	0.5696	-	TOSS:	0.6930

Epoch	87/100								
		0s	735us/step	-	accuracy:	0.5689	-	loss:	0.6943
	88/100							_	
		0s	801us/step	-	accuracy:	0.5922	-	loss:	0.6920
	89/100 ————————	95	799us/sten	_	accuracy:	0.5077	_	loss:	0.6948
	90/100	0.5	, , , , , , , , , , , , , , , , , , , ,		acca, acy.	0.3077		1033.	0.03.0
16/16		0s	800us/step	-	accuracy:	0.5615	-	loss:	0.6932
	91/100	_							
	92/100	0s	669us/step	-	accuracy:	0.6078	-	loss:	0.6931
		0s	701us/step	_	accuracv:	0.5311	_	loss:	0.6938
	93/100		,		,				
		0s	656us/step	-	accuracy:	0.6166	-	loss:	0.6927
	94/100	00	76745/5+00		2661182614	0 5070		10551	0 (042
	95/100	05	767us/step	-	accuracy:	0.5070	-	1022:	0.0942
		0s	933us/step	-	accuracy:	0.5785	-	loss:	0.6940
	96/100								
		0s	933us/step	-	accuracy:	0.5544	-	loss:	0.6933
	97/100	95	803us/sten	_	accuracy:	0.5889	_	loss:	0.6934
Epoch	98/100				-				
		0s	803us/step	-	accuracy:	0.6039	-	loss:	0.6929
	99/100	00	733us/step		2661182614	A EE01		10551	0 6029
	100/100	05	/33us/scep	-	accuracy:	0.5561	-	1022:	0.0928
16/16		0s	867us/step	-	accuracy:	0.5977	-	loss:	0.6929
	0:	s 1n	ns/step - ad	CC	uracy: 0.65	573 - 10	oss	5: 0.69	916
	1/100	00	02005/5+00		2661102614	0 4041		10551	0 7166
	2/100	05	828us/step	-	accuracy:	0.4841	-	1022:	0.7100
		0s	933us/step	-	accuracy:	0.5396	-	loss:	0.7023
•	3/100	_						_	
	4/100	0s	733us/step	-	accuracy:	0.5092	-	loss:	0.7121
16/16		0s	807us/step	_	accuracy:	0.5439	_	loss:	0.7018
•	5/100				-				
16/16		0s	800us/step	-	accuracy:	0.6109	-	loss:	0.6849
	6/100	<b>0</b> s	866us/step	_	accuracy:	0.5439	_	loss:	0.7101
	7/100		0000.5, 5 CCP			010.00			017.202
		0s	879us/step	-	accuracy:	0.5511	-	loss:	0.7109
	8/100 	Q.c	933us/step		2661182671	0 6530		1000	0 6015
	9/100	03	333us/step	-	accuracy.	0.0339	-	1055.	0.0045
16/16		0s	933us/step	-	accuracy:	0.5968	-	loss:	0.7003
	10/100	_							7040
	11/100	0s	1ms/step -	ac	ccuracy: 0	.5/35 -	10	oss: 0	. 7042
16/16		0s	735us/step	_	accuracy:	0.6399	_	loss:	0.6893
	12/100		•		•				
		0s	734us/step	-	accuracy:	0.6372	-	loss:	0.6904
	13/100	95	636us/step	_	accuracy.	0.6733	_	1055	0.6759
	14/100	<i></i>	υσομό/ στ <del>ε</del> ρ		accui acy.	3.0733		1033.	3.0733
16/16		0s	666us/step	-	accuracy:	0.6070	-	loss:	0.6971
•	15/100	ο-	CC7 /			0 5000		1	0.6076
	16/100	US	667us/step	-	accuracy:	0.5920	-	TOSS:	0.69/6
		0s	667us/step	-	accuracy:	0.6371	-	loss:	0.6835
Epoch	17/100								

16/16		<b>0</b> s	734us/step	_	accuracy:	0.5920	_	loss:	0.6966
	18/100	0.5	, 5 . u.s., 5 ccp		accar acy.	0.3320		1033.	0.0300
		0s	667us/step	-	accuracy:	0.6009	-	loss:	0.6970
	19/100								
		0s	800us/step	-	accuracy:	0.6425	-	loss:	0.6840
•	20/100	_						-	
		0s	868us/step	-	accuracy:	0.6851	-	loss:	0.6700
16/16	21/100	۵c	801us/step	_	accuracy:	0 5979	_	1000	0 6050
	22/100	03	801и3/3сер	_	accuracy.	0.3676	_	1033.	0.0939
•		0s	680us/step	_	accuracy:	0.6522	_	loss:	0.6829
Epoch	23/100		•		•				
		0s	752us/step	-	accuracy:	0.5895	-	loss:	0.6941
•	24/100	_						_	
		0s	667us/step	-	accuracy:	0.5930	-	loss:	0.6917
•	25/100 	۵c	668us/step	_	accuracy:	0 6308	_	1000	0 6912
	26/100	03	000из/зсер		accuracy.	0.0500		1033.	0.0012
		0s	867us/step	-	accuracy:	0.6393	_	loss:	0.6812
Epoch	27/100				-				
		0s	867us/step	-	accuracy:	0.6143	-	loss:	0.6922
•	28/100	_	/ .						
		0s	868us/step	-	accuracy:	0.6290	-	loss:	0.6831
<b>16/16</b>	29/100	۵s	735us/step	_	accuracy:	0 5935	_	1055.	0 6941
	30/100	03	755u373ccp		accuracy.	0.3333		1033.	0.0541
		0s	676us/step	-	accuracy:	0.6287	-	loss:	0.6787
Epoch	31/100								
		0s	735us/step	-	accuracy:	0.6566	-	loss:	0.6747
•	32/100	0-	1	_	0	F.602	1	0	6044
	33/100	05	1ms/step -	ac	ccuracy: 0	.5602 -	Τ(	055: 0	6944
		<b>0</b> s	1ms/step -	ac	curacy: 0	.6487 -	10	oss: 0.	6725
	34/100		, с сор						
16/16		0s	933us/step	-	accuracy:	0.6044	-	loss:	0.6917
•	35/100								
16/16		0s	702us/step	-	accuracy:	0.6756	-	loss:	0.6638
	36/100	ac.	733us/step		2661102614	0 5265		1000	0 6090
	37/100	03	/33u3/3cep	_	accuracy.	0.5505	_	1033.	0.0909
•		0s	734us/step	-	accuracy:	0.6319	_	loss:	0.6721
•	38/100				-				
		0s	667us/step	-	accuracy:	0.6128	-	loss:	0.6801
Epoch	39/100	0-	722/-+			0 5005		1	0 6031
	40/100	05	733us/step	-	accuracy:	0.5895	-	1055:	0.6931
		0s	868us/step	_	accuracv:	0.6310	_	loss:	0.6734
	41/100				,				
		0-						1000	0.6811
16/16		05	800us/step	-	accuracy:	0.5790	-	1022:	
Epoch	42/100								
Epoch <b>16/16</b>	42/100								
Epoch 16/16 Epoch	42/100 ———————————————————————————————————	0s	600us/step	-	accuracy:	0.6199	-	loss:	0.6734
Epoch 16/16 Epoch 16/16	42/100 43/100	0s		-	accuracy:	0.6199	-	loss:	0.6734
Epoch 16/16 Epoch 16/16 Epoch	42/100 43/100 44/100	0s 0s	600us/step 800us/step	-	accuracy:	0.6199 0.6169	-	loss:	0.6734 0.6822
Epoch 16/16 Epoch 16/16 Epoch 16/16	42/100 43/100 44/100	0s 0s	600us/step	-	accuracy:	0.6199 0.6169	-	loss:	0.6734 0.6822
Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	42/100 43/100 44/100 45/100	0s 0s 0s	600us/step 800us/step	-	accuracy: accuracy:	<ul><li>0.6199</li><li>0.6169</li><li>0.6053</li></ul>	-	loss: loss:	<ul><li>0.6734</li><li>0.6822</li><li>0.6814</li></ul>
Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	42/100 43/100 44/100 45/100 46/100	0s 0s 0s	600us/step 800us/step 733us/step 603us/step	-	accuracy: accuracy: accuracy:	<ul><li>0.6199</li><li>0.6169</li><li>0.6053</li><li>0.6050</li></ul>	-	loss: loss: loss:	<ul><li>0.6734</li><li>0.6822</li><li>0.6814</li><li>0.6749</li></ul>
Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	42/100 43/100 44/100 45/100 46/100	0s 0s 0s	600us/step 800us/step 733us/step 603us/step	-	accuracy: accuracy: accuracy:	<ul><li>0.6199</li><li>0.6169</li><li>0.6053</li><li>0.6050</li></ul>	-	loss: loss: loss:	<ul><li>0.6734</li><li>0.6822</li><li>0.6814</li><li>0.6749</li></ul>
Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	42/100 43/100 44/100 45/100 46/100 47/100	0s 0s 0s 0s	600us/step 800us/step 733us/step 603us/step 800us/step		accuracy: accuracy: accuracy: accuracy:	<ul><li>0.6199</li><li>0.6169</li><li>0.6053</li><li>0.6050</li><li>0.6282</li></ul>		loss: loss: loss: loss:	0.6734 0.6822 0.6814 0.6749 0.6754
Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	42/100 43/100 44/100 45/100 46/100	0s 0s 0s 0s	600us/step 800us/step 733us/step 603us/step 800us/step		accuracy: accuracy: accuracy: accuracy:	<ul><li>0.6199</li><li>0.6169</li><li>0.6053</li><li>0.6050</li><li>0.6282</li></ul>		loss: loss: loss: loss:	0.6734 0.6822 0.6814 0.6749 0.6754

16/16		0s	802us/step	_	accuracv:	0.6354	_	loss:	0.6704
	49/100				, , , , , , , , , , , , , , , , , , ,				
		0s	933us/step	-	accuracy:	0.6508	-	loss:	0.6675
Epoch	50/100	0-	C00 / - +			0 6724		1	0 (500
	51/100	05	600us/step	-	accuracy:	0.6724	-	1055:	0.6599
		0s	734us/step	_	accuracy:	0.6063	_	loss:	0.6809
	52/100		•						
16/16		0s	667us/step	-	accuracy:	0.6737	-	loss:	0.6603
	53/100	00	72245/5+00		2661182614	0 6204		10001	0 (722
-	54/100	62	733us/step	-	accuracy.	0.6204	-	1055.	0.0723
		0s	800us/step	-	accuracy:	0.5999	-	loss:	0.6821
	55/100								
		0s	802us/step	-	accuracy:	0.6293	-	loss:	0.6801
•	56/100	95	667us/step	_	accuracy:	0.6086	_	loss:	0.6749
Epoch	57/100	0.5	оот из, эсср		accar acy.	0.0000		1033.	0.07.15
		0s	667us/step	-	accuracy:	0.5877	-	loss:	0.6780
Epoch	58/100	0 -	624 / 1			0 6040		,	0 6740
	59/100	05	634us/step	-	accuracy:	0.6042	-	1055:	0.6/42
		0s	667us/step	-	accuracy:	0.6890	-	loss:	0.6511
•	60/100								
16/16		0s	667us/step	-	accuracy:	0.6497	-	loss:	0.6672
•	61/100	0s	600us/step	_	accuracv:	0.6197	_	loss:	0.6748
	62/100		, то то то то						
		0s	600us/step	-	accuracy:	0.6949	-	loss:	0.6571
	63/100	۵c	600us/step	_	accuracy:	0 6800	_	1000	0 6565
	64/100	03	000и3/ 3сср		accuracy.	0.0050		1033.	0.0303
		0s	668us/step	-	accuracy:	0.6073	-	loss:	0.6771
	65/100	0-	727/-+			0 6747		1	0.6644
	66/100	05	737us/step	-	accuracy:	0.6747	-	1055:	0.6644
16/16		0s	667us/step	-	accuracy:	0.6837	-	loss:	0.6504
	67/100	_						_	
	68/100	0s	667us/step	-	accuracy:	0.6710	-	loss:	0.6602
•		0s	667us/step	_	accuracy:	0.6712	_	loss:	0.6537
	69/100		·		-				
	70./400	0s	836us/step	-	accuracy:	0.6941	-	loss:	0.6549
16/16	70/100	95	600us/step	_	accuracy:	0 5994	_	1055.	0 6844
Epoch	71/100		·		-				
		0s	667us/step	-	accuracy:	0.7551	-	loss:	0.6348
•	72/100	0.0	669us/step		2661102614	0 7260		10001	0 (425
	73/100	62	oosus/step	-	accuracy.	0.7300	-	1055.	0.0433
•		0s	733us/step	-	accuracy:	0.6330	-	loss:	0.6637
	74/100							_	
		0s	667us/step	-	accuracy:	0.6875	-	loss:	0.6556
•	75/100	0s	667us/step	_	accuracv:	0.6004	_	loss:	0.6820
Epoch	76/100		. г						
		0s	634us/step	-	accuracy:	0.7229	-	loss:	0.6381
	77/100	95	733us/sten	_	accuracy.	0.6547	_	1055.	0.6706
Epoch	78/100				_				
		0s	867us/step	-	accuracy:	0.6465	-	loss:	0.6610
Epoch	79/100								

16/16		0s	2ms/step -	ac	curacy: 0	.6772 -	10	ss: 0.	6535
-	80/100		, ,		,				
16/16		0s	932us/step	_	accuracy:	0.6902	-	loss:	0.6444
Epoch	81/100				_				
16/16		0s	1ms/step -	ac	ccuracy: 0	.7063 -	10	ss: 0.	6460
Epoch	82/100								
16/16		0s	733us/step	-	accuracy:	0.6631	-	loss:	0.6586
Epoch	83/100								
16/16		0s	733us/step	-	accuracy:	0.6731	-	loss:	0.6441
Epoch	84/100								
16/16		0s	801us/step	-	accuracy:	0.6654	-	loss:	0.6578
Epoch	85/100								
16/16		0s	755us/step	-	accuracy:	0.6892	-	loss:	0.6481
	86/100								
		0s	800us/step	-	accuracy:	0.6605	-	loss:	0.6597
	87/100								
		0s	733us/step	-	accuracy:	0.6131	-	loss:	0.6619
	88/100	_						-	
		0s	701us/step	-	accuracy:	0.6834	-	loss:	0.6496
	89/100 	0-	724/			0 (001		1	0 (40)
		65	734us/step	_	accuracy:	0.6801	-	1088:	0.6492
16/16	90/100	. ac	866us/step		2661102671	0 6772		1000	0 6427
	91/100	03	800из/зсер	_	accuracy.	0.0773	_	1033.	0.0437
		05	735us/step	_	accuracy:	0.6633	_	loss:	0.6535
	92/100								
•		0s	667us/step	_	accuracy:	0.7008	-	loss:	0.6364
Epoch	93/100				-				
16/16		0s	828us/step	-	accuracy:	0.7251	-	loss:	0.6214
	94/100								
		0s	669us/step	-	accuracy:	0.6682	-	loss:	0.6481
•	95/100							,	0 4405
		05	667us/step	-	accuracy:	0.6280	-	TOSS:	0.6605
•	96/100	۵c	667us/step		accupacy:	0 6634	_	1000	0 6380
	97/100	03	007и3/3сср		accuracy.	0.0054		1033.	0.0300
		0s	869us/step	_	accuracy:	0.6778	_	loss:	0.6483
	98/100				,				
16/16		0s	733us/step	-	accuracy:	0.6763	-	loss:	0.6421
Epoch	99/100								
		0s	742us/step	-	accuracy:	0.7010	-	loss:	0.6363
•	100/100							_	
16/16		0s	867us/step	-	accuracy:	0.7138	-	loss:	0.6257
	1/100	S II	ns/step - ac	CU	iracy: 0.4	/58 - 10	JSS	6: 0.76	787
	1/100	۵s	867us/sten	_	accuracy:	0 4714	_	1055.	a 7123
	2/100	03	007 из, эсср		accui acy.	0.4714		1033.	0.7123
		0s	733us/step	_	accuracy:	0.5268	_	loss:	0.6954
	3/100				,				
16/16		0s	673us/step	-	accuracy:	0.5380	-	loss:	0.7015
Epoch	4/100								
16/16		0s	733us/step	-	accuracy:	0.5125	-	loss:	0.6949
	5/100								
		0s	735us/step	-	accuracy:	0.4802	-	loss:	0.7015
	6/100	^	724. / :			0 4000		1.	0.6000
		US	734us/step	-	accuracy:	0.4808	-	TOSS:	0.6980
	7/100	Q.c	667us/step	_	accuracy:	0 /010	_	1000	0 6004
	8/100	03	oo, us, step	_	accui acy.	0.4013	-	1033.	0.0904
•		0s	867us/step	_	accuracv:	0.4542	_	loss:	0.7034
	9/100	-	, p		, -				
		0s	901us/step	-	accuracy:	0.5273	-	loss:	0.6833
			•		-				

Epoch	10/100								
		0s	733us/step	-	accuracy:	0.4206	-	loss:	0.7067
	11/100	0-	667/-+			0 4063		1	0 6071
	12/100	05	667us/step	-	accuracy:	0.4963	-	1055:	0.68/1
•	•	0s	667us/step	_	accuracy:	0.4857	_	loss:	0.6864
Epoch	13/100								
		0s	668us/step	-	accuracy:	0.4842	-	loss:	0.6847
•	14/100	0-	CCC			0 4762		1	0 (000
-	15/100	05	666us/step	-	accuracy:	0.4762	-	1022:	0.0009
•		0s	735us/step	-	accuracy:	0.4766	_	loss:	0.6929
•	16/100								
16/16		0s	667us/step	-	accuracy:	0.5271	-	loss:	0.6803
	17/100	۵s	668us/step	_	accuracy.	0 4856	_	1055.	0 6885
	18/100	03	оооиз, эсср		accuracy.	0.4050		1033.	0.0003
16/16		0s	667us/step	-	accuracy:	0.4367	-	loss:	0.6946
•	19/100	_							
	20/100	0s	701us/step	-	accuracy:	0.4426	-	loss:	0.6946
		0s	733us/step	_	accuracy:	0.5313	_	loss:	0.6812
Epoch	21/100		•						
		0s	667us/step	-	accuracy:	0.5707	-	loss:	0.6627
•	22/100	۵s	800us/step	_	accuracy.	0 5158	_	1055.	0 6752
-	23/100	03	оооиз, эсср		accuracy.	0.5150		1033.	0.0732
16/16		0s	667us/step	-	accuracy:	0.4875	-	loss:	0.6776
•	24/100	00	72245/5+00		2661102614	0 4620		10551	0 6076
	25/100	05	733us/step	-	accuracy:	0.4630	-	1022:	0.08/6
		0s	733us/step	-	accuracy:	0.4726	-	loss:	0.6746
•	26/100							_	
=	27/100	ØS	800us/step	-	accuracy:	0.49/1	-	loss:	0.6/85
		0s	802us/step	_	accuracy:	0.4994	_	loss:	0.6816
Epoch	28/100								
		0s	868us/step	-	accuracy:	0.5357	-	loss:	0.6624
•	29/100	0s	875us/step	_	accuracv:	0.5663	_	loss:	0.6519
	30/100		от о						
-		0s	867us/step	-	accuracy:	0.4927	-	loss:	0.6686
•	31/100	۵c	934us/step	_	accuracy:	0 1912	_	1000	0 6727
	32/100	03	334u3/3Cep	_	accuracy.	0.4012	_	1033.	0.0727
16/16		0s	1ms/step -	a	ccuracy: 0	5120 -	10	oss: 0	.6756
	33/100	0-	060/-+			0 5024		1	0 6720
	34/100	05	868us/step	-	accuracy:	0.5021	-	1055:	0.6728
		0s	734us/step	-	accuracy:	0.5271	-	loss:	0.6657
	35/100								
		0s	800us/step	-	accuracy:	0.5397	-	loss:	0.6547
•	36/100	0s	800us/step	_	accuracv:	0.5543	_	loss:	0.6539
	37/100	. •	/ P		·				
		0s	800us/step	-	accuracy:	0.5666	-	loss:	0.6456
•	38/100	۵c	801us/step	_	accuracy.	0 1835	_	10551	0 6604
	39/100	<b>03</b>	00103/31eb	-	accui acy.	0.4033	_	1033.	0.0004
16/16		0s	868us/step	-	accuracy:	0.4548	-	loss:	0.6742
•	40/100	<b>0</b> -	067			0 5464		1	0 (505
16/16		US	867us/step	-	accuracy:	0.5161	-	TOSS:	Ø.6585

Epoch	41/100								
•		0s	800us/step	-	accuracy:	0.5352	-	loss:	0.6483
Epoch	42/100								
-		0s	733us/step	-	accuracy:	0.5303	-	loss:	0.6413
Epoch	43/100	0-	025/			0 5120		1	0 6400
	44/100	05	935us/step	_	accuracy:	0.5120	-	1055:	0.6480
•		05	800us/step	_	accuracy:	0.4728	_	loss:	0.6604
=	45/100		оссия, в сер						
16/16		0s	733us/step	-	accuracy:	0.4867	-	loss:	0.6578
	46/100								
16/16		0s	733us/step	-	accuracy:	0.5531	-	loss:	0.6390
	47/100 ———————————————————————————————————	Q.c	733us/step		accupacy:	0 1022		1000	0 6470
	48/100	03	755us/scep	_	accuracy.	0.4022	_	1033.	0.0473
•		0s	800us/step	_	accuracy:	0.4928	_	loss:	0.6546
Epoch	49/100		•						
		0s	800us/step	-	accuracy:	0.5187	-	loss:	0.6352
	50/100	0 -	760 / 1			0 4044		,	0 6400
	51/100	05	768us/step	-	accuracy:	0.4944	-	1055:	0.6408
		0s	2ms/step -	ac	ccuracv: 0	.4867 -	10	oss: 0.	.6643
	52/100		-,						
		0s	1ms/step -	a	ccuracy: 0	.5152 -	10	oss: 0	6309
•	53/100		004 / /			0 5074			
	54/100	0s	801us/step	-	accuracy:	0.58/1	-	loss:	0.6260
•		0s	859us/step	_	accuracv:	0.4882	_	loss:	0.6410
	55/100		ост от тр						
		0s	800us/step	-	accuracy:	0.5271	-	loss:	0.6404
•	56/100		000 / /			0 5004			0.6454
	57/100	05	800us/step	-	accuracy:	0.5031	-	1055:	0.6451
•		0s	800us/step	_	accuracy:	0.4804	_	loss:	0.6381
	58/100		·		-				
		0s	868us/step	-	accuracy:	0.4937	-	loss:	0.6270
•	59/100	00	800us/step		2661102611	0 1622		10551	0 6249
	60/100	62	owous/step	-	accuracy.	0.4033	-	1055.	0.0340
•		0s	933us/step	-	accuracy:	0.5368	-	loss:	0.6192
•	61/100								
		0s	867us/step	-	accuracy:	0.5424	-	loss:	0.6146
•	62/100	۵c	1ms/step -	20	cupacy: 0	5/138 _	1,	ncc. 0	6062
	63/100	03	Illis/scep -	a	cui acy. 0	. 5458 -	Τ(	J33. U	.0002
		0s	934us/step	-	accuracy:	0.5502	-	loss:	0.6166
	64/100								
		0s	867us/step	-	accuracy:	0.5085	-	loss:	0.6163
	65/100	۵c	868us/step	_	accuracy:	0 1701	_	1000	0 6331
	66/100	03	000us/step	_	accuracy.	0.4701	_	1033.	0.0551
•		0s	828us/step	-	accuracy:	0.4448	-	loss:	0.6285
•	67/100								
		0s	803us/step	-	accuracy:	0.4615	-	loss:	0.6249
•	68/100	۵c	800us/step	_	accunacy:	0 5/150	_	1055.	0 5012
	69/100	<del>0</del> 3	ooous/step	-	accui acy.	0.1400	-	1022.	0.3344
•		0s	868us/step	-	accuracy:	0.4610	-	loss:	0.6186
	70/100								
		0s	936us/step	-	accuracy:	0.5468	-	loss:	0.5892
	71/100	۵c	868us/step	_	accuracy:	0 5211	_	1000	0 5021
10/10		US	ooous/step	_	accuracy:	0.7211	_	TO22.	0.3704

Epoch	72/100								
		0s	733us/step	-	accuracy:	0.5232	-	loss:	0.5813
	73/100	_	/ /					_	
	74/100	0s	800us/step	-	accuracy:	0.5232	-	loss:	0.5818
		0s	800us/step	_	accuracv:	0.4801	_	loss:	0.6190
•	75/100				,				
		0s	800us/step	-	accuracy:	0.5049	-	loss:	0.6024
	76/100 	0-	026.45/54.55			0 4500		1	0 (130
-	77/100	05	936us/step	-	accuracy:	0.4566	-	1022:	0.0138
	,	0s	731us/step	-	accuracy:	0.4914	-	loss:	0.6024
	78/100								
		0s	733us/step	-	accuracy:	0.5127	-	loss:	0.5898
	79/100	۵s	733us/step	_	accuracy.	0 5286	_	1055.	0 5594
-	80/100	03	7554373666		accuracy.	0.3200		1033.	0.5554
		0s	767us/step	-	accuracy:	0.4869	-	loss:	0.5982
	81/100	_						_	
	82/100	0s	733us/step	-	accuracy:	0.5112	-	loss:	0.5852
		0s	600us/step	_	accuracy:	0.4822	_	loss:	0.5848
	83/100		•		-				
	0.4.4.00	0s	667us/step	-	accuracy:	0.5041	-	loss:	0.5815
	84/100	۵s	667us/sten	_	accuracy.	0 5099	_	1055.	a 579a
	85/100	03	0074373669		accuracy.	0.3033		1033.	0.3750
		0s	733us/step	-	accuracy:	0.4488	-	loss:	0.5929
	86/100	0-	CC7/a+a			0 5050		1	0 5710
	87/100	65	667us/step	-	accuracy:	0.5058	-	1055:	0.5/19
		0s	809us/step	-	accuracy:	0.5718	-	loss:	0.5317
	88/100		_					_	
	89/100	0s	733us/step	-	accuracy:	0.5211	-	loss:	0.5610
		0s	733us/step	_	accuracy:	0.4993	_	loss:	0.5685
	90/100								
-		0s	704us/step	-	accuracy:	0.5560	-	loss:	0.5376
	91/100	0s	735us/step	_	accuracv:	0.4679	_	loss:	0.5824
	92/100		,						
		0s	667us/step	-	accuracy:	0.5691	-	loss:	0.5252
•	93/100	۵c	667us/step		accuracy:	0 1717	_	1000	0 5727
	94/100	03	007u3/3cep		accuracy.	0.4747		1033.	0.3727
		0s	868us/step	-	accuracy:	0.4626	-	loss:	0.5781
	95/100	0 -	200 / 1			0 5000		,	0 5533
	96/100	05	800us/step	-	accuracy:	0.5288	-	ioss:	0.5533
		0s	667us/step	-	accuracy:	0.4772	-	loss:	0.5661
	97/100								
		0s	752us/step	-	accuracy:	0.5270	-	loss:	0.5472
	98/100	0s	733us/step	_	accuracv:	0.5164	_	loss:	0.5300
	99/100								
		0s	735us/step	-	accuracy:	0.4840	-	loss:	0.5651
•	100/100	00	1ms/step -	٦.	cunacu. A	1676	1.	cc. 0	5660
			- ns/step ns/step - a		-				
	1/100		,r •	- '	<i>y</i>				
		0s	1ms/step -	a	ccuracy: 0	.5037 -	lo	ss: 0.	6964
Epoch	2/100								

16/16	16/16		9s	867us/sten	_	accuracy:	0.5445	_	loss:	0.6906
Epoch   4/100			0.5	оо, из, эсср		accar acy.	0.5115		1055.	0.0300
16/16			0s	933us/step	-	accuracy:	0.5288	_	loss:	0.6931
Epoch   5/100   16/16										
Form   Part   Part			0s	941us/step	-	accuracy:	0.6105	-	loss:	0.6931
Epoch   6/100   16/16			_	005 / 1			0 5600		,	
16/16			0s	935us/step	-	accuracy:	0.5633	-	loss:	0.6898
Epoch 7/100   16/16			Q.c	1ms/ston	2.	scupacy: A	E001	1.	.cc. 0	6027
16/16			03	III3/3CEP -	at	cui acy. 0	. 5961 -	10	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	0327
Epoch 8/100 16/16			0s	1ms/step -	ad	ccuracy: 0	.6028 -	10	oss: 0.	6933
Epoch 9/100 16/16	Epoch			•						
16/16	16/16		0s	1ms/step -	ad	ccuracy: 0	.5185 -	10	ss: 0.	6952
Epoch 10/100 16/16										
16/16			0s	877us/step	-	accuracy:	0.5387	-	loss:	0.6944
Epoch 12/100 16/16			0.0	96745/5+00		2661182614	0 (212		10001	0 6006
16/16			05	86/us/step	-	accuracy:	0.6312	-	1055:	0.0000
Epoch 12/100 16/16			0s	800us/step	_	accuracv:	0.5451	_	loss:	0.6992
16/16	Epoch	12/100				,				
16/16	16/16		0s	804us/step	-	accuracy:	0.6054	-	loss:	0.6945
Epoch 14/100 16/16										
16/16			0s	867us/step	-	accuracy:	0.6255	-	loss:	0.6930
Epoch 15/100 16/16	•			000 / 1					,	
16/16			0s	800us/step	-	accuracy:	0.596/	-	loss:	0.6922
Epoch 16/16			۵s	834us/sten	_	accuracy.	0 6629	_	1055.	0 6928
16/16			03	05-403/ 3 сер		accuracy.	0.0025		1033.	0.0520
16/16			0s	801us/step	-	accuracy:	0.6031	_	loss:	0.6959
Epoch 18/100  16/16	Epoch	17/100		•		-				
16/16			0s	867us/step	-	accuracy:	0.6367	-	loss:	0.6929
Epoch 19/100 16/16			_						_	
16/16			0s	835us/step	-	accuracy:	0.5818	-	loss:	0.6960
Epoch 20/100  16/16			۵c	800us/stan	_	accuracy.	0 62/1	_	1000	0 6947
16/16	-		03	000из/ з сер		accuracy.	0.0241		1033.	0.0547
Epoch 21/100 16/16	•		0s	800us/step	_	accuracy:	0.7101	_	loss:	0.6877
Epoch   22/100   16/16	Epoch	21/100								
16/16			0s	1ms/step -	a	ccuracy: 0	.6438 -	10	oss: 0.	6925
Epoch 23/100  16/16	•		_						_	
16/16       0s 733us/step - accuracy: 0.5813 - loss: 0.6966         Epoch 24/100         16/16       Os 667us/step - accuracy: 0.7277 - loss: 0.6892         Epoch 25/100         16/16       Os 800us/step - accuracy: 0.6640 - loss: 0.6900         Epoch 26/100         16/16       Os 667us/step - accuracy: 0.7057 - loss: 0.6953         Epoch 28/100         16/16       Os 733us/step - accuracy: 0.6633 - loss: 0.6906         Epoch 29/100         16/16       Os 667us/step - accuracy: 0.6267 - loss: 0.6943         Epoch 30/100         16/16       Os 1ms/step - accuracy: 0.6001 - loss: 0.6922         Epoch 32/100         16/16       Os 934us/step - accuracy: 0.6077 - loss: 0.6953			0s	8/0us/step	-	accuracy:	0.5896	-	loss:	0.6952
Epoch 24/100  16/16			۵s	733us/sten	_	accuracy:	0 5813	_	loss.	0 6966
16/16       Øs 667us/step - accuracy: 0.7277 - loss: 0.6892         Epoch 25/100       0s 800us/step - accuracy: 0.6640 - loss: 0.6900         Epoch 26/100       0s 733us/step - accuracy: 0.7057 - loss: 0.6876         Epoch 27/100       0s 667us/step - accuracy: 0.6094 - loss: 0.6953         Epoch 28/100       0s 733us/step - accuracy: 0.6633 - loss: 0.6906         Epoch 29/100       0s 733us/step - accuracy: 0.6267 - loss: 0.6943         Epoch 30/100       0s 667us/step - accuracy: 0.7508 - loss: 0.6867         Epoch 31/100       0s 1ms/step - accuracy: 0.6001 - loss: 0.6922         Epoch 32/100       0s 934us/step - accuracy: 0.6077 - loss: 0.6953			03	, ээцэ, эсср		accui acy.	0.3013		1033.	0.0300
16/16       0s       800us/step - accuracy: 0.6640 - loss: 0.6900         Epoch 26/100       0s       733us/step - accuracy: 0.7057 - loss: 0.6876         Epoch 27/100       0s       667us/step - accuracy: 0.6094 - loss: 0.6953         Epoch 28/100       0s       733us/step - accuracy: 0.6633 - loss: 0.6906         Epoch 29/100       0s       733us/step - accuracy: 0.6267 - loss: 0.6943         Epoch 30/100       0s       667us/step - accuracy: 0.7508 - loss: 0.6867         Epoch 31/100       0s       1ms/step - accuracy: 0.6001 - loss: 0.6922         Epoch 32/100       0s       934us/step - accuracy: 0.6077 - loss: 0.6953			0s	667us/step	-	accuracy:	0.7277	-	loss:	0.6892
Epoch 26/100  16/16										
16/16       0s       733us/step - accuracy: 0.7057 - loss: 0.6876         Epoch 27/100       0s       667us/step - accuracy: 0.6094 - loss: 0.6953         Epoch 28/100       0s       733us/step - accuracy: 0.6633 - loss: 0.6906         Epoch 29/100       0s       733us/step - accuracy: 0.6267 - loss: 0.6943         Epoch 30/100       0s       667us/step - accuracy: 0.7508 - loss: 0.6867         Epoch 31/100       0s       1ms/step - accuracy: 0.6001 - loss: 0.6922         Epoch 32/100       0s       934us/step - accuracy: 0.6077 - loss: 0.6953			0s	800us/step	-	accuracy:	0.6640	-	loss:	0.6900
Epoch 27/100  16/16			0 -	722 / 1			0 7057		,	0 6076
16/16       0s 667us/step - accuracy: 0.6094 - loss: 0.6953         Epoch 28/100       0s 733us/step - accuracy: 0.6633 - loss: 0.6906         Epoch 29/100       0s 733us/step - accuracy: 0.6267 - loss: 0.6943         Epoch 30/100       0s 667us/step - accuracy: 0.7508 - loss: 0.6867         Epoch 31/100       0s 1ms/step - accuracy: 0.6001 - loss: 0.6922         Epoch 32/100       0s 934us/step - accuracy: 0.6077 - loss: 0.6953			ØS.	/33us/step	-	accuracy:	0.7057	-	loss:	0.6876
Epoch 28/100  16/16			95	667us/sten	_	accuracy:	0.6094	_	loss:	0.6953
16/16       0s 733us/step - accuracy: 0.6633 - loss: 0.6906         Epoch 29/100       0s 733us/step - accuracy: 0.6267 - loss: 0.6943         Epoch 30/100       0s 667us/step - accuracy: 0.7508 - loss: 0.6867         Epoch 31/100       0s 1ms/step - accuracy: 0.6001 - loss: 0.6922         Epoch 32/100       0s 934us/step - accuracy: 0.6077 - loss: 0.6953			03	оот из, эсср		accui acy.	0.0054		1033.	0.0333
Epoch 29/100  16/16			0s	733us/step	-	accuracy:	0.6633	_	loss:	0.6906
Epoch 30/100  16/16	Epoch	29/100								
16/16       0s 667us/step - accuracy: 0.7508 - loss: 0.6867         Epoch 31/100       0s 1ms/step - accuracy: 0.6001 - loss: 0.6922         Epoch 32/100       0s 934us/step - accuracy: 0.6077 - loss: 0.6953			0s	733us/step	-	accuracy:	0.6267	-	loss:	0.6943
Epoch 31/100  16/16 —			_	·					,	0
16/16 — Os 1ms/step - accuracy: 0.6001 - loss: 0.6922         Epoch 32/100         16/16 — Os 934us/step - accuracy: 0.6077 - loss: 0.6953			0s	667us/step	-	accuracy:	0.7508	-	loss:	0.6867
Epoch 32/100  16/16 ———			۵c	1mc/cten	21	curacy. B	6001 -	1.	155 · D	6922
<b>16/16 Os</b> 934us/step - accuracy: 0.6077 - loss: 0.6953			<b>U</b> 3	-m3/3cch -	a	curacy. 0	.0001 -	10	,,,, U.	JJ
	16/16		0s	934us/step	-	accuracy:	0.6077	_	loss:	0.6953
				•		•				

16/16		0s	800us/step	_	accuracv:	0.6217	_	loss:	0.6930
	34/100		, , , , , , ,		, , , , , , , , , , , , , , , , , , ,				
		0s	702us/step	-	accuracy:	0.6356	-	loss:	0.6936
	35/100		/ .			0 6040		,	0 6050
	36/100	ØS.	667us/step	-	accuracy:	0.6019	-	TOSS:	0.6952
		0s	667us/step	_	accuracv:	0.6958	_	loss:	0.6908
	37/100		ост от то то то то		,				
16/16		0s	669us/step	-	accuracy:	0.6323	-	loss:	0.6942
	38/100		<b></b>						
-	39/100	ØS.	733us/step	-	accuracy:	0.5906	-	TOSS:	0.69//
		0s	733us/step	_	accuracy:	0.6569	_	loss:	0.6921
Epoch	40/100		·		-				
		0s	667us/step	-	accuracy:	0.6584	-	loss:	0.6960
	41/100	Q.c	867us/step		2001112011	0 6724		1000	0 6000
-	42/100	03	007u3/3cep	_	accuracy.	0.0754	_	1033.	0.0308
		0s	734us/step	-	accuracy:	0.6371	-	loss:	0.6933
Epoch	43/100							_	
		0s	733us/step	-	accuracy:	0.6399	-	loss:	0.6925
<b>16/16</b>	44/100	0s	901us/step	_	accuracv:	0.6896	_	loss:	0.6894
	45/100		,						
		0s	800us/step	-	accuracy:	0.7211	-	loss:	0.6881
•	46/100	0.0	((7us/stan		2661102614	0 (402		10551	0 (020
	47/100	05	667us/step	-	accuracy:	0.6403	-	1022:	0.0938
		0s	602us/step	_	accuracy:	0.6714	_	loss:	0.6911
	48/100				-				
		0s	734us/step	-	accuracy:	0.6793	-	loss:	0.6913
	49/100	۵c	667us/step	_	accuracy:	0 6669	_	1000	0 6915
	50/100	03	007и3/ 3сср		accuracy.	0.0003		1033.	0.0515
		0s	734us/step	-	accuracy:	0.6026	-	loss:	0.6912
•	51/100	_							
16/16 Enoch	52/100	0s	701us/step	-	accuracy:	0.6764	-	loss:	0.6925
		0s	801us/step	_	accuracy:	0.6269	_	loss:	0.6930
	53/100		•		,				
		0s	844us/step	-	accuracy:	0.6663	-	loss:	0.6890
	54/100	۵c	800us/stan	_	accuracy:	0 6713	_	1000	0 6001
Epoch	55/100	03	000из/ эсер		accuracy.	0.0713		1033.	0.0504
16/16		0s	933us/step	-	accuracy:	0.7566	-	loss:	0.6872
	56/100	0-	000/-+			0 7262		1	0 6007
	57/100	0S	800us/step	-	accuracy:	0.7263	-	TOSS:	0.6887
		0s	967us/step	_	accuracy:	0.6748	_	loss:	0.6908
Epoch	58/100								
		0s	1ms/step -	a	ccuracy: 0	.6761 -	10	oss: 0	.6923
	59/100 	۵c	1ms/step -	20	cupacy: 0	7200 -	1,	ncc. 0	6881
	60/100	03	III3/3CEP -	a	cui acy. 0	.7290 -	Τ(	)33. U	.0004
		0s	867us/step	-	accuracy:	0.7018	-	loss:	0.6896
	61/100	_						-	
		0s	1000us/step	) -	- accuracy	0.6748	3 -	- loss:	: 0.6909
	62/100	05	1ms/sten -	ar	ccuracv: 0	.6687 -	10	oss: 0	.6923
Epoch	63/100								
16/16		0s	800us/step	-	accuracy:	0.7052	-	loss:	0.6898
Epoch	64/100								

16/16		0s	933us/step	-	accuracy:	0.6821	-	loss:	0.6894
Epoch	65/100		•		-				
		0s	800us/step	-	accuracy:	0.6886	-	loss:	0.6883
	66/100	_						_	
		0s	1ms/step -	a	ccuracy: 0	.6403 -	Ιc	ss: 0.	6954
16/16	67/100	۵c	933us/step	_	accuracy.	0 6764	_	1000	0 6858
	68/100	03	933us/scep	_	accuracy.	0.0704	_	1033.	0.0050
		0s	1ms/step -	a	ccuracv: 0	.6886 -	10	ss: 0.	6901
	69/100		, ,		,				
16/16		0s	733us/step	-	accuracy:	0.6942	-	loss:	0.6909
•	70/100								
		0s	733us/step	-	accuracy:	0.7427	-	loss:	0.6838
•	71/100	00	02445/5400		2661182614	0 7120		10001	0 6077
	72/100	05	934us/step	-	accuracy:	0.7128	-	1022:	0.08//
•		0s	935us/step	_	accuracv:	0.7156	_	loss:	0.6875
	73/100		,		,				
16/16		0s	1ms/step -	a	ccuracy: 0	.7045 -	10	ss: 0.	6868
	74/100								
		0s	968us/step	-	accuracy:	0.6774	-	loss:	0.6905
Epoch	75/100 	00	800us/step		2661182614	0 6627		1000	0 6000
	76/100	03	800us/step	-	accuracy.	0.0037	-	1055.	0.0000
•		0s	867us/step	_	accuracy:	0.6658	_	loss:	0.6901
	77/100		,		,				
16/16		0s	901us/step	-	accuracy:	0.6516	-	loss:	0.6903
•	78/100								
		0s	800us/step	-	accuracy:	0.6161	-	loss:	0.6939
•	79/100	00	733us/step		2661182614	0 7200		1000	0 6962
	80/100	03	733us/scep	-	accuracy.	0.7200	-	1055.	0.0002
		0s	901us/step	_	accuracy:	0.6908	_	loss:	0.6903
Epoch	81/100		•		•				
16/16		0s	733us/step	-	accuracy:	0.6736	-	loss:	0.6881
•	82/100	_						_	
16/16		0s	667us/step	-	accuracy:	0.7431	-	loss:	0.6821
16/16	83/100	95	667us/step	_	accuracy:	0 7642	_	loss	0 6846
-	84/100	0.5	оолиз, эсср		accar acy.	01,012		1033.	0.00.0
•		0s	1ms/step -	a	ccuracy: 0	.7195 -	10	ss: 0.	6863
•	85/100								
		0s	1ms/step -	a	ccuracy: 0	.6601 -	10	ss: 0.	6883
	86/100	00	900us/step		2661182614	0 6674		1000	0 6900
	87/100	03	900us/scep	-	accuracy.	0.0074	-	1055.	0.0050
		0s	867us/step	_	accuracy:	0.6424	_	loss:	0.6891
	88/100								
16/16		0s	801us/step	-	accuracy:	0.6391	-	loss:	0.6884
•	89/100	_						_	
16/16		0s	803us/step	-	accuracy:	0.7088	-	loss:	0.6872
	90/100	۵c	733us/step	_	accuracy.	0 71/12	_	1000	0 6827
	91/100	03	733u3/3cep	_	accuracy.	0.7142	_	1033.	0.0827
		0s	867us/step	_	accuracy:	0.6614	_	loss:	0.6878
	92/100		•		•				
		0s	733us/step	-	accuracy:	0.6827	-	loss:	0.6888
•	93/100	_	CO4 ' :			0 7000		1.	0 5055
		ØS	684us/step	-	accuracy:	0.7089	-	loss:	0.6858
	94/100	95	1ms/step -	21	curacy. A	.6021 -	10	155: A	6910
	95/100	J3	-m3/30cp -	u	cai acy. 0	. 5521		0.	. 5510
L - 3	•								

16/16		0s	1ms/step -	ac	ccuracv: 0.	6810 -	loss: 0.	6850
	96/100		-,					
16/16		0s	800us/step	-	accuracy:	0.7165	- loss:	0.6834
	97/100							
		0s	868us/step	-	accuracy:	0.6698	- loss:	0.6867
Epoch	98/100	0 -	022 / 1			0 7046	,	0 6704
		0s	933us/step	-	accuracy:	0.7216	- loss:	0.6/94
	99/100	۵c	867us/step	_	acciinacy:	0 6676	- 1000	0 6830
	100/100	03	00/из/зсер		accuracy.	0.0070	- 1033.	0.0050
•		0s	800us/step	_	accuracy:	0.6866	- loss:	0.6835
			ns/step - ad		-			
	1/100							
		0s	933us/step	-	accuracy:	0.5363	- loss:	0.6955
•	2/100	0 -	024 / 1			0 5560	,	0 6022
	3/100	ØS	934us/step	-	accuracy:	0.5568	- 10SS:	0.6933
•		95	1ms/step -	ac	curacy: 0	4836 -	1055 · 0	7160
	4/100	05	111137 3 CCP	u	cearacy. o.	4030	1033. 0.	7100
•		0s	867us/step	_	accuracy:	0.5613	- loss:	0.7035
	5/100							
		0s	824us/step	-	accuracy:	0.5751	- loss:	0.6915
•	6/100	_	000 / 1			0 5445	-	0 =016
-		0s	800us/step	-	accuracy:	0.5115	- loss:	0.7016
•	7/100	۵s	933us/step	_	accuracy:	0 5027	- loss.	a 7002
	8/100	03	эээиз, зеер		accuracy.	0.3027	1033.	0.7002
		0s	701us/step	_	accuracy:	0.4940	- loss:	0.7021
	9/100							
		0s	867us/step	-	accuracy:	0.5169	- loss:	0.7063
•	10/100	_					-	
		0s	866us/step	-	accuracy:	0.4740	- loss:	0.7153
	11/100	۵s	701us/step	_	accuracy:	0 5125	- loss:	a 7157
-	12/100	03	701и3/3сср		accuracy.	0.5125	1033.	0.7137
	,	0s	867us/step	_	accuracy:	0.5638	- loss:	0.7002
Epoch	13/100							
		0s	800us/step	-	accuracy:	0.5132	- loss:	0.7096
	14/100	_				0 =164	-	. =0.55
	15/100	ØS	907us/step	-	accuracy:	0.5161	- 10SS:	0.7065
•		<b>0</b> s	868us/step	_	accuracy:	0.5880	- loss:	0.6856
	16/100		оссия, в сер		acca. acy i	0.13000		
		0s	933us/step	-	accuracy:	0.5122	- loss:	0.7102
	17/100							
		0s	800us/step	-	accuracy:	0.5634	- loss:	0.6858
	18/100	00	72245/5+00		2661182614	0 5261	10001	0 6040
	19/100	05	733us/step	-	accuracy:	0.5361	- 1055:	0.6940
		0s	935us/step	_	accuracv:	0.5077	- loss:	0.6949
	20/100		эээшэ, эсср		acca. acy i			0.02.5
		0s	667us/step	-	accuracy:	0.6241	- loss:	0.6748
•	21/100							
		0s	1ms/step -	a	ccuracy: 0.	5296 -	loss: 0.	7035
•	22/100	0-	1mc/s+s=	_		E200	locs: 0	7015
	23/100	ØS	1ms/step -	a	ccuracy: 0.	J309 -	1022: 0	/015
•		95	1ms/step -	ar	ccuracy: 0	5235 -	loss: 0	6995
	24/100		, 5 5 5 5	٠,٠				<del>-</del>
•		0s	733us/step	-	accuracy:	0.5934	- loss:	0.6812
	25/100							
16/16		0s	733us/step	-	accuracy:	0.5311	- loss:	0.6952

Epoch	26/100								
		0s	734us/step	-	accuracy:	0.5372	-	loss:	0.6953
•	27/100	0-	667/-+			0 5457		1	0 6022
	28/100	ØS.	667us/step	-	accuracy:	0.545/	-	TOSS:	0.6933
		0s	672us/step	_	accuracy:	0.5679	_	loss:	0.6932
	29/100								
-		0s	667us/step	-	accuracy:	0.5579	-	loss:	0.6914
•	30/100	0-	CC7a /a+an			0 5400		1	0 6000
-	31/100	05	667us/step	-	accuracy:	0.5489	-	1055:	0.6909
•		0s	735us/step	_	accuracy:	0.5835	_	loss:	0.6929
	32/100								
16/16		0s	667us/step	-	accuracy:	0.5880	-	loss:	0.6798
•	33/100	00	867us/step		2661182614	A E190		10551	0 6907
	34/100	62	oo/us/step	_	accuracy.	0.5169	-	1055.	0.0097
		0s	800us/step	-	accuracy:	0.5616	-	loss:	0.6902
-	35/100								
	26/100	0s	765us/step	-	accuracy:	0.5324	-	loss:	0.6937
	36/100	۵c	735us/step	_	accuracy.	0 5384	_	1000	0 6923
	37/100	03	733u3/3ccp		accuracy.	0.5504		1033.	0.0525
16/16		0s	667us/step	-	accuracy:	0.5714	-	loss:	0.6924
	38/100	_						_	
-	39/100	0s	701us/step	-	accuracy:	0.5819	-	loss:	0.6822
16/16		0s	735us/step	_	accuracv:	0.5239	_	loss:	0.6913
	40/100								
		0s	733us/step	-	accuracy:	0.5673	-	loss:	0.6882
	41/100	0-	CC7a /a+an			0 4063		1	0 6070
	42/100	05	667us/step	-	accuracy:	0.4863	-	1055:	0.6978
	,	0s	800us/step	-	accuracy:	0.5429	-	loss:	0.6928
	43/100								
-	44/400	0s	867us/step	-	accuracy:	0.5375	-	loss:	0.6881
	44/100	۵s	600us/step	_	accuracy:	0 5207	_	1055.	0 6914
	45/100	03	000и3/ 3сср		accuracy.	0.3207		1033.	0.0314
		0s	801us/step	-	accuracy:	0.5878	-	loss:	0.6784
-	46/100	_							
	47/100	0s	667us/step	-	accuracy:	0.5555	-	loss:	0.6880
		0s	733us/step	_	accuracy:	0.5752	_	loss:	0.6758
	48/100				,				
		0s	667us/step	-	accuracy:	0.5480	-	loss:	0.6898
Epoch	49/100	۵c	733us/step	_	accuracy:	0 5837	_	1000	0 6740
	50/100	03	733us/step	-	accuracy.	0.3637	-	1055.	0.0743
		0s	733us/step	-	accuracy:	0.5744	-	loss:	0.6840
	51/100							_	
	52/100	0s	767us/step	-	accuracy:	0.5677	-	loss:	0.6802
-		0s	667us/step	_	accuracv:	0.5224	_	loss:	0.6877
	53/100		-,		·	•			
		0s	734us/step	-	accuracy:	0.4697	-	loss:	0.6884
-	54/100	0-	701/-+-		0.000.000	0 5274		100	0 (770
	55/100	05	701us/step	-	accuracy:	۷.55/4	-	1022;	0.0//0
-		0s	735us/step	-	accuracy:	0.5211	-	loss:	0.6780
	56/100		·		-				
16/16		0s	600us/step	-	accuracy:	0.5248	-	loss:	0.6893

Epoch	57/100								
-		0s	667us/step	-	accuracy:	0.5453	-	loss:	0.6855
•	58/100								
=		0s	667us/step	-	accuracy:	0.5044	-	loss:	0.6861
	59/100 ————————	95	667us/sten	_	accuracy:	0 5359	_	1055.	0 6820
	60/100	05	оот из, эсср		accar acy.	0.3333		1033.	0.0020
16/16		0s	667us/step	-	accuracy:	0.5585	-	loss:	0.6739
	61/100		636 / 1					,	0 (70)
=	62/100	0S	636us/step	-	accuracy:	0.5595	-	TOSS:	0.6/96
16/16		0s	733us/step	_	accuracy:	0.5892	_	loss:	0.6683
	63/100		·		-				
		0s	733us/step	-	accuracy:	0.5509	-	loss:	0.6742
	64/100	95	734us/step	_	accuracy:	0 5797	_	1055.	0 6673
	65/100	03	75445, 5 ccp		accuracy.	0.3737		1033.	0.0075
		0s	735us/step	-	accuracy:	0.5660	-	loss:	0.6708
•	66/100	0-	704/atas			0 5500		1	0 6706
	67/100	05	794us/step	-	accuracy:	0.5508	-	1022:	0.0790
		0s	734us/step	-	accuracy:	0.5767	-	loss:	0.6691
	68/100								
	69/100	0s	703us/step	-	accuracy:	0.5842	-	loss:	0.6630
		0s	667us/step	_	accuracy:	0.5221	_	loss:	0.6799
	70/100				,				
		0s	600us/step	-	accuracy:	0.5570	-	loss:	0.6722
	71/100	95	600us/step	_	accuracy:	0.5560	_	loss:	0.6652
	72/100	05	оооиз, эсер		acca, acy.	0.3300		1033.	0.0052
		0s	600us/step	-	accuracy:	0.5492	-	loss:	0.6628
•	73/100	۵c	800us/step	_	accuracy:	0 5065		1000	0 6730
-	74/100	03	000из/ 3 сер		accuracy.	0.5005		1033.	0.0750
		0s	667us/step	-	accuracy:	0.5130	-	loss:	0.6686
•	75/100	0-	C24a /a+a.a			0 4076		1	0 (702
	76/100	05	634us/step	-	accuracy:	0.4976	-	1022:	0.0703
		0s	867us/step	-	accuracy:	0.5046	-	loss:	0.6720
	77/100	0 -	000 / 1			0 5407		,	0.6603
	78/100	0s	802us/step	-	accuracy:	0.518/	-	loss:	0.6683
		0s	1ms/step -	ac	ccuracy: 0	.5055 -	10	oss: 0	. 6685
	79/100						_		
	80/100	0s	1ms/step -	a	ccuracy: 0	.5379 -	10	oss: 0	.6724
		0s	1ms/step -	ac	ccuracy: 0	.4834 -	10	oss: 0	.6713
Epoch	81/100				,				
		0s	867us/step	-	accuracy:	0.4886	-	loss:	0.6683
	82/100	95	933us/step	_	accuracy:	0 5098	_	loss	0 6636
	83/100	03	эээиз, эсср		accar acy.	0.3030		1033.	0.0050
		0s	868us/step	-	accuracy:	0.4799	-	loss:	0.6755
	84/100	۵c	704us/step	_	accunacy	0 1303	_	10551	0 6605
	85/100	<b>U</b> S	/o+us/step	-	accuracy:	0.4333	-	TO22.	0.0033
16/16		0s	733us/step	-	accuracy:	0.4824	-	loss:	0.6720
•	86/100	^	667. / :			0 47.5		1.	0.6553
	87/100	US	667us/step	-	accuracy:	0.4/45	-	TOSS:	0.6669
		0s	733us/step	-	accuracy:	0.5023	_	loss:	0.6691
			•		-				

Epoch	88/100							
16/16		0s	733us/step	-	accuracy:	0.5242	- loss:	0.6654
	89/100	_						
	90/100	0s	735us/step	-	accuracy:	0.5202	- loss:	0.6642
		0s	602us/step	_	accuracv:	0.5467	- loss:	0.6584
	91/100				,			
		0s	667us/step	-	accuracy:	0.4751	- loss:	0.6709
	92/100	0 -	667 ( )			0.5004	,	0 6550
	93/100	05	667us/step	-	accuracy:	0.5904	- 10SS:	0.6550
		0s	733us/step	_	accuracy:	0.4737	- loss:	0.6710
Epoch	94/100				•			
		0s	703us/step	-	accuracy:	0.5561	- loss:	0.6580
	95/100 	۵c	667us/step		accupacy:	0 5462	- loss:	0 6554
	96/100	03	007u3/3cep	_	accuracy.	0.5402	- 1033.	0.0554
		0s	667us/step	-	accuracy:	0.5229	- loss:	0.6621
	97/100							
	98/100	0s	667us/step	-	accuracy:	0.5501	- loss:	0.6476
		0s	733us/step	_	accuracv:	0.5345	- loss:	0.6498
Epoch	99/100		•		•			
		0s	668us/step	-	accuracy:	0.5897	- loss:	0.6533
16/16	100/100	۵c	735us/step	_	accuracy.	0 1918	- loss.	0 6652
5/5 —			ns/step - a		-			
Epoch	1/100							
		0s	1ms/step -	a	ccuracy: 0	.5522 -	loss: 0	.7463
•	2/100	۵c	800us/step		accupacy:	0 5008	- loss:	0 7802
	3/100	03	000и3/ 3 сер		accuracy.	0.3030	1033.	0.7032
-		0s	800us/step	-	accuracy:	0.4893	- loss:	0.7664
	4/100	0-	000/			0 5465	1	0.7240
	5/100	05	800us/step	-	accuracy:	0.5465	- 1055:	0.7340
16/16		0s	745us/step	-	accuracy:	0.4804	- loss:	0.7480
•	6/100	_					_	
16/16 Enoch	7/100	0s	868us/step	-	accuracy:	0.5995	- loss:	0.6887
16/16		0s	1ms/step -	a	ccuracy: 0	.5172 -	loss: 0	.7243
	8/100				-			
		0s	1ms/step -	a	ccuracy: 0	.5094 -	loss: 0	.7601
	9/100	05	934us/step	_	accuracy:	0.5670	- loss:	0.7199
Epoch	10/100		,		,			
		0s	941us/step	-	accuracy:	0.5903	- loss:	0.6894
	11/100	Q.c	733us/step		accunacy:	0 5596	loss	0 7209
	12/100	03	/33u3/3cep	_	accur acy.	0.5580	- 1033.	0.7298
16/16		0s	800us/step	-	accuracy:	0.6201	- loss:	0.7117
	13/100		000 / 1				,	. =
16/16 Enoch	14/100	0s	800us/step	-	accuracy:	0.6008	- loss:	0.7009
•		0s	732us/step	_	accuracy:	0.5916	- loss:	0.6939
Epoch	15/100				-			
		0s	867us/step	-	accuracy:	0.5995	- loss:	0.7015
•	16/100	95	800us/step	_	accuracy.	0.5425	- loss	0.7326
	17/100		этгээ, эсер			2.2.23		
		0s	667us/step	-	accuracy:	0.5860	- loss:	0.7055
Epoch	18/100							

16/16		05	667us/step	_	accuracy:	0.5554	_	loss:	0.7202
	19/100	0.5	оо, из, эсер		acca. acy.	0.333.		1055.	01,202
		0s	803us/step	_	accuracy:	0.5907	_	loss:	0.6975
Epoch	20/100								
		0s	665us/step	-	accuracy:	0.5233	-	loss:	0.7187
	21/100	_	/ .					_	
		0s	800us/step	-	accuracy:	0.5475	-	loss:	0.7078
16/16	22/100	Q.c	800us/step		accupacy:	0 5670		1000	0 7164
	23/100	03	800из/зсер	_	accuracy.	0.3073	_	1033.	0.7104
•		0s	701us/step	_	accuracy:	0.5215	_	loss:	0.7116
Epoch	24/100		·		•				
16/16		0s	933us/step	-	accuracy:	0.5766	-	loss:	0.7054
	25/100								
		0s	800us/step	-	accuracy:	0.5899	-	loss:	0.6769
	26/100	ac.	667us/step		accupacy:	0 5162		1000	0 7016
	27/100	62	00/us/scep	_	accuracy.	0.3102	_	1055.	0.7010
		0s	602us/step	_	accuracy:	0.5361	_	loss:	0.7044
Epoch	28/100		,		,				
16/16	-	0s	668us/step	-	accuracy:	0.5593	-	loss:	0.6934
	29/100								
		0s	741us/step	-	accuracy:	0.5749	-	loss:	0.6812
•	30/100	00	600us/ston		2661182614	0 5407		10001	0 6022
	31/100	05	600us/step	-	accuracy:	0.5407	-	1055:	0.0932
•		0s	600us/step	_	accuracy:	0.6264	_	loss:	0.6673
	32/100		,		,				
16/16		0s	735us/step	-	accuracy:	0.5241	-	loss:	0.6901
	33/100								
		0s	867us/step	-	accuracy:	0.5445	-	loss:	0.6909
	34/100	0.0	1ms/step -	-		F 2 7 1	1.		C004
	35/100	62	Illis/scep -	at	.curacy. 6	. 33/1 -	10	)55. V.	0054
		0s	1000us/step	) -	accuracy	: 0.5088	3 -	· loss:	0.6785
Epoch	36/100								
		0s	1ms/step -	ac	curacy: 0	.5847 -	10	oss: 0.	6695
	37/100	_						,	0 6766
		0s	800us/step	-	accuracy:	0.5/05	-	loss:	0.6/66
•	38/100	95	866us/step	_	accuracy:	0 6119	_	loss.	0 6648
	39/100	0.5	осоцо, эсер		acca. acy.	0.0113		1055.	0.00.0
		0s	834us/step	-	accuracy:	0.5617	-	loss:	0.6730
Epoch	40/100								
		0s	733us/step	-	accuracy:	0.5192	-	loss:	0.6753
	41/100	00	901us /ston		2661182614	0 5207		10001	0 6730
	42/100	05	oorus/steb	-	accuracy.	0.5267	-	1055.	0.0730
		0s	672us/step	_	accuracv:	0.5117	_	loss:	0.6784
	43/100		от _ а. о, о с ор		,				
16/16		0s	735us/step	-	accuracy:	0.5559	-	loss:	0.6711
	44/100								
		0s	666us/step	-	accuracy:	0.5403	-	loss:	0.6758
	45/100 	ac.	02/115/5+00		accupacy:	0 6107		1000	0 6602
	46/100	25	934us/step	-	accuracy:	0.010/	-	1022.	0.0003
		0s	668us/step	_	accuracv:	0.5768	_	loss:	0.6690
	47/100	-	, <b>F</b>		- , .				-
16/16		0s	600us/step	-	accuracy:	0.5579	-	loss:	0.6619
_	48/100							_	
Epoch		_							
16/16	49/100	0s	802us/step	-	accuracy:	0.5249	-	loss:	0.6672

16/16		95	733us/step	_	accuracy:	0.5992	_	loss:	0.6591
	50/100	0.5	, , , , , , , , , , , , , , , , , , , ,		accar acy.	0.3332		1033.	0.0331
		0s	867us/step	-	accuracy:	0.5730	_	loss:	0.6651
	51/100								
		0s	735us/step	-	accuracy:	0.5541	-	loss:	0.6594
	52/100	_						-	
		0s	733us/step	-	accuracy:	0.5337	-	loss:	0.6681
16/16	53/100	۵c	732us/step		accupacy.	0 6222		1000	0 6473
	54/100	03	/32u3/3cep	_	accuracy.	0.0222	_	1033.	0.04/3
		0s	801us/step	_	accuracy:	0.6271	_	loss:	0.6566
Epoch	55/100		·		•				
16/16		0s	1ms/step -	ad	ccuracy: 0	.6536 -	10	oss: 0.	6495
	56/100								
		0s	1ms/step -	ac	ccuracy: 0	.6206 -	10	oss: 0.	6474
-	57/100	Q.c	733us/step		accupacy:	0 6407		1000	0 6422
	58/100	03	/33us/scep	_	accuracy.	0.0407	_	1055.	0.0432
		0s	701us/step	_	accuracy:	0.6194	_	loss:	0.6459
Epoch	59/100		,		,				
16/16		0s	1ms/step -	ad	ccuracy: 0	.5654 -	10	oss: 0.	6576
	60/100								
		0s	1ms/step -	a	ccuracy: 0	.6277 -	10	oss: 0.	6526
	61/100	00	1mc/stan			6697	1.		C1C1
	62/100	05	1ms/step -	ac	ccuracy: 0	.6687 -	TC	)55: 0.	6464
		0s	735us/step	_	accuracv:	0.6948	_	loss:	0.6420
	63/100		, , , , , , , , , , , , , , , , , , ,						
16/16		0s	867us/step	-	accuracy:	0.6529	-	loss:	0.6413
	64/100								
		0s	801us/step	-	accuracy:	0.6652	-	loss:	0.6437
	65/100	0-	700 / = + = =			0 (170		1	0 (400
	66/100	05	799us/step	-	accuracy:	0.6170	-	1055:	0.6489
•		0s	733us/step	_	accuracv:	0.6857	_	loss:	0.6374
	67/100		,		,				
16/16		0s	801us/step	-	accuracy:	0.7433	-	loss:	0.6313
	68/100							_	
		0s	799us/step	-	accuracy:	0.6954	-	loss:	0.6378
-	69/100	۵c	733us/step		accupacy.	0 7137		1000	0 6317
	70/100	03	/33u3/3cep	_	accuracy.	0.7137	_	1033.	0.0317
		0s	834us/step	_	accuracy:	0.7444	_	loss:	0.6318
Epoch	71/100				-				
		0s	932us/step	-	accuracy:	0.7314	-	loss:	0.6355
	72/100	_						_	
	72/100	0s	600us/step	-	accuracy:	0.7684	-	loss:	0.6305
	73/100	۵c	689us/step	_	accuracy.	0 7719	_	1000	0 63/6
	74/100	03	089и3/3 сер	_	accuracy.	0.7719	_	1055.	0.0340
	7 1,7 200	0s	800us/step	_	accuracy:	0.8232	_	loss:	0.6202
	75/100				,				
16/16		0s	800us/step	-	accuracy:	0.7856	-	loss:	0.6302
-	76/100					_		_	_
		0s	767us/step	-	accuracy:	0.8390	-	loss:	0.6173
	77/100	G-	900us /s+a-		2001112011	0 0102		1000	0 6220
	78/100	05	800us/step	-	accuracy:	6.9T93	-	1022:	0.0220
	70/100	0s	867us/step	_	accuracy:	0.8673	_	loss:	0.6055
Epoch	79/100				-				
16/16		0s	800us/step	-	accuracy:	0.8052	-	loss:	0.6172
Epoch	80/100								

16/16		0s	798us/step	_	accuracy:	0.8021	-	loss:	0.6112
	81/100				,				
16/16		0s	668us/step	-	accuracy:	0.8264	-	loss:	0.6105
	82/100								
		0s	801us/step	-	accuracy:	0.8486	-	loss:	0.6106
Epoch	83/100	_						_	
		0s	667us/step	-	accuracy:	0.8373	-	loss:	0.6069
	84/100	0-	000/			0 0770		1	0 5004
		05	800us/step	-	accuracy:	0.8//8	-	1055:	0.5994
16/16	85/100	۵c	934us/step	_	acciinacy:	0 8/126	_	1000	0 6081
	86/100	03	ээ-чаз/ эсср		accuracy.	0.0420		1033.	0.0001
•		0s	867us/step	_	accuracy:	0.8115	_	loss:	0.6066
	87/100				,				
16/16		0s	867us/step	-	accuracy:	0.8724	-	loss:	0.5946
Epoch	88/100								
		0s	868us/step	-	accuracy:	0.8060	-	loss:	0.6114
	89/100	_						_	
		0s	867us/step	-	accuracy:	0.8676	-	loss:	0.5864
	90/100	Q.c	867us/step		accupacy:	0 0533		1000	0 5005
	91/100	03	807us/step	-	accuracy.	0.0333	-	1055.	0.3003
16/16		0s	2ms/step -	ac	curacy: 0.	8424 -	10	ss: 0.	5920
	92/100		-,						
16/16		0s	1ms/step -	ac	ccuracy: 0.	8467 -	10	ss: 0.	5869
Epoch	93/100								
		0s	1ms/step -	ac	ccuracy: 0.	8263 -	10	ss: 0.	5799
•	94/100	0 -	660 / 1			0 0775		,	0 5700
	95/100	ØS	668us/step	-	accuracy:	0.8//5	-	Toss:	0.5/83
		95	867us/step	_	accuracy:	0 8666	_	1055.	0 5717
	96/100		остав, всер		acca. acy v				010727
		0s	1ms/step -	ac	ccuracy: 0.	8590 -	10	ss: 0.	5786
Epoch	97/100								
		0s	600us/step	-	accuracy:	0.8568	-	loss:	0.5704
	98/100	0 -	0.60 / 1			0.0657		,	0 5763
	99/100	05	868us/step	-	accuracy:	0.8657	-	1055:	0.5/63
•		95	733us/step	_	accuracy:	0.8657	_	loss:	0.5695
	100/100		, ээшэ, эсср		acca. acy v				0.000
•		0s	687us/step	_	accuracy:	0.8709	_	loss:	0.5558
	0s	<b>1</b> 1	ns/step - ac	cι	ıracy: 0.89	902 - lo	SS	: 0.55	552
	1/100								
		0s	1000us/step	) -	- accuracy:	0.4500	) -	loss:	0.6966
	2/100	0-	074/			0 4000		1	0 (031
	3/100	62	6/4uS/Step	-	accuracy.	0.4000	-	1055.	0.0931
		0s	901us/step	_	accuracv:	0.5065	_	loss:	0.6929
	4/100		, ,		,				
16/16		0s	800us/step	-	accuracy:	0.5084	-	loss:	0.6947
Epoch	5/100								
		0s	895us/step	-	accuracy:	0.5864	-	loss:	0.6919
	6/100	<b>~</b> :-	024			0 4566		1	0. 6000
	7/100	ØS	834us/step	-	accuracy:	0.4566	-	TO22:	u.6992
•		95	800us/step	_	accuracy:	0.4973	_	1055.	0.6956
	8/100	-5	20003/3CEP		accui ucy.	5,45/5			2.0230
		0s	867us/step	_	accuracy:	0.4492	-	loss:	0.6990
	9/100		•		•				
		0s	804us/step	-	accuracy:	0.5312	-	loss:	0.6957
	10/100	_						_	
16/16		0s	734us/step	_	accuracy:	0.5387	-	Toss:	0.6947

Epoch	11/100								
•		0s	867us/step	-	accuracy:	0.5210	-	loss:	0.6912
•	12/100								
		0s	835us/step	-	accuracy:	0.5506	-	loss:	0.6947
	13/100	0-	722/			0 5002		1	0.6040
	14/100	05	/33us/step	-	accuracy:	0.5092	-	1055:	0.6940
•		05	800us/step	_	accuracy:	0.5376	_	loss:	0.6946
=	15/100		оссия, в сер			0.007.0			0.02.0
16/16		0s	800us/step	-	accuracy:	0.5761	-	loss:	0.6911
•	16/100								
16/16		0s	667us/step	-	accuracy:	0.5932	-	loss:	0.6915
•	17/100	0.0	72245/5+00		2661182614	0 5204		10001	0 6050
	18/100	05	733us/step	_	accuracy.	0.5294	-	1055.	0.0930
•		0s	801us/step	_	accuracy:	0.6131	_	loss:	0.6901
	19/100								
		0s	733us/step	-	accuracy:	0.5101	-	loss:	0.6957
	20/100		000 / /					,	0.6040
	21/100	0s	800us/step	-	accuracy:	0.53/8	-	loss:	0.6948
		05	800us/sten	_	accuracy:	0.6050	_	loss:	0.6879
	22/100	05	оооиз, эсер		accar acy.	0.0050		1033.	0.0075
16/16		0s	1ms/step -	a	ccuracy: 0	.5314 -	10	oss: 0	6949
•	23/100								
		0s	1ms/step -	a	ccuracy: 0	.6149 -	10	oss: 0.	6906
•	24/100	۵c	1ms/step -	21	ccuracy: 0	5986 -	16	ncc. 0	6923
	25/100	03	тшэ/ эсср	u	cearacy. o	. 5500	10	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	.0025
		0s	733us/step	-	accuracy:	0.5289	-	loss:	0.6951
	26/100								
		0s	733us/step	-	accuracy:	0.5720	-	loss:	0.6930
•	27/100	05	667us/step	_	accuracy:	0.6108	_	loss:	0.6906
	28/100				,				
16/16		0s	735us/step	-	accuracy:	0.5862	-	loss:	0.6926
•	29/100		==== / .					-	
	30/100	0s	733us/step	-	accuracy:	0.5222	-	loss:	0.6965
•		0s	868us/step	_	accuracv:	0.6139	_	loss:	0.6921
-	31/100		, ,		,				
		0s	734us/step	-	accuracy:	0.6186	-	loss:	0.6895
•	32/100	0 -	000 / 1			0 5000		,	0.6040
	33/100	65	802us/step	-	accuracy:	0.5289	-	1055:	0.6948
		0s	667us/step	_	accuracy:	0.5708	_	loss:	0.6928
Epoch	34/100		·		-				
		0s	736us/step	-	accuracy:	0.6274	-	loss:	0.6894
	35/100	0.0	100005/5+0		2664122644	. 0 571	1	1000	0 (025
	36/100	65	1000us/step	- ر	- accuracy:	: 0.5/12	+ -	- 1055	0.6935
•		0s	1ms/step -	ac	ccuracy: 0	.5865 -	10	oss: 0.	6905
	37/100								
		0s	1ms/step -	a	ccuracy: 0	.5813 -	10	oss: 0	6921
•	38/100	0-	722/-+			0 6174		1	0 6001
	39/100	65	733us/step	-	accuracy:	0.6174	-	1055:	0.6901
•		0s	799us/step	_	accuracy:	0.5736	_	loss:	0.6945
Epoch	40/100		•		,				
		0s	750us/step	-	accuracy:	0.5621	-	loss:	0.6933
	41/100	0-	900us /=+=-		2001125	0 5027		1055	0 (013
16/16		US	800us/step	-	accuracy:	0.5837	-	TOSS:	0.6913

Epoch	42/100								
16/16		0s	801us/step	-	accuracy:	0.5732	-	loss:	0.6922
•	43/100	_						_	
		0s	667us/step	-	accuracy:	0.5737	-	loss:	0.6922
	44/100	05	800us/sten	_	accuracy:	0.6450	_	loss:	0.6916
	45/100	05	оооиз, эсср		acca, acy.	0.0.50		1033.	0.0310
16/16		0s	867us/step	-	accuracy:	0.5915	-	loss:	0.6898
	46/100	_	/ .						
•	47/100	0s	802us/step	-	accuracy:	0.5997	-	loss:	0.6928
		0s	667us/step	_	accuracv:	0.5252	_	loss:	0.6974
	48/100		, ,		,				
		0s	667us/step	-	accuracy:	0.6009	-	loss:	0.6926
	49/100	00	CCQue/ston		2661182614	0 5271		10001	0 (06)
	50/100	62	668us/step	-	accuracy.	0.55/1	-	1055.	0.0902
		0s	733us/step	-	accuracy:	0.5678	-	loss:	0.6952
	51/100								
		0s	667us/step	-	accuracy:	0.6798	-	loss:	0.6850
	52/100	05	674us/sten	_	accuracy:	0.5611	_	loss:	0.6960
Epoch	53/100				_				
		0s	634us/step	-	accuracy:	0.6180	-	loss:	0.6909
	54/100	00	800us/step		2661182611	0 5220		10551	0 6057
	55/100	62	ooous/step	-	accuracy.	0.3230	-	1055.	0.0937
		0s	668us/step	-	accuracy:	0.5902	-	loss:	0.6926
	56/100	_	=26 / 1			0 5440		-	0 6057
	57/100	0s	736us/step	-	accuracy:	0.5119	-	loss:	0.6957
		0s	733us/step	_	accuracy:	0.6219	_	loss:	0.6904
	58/100								
	59/100	0s	801us/step	-	accuracy:	0.6263	-	loss:	0.6936
		0s	734us/step	_	accuracv:	0.6175	_	loss:	0.6929
	60/100		•		,				
		0s	734us/step	-	accuracy:	0.6047	-	loss:	0.6924
•	61/100	95	733us/step	_	accuracy:	0 6359	_	1055.	0 6910
	62/100		, , , , , , , , , , , , , , , , , , , ,		acca. acy t	010000			0,002
		0s	667us/step	-	accuracy:	0.6114	-	loss:	0.6924
•	63/100	Q.c	600us/step		accunacy:	0 6426		10551	0 6014
	64/100	03	000us/step	_	accur acy.	0.0420	_	1033.	0.0914
		0s	735us/step	-	accuracy:	0.6497	-	loss:	0.6911
	65/100	0 -	500 / 1			0 5470		,	0.6064
	66/100	0S	600us/step	-	accuracy:	0.54/8	-	loss:	0.6961
		0s	668us/step	_	accuracy:	0.5724	_	loss:	0.6940
•	67/100								
		0s	703us/step	-	accuracy:	0.5447	-	loss:	0.6970
	68/100	0s	666us/step	_	accuracv:	0.5309	_	loss:	0.6932
Epoch	69/100	-	-,		·			1	
		0s	733us/step	-	accuracy:	0.6544	-	loss:	0.6892
	70/100	۵c	802us/step	_	accuracy:	0 6776	_	10551	0 6803
	71/100	U3	502u3/3tep	_	accui acy.	0.0770	-	1033.	0.0095
16/16		0s	801us/step	-	accuracy:	0.6925	-	loss:	0.6884
	72/100	0 -	722 /			0 5442		1	0.6063
16/16		ØS	733us/step	-	accuracy:	o.5443	-	TOSS:	0.6963

Epoch	73/100	
		<b>- 0s</b> 800us/step - accuracy: 0.5915 - loss: 0.6937
•	74/100	0. 734/
	75/100	<b>- 0s</b> 734us/step - accuracy: 0.6643 - loss: 0.6899
	737 100	<b>- 0s</b> 2ms/step - accuracy: 0.6591 - loss: 0.6882
Epoch	76/100	
		<b>- 0s</b> 1ms/step - accuracy: 0.5839 - loss: 0.6934
•	77/100	<b>- 0s</b> 1ms/step - accuracy: 0.6593 - loss: 0.6896
-	78/100	- <b>05</b> Ims/step - accuracy. 0.0393 - 1055. 0.0090
•		<b>- 0s</b> 1ms/step - accuracy: 0.6476 - loss: 0.6905
	79/100	
16/16		<b>- 0s</b> 999us/step - accuracy: 0.6139 - loss: 0.6936
•	80/100	<b>- 0s</b> 866us/step - accuracy: 0.6756 - loss: 0.6898
	81/100	05 000us, seep accuracy. 0.0,50 1055. 0.0050
16/16		<b>- 0s</b> 901us/step - accuracy: 0.6380 - loss: 0.6905
•	82/100	
	83/100	<b>- 0s</b> 733us/step - accuracy: 0.6578 - loss: 0.6899
•		<b>- 0s</b> 667us/step - accuracy: 0.6226 - loss: 0.6921
	84/100	
		<b>- 0s</b> 802us/step - accuracy: 0.6372 - loss: 0.6928
•	85/100 	<b>- 0s</b> 799us/step - accuracy: 0.6314 - loss: 0.6890
-	86/100	05 / 35 d 3 / 3 c c p
16/16		<b>- 0s</b> 733us/step - accuracy: 0.5669 - loss: 0.6944
	87/100	- <b>0s</b> 800us/step - accuracy: 0.6201 - loss: 0.6921
	88/100	- <b>05</b> 800005/Step - accuracy. 0.0201 - 1055. 0.0921
		<b>- 0s</b> 800us/step - accuracy: 0.6191 - loss: 0.6904
-	89/100	
=	90/100	<b>- 0s</b> 733us/step - accuracy: 0.6179 - loss: 0.6932
•		<b>- 0s</b> 735us/step - accuracy: 0.6111 - loss: 0.6937
	91/100	
-	92/100	<b>- 0s</b> 813us/step - accuracy: 0.6125 - loss: 0.6936
•		<b>- 0s</b> 668us/step - accuracy: 0.6730 - loss: 0.6876
	93/100	
=	0.4./4.00	<b>- 0s</b> 733us/step - accuracy: 0.6414 - loss: 0.6908
	94/100	<b>- 0s</b> 737us/step - accuracy: 0.6692 - loss: 0.6900
	95/100	03 /3/us/seep accuracy. 0.0032 1033. 0.0300
		<b>- 0s</b> 733us/step - accuracy: 0.5808 - loss: 0.6927
	96/100	- 00 ((7)) (ston
	97/100	<b>- 0s</b> 667us/step - accuracy: 0.6363 - loss: 0.6884
		<b>- 0s</b> 667us/step - accuracy: 0.5856 - loss: 0.6955
•	98/100	_
		<b>- 0s</b> 667us/step - accuracy: 0.5898 - loss: 0.6934
•	99/100	- <b>0s</b> 802us/step - accuracy: 0.6183 - loss: 0.6898
Epoch	100/100	, , , , , , , , , , , , , , , , , , , ,
16/16		- <b>0s</b> 667us/step - accuracy: 0.6830 - loss: 0.6854
	1/100	<b>0s</b> 1ms/step - accuracy: 0.6431 - loss: 0.6885
		<b>- 0s</b> 933us/step - accuracy: 0.5296 - loss: 0.7172
Epoch	2/100	•
	2/100	<b>- 0s</b> 873us/step - accuracy: 0.5629 - loss: 0.6843
Epoch	3/100	

16/16		0s	901us/step	_	accuracy:	0.5186	-	loss:	0.7168
	4/100		,		,				
16/16		0s	800us/step	-	accuracy:	0.5447	-	loss:	0.7132
	5/100								
		0s	870us/step	-	accuracy:	0.4770	-	loss:	0.7456
Epoch	6/100	_						_	
		0s	770us/step	-	accuracy:	0.5200	-	loss:	0.7175
	7/100	•	660 / 1			0 5540		,	0 6025
	8/100	05	668us/step	-	accuracy:	0.5549	-	1055:	0.6935
		۵c	800us/step		accupacy.	0 5203	_	1000	0 7082
	9/100	03	86603/3CEP	_	accuracy.	0.5295	_	1033.	0.7002
•		0s	734us/step	_	accuracv:	0.5272	_	loss:	0.6977
	10/100		то тако, о сор						
		0s	2ms/step -	ac	curacy: 0	5169 -	10	ss: 0.	7003
Epoch	11/100				-				
16/16		0s	1ms/step -	ac	ccuracy: 0	.5098 -	10	ss: 0.	6995
	12/100								
		0s	1ms/step -	ac	ccuracy: 0	.5350 -	10	ss: 0.	6968
	13/100	0 -	067 / 1			0 5060		,	0 7000
	14/100	05	867us/step	-	accuracy:	0.5262	-	1055:	0.7008
16/16		۵s	666us/step	_	accuracy.	0 6346	_	1055.	0 6626
	15/100	03	оооиз, эсср		accuracy.	0.0540		1033.	0.0020
		0s	701us/step	_	accuracy:	0.5471	_	loss:	0.6950
	16/100				,				
16/16		0s	667us/step	-	accuracy:	0.6373	-	loss:	0.6741
•	17/100								
		0s	800us/step	-	accuracy:	0.5677	-	loss:	0.6860
	18/100	_						_	
		0s	733us/step	-	accuracy:	0.5635	-	loss:	0.6919
•	19/100	Q.c	667us/step		accupacy:	0 6624		1000	0 6634
	20/100	62	00/us/scep	_	accuracy.	0.0024	-	1055.	0.0034
•		0s	600us/step	_	accuracv:	0.5880	_	loss:	0.6874
	21/100		, , , , , , , , , , , , , , , , , , ,						
16/16		0s	667us/step	-	accuracy:	0.5844	-	loss:	0.6836
Epoch	22/100								
		0s	739us/step	-	accuracy:	0.6528	-	loss:	0.6657
	23/100	_						_	
		0s	667us/step	-	accuracy:	0.6408	-	loss:	0.6673
•	24/100	0.0	900us /stan		2661182614	0 5003		10001	0 (70)
	25/100	62	800us/step	-	accuracy.	0.3003	-	1055.	0.0762
		0s	734us/step	_	accuracv:	0.6266	_	loss:	0.6663
	26/100		то тако, о сор						
		0s	934us/step	-	accuracy:	0.6285	-	loss:	0.6745
	27/100								
		0s	1000us/step	) -	- accuracy	0.7213	3 -	loss:	0.6529
•	28/100	_						_	
		0s	735us/step	-	accuracy:	0.6758	-	loss:	0.6668
•	29/100	Q.c	733us/step		accupacy:	0 6100		1000	0 6750
	30/100	03	/33us/scep	_	accuracy.	0.0199	_	1033.	0.0755
•		0s	667us/step	_	accuracv:	0.5750	_	loss:	0.6848
	31/100	-	-,P		·				- · <del>-</del>
•		0s	667us/step	-	accuracy:	0.6801	-	loss:	0.6519
•	32/100								
		0s	733us/step	-	accuracy:	0.6169	-	loss:	0.6778
	33/100	_				0 ====		,	0 5==5
		ØS	668us/step	-	accuracy:	0.5868	-	TOSS:	0.6758
∟pocn	34/100								

16/16		0s	668us/step	_	accuracv:	0.6210	_	loss:	0.6622
	35/100		, , , , , , , , ,						
		0s	634us/step	-	accuracy:	0.6463	-	loss:	0.6658
	36/100	_						,	0 6675
	37/100	0S	667us/step	-	accuracy:	0.6/03	-	loss:	0.66/5
•		0s	667us/step	_	accuracv:	0.6535	_	loss:	0.6545
	38/100								
16/16		0s	704us/step	-	accuracy:	0.6501	-	loss:	0.6511
•	39/100	_	6 <b>7</b> 0 / 1			0.6647			0 (530
	40/100	0S	670us/step	-	accuracy:	0.6647	-	loss:	0.6530
•		0s	689us/step	_	accuracy:	0.6413	_	loss:	0.6529
Epoch	41/100		·		-				
		0s	667us/step	-	accuracy:	0.6669	-	loss:	0.6488
•	42/100	ac.	673us/step		accunacy:	0 5750		1000	0 6662
	43/100	63	0/3us/step	-	accuracy.	0.3739	-	1055.	0.0002
		0s	667us/step	-	accuracy:	0.6430	-	loss:	0.6563
Epoch	44/100							_	
	45/100	0s	733us/step	-	accuracy:	0.5890	-	loss:	0.6580
		0s	735us/step	_	accuracv:	0.6272	_	loss:	0.6608
	46/100				, , ,				
16/16		0s	901us/step	-	accuracy:	0.6260	-	loss:	0.6521
•	47/100	0-	067/atam			0 6466		1	0 6470
	48/100	05	867us/step	-	accuracy:	0.0400	-	1022:	0.04/8
•		0s	800us/step	-	accuracy:	0.6446	-	loss:	0.6413
•	49/100								
		0s	667us/step	-	accuracy:	0.6750	-	loss:	0.6497
•	50/100	۵s	733us/step	_	accuracy:	0 6837	_	1055.	0 6445
	51/100	03	7334373669		accur acy.	0.0037		1033.	0.0443
16/16		0s	667us/step	-	accuracy:	0.6127	-	loss:	0.6503
•	52/100	_	000 / /			0 6504		-	0.6455
16/16 Enoch	53/100	0S	800us/step	-	accuracy:	0.6581	-	loss:	0.6455
		0s	800us/step	_	accuracy:	0.6593	_	loss:	0.6390
Epoch	54/100				,				
		0s	667us/step	-	accuracy:	0.6663	-	loss:	0.6396
•	55/100 ———————————————————————————————————	۵c	800us /stan		accuracy:	0 6684	_	1000	0 6320
	56/100	03	000из/ 3 сер		accuracy.	0.0004		1033.	0.0323
		0s	800us/step	-	accuracy:	0.6635	-	loss:	0.6428
	57/100	_							
	58/100	0s	667us/step	-	accuracy:	0.6756	-	loss:	0.6316
•		0s	800us/step	_	accuracy:	0.6799	_	loss:	0.6244
	59/100								
		0s	733us/step	-	accuracy:	0.6938	-	loss:	0.6244
	60/100	00	02245/5+00		2661102611	0 7061		10551	0 6224
	61/100	05	933us/step	-	accuracy.	0.7001	-	1055.	0.0334
•		0s	800us/step	-	accuracy:	0.6739	-	loss:	0.6344
•	62/100		•		-				
		0s	667us/step	-	accuracy:	0.7591	-	loss:	0.6166
	63/100	05	668us/sten	_	accuracy.	0.7361	_	1055:	0.6146
Epoch	64/100				_				
		0s	667us/step	-	accuracy:	0.6961	-	loss:	0.6303
Epoch	65/100								

16/16		05	634us/step	_	accuracy:	0.7824	_	loss:	0.6018
	66/100	0.5	03.03, 300		accar acy.	0.,02.		1033.	0.0020
		0s	800us/step	-	accuracy:	0.7904	-	loss:	0.6039
	67/100								
		0s	868us/step	-	accuracy:	0.7996	-	loss:	0.6163
•	68/100	_						-	
		0s	767us/step	-	accuracy:	0.7794	-	loss:	0.6002
16/16	69/100	Q.c	2ms/step -	٦,	scupacy: A	7770	1,	occ. 0	E021
	70/100	03	21113/3CEP -	a	cui acy. o	. / / / 0 -	Τ.	J33. 0.	. 5551
•		0s	1ms/step -	a	ccuracy: 0	.7801 -	10	oss: 0.	5938
Epoch	71/100								
16/16		0s	867us/step	-	accuracy:	0.7839	-	loss:	0.5911
•	72/100							_	
		0s	867us/step	-	accuracy:	0.7754	-	loss:	0.5921
•	73/100	۵c	600us/step	_	accuracy:	0 9015	_	1000	0 5057
	74/100	03	000из/зсер		accuracy.	0.0015		1033.	0.3337
		0s	868us/step	_	accuracy:	0.8319	_	loss:	0.5777
Epoch	75/100		•		-				
		0s	667us/step	-	accuracy:	0.8040	-	loss:	0.5846
•	76/100	_	/ /						
		0s	800us/step	-	accuracy:	0.8085	-	loss:	0.5617
•	77/100	۵s	667us/step	_	accuracy:	0 8179	_	1055.	a 5672
	78/100	03	007и3/3сср		accuracy.	0.01/5		1033.	0.3072
•		0s	734us/step	-	accuracy:	0.8696	-	loss:	0.5416
Epoch	79/100								
		0s	667us/step	-	accuracy:	0.8589	-	loss:	0.5406
•	80/100	0-	722/-+			0.7020		1	0 5642
	81/100	05	733us/step	-	accuracy:	0.7929	-	1055:	0.5642
		05	819us/step	_	accuracy:	0.8590	_	loss:	0.5361
	82/100		о от , от тор		,				
16/16		0s	701us/step	-	accuracy:	0.8000	-	loss:	0.5359
	83/100								
16/16		0s	801us/step	-	accuracy:	0.8574	-	loss:	0.5307
•	84/100	Q.c	733us/step		2661102614	0 0602		1000	0 50/1
	85/100	03	/33u3/3cep	_	accuracy.	0.8082	_	1033.	0.3041
•		0s	667us/step	_	accuracy:	0.8723	_	loss:	0.5084
•	86/100				-				
		0s	667us/step	-	accuracy:	0.8695	-	loss:	0.4932
Epoch	87/100 ————————	0-	667/-+			0.0104		1	0 4000
	88/100	05	667us/step	-	accuracy:	0.8124	-	1055:	0.4999
	00/100	0s	1ms/step -	a	ccuracv: 0	.7755 -	10	oss: 0.	5139
	89/100		о, с сор						
16/16		0s	867us/step	-	accuracy:	0.8648	-	loss:	0.4659
	90/100								
		0s	800us/step	-	accuracy:	0.8230	-	loss:	0.4892
	91/100	00	66745/5+00		2661102614	0 0526		10551	0 4472
	92/100	05	667us/step	-	accuracy:	0.8536	-	1022:	0.44/3
•		0s	735us/step	_	accuracy:	0.8461	_	loss:	0.4609
	93/100	-	, <b>r</b>		- , .				
		0s	811us/step	-	accuracy:	0.8429	-	loss:	0.4517
	94/100	_							
	05 /100	0s	674us/step	-	accuracy:	0.8777	-	loss:	0.4424
16/16	95/100	۵c	666115/stan	_	accuracy.	0 8762	_	10551	0 4452
	96/100	03	σοσασ/ στερ	-	accuracy:	0.0/02	-	1022.	U.44JZ
-50011	/ =								

16/16		0s	603us/step	-	accuracy:	0.8370	-	loss:	0.4489
Epoch	97/100		·		•				
16/16		0s	667us/step	-	accuracy:	0.8323	-	loss:	0.4418
	98/100								
		0s	669us/step	-	accuracy:	0.8565	-	loss:	0.4372
Epocn	99/100	00	667us/step		26611026111	0 05/7		10001	0 4270
	100/100	03	00/us/scep	-	accuracy.	0.0347	_	1055.	0.4270
•		0s	671us/step	_	accuracy:	0.8368	_	loss:	0.4073
			ms/step - ac						
	1/100								
16/16		0s	934us/step	-	accuracy:	0.4823	-	loss:	0.7154
	2/100	•	000 / 1			0 5000		,	0 7400
	3/100	US	803us/step	-	accuracy:	0.5203	-	TOSS:	0.7108
		as	1ms/step -	a	ccuracy: 0	6060 -	10	155. U	6827
	4/100	03	111137 3 CCP	u	cearacy. or	.0000		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	10027
		0s	738us/step	-	accuracy:	0.6038	_	loss:	0.6823
Epoch	5/100								
		0s	800us/step	-	accuracy:	0.5974	-	loss:	0.6886
	6/100	•	000 / 1			0 6303		,	0.6606
	7/100	US	828us/step	-	accuracy:	0.6303	-	TOSS:	0.6686
		05	733us/step	_	accuracy:	0.5971	_	loss:	0.6868
	8/100		, за из, в сер			0,007,2			
		0s	799us/step	-	accuracy:	0.5901	-	loss:	0.6794
	9/100								
16/16		0s	2ms/step -	a	ccuracy: 0.	.6380 -	10	oss: 0	.6740
	10/100	0-	1			6745	٦.	0	6622
	11/100	05	1ms/step -	a	ccuracy: 0.	.6/15 -	TC	055: 0	.6622
•		05	1ms/step -	a	ccuracy: 0.	.6775 -	10	oss: 0.	.6545
	12/100		5, 5 ccp	-					
16/16		0s	871us/step	-	accuracy:	0.6060	-	loss:	0.6760
	13/100								
		0s	671us/step	-	accuracy:	0.6544	-	loss:	0.6569
•	14/100	00	747us/step		2661102611	0 6264		10001	0 6667
	15/100	03	747us/scep	-	accuracy.	0.0204	_	1055.	0.0007
		0s	739us/step	_	accuracy:	0.7283	_	loss:	0.6336
Epoch	16/100				-				
		0s	742us/step	-	accuracy:	0.6837	-	loss:	0.6403
	17/100	0 -	000 / 1			0.7500		,	0 (110
	18/100	US	800us/step	-	accuracy:	0.7520	-	TOSS:	0.6119
	18/ 100	05	742us/sten	_	accuracy:	0.6697	_	loss:	0.6480
	19/100		,						
16/16		0s	934us/step	-	accuracy:	0.6741	-	loss:	0.6493
	20/100								
		0s	669us/step	-	accuracy:	0.6378	-	loss:	0.6496
•	21/100	0.0	70645/5+00		2661102614	0 (522		10001	0 (550
	22/100	05	796us/step	-	accuracy:	0.0522	-	1022:	0.0558
		0s	741us/step	_	accuracv:	0.6935	_	loss:	0.6322
	23/100	_	, <b>r</b>		- , .				
		0s	868us/step	-	accuracy:	0.6935	-	loss:	0.6265
	24/100							_	
		0s	673us/step	-	accuracy:	0.7017	-	loss:	0.6324
	25/100 	Q.	733us/step	_	accunacy:	0 7102	_	10551	0 6157
	26/100	03	, , , , α α γ α ι ε ρ	_	accuracy.	0./132	_	1022.	0.013/
		0s	667us/step	_	accuracy:	0.7111	_	loss:	0.6167
		_	,r		- , ,			-	

Epoch	27/100								
		0s	667us/step	-	accuracy:	0.6833	-	loss:	0.6316
	28/100								
		0s	950us/step	-	accuracy:	0.6995	-	loss:	0.6196
	29/100	0-	672			0.6636		1	0 (262
	30/100	05	6/3us/step	_	accuracy:	0.6636	-	1055:	0.6362
		0s	667us/step	_	accuracv:	0.6728	_	loss:	0.6206
	31/100		от по, о сор		,				
16/16		0s	852us/step	-	accuracy:	0.7160	-	loss:	0.6174
	32/100								
		0s	798us/step	-	accuracy:	0.6522	-	loss:	0.6403
	33/100	Q.c	02645/5+00		accupacy:	0 7240		1000	0 6020
	34/100	03	930u3/3cep	_	accuracy.	0.7549	_	1033.	0.0033
		0s	918us/step	_	accuracy:	0.7245	_	loss:	0.6087
Epoch	35/100				-				
		0s	734us/step	-	accuracy:	0.6993	-	loss:	0.6174
	36/100	0 -	067 / 1			0 6674		,	0 6301
	37/100	ØS	86/us/step	-	accuracy:	0.66/1	-	TOSS:	0.6301
		0s	803us/step	_	accuracy:	0.7328	_	loss:	0.6097
Epoch	38/100				-				
		0s	797us/step	-	accuracy:	0.6239	-	loss:	0.6414
	39/100	0-	000/-+			0 6000		1	0 6104
	40/100	05	800us/step	_	accuracy:	0.6890	-	1055:	0.6184
-		0s	802us/step	_	accuracy:	0.6742	_	loss:	0.6419
Epoch	41/100								
		0s	807us/step	-	accuracy:	0.7364	-	loss:	0.6008
	42/100	00	201		2661182614	0 7162		10001	0 6074
	43/100	62	801us/step	_	accuracy.	0.7103	-	1055.	0.0074
		0s	879us/step	_	accuracy:	0.7083	_	loss:	0.6053
Epoch	44/100								
	45 (400	0s	666us/step	-	accuracy:	0.7218	-	loss:	0.6031
•	45/100 	۵c	666us/step		accuracy.	0 7267	_	1000	0 5886
	46/100	03	оооиз, эсср		accui acy.	0.7207		1033.	0.3000
16/16		0s	674us/step	-	accuracy:	0.7062	-	loss:	0.6083
	47/100	_						_	
	48/100	0s	781us/step	-	accuracy:	0.7305	-	loss:	0.6006
-		0s	667us/step	_	accuracv:	0.6343	_	loss:	0.6296
	49/100		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		, , , , , , , , , , , , , , , , , , ,				
		0s	665us/step	-	accuracy:	0.7415	-	loss:	0.5828
	50/100	0-	C12 / - +			0 6061		1	0 6202
	51/100	05	612us/step	-	accuracy:	0.6961	-	1055:	0.6202
		0s	672us/step	_	accuracy:	0.7243	_	loss:	0.5922
	52/100		•						
		0s	607us/step	-	accuracy:	0.6436	-	loss:	0.6238
	53/100	0-				0 6050		1	0 6077
	54/100	05	666us/step	-	accuracy:	0.6950	-	1055:	0.60//
-		0s	542us/step	_	accuracy:	0.6552	_	loss:	0.6339
Epoch	55/100		•		,				
		0s	740us/step	-	accuracy:	0.7139	-	loss:	0.6114
	56/100	00	807us/step		accunacu	0 7105		10001	0 5054
	57/100	<del>0</del> 5	ου/μο/οιερ	-	accuracy:	0./103	-	TO22.	0.3334
	37,7 100	0s	734us/step	-	accuracy:	0.6945	-	loss:	0.6035
			,		-				

Epoch	58/100		
		0s	730us/step - accuracy: 0.6950 - loss: 0.6098
	59/100		
		0s	671us/step - accuracy: 0.7211 - loss: 0.5950
	60/100	۵c	717us/step - accuracy: 0.7148 - loss: 0.5870
-	61/100	03	71743/3ccp accuracy: 0.7140 1033. 0.3070
		0s	694us/step - accuracy: 0.6954 - loss: 0.5915
	62/100		·
-		0s	693us/step - accuracy: 0.6847 - loss: 0.5969
	63/100	_	
-		0s	688us/step - accuracy: 0.6983 - loss: 0.5870
	64/100	۵s	673us/step - accuracy: 0.7125 - loss: 0.5788
	65/100	03	075u3/3ccp uccuracy: 0.7123 1033. 0.5700
		0s	733us/step - accuracy: 0.7159 - loss: 0.5754
	66/100		
-		0s	671us/step - accuracy: 0.6830 - loss: 0.5976
	67/100	0-	762/
	68/100	05	762us/step - accuracy: 0.6880 - loss: 0.5996
		0s	901us/step - accuracy: 0.6599 - loss: 0.6208
	69/100		, ,
16/16		0s	1000us/step - accuracy: 0.7066 - loss: 0.5913
	70/100		
-		0s	1ms/step - accuracy: 0.5869 - loss: 0.6482
	71/100	۵c	1ms/step - accuracy: 0.6852 - loss: 0.5824
	72/100	03	Ims/seep - accuracy. 0.0032 - 1033. 0.3024
•		0s	1000us/step - accuracy: 0.6926 - loss: 0.5953
	73/100		
		0s	1ms/step - accuracy: 0.7681 - loss: 0.5511
	74/100	0.0	939us /ston 20000000
-	75/100	05	828us/step - accuracy: 0.7154 - loss: 0.5599
		0s	727us/step - accuracy: 0.7268 - loss: 0.5667
	76/100		
		0s	735us/step - accuracy: 0.7051 - loss: 0.5829
•	77/100	_	
-	78/100	0s	670us/step - accuracy: 0.6757 - loss: 0.6008
•		0s	672us/step - accuracy: 0.7414 - loss: 0.5564
	79/100		,,,
16/16		0s	696us/step - accuracy: 0.6890 - loss: 0.6012
	80/100		
		0s	665us/step - accuracy: 0.6720 - loss: 0.6060
	81/100	95	748us/step - accuracy: 0.6957 - loss: 0.6003
	82/100	03	74003/300p accuracy: 0.0337 1033. 0.0003
		0s	666us/step - accuracy: 0.6902 - loss: 0.5682
	83/100		
		0s	715us/step - accuracy: 0.7022 - loss: 0.5882
	84/100	۵c	743us/step - accuracy: 0.6753 - loss: 0.5901
	85/100	<i>U</i> 3	, -303, 3ccp acculacy. 0.0/33 - 1033. 0.3301
•		0s	668us/step - accuracy: 0.7056 - loss: 0.5696
	86/100		
		0s	675us/step - accuracy: 0.6543 - loss: 0.6041
•	87/100	0-	692us /ston 200unagus & 7200 lagge & 5050
	88/100	<b>U</b> S	683us/step - accuracy: 0.7296 - loss: 0.5658
•	00/100	0s	666us/step - accuracy: 0.6418 - loss: 0.6147

Epoch	89/100								
16/16		0s	734us/step	-	accuracy:	0.7103	-	loss:	0.5862
	90/100	_							
	91/100	0s	653us/step	-	accuracy:	0.6914	-	loss:	0.6061
•		0s	732us/step	_	accuracv:	0.6906	_	loss:	0.5743
-	92/100		,		, , , , , , , , , , , , , , , , , , ,				
		0s	934us/step	-	accuracy:	0.6974	-	loss:	0.5757
	93/100	0 -	006 / 1			0 6004		,	0 5556
	94/100	05	806us/step	-	accuracy:	0.6991	-	1055:	0.5556
		0s	870us/step	_	accuracy:	0.6954	_	loss:	0.5873
	95/100		•						
		0s	734us/step	-	accuracy:	0.7347	-	loss:	0.5742
	96/100	۵c	808us/step	_	accuracy:	0 6378		1000	0 6010
	97/100	03	000us/step	_	accuracy.	0.0378	_	1033.	0.0049
		0s	799us/step	-	accuracy:	0.6579	-	loss:	0.6165
	98/100								
	99/100	0s	733us/step	-	accuracy:	0.6993	-	loss:	0.5889
		0s	667us/step	_	accuracv:	0.6799	_	loss:	0.5953
Epoch	100/100		·		-				
16/16					-				
		s 1n	ns/step - ac	CCL	uracy: 0.83	342 - 10	os:	s: 0.5 <sup>4</sup>	178
		0s	936us/step	_	accuracv:	0.5271	_	loss:	0.7070
	2/100								
	2 / 1 2 2	0s	784us/step	-	accuracy:	0.5000	-	loss:	0.7175
	3/100	۵c	800us/stan	_	accuracy:	0 1711		1000	0 7122
	4/100	03	000из/ 3 сер		accuracy.	0.4741		1033.	0.7122
		0s	800us/step	-	accuracy:	0.4960	-	loss:	0.7157
	5/100	0-	777/-+			0 5077		1	0.7003
Epoch		05	777us/step	-	accuracy:	0.50//	-	1055:	0.7003
16/16		0s	734us/step	-	accuracy:	0.5589	-	loss:	0.6838
	7/100								
16/16		0s	728us/step	-	accuracy:	0.5422	-	loss:	0.6951
16/16	8/100 	0s	674us/step	_	accuracv:	0.4569	_	loss:	0.7123
	9/100		, ,		,				
		0s	603us/step	-	accuracy:	0.5742	-	loss:	0.6870
	10/100	۵c	670us/step	_	accuracy:	0 5505	_	1000	a 6975
	11/100	03	070и3/3сср		accuracy.	0.5505		1033.	0.0575
		0s	669us/step	-	accuracy:	0.5356	-	loss:	0.6983
	12/100	0-	747/-+			0 5104		1	0.6053
	13/100	05	717us/step	-	accuracy:	0.5194	-	1055:	0.6953
		0s	660us/step	_	accuracy:	0.5972	_	loss:	0.6729
	14/100								
16/16		0s	737us/step	-	accuracy:	0.5282	-	loss:	0.6994
	15/100	05	609us/step	_	accuracv:	0.5024	_	loss:	0.7002
	16/100					<b></b> T			,
		0s	706us/step	-	accuracy:	0.6347	-	loss:	0.6623
•	17/100	00	800us /s+o>		accunacu	0 6045		10551	0 6746
	18/100	US	800us/step	-	accuracy:	0.0043	-	TO22.	0.0/40
16/16		0s	719us/step	-	accuracy:	0.5369	-	loss:	0.6913
Epoch	19/100								

Epoch   20/100	16/16		0s	775us/step	_	accuracv:	0.6099	_	loss:	0.6732
Epoch   21/100				,						
16/16			0s	865us/step	-	accuracy:	0.5266	-	loss:	0.6853
Epoch   22/100   6/16							0 5740		,	0 1000
16/16			ØS.	66/us/step	-	accuracy:	0.5/42	-	TOSS:	0.6828
Epoch   23/100	•		0s	1ms/step -	ac	curacv: 0	.5521 -	10	oss: 0	.6763
Epoch 24/100				, ,						
16/16			0s	866us/step	-	accuracy:	0.5608	-	loss:	0.6761
Epoch 25/100   16/16			0-	724/			0 5046		1	0 (502
16/16			65	/34us/step	-	accuracy:	0.5946	-	1055:	0.6583
16/16	•		0s	667us/step	_	accuracy:	0.5961	_	loss:	0.6684
Epoch 27/100 16/16	•									
16/16			0s	735us/step	-	accuracy:	0.5644	-	loss:	0.6780
Epoch 28/100 16/16	•		۵s	798115/sten	_	accuracy:	0 6118	_	1055.	0 6648
16/16	-		03	73003/3ccp		accuracy.	0.0110		1033.	0.0040
16/16			0s	741us/step	-	accuracy:	0.5876	-	loss:	0.6679
Epoch 30/100 16/16	Epoch	29/100	_							
16/16         — 85 666us/step - accuracy: 0.5966 - loss: 0.6612           Epoch 31/100         — 95 650us/step - accuracy: 0.5081 - loss: 0.6704           16/16         — 95 804us/step - accuracy: 0.6160 - loss: 0.6549           Epoch 33/100         — 95 699us/step - accuracy: 0.6091 - loss: 0.6473           Epoch 34/100         — 95 765us/step - accuracy: 0.5916 - loss: 0.6554           Epoch 35/100         — 95 667us/step - accuracy: 0.5916 - loss: 0.6479           Epoch 36/100         — 95 666us/step - accuracy: 0.5747 - loss: 0.6571           Epoch 37/100         — 95 668us/step - accuracy: 0.5747 - loss: 0.6571           Epoch 38/100         — 95 668us/step - accuracy: 0.5949 - loss: 0.6528           Epoch 39/100         — 95 668us/step - accuracy: 0.5949 - loss: 0.6528           Epoch 39/100         — 95 668us/step - accuracy: 0.5705 - loss: 0.6597           Epoch 40/100         — 95 667us/step - accuracy: 0.5705 - loss: 0.6597           Epoch 41/100         — 95 668us/step - accuracy: 0.5705 - loss: 0.6597           Epoch 41/100         — 95 673us/step - accuracy: 0.5999 - loss: 0.6558           Epoch 42/100         — 95 666us/step - accuracy: 0.5999 - loss: 0.6581           Epoch 44/100         — 95 668us/step - accuracy: 0.6542 - loss: 0.6592           Epoch 45/100         — 95 668us/step - accuracy: 0.6542 - loss: 0.6592           Epoch 46/100         — 95 668us/step - accuracy: 0.6383			0s	691us/step	-	accuracy:	0.6034	-	loss:	0.6544
Epoch 31/100 16/16	•		0s	666us/step	_	accuracy:	0.5966	_	loss:	0.6612
Epoch 32/100 16/16	•	31/100				,				
16/16			0s	650us/step	-	accuracy:	0.5081	-	loss:	0.6704
Epoch 33/100  16/16			۵s	804us/sten	_	accuracy:	0 6160	_	1055.	0 6549
Epoch 34/100  16/16			03	00-из/ эсср		accur acy.	0.0100		1033.	0.0545
16/16			0s	699us/step	-	accuracy:	0.6091	-	loss:	0.6473
Epoch 35/100  16/16	•		0-	765/-+			0 5016		1	0 6554
16/16			05	765us/step	-	accuracy:	0.5916	-	1055:	0.6554
16/16	•		0s	667us/step	-	accuracy:	0.6322	-	loss:	0.6479
Epoch 37/100  16/16										
16/16			0s	666us/step	-	accuracy:	0.5747	-	loss:	0.6571
Epoch 38/100  16/16	•		0s	668us/step	_	accuracv:	0.5949	_	loss:	0.6433
Epoch   39/100   16/16				, ,						
16/16	-		0s	667us/step	-	accuracy:	0.6260	-	loss:	0.6528
Epoch 40/100  16/16	•		۵c	668us /stan	_	accuracy:	0 5705	_	1000	0 6507
16/16       0s 667us/step - accuracy: 0.5830 - loss: 0.6551         Epoch 41/100       0s 673us/step - accuracy: 0.5999 - loss: 0.6526         Epoch 42/100       0s 787us/step - accuracy: 0.5909 - loss: 0.6548         Epoch 43/100       0s 666us/step - accuracy: 0.5928 - loss: 0.6581         Epoch 44/100       0s 673us/step - accuracy: 0.6542 - loss: 0.6581         Epoch 45/100       0s 644us/step - accuracy: 0.6542 - loss: 0.6592         Epoch 46/100       0s 668us/step - accuracy: 0.6257 - loss: 0.6387         Epoch 47/100       0s 735us/step - accuracy: 0.6834 - loss: 0.6344         Epoch 48/100       0s 734us/step - accuracy: 0.6383 - loss: 0.6483         Epoch 49/100       0s 668us/step - accuracy: 0.6470 - loss: 0.6483			03	000из/ з сер		accuracy.	0.5705		1033.	0.0337
16/16	•		0s	667us/step	-	accuracy:	0.5830	-	loss:	0.6551
Epoch 42/100  16/16	Epoch	41/100	0 -	672 / 1			0 5000		,	0 (52)
16/16       0s 787us/step - accuracy: 0.5909 - loss: 0.6548         Epoch 43/100       0s 666us/step - accuracy: 0.5928 - loss: 0.6581         Epoch 44/100       0s 673us/step - accuracy: 0.6542 - loss: 0.6502         Epoch 45/100       0s 644us/step - accuracy: 0.6116 - loss: 0.6454         Epoch 46/100       0s 668us/step - accuracy: 0.6257 - loss: 0.6387         Epoch 47/100       0s 735us/step - accuracy: 0.6834 - loss: 0.6344         Epoch 48/100       0s 734us/step - accuracy: 0.6383 - loss: 0.6483         Epoch 49/100       0s 668us/step - accuracy: 0.6470 - loss: 0.6463			05	6/3us/step	-	accuracy:	0.5999	-	1055:	0.6526
16/16       0s 666us/step - accuracy: 0.5928 - loss: 0.6581         Epoch 44/100       0s 673us/step - accuracy: 0.6542 - loss: 0.6502         Epoch 45/100       0s 644us/step - accuracy: 0.6116 - loss: 0.6454         Epoch 46/100       0s 668us/step - accuracy: 0.6257 - loss: 0.6387         Epoch 47/100       0s 735us/step - accuracy: 0.6834 - loss: 0.6344         Epoch 48/100       0s 734us/step - accuracy: 0.6383 - loss: 0.6483         Epoch 49/100       0s 668us/step - accuracy: 0.6470 - loss: 0.6463			0s	787us/step	-	accuracy:	0.5909	-	loss:	0.6548
Epoch 44/100  16/16	•									
16/16       0s 673us/step - accuracy: 0.6542 - loss: 0.6502         Epoch 45/100       0s 644us/step - accuracy: 0.6116 - loss: 0.6454         Epoch 46/100       0s 668us/step - accuracy: 0.6257 - loss: 0.6387         Epoch 47/100       0s 735us/step - accuracy: 0.6834 - loss: 0.6344         Epoch 48/100       0s 734us/step - accuracy: 0.6383 - loss: 0.6483         Epoch 49/100       0s 668us/step - accuracy: 0.6470 - loss: 0.6463			0s	666us/step	-	accuracy:	0.5928	-	loss:	0.6581
Epoch 45/100  16/16	•		05	673us/sten	_	accuracy:	0.6542	_	loss:	0.6502
Epoch 46/100  16/16				o. 5 a.5, 5 ccp		acca. acy t				0.000
16/16       0s 668us/step - accuracy: 0.6257 - loss: 0.6387         Epoch 47/100       0s 735us/step - accuracy: 0.6834 - loss: 0.6344         Epoch 48/100       0s 734us/step - accuracy: 0.6383 - loss: 0.6483         Epoch 49/100       0s 668us/step - accuracy: 0.6470 - loss: 0.6463	16/16		0s	644us/step	-	accuracy:	0.6116	-	loss:	0.6454
Epoch 47/100  16/16	•		0-	660ua /a+		2001125	0 6257		1055	0 (207
16/16       0s 735us/step - accuracy: 0.6834 - loss: 0.6344         Epoch 48/100       0s 734us/step - accuracy: 0.6383 - loss: 0.6483         Epoch 49/100       0s 668us/step - accuracy: 0.6470 - loss: 0.6463			υS	oodus/step	-	accuracy:	ל25ס.ש	-	1022:	v.038/
16/16 — Os 734us/step - accuracy: 0.6383 - loss: 0.6483         Epoch 49/100         16/16 — Os 668us/step - accuracy: 0.6470 - loss: 0.6463	•		0s	735us/step	-	accuracy:	0.6834	-	loss:	0.6344
Epoch 49/100  16/16 ———									_	
<b>16/16 Os</b> 668us/step - accuracy: 0.6470 - loss: 0.6463			0s	734us/step	-	accuracy:	0.6383	-	loss:	0.6483
	16/16	+3/ IUU	0s	668us/sten	_	accuracv:	0.6470	_	loss:	0.6463
250cm 30/100			_	,						

16/16		0s	626us/step	_	accuracv:	0.6160	_	loss:	0.6490
	51/100		,						
		0s	748us/step	-	accuracy:	0.6384	-	loss:	0.6445
	52/100	_	004 / /					,	0 4305
	53/100	ØS.	801us/step	-	accuracy:	0.6803	-	TOSS:	0.6305
•		0s	607us/step	_	accuracv:	0.5772	_	loss:	0.6460
	54/100		, ,		,				
16/16		0s	667us/step	-	accuracy:	0.6118	-	loss:	0.6348
	55/100	0-	CEO / at an			0 6701		1	0 6407
	56/100	05	650us/step	-	accuracy:	0.6701	_	1055:	0.6407
•		0s	732us/step	_	accuracy:	0.6324	_	loss:	0.6358
•	57/100								
		0s	666us/step	-	accuracy:	0.6402	-	loss:	0.6461
•	58/100	۵s	807us/step	_	accuracy:	0 6812	_	1055.	0 6356
	59/100	03	007и3/3сср		accuracy.	0.0012		1033.	0.0330
		0s	860us/step	-	accuracy:	0.6975	-	loss:	0.6213
Epoch	60/100	_	,						
	61/100	0s	735us/step	-	accuracy:	0.65/4	-	loss:	0.633/
		0s	734us/step	_	accuracy:	0.7076	_	loss:	0.6303
	62/100								
16/16		0s	839us/step	-	accuracy:	0.7583	-	loss:	0.6114
	63/100	95	681us/step	_	accuracy:	0.7766	_	loss:	0.6249
	64/100		002007000						0.02.12
		0s	731us/step	-	accuracy:	0.7416	-	loss:	0.6200
•	65/100	00	721us/step		2661102614	0 7201		10001	0 (250
	66/100	62	/21us/step	-	accuracy.	0.7201	-	1055.	0.0230
		0s	867us/step	-	accuracy:	0.7112	-	loss:	0.6241
	67/100								
	68/100	0s	734us/step	-	accuracy:	0.7255	-	loss:	0.6308
16/16		0s	681us/step	_	accuracy:	0.7433	_	loss:	0.6233
Epoch	69/100		•		-				
		0s	799us/step	-	accuracy:	0.7227	-	loss:	0.6247
•	70/100	95	668us/step	_	accuracy:	0 6989	_	1055.	0 6172
	71/100	0.5	оооиз, эсср		accar acy.	0.0303		1033.	0.01/2
		0s	667us/step	-	accuracy:	0.7530	-	loss:	0.6230
Epoch	72/100	00	CEQUE/ston		26611026111	0 7042		1000	0 6190
	73/100	62	650us/step	-	accuracy.	0.7942	-	1055.	0.0100
		0s	600us/step	-	accuracy:	0.7615	-	loss:	0.6166
•	74/100	_	/ .						
	75/100	0s	600us/step	-	accuracy:	0.7490	-	loss:	0.6146
	73/100	0s	600us/step	_	accuracy:	0.7707	_	loss:	0.6182
	76/100				,				
		0s	605us/step	-	accuracy:	0.7833	-	loss:	0.6151
•	77/100	۵c	604us/step	_	accuracy.	0 2067	_	1055.	0 6002
	78/100	<b>U</b> 3	00-u3/3(ep	_	accui acy.	0.0007	-	1033.	3.0000
16/16		0s	667us/step	-	accuracy:	0.7900	-	loss:	0.6127
	79/100	Ω-	704			0.0100		1	0.6000
	80/100	US	/04us/step	-	accuracy:	0.8100	-	TOSS:	0.6092
16/16		0s	665us/step	-	accuracy:	0.7693	-	loss:	0.6186
	81/100								

16/16		0s	806us/step	-	accuracy:	0.7978	-	loss:	0.6131
Epoch	82/100		•		-				
16/16		0s	671us/step	-	accuracy:	0.8089	-	loss:	0.6074
	83/100								
		0s	780us/step	-	accuracy:	0.8147	-	loss:	0.6077
Epocn	84/100	00	900us /ston		2661182614	0 7750		1000	0 6062
	85/100	05	800us/step	_	accuracy.	0.7756	-	1055.	0.0003
		0s	932us/step	_	accuracv:	0.8317	_	loss:	0.5983
	86/100				,				
16/16		0s	803us/step	-	accuracy:	0.8057	-	loss:	0.5915
•	87/100								
		0s	601us/step	-	accuracy:	0.8096	-	loss:	0.5930
	88/100	0-	722 / - +			0 7076		1	0 (020
	89/100	US	733us/step	-	accuracy:	0.7876	-	TOSS:	0.6029
		as	689us/step	_	accuracy:	0 8493	_	loss.	0 5959
	90/100	05	оозиз, эсср		accai acy i	0.0.55		1033.	0.3333
		0s	808us/step	_	accuracy:	0.8276	_	loss:	0.5995
	91/100								
		0s	660us/step	-	accuracy:	0.8472	-	loss:	0.5952
Epoch	92/100	0 -	000 / 1			0.0634		,	0.6036
	93/100	0S	802us/step	-	accuracy:	0.8631	-	loss:	0.6036
		as.	733us/step	_	accuracy:	0 8453	_	loss	0 5888
	94/100	03	733и3, 3 сер		accui acy.	0.0433		1033.	0.3000
		0s	656us/step	_	accuracy:	0.8764	_	loss:	0.5852
Epoch	95/100								
		0s	673us/step	-	accuracy:	0.8440	-	loss:	0.5963
	96/100	_							
		0s	734us/step	-	accuracy:	0.8738	-	loss:	0.5943
•	97/100 	۵c	676us/step	_	accuracy.	0 8/126	_	1000	0 5793
	98/100	03	070и3/3 сер		accuracy.	0.0420		1033.	0.3/33
		0s	737us/step	_	accuracy:	0.8705	_	loss:	0.5917
Epoch	99/100								
16/16		0s	666us/step	-	accuracy:	0.8936	-	loss:	0.5862
	100/100	0-	670/			0.0440		1	0 5073
16/16		05 6 1	679us/step	-	accuracy:	0.8449 750 1/	-	1055:	0.59/3
	1/100	3 11	пз/зсер - ас		11 acy. 0.0	/ 50 - 10	J 3 3	3. 0.0	794
		0s	933us/step	_	accuracy:	0.5122	_	loss:	0.7232
Epoch	2/100		·		•				
-		0s	812us/step	-	accuracy:	0.5368	-	loss:	0.7037
	3/100		070 / /			0 5404		,	0 7004
	4/100	US	873us/step	-	accuracy:	0.5186	-	TOSS:	0.7001
		as.	801us/step	_	accuracy:	0 5057	_	loss	0 7093
	5/100	03	001и3/3сср		accuracy.	0.3037		1033.	0.7055
		0s	733us/step	_	accuracy:	0.5025	_	loss:	0.7026
Epoch	6/100				-				
16/16		0s	800us/step	-	accuracy:	0.5359	-	loss:	0.6974
	7/100								
		0s	740us/step	-	accuracy:	0.5434	-	loss:	0.6929
•	8/100	Q.c	805us/step	_	accuracy	0 1122	_	10551	0 7222
	9/100	03	oosus/steb	_	accui acy.	0.4432	_	TO32.	0./332
		0s	604us/step	-	accuracy:	0.4919	-	loss:	0.7201
	10/100		· r						
		0s	674us/step	-	accuracy:	0.4678	-	loss:	0.7225
	11/100	_				:			
16/16		0s	667us/step	-	accuracy:	0.5701	-	loss:	0.6865

Epoch	12/100								
•		0s	776us/step	-	accuracy:	0.5324	-	loss:	0.6958
Epoch	13/100								
		0s	800us/step	-	accuracy:	0.5717	-	loss:	0.6844
Epoch	14/100	0-	722 / = + = =			0 5433		1	0 7050
	15/100	65	733us/step	-	accuracy:	0.5422	-	1055:	0.7058
•		0s	651us/step	_	accuracv:	0.5184	_	loss:	0.7075
-	16/100		от , с сор		,				
16/16		0s	812us/step	-	accuracy:	0.5513	-	loss:	0.6944
	17/100								
16/16		0s	743us/step	-	accuracy:	0.5158	-	loss:	0.6970
•	18/100	ac.	701us/step		accupacy:	0 5552		1000	0 6072
	19/100	03	701u3/3cep	_	accuracy.	0.5555	_	1033.	0.0372
•		0s	772us/step	_	accuracy:	0.4893	_	loss:	0.6993
Epoch	20/100								
-		0s	734us/step	-	accuracy:	0.5324	-	loss:	0.6953
•	21/100	•	744 ( )			0 5600		,	0 6703
	22/100	0S	741us/step	-	accuracy:	0.5688	-	TOSS:	0.6/93
16/16		0s	798us/step	_	accuracv:	0.5318	_	loss:	0.6879
	23/100		, ,		,				
		0s	821us/step	-	accuracy:	0.4642	-	loss:	0.7091
•	24/100	0 -	726 / 1			0 5333		,	0 6000
	25/100	05	726us/step	-	accuracy:	0.5332	-	1055:	0.6888
		0s	735us/step	_	accuracy:	0.5182	_	loss:	0.7003
	26/100								
		0s	868us/step	-	accuracy:	0.5217	-	loss:	0.6939
•	27/100	0-	046/-+			0 5543		1	0 6077
	28/100	65	846us/step	-	accuracy:	0.5513	-	1055:	0.68//
		0s	739us/step	_	accuracy:	0.5477	_	loss:	0.6899
	29/100		·						
		0s	733us/step	-	accuracy:	0.5620	-	loss:	0.6816
•	30/100	ac.	784us/step		accupacy:	0 5000		1000	0 6974
	31/100	62	764us/step	_	accuracy.	0.3036	_	1055.	0.0074
		0s	799us/step	-	accuracy:	0.5295	-	loss:	0.6859
•	32/100								
		0s	1ms/step -	a	ccuracy: 0	.5676 -	10	oss: 0	.6795
	33/100	۵s	800us/step	_	accuracy.	0 5943	_	1055.	0 6809
	34/100	03	000и3/ 3 сср		accuracy.	0.5545		1033.	0.0005
		0s	701us/step	-	accuracy:	0.5482	-	loss:	0.6820
	35/100								
		0s	801us/step	-	accuracy:	0.5553	-	loss:	0.6916
	36/100	95	708us/step	_	accuracy:	0 5673	_	1055.	0 6782
	37/100	0.5	, 00 d3, 5 ccp		acca. acy.	0.3073		1033.	0.0702
16/16		0s	838us/step	-	accuracy:	0.5539	-	loss:	0.6822
•	38/100								
		0s	735us/step	-	accuracy:	0.5613	-	loss:	0.6833
•	39/100	95	743us/step	_	accuracy.	0.5231	_	1055.	0.6891
	40/100	J J	. 1343/3сср		accai acy.	J.J2J1			3.3071
		0s	973us/step	-	accuracy:	0.5931	-	loss:	0.6795
•	41/100	_						-	
	42/100	0s	934us/step	-	accuracy:	0.5954	-	loss:	0.6755
		05	933us/step	_	accuracy.	0.6045	_	1055:	0.6803
_0, _0		55	- 5545/ 5ccp		accar acy.	3.00-3		2000.	3.3003

Epoch	43/100								
		0s	801us/step	-	accuracy:	0.5542	-	loss:	0.6925
	44/100	0-	CC7 / - +			0 5603		1	0 6020
	45/100	ØS.	667us/step	-	accuracy:	0.5603	-	loss:	0.6829
		0s	665us/step	_	accuracy:	0.6351	_	loss:	0.6753
Epoch	46/100		•						
		0s	721us/step	-	accuracy:	0.6304	-	loss:	0.6735
	47/100	0-	724/a+a			0 5033		1	0 6704
	48/100	65	734us/step	-	accuracy:	0.5933	-	1055:	0.6784
		0s	670us/step	_	accuracy:	0.6308	_	loss:	0.6720
	49/100		·						
		0s	675us/step	-	accuracy:	0.6620	-	loss:	0.6686
	50/100	۵c	670us/step	_	acciinacy:	0 5035	_	1000	0 6752
-	51/100	03	070u3/3cep		accur acy.	0.5555		1033.	0.0752
		0s	671us/step	-	accuracy:	0.6159	-	loss:	0.6779
	52/100								
	53/100	0s	738us/step	-	accuracy:	0.6405	-	loss:	0.6700
	33/100	0s	733us/step	_	accuracv:	0.6095	_	loss:	0.6708
Epoch	54/100		·						
		0s	669us/step	-	accuracy:	0.6168	-	loss:	0.6704
	55/100	00	667us/step		2661182671	0 6224		10551	0 6722
	56/100	62	00/us/step	-	accuracy.	0.0224	-	1055.	0.0733
		0s	803us/step	-	accuracy:	0.5856	-	loss:	0.6802
	57/100	_						_	
	58/100	0s	733us/step	-	accuracy:	0.6031	-	loss:	0.6773
		0s	807us/step	_	accuracy:	0.6390	_	loss:	0.6719
	59/100				,				
		0s	608us/step	-	accuracy:	0.6499	-	loss:	0.6626
	60/100	95	667us/sten	_	accuracy:	0 5830	_	loss	0 6753
	61/100	05	0074373000		acca. acy.	0.3030		1033.	0.0733
-		0s	600us/step	-	accuracy:	0.6462	-	loss:	0.6669
•	62/100	0.0	C74us/ston		2661102614	0 (051		10001	0 (500
	63/100	05	674us/step	-	accuracy.	0.0031	-	1055.	0.0390
		0s	599us/step	-	accuracy:	0.6278	-	loss:	0.6652
	64/100								
	65/100	0s	631us/step	-	accuracy:	0.5849	-	loss:	0.6722
•		0s	668us/step	_	accuracy:	0.5969	_	loss:	0.6659
	66/100				-				
	67/100	0s	800us/step	-	accuracy:	0.6051	-	loss:	0.6771
	67/100	95	734us/step	_	accuracy:	0.5717	_	loss:	0.6691
	68/100	05	, 5 tu 5, 5 ccp		acca. acy.	0.37.17		1033.	0.0051
		0s	800us/step	-	accuracy:	0.6397	-	loss:	0.6577
•	69/100	0-	C71a /a+a.a			0 6217		1	0.6637
	70/100	65	671us/step	-	accuracy:	0.6317	-	1055:	0.6637
		0s	654us/step	-	accuracy:	0.6430	-	loss:	0.6607
	71/100								
	72/100	0s	670us/step	-	accuracy:	0.6428	-	loss:	0.6604
		0s	1ms/step -	ad	curacy: 0.	.6199 -	10	oss: 0	.6615
	73/100		·		-				
16/16		0s	1ms/step -	a	ccuracy: 0.	6167 -	10	oss: 0	.6651

Epoch	74/100								
		0s	939us/step	-	accuracy:	0.6770	-	loss:	0.6510
	75/100	0-	672/-+			0 5053		1	0 6616
-	76/100	05	673us/step	-	accuracy:	0.5953	-	1055:	0.6616
		0s	722us/step	-	accuracy:	0.6202	-	loss:	0.6601
	77/100								
		0s	671us/step	-	accuracy:	0.6785	-	loss:	0.6480
	78/100	0s	798us/step	_	accuracv:	0.6229	_	loss:	0.6587
=	79/100		,						
16/16		0s	797us/step	-	accuracy:	0.6633	-	loss:	0.6488
	80/100	۵s	671us/step	_	accuracy:	0 6520	_	1055.	0 6550
	81/100	03	0714375000		accar acy.	0.0320		1033.	0.0330
		0s	672us/step	-	accuracy:	0.6226	-	loss:	0.6587
	82/100 	00	673us/step		26611026111	0 7114		1000	0 6405
	83/100	63	0/3us/step	-	accuracy.	0.7114	-	1055.	0.0493
		0s	599us/step	-	accuracy:	0.6824	-	loss:	0.6501
	84/100	0-	007/atan			0 6014		1	0 6541
	85/100	05	80/us/step	-	accuracy:	0.6914	-	1055:	0.6541
		0s	666us/step	-	accuracy:	0.6564	-	loss:	0.6595
	86/100	0 -	607 / 1			0 6033		,	0 6405
	87/100	05	607us/step	-	accuracy:	0.6833	-	1055:	0.6485
•		0s	733us/step	-	accuracy:	0.6770	-	loss:	0.6565
	88/100	0-	667/-t			0 7447		1	0 6416
	89/100	05	667us/step	-	accuracy:	0.7447	-	1055:	0.6416
-		0s	666us/step	-	accuracy:	0.6994	-	loss:	0.6489
-	90/100	0-	C01a /a+an			0 7100		1	0 6300
	91/100	05	601us/step	-	accuracy:	0.7100	-	1055:	0.0380
		0s	733us/step	-	accuracy:	0.7293	-	loss:	0.6468
-	92/100	00	605us/step		26611026111	0 7021		10001	0 6439
	93/100	05	oosus/step	-	accuracy.	0.7021	-	1055.	0.0436
16/16		0s	601us/step	-	accuracy:	0.7336	-	loss:	0.6366
•	94/100	00	604us/ston		26611026111	0 7020		10001	0 6204
	95/100	05	604us/step	-	accuracy.	0.7920	-	1055.	0.0294
		0s	606us/step	-	accuracy:	0.7355	-	loss:	0.6374
	96/100	00	E00us/ston		26611026111	0 7257		1000	0 6261
	97/100	63	599us/step	-	accuracy.	0.7557	-	1055.	0.0301
		0s	1ms/step -	ad	ccuracy: 0	.7459 -	10	oss: 0	.6384
	98/100	00	900us /ston		26611026111	a 7100		10001	0 6400
	99/100	05	800us/step	-	accuracy.	0.7109	-	1055.	0.0400
		0s	868us/step	-	accuracy:	0.7052	-	loss:	0.6363
	100/100	0-	740 / = + = =			0.7600		1	0 (252
5/5 -			740us/step ns/step - ad		-				
Epoch	1/100		·		•				
		0s	997us/step	-	accuracy:	0.5479	-	loss:	0.6882
-	2/100	<b>0</b> s	721us/step	_	accuracy.	0.4664	_	loss:	0.6962
Epoch	3/100		,p		·			·	
		0s	801us/step	-	accuracy:	0.4474	-	loss:	0.6984
Epoch	4/100								

16/16		05	836us/step	_	accuracy:	0.4359	_	loss:	0.6985
	5/100	0.5	03043, 300		accai acy.	0.1555		1033.	0.0303
		0s	735us/step	-	accuracy:	0.4093	-	loss:	0.7063
	6/100								
		0s	799us/step	-	accuracy:	0.4732	-	loss:	0.6945
•	7/100	_	<b></b>			0 ==04		,	0.6060
		0s	697us/step	-	accuracy:	0.5526	-	loss:	0.6868
16/16	8/100	Q.c	808us/step		accupacy:	0 1005		1000	0 6962
	9/100	03	868из/зсер	_	accuracy.	0.4005	_	1033.	0.0005
16/16		0s	867us/step	_	accuracy:	0.3895	_	loss:	0.7007
	10/100		•		-				
		0s	733us/step	-	accuracy:	0.4549	-	loss:	0.6944
•	11/100	_	/ .						
		0s	800us/step	-	accuracy:	0.3625	-	loss:	0.6992
•	12/100	۵s	715us/step	_	accuracy:	0 4036	_	1055.	0 6983
	13/100	03	, 13u3, 3ccp		accuracy.	0.4050		1033.	0.0303
		0s	734us/step	-	accuracy:	0.3399	_	loss:	0.7048
Epoch	14/100								
		0s	733us/step	-	accuracy:	0.3147	-	loss:	0.7033
	15/100	0 -	700 / 1			0 2722		,	0.6064
	16/100	ØS.	799us/step	-	accuracy:	0.3/22	-	TOSS:	0.6964
16/16		05	667us/step	_	accuracy:	0.4284	_	loss:	0.6972
	17/100		ос. из, этер						0.027.
16/16		0s	804us/step	-	accuracy:	0.3494	-	loss:	0.6980
•	18/100								
		0s	808us/step	-	accuracy:	0.3847	-	loss:	0.6920
•	19/100	0.0	CCCus/ston		26611826144	0 2007		10001	0 (050
	20/100	05	666us/step	-	accuracy:	0.3697	-	1055:	0.0959
•		0s	670us/step	_	accuracv:	0.3884	_	loss:	0.6949
	21/100		, ,		,				
16/16		0s	666us/step	-	accuracy:	0.3495	-	loss:	0.6951
•	22/100							_	
-		0s	641us/step	-	accuracy:	0.3544	-	loss:	0.6966
	23/100	۵c	599us/step	_	accuracy.	0 3320	_	1000	0 6983
	24/100	03	эээиз/ зеер		accuracy.	0.3320		1033.	0.0000
•		0s	671us/step	-	accuracy:	0.4025	_	loss:	0.6914
•	25/100								
		0s	668us/step	-	accuracy:	0.3950	-	loss:	0.6943
Epoch	26/100	0.0	70005/5+00		26611826144	0 2056		10001	0 (025
	27/100	05	798us/step	-	accuracy:	0.3930	-	1022:	0.0935
		0s	815us/step	_	accuracy:	0.3911	_	loss:	0.6882
	28/100		, ,		,				
16/16		0s	736us/step	-	accuracy:	0.3667	-	loss:	0.6953
	29/100	_						_	
	20/100	0s	783us/step	-	accuracy:	0.3509	-	loss:	0.6926
•	30/100	۵c	732us/step	_	acciinacii.	0 /191	_	1000	0 6877
	31/100	03	/32u3/3cep		accuracy.	0.4101		1033.	0.0077
•		0s	797us/step	-	accuracy:	0.3193	-	loss:	0.6978
Epoch	32/100		•		,				
		0s	913us/step	-	accuracy:	0.3062	-	loss:	0.7000
	33/100	<b>~</b> -	000-1-1			0 3055		1	0 (000
	34/100	ØS	ათხus/step	-	accuracy:	0.3955	-	TOSS:	0.6888
16/16	34/100	0s	732us/sten	_	accuracy:	0.3044	_	loss:	0.6960
	35/100		30, осер						
-									

16/16		0s	671us/step	_	accuracv:	0.3152	_	loss:	0.7006
	36/100		,,,,,,,,,		,				
16/16		0s	1ms/step -	ac	curacy: 0	3397 -	10	oss: 0.	6924
	37/100								
		0s	733us/step	-	accuracy:	0.3736	-	loss:	0.6905
•	38/100	0-	770/			0 2510		1	0 6053
	39/100	ØS	770us/step	-	accuracy:	0.3518	-	TOSS:	0.6952
16/16		۵s	801us/step	_	accuracy.	a 391a	_	1055.	0 6937
	40/100	03	001и3/3сср		accuracy.	0.3310		1033.	0.0557
		0s	667us/step	_	accuracy:	0.3978	_	loss:	0.6906
Epoch	41/100				-				
		0s	755us/step	-	accuracy:	0.3909	-	loss:	0.6872
•	42/100	_	,					-	
		0s	867us/step	-	accuracy:	0.3515	-	loss:	0.6911
	43/100	۵s	733us/step	_	accuracy.	a 329a	_	1055.	0 6893
	44/100	03	, ээцэ, эсср		accui acy.	0.3230		1033.	0.0055
		0s	734us/step	_	accuracy:	0.4591	-	loss:	0.6879
Epoch	45/100								
		0s	666us/step	-	accuracy:	0.3708	-	loss:	0.6938
•	46/100	_	/ .			0 2744		,	0 4045
	47/100	ØS	666us/step	-	accuracy:	0.3/11	-	TOSS:	0.6865
		05	807us/step	_	accuracy:	0.3553	_	loss:	0.6976
	48/100	05	оо, из, эсср		accar acy.	0.3333		1033.	0.0370
		0s	669us/step	-	accuracy:	0.3750	-	loss:	0.6909
•	49/100								
		0s	733us/step	-	accuracy:	0.4106	-	loss:	0.6889
•	50/100	0-	CC0/atam			0 2454		1	0 6000
	51/100	05	668us/step	-	accuracy:	0.3454	-	1055:	0.6899
		<b>0</b> s	660us/step	_	accuracy:	0.4021	_	loss:	0.6865
	52/100				,				
16/16		0s	805us/step	-	accuracy:	0.3229	-	loss:	0.6935
•	53/100								
16/16		0s	794us/step	-	accuracy:	0.3594	-	loss:	0.6897
•	54/100	Q.c	868us/step		accupacy:	0 1012		1000	0 6026
	55/100	03	808us/scep	_	accuracy.	0.4042	_	1033.	0.0830
•		0s	770us/step	_	accuracy:	0.3847	_	loss:	0.6848
Epoch	56/100		•						
		0s	961us/step	-	accuracy:	0.3770	-	loss:	0.6917
	57/100	_	4 / 1			2054		•	
	58/100	0s	1ms/step -	ac	curacy: 0	3956 -	10	oss: 0.	. 6868
	38/100	05	748us/sten	_	accuracy:	0.3980	_	loss:	0.6867
	59/100	05	, .ous, seep		accar acy.	0.3300		1033.	0.0007
		0s	799us/step	-	accuracy:	0.3985	-	loss:	0.6851
•	60/100								
		0s	711us/step	-	accuracy:	0.4057	-	loss:	0.6862
•	61/100	0-	720 / = + = =			0 2405		1	0 6014
	62/100	05	729us/step	-	accuracy:	0.3405	-	1055:	0.6914
•		0s	731us/step	_	accuracy:	0.3991	_	loss:	0.6858
	63/100		, этор						
•		0s	733us/step	-	accuracy:	0.3610	-	loss:	0.6877
	64/100							_	
	CF /100	0s	742us/step	-	accuracy:	0.4247	-	loss:	0.6837
±poch	65/100	Q.c	735115/5+05	_	accuracy.	0 2202	_	10551	0 6015
	66/100	<b>U</b> S	/ Sous/Step	-	accuracy:	v.3382	-	TO22:	כובס.ש
-bocii	00/ 100								

Epoch 67/100   68	16/16		0s	671us/step	_	accuracv:	0.4526	_	loss:	0.6835
Epoch   68/100   69										
16/16			0s	738us/step	-	accuracy:	0.3704	-	loss:	0.6893
Epoch   69/100   16/16			_	=== / .					-	
16/16			0S	//2us/step	-	accuracy:	0.4640	-	TOSS:	0.6800
Epoch 70/100	•		0s	667us/step	_	accuracv:	0.4315	_	loss:	0.6832
Epoch 71/100				, ,		,				
Epoch   72/100   16/16			0s	666us/step	-	accuracy:	0.4293	-	loss:	0.6835
Epoch 72/100			0-	C75 / a t a m			0 4401		1	0 (022
16/16	=		65	6/Sus/step	-	accuracy:	0.4481	-	1055:	0.6823
16/16			0s	740us/step	_	accuracy:	0.4343	_	loss:	0.6854
Epoch 74/100   16/16										
16/16			0s	734us/step	-	accuracy:	0.4656	-	loss:	0.6763
Epoch 75/100 16/16	-		۵s	664us/sten	_	accuracy:	0 4987	_	1055.	0 6804
16/16         0s 653us/step - accuracy: 0.5328 - loss: 0.6756           Epoch 76/100         6/16         0s 733us/step - accuracy: 0.4459 - loss: 0.6788           Epoch 77/100         16/16         0s 667us/step - accuracy: 0.4929 - loss: 0.6794           Epoch 78/100         6/16         0s 741us/step - accuracy: 0.4469 - loss: 0.6823           Epoch 79/100         6/16         0s 671us/step - accuracy: 0.5809 - loss: 0.6883           Epoch 80/100         6/16         0s 666us/step - accuracy: 0.4622 - loss: 0.6885           Epoch 81/100         6/16         0s 869us/step - accuracy: 0.4958 - loss: 0.6794           Epoch 81/100         6/16         0s 1ms/step - accuracy: 0.5438 - loss: 0.6794           Epoch 82/100         0s 1ms/step - accuracy: 0.5972 - loss: 0.6822           Epoch 83/100         0s 650us/step - accuracy: 0.5972 - loss: 0.6822           Epoch 84/100         0s 650us/step - accuracy: 0.5439 - loss: 0.6754           Epoch 85/100         0s 601us/step - accuracy: 0.5439 - loss: 0.6754           Epoch 87/100         0s 669us/step - accuracy: 0.5943 - loss: 0.6797           Epoch 88/100         0s 667us/step - accuracy: 0.5989 - loss: 0.6798           Epoch 89/100         0s 667us/step - accuracy: 0.5982 - loss: 0.6798           Epoch 89/100         0s 667us/step - accuracy: 0.5982 - loss: 0.6798           Epoch 99/100         0s 733us/step - accuracy:			03	00-из/ эсср		accuracy.	0.4507		1033.	0.0004
16/16			0s	653us/step	-	accuracy:	0.5328	-	loss:	0.6756
Epoch 77/100 16/16	Epoch	76/100	_							
16/16			0s	/33us/step	-	accuracy:	0.4459	-	loss:	0.6/88
Epoch 78/100 16/16	•		0s	667us/step	_	accuracy:	0.4929	_	loss:	0.6794
Epoch 79/100 16/16	•	78/100		·						
16/16			0s	741us/step	-	accuracy:	0.4469	-	loss:	0.6823
Epoch 80/100  16/16			۵c	671115/stan	_	accuracy:	0 5800	_	1000	0 6687
Epoch 81/100  16/16			03	07143/3сер		accar acy.	0.3003		1033.	0.0007
16/16			0s	666us/step	-	accuracy:	0.4622	-	loss:	0.6805
Epoch 82/100  16/16	•		_	/ .						
16/16									7	
16/16	=		0s	869us/step	-	accuracy:	0.4958	-	loss:	0.6794
Epoch 84/100  16/16	Epoch	82/100								
16/16	Epoch 16/16 Epoch	82/100 ———————————————————————————————————	0s	1ms/step -	a	ccuracy: 0	.5438 -	10	oss: 0.	6734
Epoch 85/100  16/16	Epoch 16/16 Epoch 16/16	82/100	0s	1ms/step -	a	ccuracy: 0	.5438 -	10	oss: 0.	6734
Epoch 86/100  16/16	Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100	0s 0s	1ms/step -	ad	ccuracy: 0	.5438 - .5072 -	10	oss: 0.	6734
16/16       0s 669us/step - accuracy: 0.4974 - loss: 0.6797         Epoch 87/100       0s 667us/step - accuracy: 0.5384 - loss: 0.6730         Epoch 88/100       0s 607us/step - accuracy: 0.5989 - loss: 0.6727         Epoch 89/100       0s 667us/step - accuracy: 0.5982 - loss: 0.6708         Epoch 90/100       0s 673us/step - accuracy: 0.5982 - loss: 0.6760         Epoch 91/100       0s 733us/step - accuracy: 0.6018 - loss: 0.6760         Epoch 92/100       0s 672us/step - accuracy: 0.5443 - loss: 0.6800         Epoch 92/100       0s 733us/step - accuracy: 0.5372 - loss: 0.6756         Epoch 93/100       0s 824us/step - accuracy: 0.5794 - loss: 0.6741         Epoch 94/100       0s 735us/step - accuracy: 0.5593 - loss: 0.6759         Epoch 95/100       0s 954us/step - accuracy: 0.5440 - loss: 0.6722         Epoch 96/100       0s 867us/step - accuracy: 0.5866 - loss: 0.6759	Epoch 16/16 Epoch 16/16 Epoch 16/16	82/100 	0s 0s	1ms/step -	ad	ccuracy: 0	.5438 - .5072 -	10	oss: 0.	6734
Epoch 87/100  16/16	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	82/100 83/100 84/100 85/100	0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step</pre>	a (	ccuracy: 0 ccuracy: 0 accuracy:	.5438 - .5072 - 0.4720	10	oss: 0. oss: 0. loss:	.6734 .6822 0.6824
16/16       0s 667us/step - accuracy: 0.5384 - loss: 0.6730         Epoch 88/100       16/16	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100	0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step</pre>	a (	ccuracy: 0 ccuracy: 0 accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439	10	oss: 0. oss: 0. loss:	6734 6822 0.6824 0.6754
16/16	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	82/100 83/100 84/100 85/100 86/100	0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step</pre>	a (	ccuracy: 0 ccuracy: 0 accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439	10	oss: 0. oss: 0. loss:	6734 6822 0.6824 0.6754
Epoch 89/100  16/16	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100	0s 0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step</pre>	a (	accuracy: 0 accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974	10	loss: 0.	.6734 .6822 0.6824 0.6754 0.6797
16/16       0s 667us/step - accuracy: 0.5982 - loss: 0.6708         Epoch 90/100       0s 733us/step - accuracy: 0.6018 - loss: 0.6760         Epoch 91/100       0s 672us/step - accuracy: 0.5443 - loss: 0.6800         Epoch 92/100       0s 733us/step - accuracy: 0.5372 - loss: 0.6756         Epoch 93/100       0s 824us/step - accuracy: 0.5794 - loss: 0.6741         Epoch 94/100       0s 735us/step - accuracy: 0.5593 - loss: 0.6759         Epoch 95/100       0s 954us/step - accuracy: 0.5440 - loss: 0.6722         Epoch 96/100       0s 867us/step - accuracy: 0.5866 - loss: 0.6759	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100	0s 0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step</pre>	a (	accuracy: 0 accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384	10 - - -	loss: 0. loss: loss: loss:	6734 6822 0.6824 0.6754 0.6797 0.6730
Epoch 90/100  16/16	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	82/100 83/100 84/100 85/100 86/100 87/100 88/100	0s 0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step</pre>	a (	accuracy: 0 accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384	10 - - -	loss: 0. loss: loss: loss:	6734 6822 0.6824 0.6754 0.6797 0.6730
Epoch 91/100  16/16	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100	0s 0s 0s 0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 607us/step</pre>	a (	accuracy: 0 accuracy: 0 accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989	10 - - -	loss: 0. loss: loss: loss: loss:	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727
16/16       0s 672us/step - accuracy: 0.5443 - loss: 0.6800         Epoch 92/100       0s 733us/step - accuracy: 0.5372 - loss: 0.6756         Epoch 93/100       0s 824us/step - accuracy: 0.5794 - loss: 0.6741         Epoch 94/100       0s 735us/step - accuracy: 0.5593 - loss: 0.6759         Epoch 95/100       0s 954us/step - accuracy: 0.5440 - loss: 0.6722         Epoch 96/100       0s 867us/step - accuracy: 0.5866 - loss: 0.6759	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100 99/100	0s 0s 0s 0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 607us/step</pre>	a (	accuracy: 0 accuracy: 0 accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989	10 - - -	loss: 0. loss: loss: loss: loss:	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727
Epoch 92/100  16/16	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	82/100 83/100 84/100 85/100 86/100 87/100 88/100 89/100 90/100	0s 0s 0s 0s 0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 607us/step 667us/step</pre>	a c	accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982	1 c	loss: loss: loss: loss: loss: loss:	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727 0.6708
16/16       0s 733us/step - accuracy: 0.5372 - loss: 0.6756         Epoch 93/100       0s 824us/step - accuracy: 0.5794 - loss: 0.6741         Epoch 94/100       0s 735us/step - accuracy: 0.5593 - loss: 0.6759         Epoch 95/100       0s 954us/step - accuracy: 0.5440 - loss: 0.6722         Epoch 96/100       0s 867us/step - accuracy: 0.5866 - loss: 0.6759	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100 99/100 91/100	<ul><li>0s</li><li>0s</li><li>0s</li><li>0s</li><li>0s</li><li>0s</li><li>0s</li></ul>	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step</pre>	a c	accuracy: 0 accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018	1 c	loss: 0. loss: loss: loss: loss: loss: loss:	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727 0.6708 0.6760
16/16       0s       824us/step - accuracy: 0.5794 - loss: 0.6741         Epoch 94/100       0s       735us/step - accuracy: 0.5593 - loss: 0.6759         Epoch 95/100       0s       954us/step - accuracy: 0.5440 - loss: 0.6722         Epoch 96/100       0s       867us/step - accuracy: 0.5866 - loss: 0.6759	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	82/100 83/100 84/100 85/100 86/100 87/100 88/100 90/100 91/100	<ul><li>0s</li><li>0s</li><li>0s</li><li>0s</li><li>0s</li><li>0s</li><li>0s</li></ul>	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step</pre>	a c	accuracy: 0 accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018	1 c	loss: 0. loss: loss: loss: loss: loss: loss:	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727 0.6708 0.6760
Epoch 94/100  16/16	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	82/100 83/100 84/100 85/100 86/100 87/100 88/100 90/100 91/100 92/100	0s 0s 0s 0s 0s 0s 0s 0s 0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step 672us/step</pre>	a ( a ( a ( a ( a ( a ( a ( a ( a ( a (	accuracy: 0 accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018 0.5443	10 - - - - -	loss:	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727 0.6708 0.6760 0.6800
16/16       0s 735us/step - accuracy: 0.5593 - loss: 0.6759         Epoch 95/100       0s 954us/step - accuracy: 0.5440 - loss: 0.6722         Epoch 96/100       0s 867us/step - accuracy: 0.5866 - loss: 0.6759	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100 90/100 91/100 92/100 93/100	0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step 672us/step 733us/step</pre>	a c	accuracy: 0 accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.54385072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018 0.5443 0.5372	1 c	loss: 0. loss: los	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727 0.6708 0.6760 0.6800 0.6756
Epoch 95/100  16/16 —	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100 90/100 91/100 92/100 93/100	0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step 672us/step 733us/step</pre>	a c	accuracy: 0 accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.54385072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018 0.5443 0.5372	1 c	loss: 0. loss: los	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727 0.6708 0.6760 0.6800 0.6756
Epoch 96/100  16/16 ———	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100 90/100 91/100 92/100 93/100 94/100	0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step 672us/step 733us/step 824us/step</pre>	a ( a ( a ( a ( a ( a ( a ( a ( a ( a (	accuracy: 0 accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018 0.5443 0.5372 0.5794	1 c c c c c c c c c c c c c c c c c c c	loss: 0. loss: los	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727 0.6708 0.6760 0.6800 0.6756 0.6741
<b>16/16 Os</b> 867us/step - accuracy: 0.5866 - loss: 0.6759	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100 99/100 91/100 92/100 93/100 94/100 95/100	0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step 733us/step 733us/step 824us/step 735us/step</pre>	a c	accuracy: 0 accuracy: 0 accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018 0.5443 0.5372 0.5794 0.5593	1 c	DSS: 0.  DSS: 0.  LOSS:	6734 6822 0.6824 0.6754 0.6757 0.6730 0.6727 0.6708 0.6760 0.6800 0.6756 0.6741 0.6759
	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100 90/100 91/100 92/100 93/100 94/100 95/100	0s	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step 733us/step 733us/step 824us/step 735us/step</pre>	a c	accuracy: 0 accuracy: 0 accuracy:	.5438 - .5072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018 0.5443 0.5372 0.5794 0.5593	1 c	DSS: 0.  DSS: 0.  LOSS:	6734 6822 0.6824 0.6754 0.6757 0.6730 0.6727 0.6708 0.6760 0.6800 0.6756 0.6741 0.6759
Epoch 97/100	Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	82/100 83/100 84/100 85/100 86/100 87/100 88/100 90/100 91/100 92/100 93/100 94/100 95/100	0s 0	<pre>1ms/step - 1ms/step - 650us/step 601us/step 669us/step 667us/step 667us/step 733us/step 672us/step 733us/step 824us/step 735us/step 954us/step</pre>	a c	accuracy: 0 accuracy: 0 accuracy:	.54385072 - 0.4720 0.5439 0.4974 0.5384 0.5989 0.5982 0.6018 0.5443 0.5372 0.5794 0.5593 0.5440	1 c	Doss: 0.  Doss: 0.  Loss:	6734 6822 0.6824 0.6754 0.6797 0.6730 0.6727 0.6708 0.6760 0.6800 0.6756 0.6741 0.6759 0.6722

16/16		<b>-</b> 0s	734us/step	_	accuracy.	0 5501	- loss.	0 6737
	98/100	03	754u575ccp		accuracy.	0.3301	1033.	0.0737
	•	<b>-</b> 0s	782us/step	-	accuracy:	0.5927	- loss:	0.6741
Epoch	99/100							
		<b>-</b> 0s	813us/step	-	accuracy:	0.6449	- loss:	0.6675
	100/100	_	0.50 / 1				-	0 6706
			860us/step					
	1/100	0S II	ms/step - ad	CC	uracy: 0.40	012 - 10	)55: 0.6:	904
16/16		- 0s	979us/step	_	accuracy:	0.4525	- loss:	0.7059
	2/100		,		,			
16/16		- 0s	882us/step	-	accuracy:	0.5029	- loss:	0.6962
	3/100							
	1/100	<b>-</b> 0s	866us/step	-	accuracy:	0.4613	- loss:	0.7009
	4/100	- 00	848us/step		2661102611	0 1010	1000	0 6000
	5/100	- 65	646US/SCEP	-	accuracy.	0.4010	- 1055.	0.0999
	3,100	- 0s	857us/step	_	accuracy:	0.4632	- loss:	0.7013
Epoch	6/100							
		<b>-</b> 0s	800us/step	-	accuracy:	0.4134	- loss:	0.7041
•	7/100						_	
		- 0s	732us/step	-	accuracy:	0.4734	- loss:	0.6934
	8/100	<b>-</b> 0c	734us/step	_	accuracy.	0 1696	- 1000	0 6932
	9/100	03	734u3/3cep		accuracy.	0.4050	- 1033.	0.0552
16/16		<b>-</b> 0s	800us/step	_	accuracy:	0.4941	- loss:	0.6925
Epoch	10/100		•					
		<b>-</b> 0s	803us/step	-	accuracy:	0.5223	- loss:	0.6954
	11/100	_	704 / 1				-	0.4044
		<b>-</b> 0s	731us/step	-	accuracy:	0.4538	- loss:	0.6941
	12/100	<b>-</b> 0s	818us/step	_	accuracy:	0 4461	- 1055.	0 7012
	13/100	03	010и3, 3 сер		accuracy.	0.4401	1033.	0.7012
		- 0s	705us/step	-	accuracy:	0.4251	- loss:	0.6944
	14/100							
		<b>-</b> 0s	734us/step	-	accuracy:	0.4434	- loss:	0.6909
	15/100 	- 00	799us/step		2661182614	0 4221	10001	0 (020
	16/100	05	/99us/scep	-	accuracy:	0.4331	- 1055:	0.0939
		- 0s	1ms/step -	a	ccuracy: 0.	4683 -	loss: 0	.6929
	17/100							
		<b>-</b> 0s	801us/step	-	accuracy:	0.3855	- loss:	0.6989
	18/100	_	<b>7.1</b> 2				-	0 4004
	19/100	<b>-</b> 0s	/43us/step	-	accuracy:	0.4550	- loss:	0.6891
		- 05	800us/step	_	accuracy:	0.4414	- loss:	0.6930
	20/100		оттана, с тар		,			
16/16		- 0s	734us/step	-	accuracy:	0.3907	- loss:	0.6984
	21/100							
		<b>-</b> 0s	732us/step	-	accuracy:	0.4573	- loss:	0.6906
	22/100	- 00	72745/5+00		2661182614	0 4126	10001	0 (042
	23/100	- 05	737us/step	-	accuracy:	0.4126	- 1055:	0.6943
		- 0s	1ms/step -	a	ccuracy: 0.	4237 -	loss: 0	.6921
	24/100		, ,		,			
		<b>-</b> 0s	1ms/step -	a	ccuracy: 0.	4114 -	loss: 0	.6945
	25/100						_	
		<b>-</b> 0s	1ms/step -	a	ccuracy: 0.	4022 -	loss: 0	.6916
	26/100 	<b>-</b> 0c	93311c/c+an	_	accuracy.	0 4412	- 1000	0 6903
	27/100	03	22243/3CEP		accui acy.	J. 7772	1033.	3.0505
		<b>-</b> 0s	731us/step	-	accuracy:	0.4301	- loss:	0.6905
			·					

Epoch	28/100								
•		0s	671us/step	-	accuracy:	0.4568	-	loss:	0.6925
Epoch	29/100								
		0s	648us/step	-	accuracy:	0.4658	-	loss:	0.6939
Epoch	30/100	0-	726 / = + = =			0 5241		1	0 6000
	31/100	05	726us/step	_	accuracy:	0.5241	-	1055:	0.6908
•		0s	733us/step	_	accuracv:	0.4432	_	loss:	0.6902
-	32/100				,				
16/16		0s	605us/step	-	accuracy:	0.4714	-	loss:	0.6916
•	33/100								
16/16		0s	668us/step	-	accuracy:	0.4505	-	loss:	0.6941
•	34/100	00	676us/step		2001112011	0 /511		1000	0 6046
	35/100	03	070u3/3cep	_	accuracy.	0.4311	_	1033.	0.0940
•		0s	738us/step	_	accuracy:	0.4422	_	loss:	0.6904
Epoch	36/100				-				
		0s	762us/step	-	accuracy:	0.4603	-	loss:	0.6944
•	37/100	0 -	667 / 1			0 4724		,	0 6006
	38/100	ØS	667us/step	-	accuracy:	0.4/31	-	TOSS:	0.6906
16/16		0s	733us/step	_	accuracv:	0.4994	_	loss:	0.6889
	39/100		, ,		,				
		0s	786us/step	-	accuracy:	0.5260	-	loss:	0.6855
•	40/100	0 -	705 / 1			0 4240		,	0.6040
16/16 Enoch	41/100	05	705us/step	-	accuracy:	0.4319	-	1055:	0.6948
		0s	667us/step	_	accuracy:	0.4313	_	loss:	0.6893
	42/100								
		0s	827us/step	-	accuracy:	0.4411	-	loss:	0.6920
•	43/100	0-	050/-+			0 4101		1	0.6047
	44/100	05	859us/step	-	accuracy:	0.4101	-	1055:	0.6947
•		0s	932us/step	_	accuracy:	0.4709	_	loss:	0.6909
	45/100		·		-				
		0s	902us/step	-	accuracy:	0.4579	-	loss:	0.6933
•	46/100	00	738us/step		2661182614	0 1100		1000	0 6026
	47/100	62	/30us/step	-	accuracy.	0.4460	-	1055.	0.0920
•		0s	799us/step	_	accuracy:	0.4431	_	loss:	0.6925
•	48/100								
		0s	741us/step	-	accuracy:	0.3850	-	loss:	0.6953
•	49/100	۵c	715us/step	_	accupacy:	0 1610	_	1000	0 6015
=	50/100	03	/13u3/3tep	_	accuracy.	0.4019	_	1033.	0.0913
		0s	882us/step	-	accuracy:	0.4527	-	loss:	0.6912
	51/100								
		0s	799us/step	-	accuracy:	0.4637	-	loss:	0.6883
	52/100	۵c	783us/step	_	accupacy:	0 1162	_	1000	0 6008
	53/100	03	763u3/3tep	_	accuracy.	0.4402	_	1033.	0.0308
•		0s	866us/step	-	accuracy:	0.4253	-	loss:	0.6919
•	54/100								
		0s	692us/step	-	accuracy:	0.4960	-	loss:	0.6861
•	55/100	۵c	713us/step	_	accupacy:	0 1622	_	1000	0 6876
	56/100	03	, 1003/31ch	-	accui acy.	0.4022	-	1022.	0.00/0
		0s	674us/step	-	accuracy:	0.4270	-	loss:	0.6899
	57/100								
		0s	934us/step	-	accuracy:	0.3755	-	loss:	0.6947
	58/100	۵c	675us/step	_	accuracy:	0 5079	_	1000	0 6828
10/10		05	o/Jus/step	_	accuracy:	0.00/0	_	TO22.	0.0000

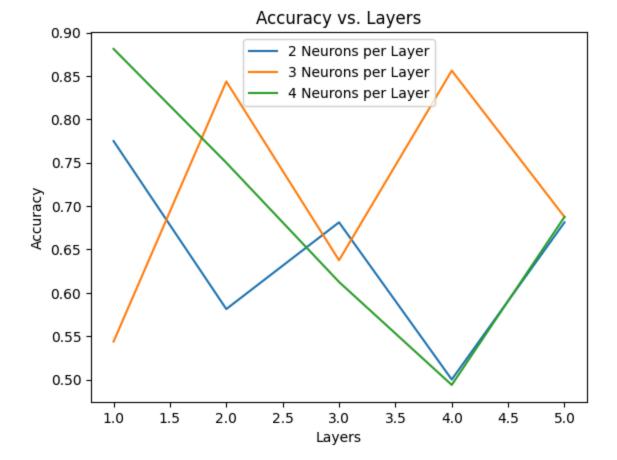
Epoch	59/100								
		0s	701us/step	-	accuracy:	0.4613	-	loss:	0.6873
•	60/100	0 -	672 / 1			0.4600		,	0.6004
	61/100	05	673us/step	-	accuracy:	0.4682	-	1055:	0.6884
		0s	605us/step	_	accuracy:	0.4337	_	loss:	0.6894
Epoch	62/100								
		0s	650us/step	-	accuracy:	0.3903	-	loss:	0.6941
•	63/100	0-	672a /a+an			0 4001		1	0 (050
-	64/100	05	672us/step	-	accuracy:	0.4821	-	1022:	0.0000
•		0s	672us/step	-	accuracy:	0.4585	_	loss:	0.6899
•	65/100								
16/16		0s	740us/step	-	accuracy:	0.4397	-	loss:	0.6899
•	66/100	۵s	601us/step	_	accuracy.	0 4466	_	1055.	0 6875
	67/100	03	001и3/ 3 сер		accuracy.	0.4400		1033.	0.0075
16/16		0s	732us/step	-	accuracy:	0.5262	-	loss:	0.6823
	68/100	_							
	69/100	0s	669us/step	-	accuracy:	0.4289	-	loss:	0.6895
		0s	666us/step	_	accuracy:	0.3990	_	loss:	0.6926
Epoch	70/100		•						
		0s	737us/step	-	accuracy:	0.4572	-	loss:	0.6877
•	71/100	95	730us/step	_	accuracy:	0 4631	_	1055.	0 6870
-	72/100	03	730u373ccp		accuracy.	0.4031		1033.	0.0070
16/16		0s	742us/step	-	accuracy:	0.4503	-	loss:	0.6898
	73/100	00	202115/5+00		2661102614	0 4022		10551	0 6940
	74/100	05	803us/step	-	accuracy:	0.4832	-	1022:	0.0840
		0s	725us/step	-	accuracy:	0.3946	-	loss:	0.6945
-	75/100							_	
=	76/100	ØS	749us/step	-	accuracy:	0.4416	-	loss:	0.6898
	70,100	0s	765us/step	_	accuracy:	0.4940	-	loss:	0.6883
Epoch	77/100								
		0s	735us/step	-	accuracy:	0.4732	-	loss:	0.6860
	78/100	0s	734us/step	_	accuracv:	0.4934	_	loss:	0.6825
	79/100		то того, о сор						
-		0s	730us/step	-	accuracy:	0.4560	-	loss:	0.6847
•	80/100	Q.c	1ms/step -	2.	scupacy: A	1621	1,	occ: 0	6915
-	81/100	03	III3/3CEP -	a	cui acy. 0	4031 -	Τ(	)33. U	.0043
•		0s	1ms/step -	a	ccuracy: 0	4726 -	10	oss: 0	.6837
	82/100	0-	050/-+			0 4700		1	0 6010
	83/100	05	850us/step	-	accuracy:	0.4/99	-	1055:	0.6818
		0s	674us/step	-	accuracy:	0.4668	-	loss:	0.6859
	84/100								
		0s	800us/step	-	accuracy:	0.4381	-	loss:	0.6868
•	85/100 	05	675us/step	_	accuracy:	0.4921	_	loss:	0.6845
	86/100		, ссер						
		0s	666us/step	-	accuracy:	0.5081	-	loss:	0.6785
•	87/100	Q.c	822us/step	_	accunacy	0 1720	_	10551	0 6021
	88/100	05	ozzus/step	-	accuracy:	0.4/30	-	TO22.	0.0021
16/16		0s	667us/step	-	accuracy:	0.4510	-	loss:	0.6865
	89/100	^	716. / :			0.4505		1.	0.6005
16/16		ØS	716us/step	-	accuracy:	v.4681	-	Toss:	0.6806

16/16	Epoch	90/100	
16/16			<b>- 0s</b> 666us/step - accuracy: 0.4829 - loss: 0.6874
Epoch   92/100   16/16			2 2 / /
16/16			- <b>US</b> /34us/step - accuracy: 0.4635 - 10ss: 0.6844
Epoch 93/100	•		<b>- 0s</b> 676us/step - accuracy: 0.4418 - loss: 0.6828
Epoch 94/100   16/16	Epoch	93/100	,
16/16			<b>- 0s</b> 733us/step - accuracy: 0.4987 - loss: 0.6795
Epoch 95/100   16/16			2 465 / 1 2 4650
16/16			- <b>Us</b> 666us/step - accuracy: 0.4839 - 10ss: 0.6/92
Epoch 96/100   16/16			<b>- 0s</b> 793us/step - accuracy: 0.4936 - loss: 0.6789
Epoch 97/100 16/16			
16/16			<b>- 0s</b> 715us/step - accuracy: 0.4731 - loss: 0.6793
Epoch 98/100 16/16	•		0. ((5)/
16/16			- <b>US</b> 665US/STEP - accuracy: 0.4/8/ - 10SS: 0.6/88
Epoch 99/100 16/16			- <b>0s</b> 662us/step - accuracy: 0.5717 - loss: 0.6741
Epoch 100/100 16/16	Epoch	99/100	
16/16			<b>- 0s</b> 678us/step - accuracy: 0.5232 - loss: 0.6749
S/5			- <b>Ac</b> 666us/stan   255unasy: 0.4690   lass: 0.6705
Epoch 1/100 16/16	5/5 -		Os 1ms/step - accuracy: 0.4810 - loss: 0.6752
Epoch 2/100 16/16	Epoch	1/100	,,,
16/16			<b>- 0s</b> 931us/step - accuracy: 0.4862 - loss: 0.6999
Epoch 3/100  16/16			0. 031/
16/16			- <b>us</b> 831us/step - accuracy: 0.5398 - 10ss: 0.695/
Epoch 4/100 16/16			- <b>0s</b> 814us/step - accuracy: 0.5626 - loss: 0.6914
Epoch 5/100  16/16	Epoch		,
16/16			<b>- 0s</b> 880us/step - accuracy: 0.5321 - loss: 0.6937
Epoch 6/100  16/16			- 0c 88/us/stan - accuracy: 0 50/8 - loss: 0 6887
16/16			03 864437 Step - accuracy. 0.3346 - 1033. 0.0007
Epoch 7/100  16/16			- <b>0s</b> 807us/step - accuracy: 0.5770 - loss: 0.6904
Epoch 8/100  16/16	-		
16/16			<b>- 0s</b> 833us/step - accuracy: 0.5123 - loss: 0.6985
Epoch 9/100  16/16			<b>- 0s</b> 826us/sten - accuracy: 0.6072 - loss: 0.6908
Epoch 10/100 16/16			
16/16	16/16		<b>- 0s</b> 889us/step - accuracy: 0.5868 - loss: 0.6932
Epoch 11/100 16/16			2 22 / 1 2 22
16/16       0s 1ms/step - accuracy: 0.6796 - loss: 0.6856         Epoch 12/100       0s 1ms/step - accuracy: 0.5944 - loss: 0.6906         Epoch 13/100       0s 1ms/step - accuracy: 0.5707 - loss: 0.6986         Epoch 14/100       0s 665us/step - accuracy: 0.6582 - loss: 0.6879         Epoch 15/100       0s 800us/step - accuracy: 0.6026 - loss: 0.6928         Epoch 16/100       0s 667us/step - accuracy: 0.5959 - loss: 0.6921         Epoch 17/100       0s 737us/step - accuracy: 0.6441 - loss: 0.6877         Epoch 18/100       0s 739us/step - accuracy: 0.6500 - loss: 0.6884         Epoch 19/100       0s 645us/step - accuracy: 0.5969 - loss: 0.6922			- <b>Us</b> 8/2us/step - accuracy: 0./132 - 1oss: 0.683/
Epoch 12/100  16/16			- <b>0s</b> 1ms/step - accuracy: 0.6796 - loss: 0.6856
Epoch 13/100  16/16	Epoch	12/100	
16/16       0s 1ms/step - accuracy: 0.5707 - loss: 0.6986         Epoch 14/100       0s 665us/step - accuracy: 0.6582 - loss: 0.6879         Epoch 15/100       0s 800us/step - accuracy: 0.6026 - loss: 0.6928         Epoch 16/100       0s 667us/step - accuracy: 0.5959 - loss: 0.6921         Epoch 17/100       0s 737us/step - accuracy: 0.6441 - loss: 0.6877         Epoch 18/100       0s 739us/step - accuracy: 0.6500 - loss: 0.6884         Epoch 19/100       0s 645us/step - accuracy: 0.5969 - loss: 0.6922			<b>- 0s</b> 1ms/step - accuracy: 0.5944 - loss: 0.6906
Epoch 14/100  16/16			- 0s 1ms/sten - accuracy: 0 5707 - loss: 0 6086
16/16       0s 665us/step - accuracy: 0.6582 - loss: 0.6879         Epoch 15/100       0s 800us/step - accuracy: 0.6026 - loss: 0.6928         Epoch 16/100       0s 667us/step - accuracy: 0.5959 - loss: 0.6921         Epoch 17/100       0s 737us/step - accuracy: 0.6441 - loss: 0.6877         Epoch 18/100       0s 739us/step - accuracy: 0.6500 - loss: 0.6884         Epoch 19/100       0s 645us/step - accuracy: 0.5969 - loss: 0.6922			03 Illis/Step - accul acy. 0.3707 - 1033. 0.0900
16/16       0s       800us/step - accuracy: 0.6026 - loss: 0.6928         Epoch 16/100       0s       667us/step - accuracy: 0.5959 - loss: 0.6921         Epoch 17/100       0s       737us/step - accuracy: 0.6441 - loss: 0.6877         Epoch 18/100       0s       739us/step - accuracy: 0.6500 - loss: 0.6884         Epoch 19/100       0s       645us/step - accuracy: 0.5969 - loss: 0.6922			- <b>0s</b> 665us/step - accuracy: 0.6582 - loss: 0.6879
Epoch 16/100  16/16			
16/16       0s 667us/step - accuracy: 0.5959 - loss: 0.6921         Epoch 17/100       0s 737us/step - accuracy: 0.6441 - loss: 0.6877         Epoch 18/100       0s 739us/step - accuracy: 0.6500 - loss: 0.6884         Epoch 19/100       0s 645us/step - accuracy: 0.5969 - loss: 0.6922			<b>- 0s</b> 800us/step - accuracy: 0.6026 - loss: 0.6928
Epoch 17/100  16/16			<b>- 0s</b> 667us/sten - accuracy: 0.5959 - loss: 0.6921
16/16       0s 737us/step - accuracy: 0.6441 - loss: 0.6877         Epoch 18/100       0s 739us/step - accuracy: 0.6500 - loss: 0.6884         Epoch 19/100       0s 645us/step - accuracy: 0.5969 - loss: 0.6922			12 13. ab, 510p acca. acy. 5.5555 1555. 5.6521
16/16 — Os 739us/step - accuracy: 0.6500 - loss: 0.6884         Epoch 19/100         16/16 — Os 645us/step - accuracy: 0.5969 - loss: 0.6922	16/16		<b>- 0s</b> 737us/step - accuracy: 0.6441 - loss: 0.6877
Epoch 19/100  16/16 ————	-		0. 7300-7-1
<b>16/16 Os</b> 645us/step - accuracy: 0.5969 - loss: 0.6922			<b>- us</b> /39us/step - accuracy: 0.6500 - 1oss: 0.6884
·	-		- <b>0s</b> 645us/step - accuracy: 0.5969 - loss: 0.6922
			· · · · · · · · · · · · · · · · · · ·

16/16		0s	902us/step	_	accuracv:	0.6073	_	loss:	0.6913
	21/100		,		, , , , , , , , , , , , , , , , , , ,				
		0s	825us/step	-	accuracy:	0.6971	-	loss:	0.6804
Epoch	22/100		6 <b>7</b> 0 / 1					,	0 4040
	23/100	ØS.	670us/step	-	accuracy:	0.6096	-	loss:	0.6913
•		0s	733us/step	_	accuracv:	0.6700	_	loss:	0.6840
	24/100		, ,		,				
16/16		0s	669us/step	-	accuracy:	0.6139	-	loss:	0.6873
•	25/100	0-	004/atan			0.6640		1	0 6045
	26/100	65	804us/step	-	accuracy:	0.6649	-	1055:	0.6845
•		0s	714us/step	-	accuracy:	0.6431	_	loss:	0.6830
•	27/100								
		0s	673us/step	-	accuracy:	0.6201	-	loss:	0.6884
	28/100	۵s	933us/step	_	accuracy:	0 6508	_	1055.	0 6844
	29/100	03	эээиз/ эсср		accuracy.	0.0500		1033.	0.0044
16/16		0s	734us/step	-	accuracy:	0.5879	-	loss:	0.6914
Epoch	30/100	_							
	31/100	0s	679us/step	-	accuracy:	0.6291	-	loss:	0.6821
•		0s	759us/step	_	accuracy:	0.6314	_	loss:	0.6846
•	32/100				-				
16/16		0s	742us/step	-	accuracy:	0.5730	-	loss:	0.6902
	33/100	95	802us/step	_	accuracy:	0.5684	_	loss:	0.6905
	34/100		00_0.5, 5 00p		acca. acy i				0.0101
		0s	667us/step	-	accuracy:	0.6952	-	loss:	0.6775
•	35/100	0.0	724us/step		2661102614	0 6007		10001	0 (042
	36/100	05	/24us/step	-	accuracy.	0.0007	-	1055.	0.0043
		0s	707us/step	-	accuracy:	0.6461	-	loss:	0.6792
	37/100							_	
	38/100	0s	666us/step	-	accuracy:	0.5687	-	loss:	0.6909
16/16		0s	733us/step	_	accuracy:	0.6367	_	loss:	0.6805
Epoch	39/100		•						
		0s	677us/step	-	accuracy:	0.6011	-	loss:	0.6854
	40/100	95	734us/step	_	accuracy:	0 5761	_	1055.	0 6863
	41/100	05	73 143, 3 ccp		acca, acy.	0.3701		1033.	0.0003
		0s	667us/step	-	accuracy:	0.6045	-	loss:	0.6863
Epoch	42/100 	00	72945/5+00		2661182611	0 6741		10551	0 6725
	43/100	05	728us/step	-	accuracy.	0.6741	-	1055.	0.0733
		0s	640us/step	-	accuracy:	0.6592	-	loss:	0.6793
	44/100	_	,						
	45/100	0s	753us/step	-	accuracy:	0.6246	-	loss:	0.6827
		0s	734us/step	_	accuracy:	0.6715	_	loss:	0.6776
	46/100		•		,				
		0s	677us/step	-	accuracy:	0.6920	-	loss:	0.6647
	47/100 ———————————————————————————————————	۵s	745us/step	_	accuracy:	0 6314	_	1055.	0 6808
	48/100	U3	, 4503/3CEP	_	accui acy.	0.0014	_	1033.	3.0000
16/16		0s	800us/step	-	accuracy:	0.5793	-	loss:	0.6885
	49/100	ο-	051			0 (100		1	0.6003
	50/100	US	851US/Step	-	accuracy:	0.6182	-	TOSS:	6.6863
16/16		0s	839us/step	-	accuracy:	0.6376	-	loss:	0.6721
	51/100								

16/16		0s	800us/step	_	accuracy:	0.6721	_	loss:	0.6704
	52/100		, , , , , , , , ,		,				
		0s	815us/step	-	accuracy:	0.6583	-	loss:	0.6704
	53/100	_	=== / .			0 4570			0 6745
	54/100	ØS	734us/step	-	accuracy:	0.65/9	-	TOSS:	0.6/15
•		0s	800us/step	_	accuracv:	0.6559	_	loss:	0.6663
	55/100				,				
16/16		0s	869us/step	-	accuracy:	0.7004	-	loss:	0.6631
	56/100	_	004 / /						
	57/100	ØS	801us/step	-	accuracy:	0.6855	-	TOSS:	0.6683
•		0s	1ms/step -	ac	curacy: 0	.6839 -	10	oss: 0.	6620
	58/100		, ,		,				
		0s	937us/step	-	accuracy:	0.6389	-	loss:	0.6713
	59/100	0-	002/-+			0 6440		1	0.6650
	60/100	05	802us/step	-	accuracy:	0.6440	-	1055:	0.6650
		0s	830us/step	_	accuracy:	0.6209	_	loss:	0.6747
Epoch	61/100		·		-				
		0s	691us/step	-	accuracy:	0.6107	-	loss:	0.6732
•	62/100	Q.c	751us/step		accunacy:	0 5754		1000	0 6700
	63/100	03	/31us/step	_	accuracy.	0.3734	-	1055.	0.0790
16/16		0s	930us/step	-	accuracy:	0.6398	-	loss:	0.6637
	64/100								
		0s	753us/step	-	accuracy:	0.6191	-	loss:	0.6652
•	65/100	۵s	667us/step	_	accuracy:	0 6226	_	1055.	0 6710
	66/100	03	007и3/3сер		accuracy.	0.0220		1033.	0.0710
		0s	928us/step	-	accuracy:	0.6383	-	loss:	0.6636
•	67/100								
	68/100	0s	671us/step	-	accuracy:	0.6593	-	loss:	0.6551
гросп									
•		0s	1ms/step -	ad	ccuracy: 0	.6650 -	10	oss: 0.	6588
16/16		0s	1ms/step -	ad	ccuracy: 0	.6650 -	10	oss: 0	6588
16/16 Epoch 16/16	69/100		<pre>1ms/step - 1ms/step -</pre>						
16/16 Epoch 16/16 Epoch	69/100	0s	1ms/step -	ad	ccuracy: 0	.7132 -	10	oss: 0.	6483
16/16 Epoch 16/16 Epoch 16/16	69/100 70/100	0s		ad	ccuracy: 0	.7132 -	10	oss: 0.	6483
16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100	0s 0s	1ms/step -	a (	accuracy: 0	.7132 - 0.6747	10	oss: 0. loss:	6483 0.6575
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 72/100	0s 0s 0s	1ms/step - 935us/step 980us/step	- -	accuracy: 0	.7132 - 0.6747 0.6997	10 - -	loss: 0.	6483 0.6575 0.6494
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	69/100 70/100 71/100 72/100	0s 0s 0s	1ms/step - 935us/step 980us/step	- -	accuracy: 0	.7132 - 0.6747 0.6997	10 - -	loss: 0.	6483 0.6575 0.6494
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 72/100 73/100	0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step	- -	accuracy: 0 accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406		loss: 0. loss: loss:	6483 0.6575 0.6494 0.6616
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	69/100 70/100 71/100 72/100 73/100	0s 0s 0s	1ms/step - 935us/step 980us/step	- -	accuracy: 0 accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406		loss: 0. loss: loss:	6483 0.6575 0.6494 0.6616
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 72/100 73/100	<ul><li>0s</li><li>0s</li><li>0s</li><li>0s</li></ul>	1ms/step - 935us/step 980us/step 735us/step 808us/step	- - -	accuracy: 0 accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598		loss: 0. loss: loss: loss:	0.6575 0.6494 0.6616 0.6588
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 72/100 73/100 74/100 75/100	0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step	- - -	accuracy: 0 accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294		loss: 0. loss: loss: loss: loss:	6483 0.6575 0.6494 0.6616 0.6588 0.6436
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	69/100 70/100 71/100 72/100 73/100 74/100 75/100	0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step	- - -	accuracy: 0 accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294		loss: 0. loss: loss: loss: loss:	6483 0.6575 0.6494 0.6616 0.6588 0.6436
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 72/100 73/100 74/100 75/100 76/100	0s 0s 0s 0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step		accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711	- - - -	loss: 0. loss: loss: loss: loss: loss:	0.6575 0.6494 0.6616 0.6588 0.6436 0.6478
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	69/100 70/100 71/100 72/100 73/100 74/100 75/100 76/100	0s 0s 0s 0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step		accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711	- - - -	loss: 0. loss: loss: loss: loss: loss:	0.6575 0.6494 0.6616 0.6588 0.6436 0.6478
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16	69/100 70/100 71/100 72/100 73/100 74/100 75/100 76/100	0s 0s 0s 0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step		accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711 0.6694	1 c	loss: 0. loss: loss: loss: loss: loss: loss:	6483 0.6575 0.6494 0.6616 0.6588 0.6436 0.6478 0.6555
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 72/100 73/100 74/100 75/100 76/100 78/100	0s 0s 0s 0s 0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step 601us/step 737us/step		accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711 0.6694 0.6764	1 c	loss: 0. loss: loss: loss: loss: loss: loss: loss:	0.6575 0.6494 0.6616 0.6588 0.6436 0.6478 0.6555 0.6488
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 72/100 73/100 74/100 75/100 76/100 77/100	0s 0s 0s 0s 0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step 601us/step		accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711 0.6694 0.6764	1 c	loss: 0. loss: loss: loss: loss: loss: loss: loss:	0.6575 0.6494 0.6616 0.6588 0.6436 0.6478 0.6555 0.6488
16/16 Epoch	69/100 70/100 71/100 72/100 73/100 74/100 75/100 76/100 78/100 79/100	0s 0s 0s 0s 0s 0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step 601us/step 737us/step		accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711 0.6694 0.6764 0.6298		loss: 0. loss: loss: loss: loss: loss: loss: loss:	6483 0.6575 0.6494 0.6616 0.6588 0.6436 0.6478 0.6555 0.6488 0.6594
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 71/100 72/100 73/100 74/100 75/100 76/100 77/100 78/100 79/100	0s 0s 0s 0s 0s 0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step 601us/step 737us/step 715us/step 733us/step		accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711 0.6694 0.6764 0.6298 0.6547	1 c	loss: 0. loss: loss: loss: loss: loss: loss: loss: loss:	0.6575 0.6494 0.6616 0.6588 0.6436 0.6478 0.6555 0.6488 0.6594 0.6582
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 71/100 72/100 73/100 74/100 75/100 76/100 77/100 78/100 79/100 80/100	0s 0s 0s 0s 0s 0s 0s 0s 0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step 601us/step 737us/step 715us/step 733us/step		accuracy: 0 accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy: accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711 0.6694 0.6764 0.6298 0.6547	1 c	loss: 0. loss: loss: loss: loss: loss: loss: loss: loss:	0.6575 0.6494 0.6616 0.6588 0.6436 0.6478 0.6555 0.6488 0.6594 0.6582
16/16 Epoch	69/100 70/100 71/100 71/100 72/100 73/100 74/100 75/100 76/100 77/100 78/100 79/100 80/100 81/100	0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step 601us/step 737us/step 715us/step 733us/step 667us/step		accuracy: 0 accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711 0.6694 0.6764 0.6298 0.6547 0.6458	1 c	loss: 0. loss: loss: loss: loss: loss: loss: loss: loss: loss:	0.6575 0.6494 0.6616 0.6588 0.6436 0.6478 0.6555 0.6488 0.6594 0.6582 0.6564
16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch 16/16 Epoch	69/100 70/100 71/100 71/100 72/100 73/100 74/100 75/100 76/100 77/100 78/100 79/100 80/100	0s	1ms/step - 935us/step 980us/step 735us/step 808us/step 870us/step 869us/step 601us/step 737us/step 715us/step 733us/step 667us/step		accuracy: 0 accuracy:	.7132 - 0.6747 0.6997 0.6406 0.6598 0.7294 0.6711 0.6694 0.6764 0.6298 0.6547 0.6458	1 c	loss: 0. loss: loss: loss: loss: loss: loss: loss: loss: loss:	0.6575 0.6494 0.6616 0.6588 0.6436 0.6478 0.6555 0.6488 0.6594 0.6582 0.6564

```
16/16
                                 - 0s 666us/step - accuracy: 0.6843 - loss: 0.6470
       Epoch 83/100
                                 - 0s 671us/step - accuracy: 0.6779 - loss: 0.6432
       16/16 -
       Epoch 84/100
       16/16 •
                                  - 0s 734us/step - accuracy: 0.6724 - loss: 0.6419
       Epoch 85/100
                                  - 0s 654us/step - accuracy: 0.7002 - loss: 0.6260
       16/16 -
       Epoch 86/100
       16/16 -
                                 - 0s 687us/step - accuracy: 0.6596 - loss: 0.6563
       Epoch 87/100
       16/16 -
                                 - 0s 730us/step - accuracy: 0.6584 - loss: 0.6472
       Epoch 88/100
       16/16 -
                                 - 0s 736us/step - accuracy: 0.6623 - loss: 0.6390
       Epoch 89/100
       16/16 -
                                 - 0s 736us/step - accuracy: 0.6383 - loss: 0.6518
       Epoch 90/100
                                 - 0s 732us/step - accuracy: 0.6666 - loss: 0.6435
       16/16 -
       Epoch 91/100
                                 - 0s 674us/step - accuracy: 0.6514 - loss: 0.6459
       16/16 ---
       Epoch 92/100
       16/16 -
                                 - 0s 720us/step - accuracy: 0.6306 - loss: 0.6409
       Epoch 93/100
                                 - 0s 734us/step - accuracy: 0.6822 - loss: 0.6403
       16/16 -
       Epoch 94/100
       16/16 -
                                  - 0s 764us/step - accuracy: 0.7758 - loss: 0.5916
       Epoch 95/100
                                 - 0s 674us/step - accuracy: 0.6609 - loss: 0.6390
       16/16 -
       Epoch 96/100
                                 - 0s 734us/step - accuracy: 0.6455 - loss: 0.6421
       16/16 •
       Epoch 97/100
       16/16 -
                                 - 0s 665us/step - accuracy: 0.7091 - loss: 0.6284
       Epoch 98/100
                                 - 0s 941us/step - accuracy: 0.6563 - loss: 0.6404
       16/16 -
       Epoch 99/100
                                  - 0s 935us/step - accuracy: 0.7192 - loss: 0.6093
       16/16 -
       Epoch 100/100
       16/16 -
                                 - 0s 674us/step - accuracy: 0.6732 - loss: 0.6227
       5/5 -
                               • 0s 1ms/step - accuracy: 0.7743 - loss: 0.6117
In [6]: for n in neurons:
            plt.plot(num_layers, res[n], label=f'{n} Neurons per Layer')
        plt.xlabel('Layers')
        plt.ylabel('Accuracy')
        plt.title('Accuracy vs. Layers')
        plt.legend()
        plt.show()
```



## **Assessment of Optimal Configuration**

The three neuron configuration performs poorly with only a single layer, while the two neuron layer performs adequately while the 4 neuron layer performs at its maximum accuracy. In the second layer, both the 4 and 2 neuron configurations decrease in accuracy, while the 3 neuron config increases to near its maximum. None of the configurations perform well with three layers. In the fourth layer, the 2 and 4 neuron configs performally poorly, while the 3 neuron layer is at its maximum accuracy. Finally, in the fifth layer, all configs perform approximately the same, and roughly average accuracy.

The accuracy for all configurations is not great, likely due to only executing 100 epochs with batch size 10 (due to computer limitations). In any case, we see that 4 layers with 3 neurons each has the highest accuracy. This is only slightly greater than the 2nd layer, also with 3 neuron configuration. Either configuration could be seen as the optimum in this scenario. Strictly using accuracy, 3 neurons in each of 4 layers is optimum. However, it would be substantially faster to run the 2 layer, 3 neuron configuration than running that model over 4 layers. Thus, trading a slight amount of accuracy for a great increase in computer performance/speed may be worthwhile.

3. Using the most optimal configuraion (n-layers, k-neurons per layer), compare how tanh, sigmoid, softplus and relu effect the loss after 400 epochs. Try other Activation functions as well (https://keras.io/activations/)

Running 2 layers with 3 neurons, 100 epochs for computer performance considerations.

```
In [7]: from keras.layers import Activation
   act_fun = ['tanh', 'sigmoid', 'softplus', 'relu', 'softmax', 'selu', 'linear']
#computer can't handle 400 epochs, using 100
```

```
def mod_act(activation, epochs=100):
   model=Sequential()
   #add 2 Layers
   #layer 1
   model.add(Dense(3, input_dim = 2))
   model.add(Activation(activation))
   #layer 2
   model.add(Dense(3))
   model.add(Activation(activation))
   #output
   model.add(Dense(1, activation='sigmoid'))
   model.compile(loss='binary_crossentropy', optimizer='sgd', metrics=['accuracy'])
   model.fit(X, y, batch_size=10, epochs=100)
   loss, accuracy = model.evaluate(X, y)
   return loss, accuracy
act_res = {}
for activation in act_fun:
   loss, accuracy = mod_act(activation)
    act_res[activation] = {'loss': loss, 'accuracy': accuracy}
```

Epoch	1/100								
16/16		0s	1ms/step -	ad	ccuracy: 0	.5233 -	10	ss: 0.	7027
•	2/100								
		0s	878us/step	-	accuracy:	0.4689	- :	loss:	0.7136
	3/100	00	763us/step		2661102614	0 1077		10001	0 7050
	4/100	62	/osus/step	_	accuracy.	0.40//	-	1055.	0.7059
		0s	867us/step	_	accuracy:	0.5299	_ ;	loss:	0.6962
Epoch	5/100		·		•				
=		0s	800us/step	-	accuracy:	0.5012	- :	loss:	0.7015
•	6/100	_	/ .						
16/16		0s	800us/step	-	accuracy:	0.4831	-	loss:	0.7106
	7/100	95	733us/step	_	accuracy:	0.5287		loss:	0.6942
	8/100	05	, , , , , , , , , , , , , , , , , , , ,		accar acy.	0.3207		1033.	0.03.12
		0s	823us/step	-	accuracy:	0.5007	- 3	loss:	0.6998
	9/100								
		0s	750us/step	-	accuracy:	0.5396	- :	loss:	0.6891
	10/100	۵c	800us/step		accupacy.	0 1776		1000	0 7005
	11/100	03	000us/step	_	accuracy.	0.4770		1033.	0.7093
		0s	775us/step	_	accuracy:	0.5102	- :	loss:	0.6988
	12/100								
		0s	733us/step	-	accuracy:	0.4978	- :	loss:	0.7011
	13/100	Q.c	907us/step		accupacy:	0 4705		1000	0 7055
	14/100	62	30/us/step	_	accuracy.	0.4793		1055.	0.7033
-		0s	701us/step	_	accuracy:	0.4853	- :	loss:	0.6984
	15/100								
		0s	671us/step	-	accuracy:	0.5406	- :	loss:	0.6932
	16/100	۵c	735us/step		accupacy:	0 1508		1000	0 7061
	17/100	03	/33u3/3tep	_	accuracy.	0.4556		1033.	0.7001
		0s	734us/step	-	accuracy:	0.5075	- :	loss:	0.7005
	18/100								
	40/400	0s	2ms/step -	a	ccuracy: 0	.5419 -	10:	ss: 0.	6915
	19/100	۵s	1ms/step -	20	curacy: 0	5229 -	10	دد٠ ۵	6955
	20/100	03	тшэ/ эсср	u	cear acy. o	. 5225			0333
16/16		0s	957us/step	-	accuracy:	0.5116	- :	loss:	0.6995
	21/100	_						_	
	22/100	0s	800us/step	-	accuracy:	0.4958		loss:	0.6998
		0s	754us/step	_	accuracv:	0.5119	_ :	loss:	0.6942
Epoch	23/100		,		,				
		0s	724us/step	-	accuracy:	0.5384	- :	loss:	0.6904
	24/100	0 -	040 / 1			0 4030			0 6054
	25/100	ØS.	840us/step	-	accuracy:	0.4839	-	loss:	0.6951
		0s	665us/step	_	accuracy:	0.5254	_ :	loss:	0.6969
	26/100		, ,		,				
		0s	717us/step	-	accuracy:	0.5614	- :	loss:	0.6837
	27/100	_	6 <b>7</b> 3 / 1						0. 6004
	28/100	0s	673us/step	-	accuracy:	0.5223		loss:	0.6934
		0s	719us/step	_	accuracy:	0.5111	_ ;	loss:	0.6953
	29/100		-,						
		0s	705us/step	-	accuracy:	0.5073	- :	loss:	0.6935
	30/100	G.c	66700/5+5=		2001102	0 4027		1000	0 6044
	31/100	<b>U</b> S	667us/step	-	accuracy:	v.482/		1022:	0.0944
		0s	667us/step	_	accuracy:	0.5131	_ :	loss:	0.6947
•			· r		, .				

Epoch	32/100								
-		0s	667us/step	-	accuracy:	0.4946	-	loss:	0.6966
•	33/100								
		0s	667us/step	-	accuracy:	0.5455	-	loss:	0.6906
16/16	34/100	95	735us/step	_	accuracy:	0 4889	_	1055.	0 6954
	35/100	0.5	, , , , , , , , , , , , , , , , , , , ,		acca, acy.	0.1003		1033.	0.033.
16/16		0s	731us/step	-	accuracy:	0.5262	-	loss:	0.6915
	36/100		<b>704</b> / /					-	
	37/100	0S	704us/step	-	accuracy:	0.5530	-	TOSS:	0.6899
•		0s	801us/step	_	accuracy:	0.5209	_	loss:	0.6889
	38/100		•		•				
		0s	2ms/step -	a	ccuracy: 0	.5262 -	10	oss: 0.	6936
	39/100	۵c	936us/step	_	accupacy:	0 55/15	_	1000	0 6863
	40/100	03	230u3/3cep		accuracy.	0.5545		1033.	0.0005
		0s	1ms/step -	a	ccuracy: 0	.5433 -	10	oss: 0	6903
•	41/100	0 -	040 / 1			0 5470		,	0.6064
	42/100	05	912us/step	-	accuracy:	0.54/2	-	1055:	0.6864
16/16		0s	735us/step	-	accuracy:	0.5450	-	loss:	0.6873
	43/100								
		0s	803us/step	-	accuracy:	0.5460	-	loss:	0.6820
	44/100	0s	714us/step	_	accuracv:	0.5388	_	loss:	0.6909
	45/100		,						
		0s	667us/step	-	accuracy:	0.5155	-	loss:	0.6894
	46/100	۵s	667us/step	_	accuracy:	0 5245	_	1055.	0 6909
	47/100	03	007 из, эсср		accar acy.	0.3243		1033.	0.0303
		0s	745us/step	-	accuracy:	0.4551	-	loss:	0.6981
	48/100	Q.c	868us/step		accunacy:	0 5400		1000	0 6000
	49/100	03	000us/step	_	accur acy.	0.5400	_	1033.	0.0909
		0s	734us/step	-	accuracy:	0.5377	-	loss:	0.6891
-	50/100	0 -	670 / 1			0 5574		,	0 (022
	51/100	05	678us/step	-	accuracy:	0.55/4	-	1055:	0.6833
		0s	733us/step	-	accuracy:	0.5228	-	loss:	0.6902
	52/100	_						_	
	53/100	0s	667us/step	-	accuracy:	0.5322	-	loss:	0.6869
		0s	1ms/step -	ad	ccuracy: 0	.4851 -	10	oss: 0.	6948
	54/100		·		-				
		0s	1ms/step -	a	ccuracy: 0	.5256 -	10	oss: 0.	6910
	55/100 ————————	0s	842us/step	_	accuracv:	0.5473	_	loss:	0.6868
Epoch	56/100		о := ::-, с с с р						
		0s	869us/step	-	accuracy:	0.5495	-	loss:	0.6875
	57/100 	۵c	819us/step	_	accuracy:	0 5370	_	1000	0 6880
	58/100	03	019u3/3tep	_	accur acy.	0.5576	_	1033.	0.0880
16/16		0s	602us/step	-	accuracy:	0.5796	-	loss:	0.6872
	59/100	O.	COO / - + -		0.000.000	0 5254		100	0 (022
	60/100	υS	600us/step	-	accuracy:	0.5251	-	TOSS:	v.6933
		0s	819us/step	-	accuracy:	0.5788	-	loss:	0.6860
	61/100				-	_		_	
	62/100	0s	733us/step	-	accuracy:	0.6359	-	loss:	0.6773
		0s	736us/step	_	accuracv:	0.5847	_	loss:	0.6858
-, = -			-,		, •	= = = = =			

Epoch	63/100							
16/16		0s	1ms/step -	a	ccuracy: 0.	6167 -	loss: 0	.6787
	64/100	_					_	
	65/100	0s	897us/step	-	accuracy:	0.6386	- loss:	0.6787
		0s	1ms/step -	ac	ccuracy: 0.	5522 -	loss: 0	.6890
Epoch	66/100		-,					
		0s	835us/step	-	accuracy:	0.6542	- loss:	0.6799
•	67/100	0-	770 / a + a a			0 (472	1	0 6005
	68/100	05	779us/step	-	accuracy:	0.04/2	- 1055;	0.0805
		0s	673us/step	-	accuracy:	0.6474	- loss:	0.6792
	69/100							
16/16		0s	806us/step	-	accuracy:	0.6322	- loss:	0.6837
	70/100	95	771us/step	_	accuracy:	0 6329	- loss:	0 6796
	71/100	03	// 143/ 5 ccp		accuracy.	0.0323	1033.	0.0730
		0s	707us/step	-	accuracy:	0.6247	- loss:	0.6812
	72/100	0 -	670 / 1			0 (022	-	0.6040
	73/100	05	670us/step	-	accuracy:	0.6032	- 1055:	0.6849
		0s	1ms/step -	ad	ccuracy: 0.	6821 -	loss: 0	.6776
	74/100							
	75/100	0s	829us/step	-	accuracy:	0.5824	- loss:	0.6857
		0s	867us/step	_	accuracy:	0.5810	- loss:	0.6922
	76/100							
16/16		0s	1ms/step -	a	ccuracy: 0.	6640 -	loss: 0	.6771
	77/100	95	812us/step	_	accuracy:	0 6581	- loss:	0 6789
	78/100	05	01243, 500		accar acy.	0.0301	1033.	0.0703
		0s	718us/step	-	accuracy:	0.6747	- loss:	0.6758
	79/100	Q.c	733us/step		accupacy:	0 6024	loss	0 6917
	80/100	03	/33u3/3cep	_	accuracy.	0.0024	- 1033.	0.0047
		0s	668us/step	-	accuracy:	0.5979	- loss:	0.6807
	81/100		<b></b>			0 5010	-	0 6040
	82/100	05	604us/step	-	accuracy:	0.5919	- 10SS:	0.6810
		0s	1ms/step -	a	ccuracy: 0.	6000 -	loss: 0	.6836
	83/100							
	84/100	0s	1ms/step -	a	ccuracy: 0.	5789 -	loss: 0	.6819
		0s	1ms/step -	ad	ccuracy: 0.	5713 -	loss: 0	.6844
	85/100				,			
		0s	631us/step	-	accuracy:	0.6132	- loss:	0.6744
	86/100	95	747us/sten	_	accuracy:	0 6899	- loss:	0 6673
	87/100	03	747 d37 5 ccp		accuracy.	0.0055	1033.	0.0075
		0s	667us/step	-	accuracy:	0.6705	- loss:	0.6704
	88/100	0-	C00 / at an			0 (202	1	0 6777
	89/100	65	600us/step	-	accuracy:	0.6202	- 1055:	0.6///
		0s	533us/step	-	accuracy:	0.5931	- loss:	0.6794
	90/100	_					-	
	91/100	0s	1ms/step -	a	ccuracy: 0.	5990 -	loss: 0	.6763
•		0s	990us/step	_	accuracy:	0.6093	- loss:	0.6768
Epoch	92/100		·		-			
		0s	930us/step	-	accuracy:	0.6620	- loss:	0.6699
•	93/100	95	914us/step	_	accuracy.	0.6792	- loss.	0.6695
_0, 10		93	- = .as/ seep		accar acy.	3.0/52	1033.	3.3055

```
Epoch 94/100
16/16 -
                          - 0s 801us/step - accuracy: 0.6898 - loss: 0.6670
Epoch 95/100
                           • 0s 600us/step - accuracy: 0.6510 - loss: 0.6721
16/16 •
Epoch 96/100
16/16 -
                           0s 803us/step - accuracy: 0.6478 - loss: 0.6701
Epoch 97/100
16/16 -
                          - 0s 777us/step - accuracy: 0.6556 - loss: 0.6684
Epoch 98/100
                           0s 1ms/step - accuracy: 0.5950 - loss: 0.6755
16/16
Epoch 99/100
                           0s 1ms/step - accuracy: 0.6231 - loss: 0.6751
16/16 •
Epoch 100/100
16/16 -
                           0s 867us/step - accuracy: 0.6860 - loss: 0.6599
5/5 -
                        - 0s 1ms/step - accuracy: 0.4503 - loss: 0.7000
Epoch 1/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4696 - loss: 0.8209
Epoch 2/100
16/16 -
                          - 0s 935us/step - accuracy: 0.5566 - loss: 0.7318
Epoch 3/100
16/16 -
                          - 0s 866us/step - accuracy: 0.5019 - loss: 0.7699
Epoch 4/100
16/16 -
                           0s 800us/step - accuracy: 0.5603 - loss: 0.7156
Epoch 5/100
16/16 -
                           0s 1ms/step - accuracy: 0.4948 - loss: 0.7568
Epoch 6/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4813 - loss: 0.7578
Epoch 7/100
16/16
                          - 0s 798us/step - accuracy: 0.5052 - loss: 0.7362
Epoch 8/100
16/16 -
                          - 0s 798us/step - accuracy: 0.4540 - loss: 0.7595
Epoch 9/100
16/16 -
                           0s 705us/step - accuracy: 0.5461 - loss: 0.7040
Epoch 10/100
16/16 -
                           0s 786us/step - accuracy: 0.4890 - loss: 0.7298
Epoch 11/100
16/16 -
                          - 0s 733us/step - accuracy: 0.4639 - loss: 0.7389
Epoch 12/100
16/16
                          - 0s 1ms/step - accuracy: 0.5100 - loss: 0.7141
Epoch 13/100
16/16 •
                           0s 976us/step - accuracy: 0.5256 - loss: 0.7045
Epoch 14/100
16/16 -
                          0s 953us/step - accuracy: 0.5618 - loss: 0.6879
Epoch 15/100
                           0s 665us/step - accuracy: 0.5196 - loss: 0.7026
16/16 -
Epoch 16/100
16/16 -
                           0s 800us/step - accuracy: 0.4935 - loss: 0.7099
Epoch 17/100
16/16 -
                          - 0s 667us/step - accuracy: 0.4552 - loss: 0.7197
Epoch 18/100
16/16 •
                          - 0s 769us/step - accuracy: 0.5305 - loss: 0.6938
Epoch 19/100
16/16 -
                           0s 1ms/step - accuracy: 0.5047 - loss: 0.7008
Epoch 20/100
                          • 0s 1ms/step - accuracy: 0.4419 - loss: 0.7184
16/16 -
Epoch 21/100
                          - 0s 1ms/step - accuracy: 0.5297 - loss: 0.6936
16/16 -
Epoch 22/100
16/16 -
                           0s 1ms/step - accuracy: 0.5152 - loss: 0.6973
Epoch 23/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.5054 - loss: 0.6983
```

Epoch 24/100

```
16/16
                          - 0s 800us/step - accuracy: 0.4825 - loss: 0.7024
Epoch 25/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4935 - loss: 0.6987
Epoch 26/100
16/16
                           0s 1ms/step - accuracy: 0.4933 - loss: 0.6989
Epoch 27/100
16/16 -
                           0s 1ms/step - accuracy: 0.5340 - loss: 0.6915
Epoch 28/100
                          - 0s 1ms/step - accuracy: 0.5390 - loss: 0.6911
16/16 -
Epoch 29/100
16/16 -
                          - 0s 799us/step - accuracy: 0.5005 - loss: 0.6960
Epoch 30/100
                          - 0s 799us/step - accuracy: 0.4846 - loss: 0.6974
16/16 -
Epoch 31/100
16/16 -
                          - 0s 643us/step - accuracy: 0.5147 - loss: 0.6947
Epoch 32/100
16/16 -
                          - 0s 2ms/step - accuracy: 0.4481 - loss: 0.7005
Epoch 33/100
                          - 0s 873us/step - accuracy: 0.4108 - loss: 0.7048
16/16 -
Epoch 34/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.5215 - loss: 0.6925
Epoch 35/100
16/16 -
                           0s 871us/step - accuracy: 0.5220 - loss: 0.6922
Epoch 36/100
16/16 -
                           0s 734us/step - accuracy: 0.5247 - loss: 0.6923
Epoch 37/100
16/16 -
                          - 0s 805us/step - accuracy: 0.5571 - loss: 0.6887
Epoch 38/100
16/16
                          - 0s 1ms/step - accuracy: 0.5662 - loss: 0.6892
Epoch 39/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4545 - loss: 0.6970
Epoch 40/100
                           0s 1ms/step - accuracy: 0.4505 - loss: 0.6991
16/16 -
Epoch 41/100
16/16 -
                           0s 737us/step - accuracy: 0.4879 - loss: 0.6947
Epoch 42/100
                          - 0s 782us/step - accuracy: 0.4910 - loss: 0.6939
16/16 -
Epoch 43/100
                          - 0s 799us/step - accuracy: 0.4827 - loss: 0.6947
16/16
Epoch 44/100
16/16 •
                           0s 1ms/step - accuracy: 0.4636 - loss: 0.6953
Epoch 45/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.5033 - loss: 0.6922
Epoch 46/100
                           0s 999us/step - accuracy: 0.5214 - loss: 0.6925
16/16 -
Epoch 47/100
16/16 -
                          • 0s 647us/step - accuracy: 0.5489 - loss: 0.6917
Epoch 48/100
16/16 -
                          - 0s 732us/step - accuracy: 0.4818 - loss: 0.6939
Epoch 49/100
16/16 •
                          - 0s 798us/step - accuracy: 0.4942 - loss: 0.6941
Epoch 50/100
                           0s 1ms/step - accuracy: 0.5127 - loss: 0.6927
16/16
Epoch 51/100
16/16 -
                          • 0s 927us/step - accuracy: 0.5114 - loss: 0.6913
Epoch 52/100
                          - 0s 805us/step - accuracy: 0.4755 - loss: 0.6935
16/16 -
Epoch 53/100
16/16 -
                          • 0s 734us/step - accuracy: 0.4024 - loss: 0.6951
Epoch 54/100
16/16 -
                          - 0s 600us/step - accuracy: 0.4500 - loss: 0.6943
Epoch 55/100
```

16/16		05	800us/step	_	accuracy:	0.4409	- loss:	0.6932
	56/100	0.5	оооца, эсер		accu. acy.	0.1103	1033.	0.0332
		0s	674us/step	_	accuracy:	0.3678	- loss:	0.6939
	57/100							
		0s	649us/step	-	accuracy:	0.4030	- loss:	0.6936
	58/100	_					-	
		0s	933us/step	-	accuracy:	0.4352	- loss:	0.6944
16/16	59/100	Q.c	667us/step		accupacy:	0 1010	1055	0 6024
	60/100	03	007и3/3сер	_	accuracy.	0.4019	- 1033.	0.0324
•		0s	706us/step	_	accuracy:	0.4440	- loss:	0.6926
Epoch	61/100		·		•			
16/16		0s	668us/step	-	accuracy:	0.3296	- loss:	0.6952
	62/100						_	
		0s	667us/step	-	accuracy:	0.4067	- loss:	0.6930
•	63/100	۵c	674us/step		acciinacy:	0 1060	- 1055	0 6027
	64/100	03	074и3/3сер		accur acy.	0.4000	- 1033.	0.0327
		0s	666us/step	_	accuracy:	0.4068	- loss:	0.6931
Epoch	65/100		·		,			
		0s	666us/step	-	accuracy:	0.3806	- loss:	0.6932
•	66/100	_	/ /				-	
		0s	664us/step	-	accuracy:	0.3536	- loss:	0.6938
<b>16/16</b>	67/100	۵s	863us/step	_	accuracy.	0 3797	- loss	0 6934
	68/100	03	003и3/3сср		accuracy.	0.3/3/	1033.	0.0554
•		0s	733us/step	_	accuracy:	0.4426	- loss:	0.6928
Epoch	69/100							
		0s	866us/step	-	accuracy:	0.4025	- loss:	0.6934
	70/100	0 -	0.40 / 1			0 2602		0.6034
	71/100	0s	942us/step	-	accuracy:	0.3692	- loss:	0.6934
		95	800us/step	_	accuracy:	0.3956	- loss:	0.6934
	72/100		осоцо, осер		acca. acy v	01000		
		0s	798us/step	-	accuracy:	0.3992	- loss:	0.6929
	73/100							
16/16		0s	1ms/step -	ac	ccuracy: 0	.3690 -	loss: 0	.6933
	74/100	0.0	1ms/step -	-		4500	1000.	
	75/100	62	Illis/step -	ac	curacy. 0	.4590 -	1055. (	1.0931
•		0s	920us/step	_	accuracy:	0.3993	- loss:	0.6935
	76/100							
16/16		0s	734us/step	-	accuracy:	0.3994	- loss:	0.6940
Epoch	77/100	_					_	
		0s	733us/step	-	accuracy:	0.4045	- loss:	0.6934
	78/100 —————————	95	608us/sten	_	accuracy:	0 4605	- 1055	0 6937
	79/100	03	000и3/3сср		accuracy.	0.4003	1033.	0.0557
	,	0s	733us/step	_	accuracy:	0.4772	- loss:	0.6922
Epoch	80/100		·					
		0s	1ms/step -	ac	ccuracy: 0	.4951 -	loss: 0	.6921
	81/100	_				40.40		
		0s	1ms/step -	ac	ccuracy: 0	.4249 -	loss: 6	.6932
	82/100 	95	1ms/step -	ar	curacy. 0	.4196 -	1055. 0	. 6932
	83/100		, эсер	-	- 5 m. mey • 0 i	0		
		0s	807us/step	-	accuracy:	0.4366	- loss:	0.6929
	84/100							
	05 (400	0s	813us/step	-	accuracy:	0.4342	- loss:	0.6929
Epoch	85/100 ———————————————————————————————————	00	66605/5+55		2001102011	0 1000	1000	0 6022
	86/100	US	ooous/step	-	accuracy:	Ø.4886	- 1022;	و. وع. و
Lpotii	55/ 100							

```
16/16
                          - 0s 733us/step - accuracy: 0.4966 - loss: 0.6934
Epoch 87/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4033 - loss: 0.6936
Epoch 88/100
16/16
                          • 0s 1ms/step - accuracy: 0.4827 - loss: 0.6930
Epoch 89/100
16/16 -
                           0s 940us/step - accuracy: 0.5446 - loss: 0.6927
Epoch 90/100
                          - 0s 740us/step - accuracy: 0.4886 - loss: 0.6928
16/16 -
Epoch 91/100
16/16 -
                          - 0s 736us/step - accuracy: 0.4923 - loss: 0.6933
Epoch 92/100
                          - 0s 1ms/step - accuracy: 0.5084 - loss: 0.6940
16/16 -
Epoch 93/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4874 - loss: 0.6932
Epoch 94/100
16/16 -
                          - 0s 935us/step - accuracy: 0.5663 - loss: 0.6922
Epoch 95/100
                          - 0s 710us/step - accuracy: 0.4475 - loss: 0.6935
16/16 -
Epoch 96/100
16/16 -
                          - 0s 861us/step - accuracy: 0.3685 - loss: 0.6955
Epoch 97/100
16/16 -
                          - 0s 735us/step - accuracy: 0.4122 - loss: 0.6935
Epoch 98/100
16/16 -
                          · 0s 840us/step - accuracy: 0.5076 - loss: 0.6926
Epoch 99/100
16/16 -
                          - 0s 998us/step - accuracy: 0.5055 - loss: 0.6928
Epoch 100/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4574 - loss: 0.6929
5/5 -
                         0s 1ms/step - accuracy: 0.3898 - loss: 0.6952
Epoch 1/100
                          - 0s 1ms/step - accuracy: 0.5000 - loss: 0.7179
16/16 -
Epoch 2/100
16/16 -
                          - 0s 899us/step - accuracy: 0.4599 - loss: 0.7302
Epoch 3/100
16/16 -
                          0s 867us/step - accuracy: 0.5543 - loss: 0.6902
Epoch 4/100
                          - 0s 868us/step - accuracy: 0.4992 - loss: 0.7068
16/16 -
Epoch 5/100
16/16 -
                          0s 800us/step - accuracy: 0.4805 - loss: 0.7079
Epoch 6/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4749 - loss: 0.7064
Epoch 7/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4864 - loss: 0.7065
Epoch 8/100
16/16 •
                          - 0s 1ms/step - accuracy: 0.4544 - loss: 0.7117
Epoch 9/100
16/16 -
                           0s 1ms/step - accuracy: 0.4608 - loss: 0.7058
Epoch 10/100
                          - 0s 667us/step - accuracy: 0.4965 - loss: 0.6973
16/16 -
Epoch 11/100
16/16 -
                          - 0s 600us/step - accuracy: 0.5355 - loss: 0.6905
Epoch 12/100
16/16 -
                          - 0s 733us/step - accuracy: 0.5653 - loss: 0.6821
Epoch 13/100
16/16 -
                          - 0s 2ms/step - accuracy: 0.4791 - loss: 0.6983
Epoch 14/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.5094 - loss: 0.6929
Epoch 15/100
16/16 •
                           0s 933us/step - accuracy: 0.5733 - loss: 0.6873
Epoch 16/100
16/16 -
                           0s 800us/step - accuracy: 0.4827 - loss: 0.6956
```

```
Epoch 17/100
16/16 -
                          - 0s 809us/step - accuracy: 0.5017 - loss: 0.6947
Epoch 18/100
                          - 0s 667us/step - accuracy: 0.4387 - loss: 0.6948
16/16 •
Epoch 19/100
16/16 -
                           0s 2ms/step - accuracy: 0.4586 - loss: 0.6958
Epoch 20/100
                          - 0s 867us/step - accuracy: 0.4990 - loss: 0.6899
16/16 -
Epoch 21/100
                           0s 1000us/step - accuracy: 0.4527 - loss: 0.6883
16/16
Epoch 22/100
                           0s 969us/step - accuracy: 0.4647 - loss: 0.6904
16/16 -
Epoch 23/100
16/16 -
                          - 0s 733us/step - accuracy: 0.3245 - loss: 0.6931
Epoch 24/100
16/16 -
                          - 0s 733us/step - accuracy: 0.4821 - loss: 0.6854
Epoch 25/100
16/16 -
                           0s 734us/step - accuracy: 0.3212 - loss: 0.6926
Epoch 26/100
16/16 -
                           0s 1ms/step - accuracy: 0.3144 - loss: 0.6953
Epoch 27/100
                          - 0s 867us/step - accuracy: 0.3429 - loss: 0.6919
16/16 -
Epoch 28/100
                          - 0s 772us/step - accuracy: 0.3453 - loss: 0.6911
16/16 -
Epoch 29/100
16/16 -
                          - 0s 667us/step - accuracy: 0.2822 - loss: 0.6935
Epoch 30/100
                           0s 733us/step - accuracy: 0.3478 - loss: 0.6924
16/16 -
Epoch 31/100
16/16 -
                           0s 767us/step - accuracy: 0.3485 - loss: 0.6895
Epoch 32/100
                          - 0s 2ms/step - accuracy: 0.3974 - loss: 0.6908
16/16 -
Epoch 33/100
16/16
                          - 0s 1ms/step - accuracy: 0.3793 - loss: 0.6914
Epoch 34/100
16/16 -
                           0s 1ms/step - accuracy: 0.4970 - loss: 0.6912
Epoch 35/100
                           0s 600us/step - accuracy: 0.4102 - loss: 0.6909
16/16 -
Epoch 36/100
16/16 -
                           0s 635us/step - accuracy: 0.4179 - loss: 0.6919
Epoch 37/100
16/16 -
                           0s 2ms/step - accuracy: 0.4794 - loss: 0.6926
Epoch 38/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4116 - loss: 0.6933
Epoch 39/100
16/16 -
                          • 0s 1000us/step - accuracy: 0.4559 - loss: 0.6912
Epoch 40/100
16/16 -
                           0s 661us/step - accuracy: 0.5446 - loss: 0.6913
Epoch 41/100
16/16 -
                           0s 733us/step - accuracy: 0.5301 - loss: 0.6909
Epoch 42/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.5270 - loss: 0.6921
Epoch 43/100
16/16 •
                          - 0s 1ms/step - accuracy: 0.5789 - loss: 0.6903
Epoch 44/100
16/16 -
                          - 0s 815us/step - accuracy: 0.5427 - loss: 0.6902
Epoch 45/100
16/16
                          - 0s 1ms/step - accuracy: 0.5346 - loss: 0.6918
Epoch 46/100
16/16
                           0s 867us/step - accuracy: 0.5268 - loss: 0.6920
Epoch 47/100
16/16 -
                           0s 1ms/step - accuracy: 0.6128 - loss: 0.6880
```

```
Epoch 48/100
16/16 -
                          - 0s 933us/step - accuracy: 0.5696 - loss: 0.6913
Epoch 49/100
                          - 0s 1ms/step - accuracy: 0.6001 - loss: 0.6911
16/16 -
Epoch 50/100
16/16 -
                           0s 867us/step - accuracy: 0.6075 - loss: 0.6903
Epoch 51/100
16/16 -
                          - 0s 802us/step - accuracy: 0.5962 - loss: 0.6922
Epoch 52/100
                           0s 667us/step - accuracy: 0.5985 - loss: 0.6928
16/16
Epoch 53/100
                           0s 2ms/step - accuracy: 0.4681 - loss: 0.6957
16/16 -
Epoch 54/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6161 - loss: 0.6916
Epoch 55/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6077 - loss: 0.6916
Epoch 56/100
16/16 -
                           0s 667us/step - accuracy: 0.6245 - loss: 0.6902
Epoch 57/100
16/16 -
                           0s 667us/step - accuracy: 0.5001 - loss: 0.6949
Epoch 58/100
                          - 0s 733us/step - accuracy: 0.6620 - loss: 0.6901
16/16 -
Epoch 59/100
                          - 0s 1ms/step - accuracy: 0.6410 - loss: 0.6912
16/16 -
Epoch 60/100
16/16 -
                          • 0s 1ms/step - accuracy: 0.6260 - loss: 0.6898
Epoch 61/100
                          • 0s 1ms/step - accuracy: 0.6413 - loss: 0.6902
16/16 -
Epoch 62/100
16/16 •
                           0s 668us/step - accuracy: 0.5571 - loss: 0.6939
Epoch 63/100
                          - 0s 623us/step - accuracy: 0.5586 - loss: 0.6911
16/16 -
Epoch 64/100
16/16
                          - 0s 601us/step - accuracy: 0.6113 - loss: 0.6905
Epoch 65/100
16/16 •
                           0s 667us/step - accuracy: 0.6001 - loss: 0.6909
Epoch 66/100
                           0s 869us/step - accuracy: 0.6417 - loss: 0.6917
16/16 -
Epoch 67/100
16/16 •
                           0s 1ms/step - accuracy: 0.6246 - loss: 0.6916
Epoch 68/100
16/16 •
                           0s 934us/step - accuracy: 0.6318 - loss: 0.6909
Epoch 69/100
16/16 -
                          - 0s 834us/step - accuracy: 0.5118 - loss: 0.6960
Epoch 70/100
16/16 -
                          0s 733us/step - accuracy: 0.6072 - loss: 0.6914
Epoch 71/100
16/16 -
                           0s 800us/step - accuracy: 0.6347 - loss: 0.6936
Epoch 72/100
                           0s 2ms/step - accuracy: 0.6495 - loss: 0.6897
16/16 -
Epoch 73/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.7076 - loss: 0.6872
Epoch 74/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6230 - loss: 0.6897
Epoch 75/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6372 - loss: 0.6922
Epoch 76/100
16/16
                           0s 667us/step - accuracy: 0.6787 - loss: 0.6904
Epoch 77/100
16/16
                           0s 734us/step - accuracy: 0.5005 - loss: 0.6958
Epoch 78/100
16/16 -
                           0s 1ms/step - accuracy: 0.5958 - loss: 0.6940
```

```
Epoch 79/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6043 - loss: 0.6923
Epoch 80/100
                          - 0s 1ms/step - accuracy: 0.5803 - loss: 0.6939
16/16
Epoch 81/100
16/16 -
                          - 0s 691us/step - accuracy: 0.6060 - loss: 0.6915
Epoch 82/100
16/16 -
                          - 0s 732us/step - accuracy: 0.5215 - loss: 0.6956
Epoch 83/100
                           0s 2ms/step - accuracy: 0.6177 - loss: 0.6917
16/16
Epoch 84/100
                           0s 1ms/step - accuracy: 0.5740 - loss: 0.6909
16/16
Epoch 85/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6104 - loss: 0.6924
Epoch 86/100
16/16
                          - 0s 667us/step - accuracy: 0.6425 - loss: 0.6890
Epoch 87/100
16/16 -
                           0s 690us/step - accuracy: 0.6125 - loss: 0.6908
Epoch 88/100
                           0s 681us/step - accuracy: 0.6089 - loss: 0.6924
16/16
Epoch 89/100
                          - 0s 751us/step - accuracy: 0.6670 - loss: 0.6894
16/16 •
Epoch 90/100
                          - 0s 1ms/step - accuracy: 0.6603 - loss: 0.6902
16/16 •
Epoch 91/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6041 - loss: 0.6929
Epoch 92/100
                          • 0s 868us/step - accuracy: 0.6107 - loss: 0.6917
16/16 -
Epoch 93/100
16/16 •
                           0s 667us/step - accuracy: 0.6122 - loss: 0.6916
Epoch 94/100
                          - 0s 735us/step - accuracy: 0.5838 - loss: 0.6939
16/16 -
Epoch 95/100
16/16
                          - 0s 667us/step - accuracy: 0.5837 - loss: 0.6924
Epoch 96/100
16/16 •
                           0s 1ms/step - accuracy: 0.6503 - loss: 0.6926
Epoch 97/100
                          • 0s 1ms/step - accuracy: 0.6128 - loss: 0.6912
16/16 -
Epoch 98/100
16/16 -
                           0s 1ms/step - accuracy: 0.6634 - loss: 0.6889
Epoch 99/100
16/16 •
                           0s 733us/step - accuracy: 0.6269 - loss: 0.6914
Epoch 100/100
16/16 -
                          - 0s 701us/step - accuracy: 0.6433 - loss: 0.6902
5/5 -
                        • 0s 1ms/step - accuracy: 0.6753 - loss: 0.6876
Epoch 1/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4812 - loss: 0.6975
Epoch 2/100
16/16 -
                          - 0s 802us/step - accuracy: 0.4574 - loss: 0.6750
Epoch 3/100
16/16 -
                          - 0s 868us/step - accuracy: 0.3761 - loss: 0.6875
Epoch 4/100
16/16
                           0s 1ms/step - accuracy: 0.3865 - loss: 0.6783
Epoch 5/100
16/16 -
                          · 0s 800us/step - accuracy: 0.3484 - loss: 0.6874
Epoch 6/100
                          - 0s 866us/step - accuracy: 0.4120 - loss: 0.6644
16/16 •
Epoch 7/100
16/16 •
                           0s 1ms/step - accuracy: 0.4326 - loss: 0.6639
Epoch 8/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.3990 - loss: 0.6578
```

Epoch 9/100

16/16		05	1ms/step -	а	ccuracy: 0.	3641 -	loss: 0	.6680
	10/100	0.5	23, 3 ccp	<u>_</u>	ccui acy. o.	. 50	1033. 0	
		0s	835us/step	_	accuracy:	0.4732	- loss:	0.6438
Epoch	11/100				-			
16/16		0s	667us/step	-	accuracy:	0.4983	- loss:	0.6532
	12/100							
		0s	667us/step	-	accuracy:	0.5711	- loss:	0.6274
	13/100							
16/16		0s	978us/step	-	accuracy:	0.5499	- loss:	0.6450
•	14/100	0-	067/			0 (530	1	0 (221
	15/100	05	867us/step	-	accuracy:	0.6530	- 1055:	0.6231
		۵s	800us/step	_	accuracy:	a 5892	- loss.	0 6367
	16/100	03	000и3/3сср		accuracy.	0.3032	1033.	0.0307
		0s	968us/step	_	accuracy:	0.6237	- loss:	0.6250
	17/100							
16/16		0s	669us/step	-	accuracy:	0.5933	- loss:	0.6320
Epoch	18/100							
		0s	667us/step	-	accuracy:	0.6330	- loss:	0.6244
Epoch	19/100					E044		
	20/100	US	1ms/step -	а	ccuracy: 0.	5911 -	TOSS: 0	.6294
•		۵c	931us/step	_	accuracy:	0 6372	- 1055.	0 63/15
	21/100	03	<b>ээтиз/зсер</b>		accuracy.	0.0372	- 1033.	0.0545
16/16		0s	798us/step	_	accuracy:	0.5991	- loss:	0.6235
Epoch	22/100				-			
		0s	665us/step	-	accuracy:	0.5888	- loss:	0.6350
	23/100	_					_	
		0s	798us/step	-	accuracy:	0.6123	- loss:	0.6087
	24/100	۵c	735us/step		accupacy:	0 6726	- 10551	0 6144
	25/100	03	75543/3 сер		accuracy.	0.0720	1033.	0.0144
•		0s	2ms/step -	а	ccuracy: 0.	6285 -	loss: 0	6192
Epoch	26/100							
		0s	1ms/step -	а	ccuracy: 0.	5676 -	loss: 0	.6235
	27/100						7 0	
16/16	28/100	05	1ms/step -	а	ccuracy: 0.	6022 -	1055: 0	.6200
		05	743us/step	_	accuracy:	0.6028	- loss:	0.6192
	29/100		, с сор		,			
16/16		0s	672us/step	-	accuracy:	0.6528	- loss:	0.6040
	30/100							
		0s	712us/step	-	accuracy:	0.6659	- loss:	0.6047
Epoch	31/100	0-	2	_		C402	1 0	6040
	32/100	05	2ms/step -	а	ccuracy. 0.	0492 -	1055. 6	.0040
		0s	1ms/step -	а	ccuracv: 0.	6481 -	loss: 0	.6028
	33/100		-,					
•		0s	999us/step	-	accuracy:	0.6549	- loss:	0.6062
•	34/100							
		0s	806us/step	-	accuracy:	0.5732	- loss:	0.6277
	35/100	0 -	700 / 1			0 6704	,	0 5050
	36/100	US	780us/step	-	accuracy:	0.6/84	- 1088:	0.5950
		05	1ms/step -	а	ccuracy: 0	.6286 -	loss: 0	.6070
	37/100		, o cop	~			1135. 0	
		0s	1ms/step -	a	ccuracy: 0.	6464 -	loss: 0	.6008
	38/100							
	20/100	0s	1ms/step -	а	ccuracy: 0.	6443 -	loss: 0	.5867
Epoch	39/100	0-	001/-+-		0.000.00	0 [71]	1	0 (370
	40/100	ØS	801us/step	-	accuracy:	0.5/13	- 10SS:	0.63/8
Ehocu	40/ 100							

```
16/16
                          - 0s 843us/step - accuracy: 0.6812 - loss: 0.5820
Epoch 41/100
16/16 -
                          - 0s 2ms/step - accuracy: 0.6836 - loss: 0.5968
Epoch 42/100
16/16
                           0s 1ms/step - accuracy: 0.6962 - loss: 0.5756
Epoch 43/100
16/16 -
                           0s 1ms/step - accuracy: 0.5613 - loss: 0.6152
Epoch 44/100
                          - 0s 740us/step - accuracy: 0.6138 - loss: 0.6079
16/16 -
Epoch 45/100
16/16 -
                          - 0s 700us/step - accuracy: 0.6799 - loss: 0.5787
Epoch 46/100
                           0s 1ms/step - accuracy: 0.6306 - loss: 0.6032
16/16 -
Epoch 47/100
                          • 0s 975us/step - accuracy: 0.7139 - loss: 0.5705
16/16 -
Epoch 48/100
16/16 -
                           0s 801us/step - accuracy: 0.6339 - loss: 0.5946
Epoch 49/100
16/16 -
                          - 0s 869us/step - accuracy: 0.6670 - loss: 0.5873
Epoch 50/100
16/16 -
                          - 0s 796us/step - accuracy: 0.6867 - loss: 0.5948
Epoch 51/100
16/16 -
                           0s 1ms/step - accuracy: 0.6609 - loss: 0.5946
Epoch 52/100
16/16 -
                           0s 970us/step - accuracy: 0.6132 - loss: 0.5937
Epoch 53/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6807 - loss: 0.5694
Epoch 54/100
16/16
                          0s 736us/step - accuracy: 0.6714 - loss: 0.5785
Epoch 55/100
16/16 -
                          - 0s 781us/step - accuracy: 0.6787 - loss: 0.5790
Epoch 56/100
                           0s 2ms/step - accuracy: 0.7043 - loss: 0.5789
16/16 -
Epoch 57/100
16/16 -
                           0s 878us/step - accuracy: 0.6082 - loss: 0.5958
Epoch 58/100
16/16 -
                          - 0s 867us/step - accuracy: 0.6643 - loss: 0.5759
Epoch 59/100
16/16
                          - 0s 735us/step - accuracy: 0.6722 - loss: 0.5615
Epoch 60/100
16/16
                           0s 751us/step - accuracy: 0.6585 - loss: 0.5821
Epoch 61/100
16/16 -
                          - 0s 737us/step - accuracy: 0.6897 - loss: 0.5618
Epoch 62/100
                           0s 702us/step - accuracy: 0.6263 - loss: 0.5890
16/16 -
Epoch 63/100
16/16 -
                           0s 1ms/step - accuracy: 0.6513 - loss: 0.5812
Epoch 64/100
16/16 -
                          - 0s 933us/step - accuracy: 0.6524 - loss: 0.5764
Epoch 65/100
16/16 •
                          - 0s 1ms/step - accuracy: 0.6160 - loss: 0.5861
Epoch 66/100
16/16
                           0s 898us/step - accuracy: 0.6808 - loss: 0.5659
Epoch 67/100
16/16 -
                          · 0s 800us/step - accuracy: 0.6691 - loss: 0.5880
Epoch 68/100
                          - 0s 732us/step - accuracy: 0.6487 - loss: 0.5690
16/16 •
Epoch 69/100
16/16
                           0s 1ms/step - accuracy: 0.7329 - loss: 0.5509
Epoch 70/100
16/16 -
                          - 0s 1000us/step - accuracy: 0.6549 - loss: 0.5721
Epoch 71/100
```

```
16/16
                          - 0s 1ms/step - accuracy: 0.6567 - loss: 0.5536
Epoch 72/100
16/16 -
                          - 0s 750us/step - accuracy: 0.7026 - loss: 0.5619
Epoch 73/100
16/16 -
                           0s 733us/step - accuracy: 0.6805 - loss: 0.5500
Epoch 74/100
                           0s 1ms/step - accuracy: 0.6887 - loss: 0.5420
16/16 -
Epoch 75/100
                          - 0s 1ms/step - accuracy: 0.7140 - loss: 0.5448
16/16 -
Epoch 76/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6383 - loss: 0.5926
Epoch 77/100
                          - 0s 731us/step - accuracy: 0.7109 - loss: 0.5492
16/16 -
Epoch 78/100
16/16 -
                          - 0s 735us/step - accuracy: 0.6805 - loss: 0.5500
Epoch 79/100
16/16 -
                          0s 1ms/step - accuracy: 0.6630 - loss: 0.5444
Epoch 80/100
                          - 0s 1ms/step - accuracy: 0.6960 - loss: 0.5501
16/16 -
Epoch 81/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6628 - loss: 0.5732
Epoch 82/100
16/16 -
                          0s 733us/step - accuracy: 0.6602 - loss: 0.5540
Epoch 83/100
16/16 -
                           0s 760us/step - accuracy: 0.6716 - loss: 0.5611
Epoch 84/100
16/16 -
                          - 0s 733us/step - accuracy: 0.7074 - loss: 0.5313
Epoch 85/100
16/16
                          - 0s 1ms/step - accuracy: 0.7057 - loss: 0.5792
Epoch 86/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.7256 - loss: 0.5389
Epoch 87/100
                           0s 742us/step - accuracy: 0.6837 - loss: 0.5398
16/16 -
Epoch 88/100
16/16 -
                           0s 732us/step - accuracy: 0.7075 - loss: 0.5331
Epoch 89/100
16/16 -
                          - 0s 845us/step - accuracy: 0.6926 - loss: 0.5382
Epoch 90/100
16/16
                          - 0s 1ms/step - accuracy: 0.6697 - loss: 0.5538
Epoch 91/100
16/16 •
                           0s 1ms/step - accuracy: 0.6006 - loss: 0.5617
Epoch 92/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6799 - loss: 0.5442
Epoch 93/100
                          - 0s 863us/step - accuracy: 0.6733 - loss: 0.5750
16/16 -
Epoch 94/100
16/16 -
                          • 0s 1ms/step - accuracy: 0.6715 - loss: 0.5536
Epoch 95/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6492 - loss: 0.5810
Epoch 96/100
16/16 -
                          - 0s 666us/step - accuracy: 0.6712 - loss: 0.5662
Epoch 97/100
16/16 -
                           0s 796us/step - accuracy: 0.6624 - loss: 0.5472
Epoch 98/100
16/16 -
                          - 0s 784us/step - accuracy: 0.6938 - loss: 0.5502
Epoch 99/100
                          - 0s 2ms/step - accuracy: 0.6899 - loss: 0.5503
16/16 •
Epoch 100/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6422 - loss: 0.5836
5/5
                        • 0s 2ms/step - accuracy: 0.8082 - loss: 0.5303
Epoch 1/100
16/16 -
                          - 0s 2ms/step - accuracy: 0.5234 - loss: 0.6990
```

Epoch	2/100					
		0s	1ms/step -	accuracy:	0.4783 -	loss: 0.7120
	3/100	•	4 / 1		0 5430	1 0 6000
	4/100	ØS.	ims/step -	accuracy:	0.5138 -	loss: 0.6998
		0s	864us/step	- accuracy	y: 0.5474	- loss: 0.6895
Epoch	5/100			_		
		0s	933us/step	- accuracy	y: 0.4938	- loss: 0.7033
	6/100	0-	027 / = + = =		0 5507	1 0 6000
-	7/100	65	937uS/Step	- accuracy	y: 0.5507	- loss: 0.6880
•		0s	2ms/step -	accuracy:	0.5574 -	loss: 0.6864
	8/100					
		0s	1ms/step -	accuracy:	0.5180 -	loss: 0.6952
	9/100	00	1mc/c+on	2661182614	0 4122	locc: 0 7162
	10/100	05	Illis/step -	accuracy.	0.4133 -	loss: 0.7162
•		0s	934us/step	- accuracy	y: 0.4882	- loss: 0.6999
	11/100					
		0s	2ms/step -	accuracy:	0.5053 -	loss: 0.6963
	12/100	۵c	1mc/stan -	accuracy.	0 5081 -	loss: 0.6954
	13/100	03	тшэ/ эсср	accuracy.	0.5001	1033. 0.0554
		0s	1ms/step -	accuracy:	0.5188 -	loss: 0.6934
	14/100	_				
		0s	867us/step	- accuracy	y: 0.5023	- loss: 0.6957
	15/100	05	852us/sten	- accuracy	v: 0.4550	- loss: 0.7020
	16/100	-	052057500		,	
16/16		0s	2ms/step -	accuracy:	0.4722 -	loss: 0.6990
	17/100	•	4 / 1		0 4043	1 0 000
	18/100	<b>0</b> S	ims/step -	accuracy:	0.4913 -	loss: 0.6965
•		0s	937us/step	- accuracy	y: 0.4097	- loss: 0.7053
	19/100		·			
		0s	934us/step	- accuracy	y: 0.5453	- loss: 0.6896
	20/100	۵c	2ms/stan -	accupacy:	0 5580 -	loss: 0.6878
	21/100	03	21113/3CEP -	accuracy.	0.5565 -	1033. 0.0076
•		0s	1ms/step -	accuracy:	0.5133 -	loss: 0.6932
	22/100	_				
	23/100	0s	1ms/step -	accuracy:	0.61/5 -	loss: 0.6826
		0s	954us/step	- accuracy	y: 0.5050	- loss: 0.6935
	24/100		·			
		0s	1ms/step -	accuracy:	0.5243 -	loss: 0.6916
	25/100 	95	1ms/sten -	accuracy:	0.4718 -	loss: 0.6958
	26/100	03	тшэ/ эсср	accar acy.	0.4710	1033. 0.0550
		0s	1ms/step -	accuracy:	0.5099 -	loss: 0.6928
	27/100	_	4 / /		0 4744	1 0 5054
	28/100	<b>0</b> S	ims/step -	accuracy:	0.4/44 -	loss: 0.6954
•		0s	818us/step	- accuracy	y: 0.5001	- loss: 0.6933
Epoch	29/100		•	_		
		0s	1ms/step -	accuracy:	0.4468 -	loss: 0.6962
	30/100	۵c	1ms/stan	accuracy.	0 5350 -	loss: 0.6911
	31/100	U3	-m3/3cch -	accui acy.	J.JJJ0 -	1033. 0.0311
		0s	1ms/step -	accuracy:	0.4969 -	loss: 0.6934
•	32/100	_				<u>.</u>
16/16		0s	1ms/step -	accuracy:	0.5329 -	loss: 0.6913

```
Epoch 33/100
16/16 -
                          - 0s 968us/step - accuracy: 0.5344 - loss: 0.6914
Epoch 34/100
                          - 0s 1ms/step - accuracy: 0.5309 - loss: 0.6917
16/16 •
Epoch 35/100
16/16 -
                           0s 1ms/step - accuracy: 0.5057 - loss: 0.6926
Epoch 36/100
16/16 -
                          - 0s 873us/step - accuracy: 0.5263 - loss: 0.6920
Epoch 37/100
                           0s 871us/step - accuracy: 0.5295 - loss: 0.6919
16/16
Epoch 38/100
                           0s 852us/step - accuracy: 0.4775 - loss: 0.6939
16/16 -
Epoch 39/100
16/16 -
                          - 0s 868us/step - accuracy: 0.5075 - loss: 0.6927
Epoch 40/100
16/16 -
                          - 0s 2ms/step - accuracy: 0.5429 - loss: 0.6916
Epoch 41/100
16/16 -
                           0s 1ms/step - accuracy: 0.4785 - loss: 0.6938
Epoch 42/100
16/16 -
                           0s 1ms/step - accuracy: 0.5024 - loss: 0.6926
Epoch 43/100
                          • 0s 817us/step - accuracy: 0.5410 - loss: 0.6918
16/16 -
Epoch 44/100
                          - 0s 875us/step - accuracy: 0.5115 - loss: 0.6926
16/16 •
Epoch 45/100
16/16 -
                           0s 804us/step - accuracy: 0.4977 - loss: 0.6928
Epoch 46/100
                           0s 1ms/step - accuracy: 0.4813 - loss: 0.6932
16/16 -
Epoch 47/100
16/16 -
                           0s 1000us/step - accuracy: 0.5287 - loss: 0.6920
Epoch 48/100
                          - 0s 1ms/step - accuracy: 0.4868 - loss: 0.6928
16/16 -
Epoch 49/100
16/16
                          - 0s 893us/step - accuracy: 0.5515 - loss: 0.6918
Epoch 50/100
16/16 -
                           0s 868us/step - accuracy: 0.5356 - loss: 0.6925
Epoch 51/100
                           0s 801us/step - accuracy: 0.5047 - loss: 0.6924
16/16 -
Epoch 52/100
16/16 -
                           0s 2ms/step - accuracy: 0.5392 - loss: 0.6928
Epoch 53/100
16/16 -
                           0s 1ms/step - accuracy: 0.5338 - loss: 0.6931
Epoch 54/100
16/16 -
                          - 0s 932us/step - accuracy: 0.5689 - loss: 0.6930
Epoch 55/100
16/16 -
                          - 0s 942us/step - accuracy: 0.5497 - loss: 0.6928
Epoch 56/100
16/16 -
                           0s 865us/step - accuracy: 0.5491 - loss: 0.6926
Epoch 57/100
                           0s 941us/step - accuracy: 0.6152 - loss: 0.6926
16/16 -
Epoch 58/100
16/16 -
                          - 0s 2ms/step - accuracy: 0.6398 - loss: 0.6920
Epoch 59/100
16/16 •
                          - 0s 1ms/step - accuracy: 0.5895 - loss: 0.6932
Epoch 60/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.6788 - loss: 0.6928
Epoch 61/100
16/16
                           0s 869us/step - accuracy: 0.6184 - loss: 0.6925
Epoch 62/100
16/16
                           0s 932us/step - accuracy: 0.6389 - loss: 0.6933
Epoch 63/100
16/16 -
                           0s 898us/step - accuracy: 0.7097 - loss: 0.6922
```

```
Epoch 64/100
16/16 -
                          - 0s 2ms/step - accuracy: 0.5969 - loss: 0.6935
Epoch 65/100
                          - 0s 1ms/step - accuracy: 0.6493 - loss: 0.6930
16/16
Epoch 66/100
16/16 -
                           0s 1ms/step - accuracy: 0.6542 - loss: 0.6924
Epoch 67/100
16/16 -
                          - 0s 937us/step - accuracy: 0.5835 - loss: 0.6930
Epoch 68/100
                           0s 854us/step - accuracy: 0.5485 - loss: 0.6932
16/16
Epoch 69/100
                           0s 938us/step - accuracy: 0.5399 - loss: 0.6926
16/16
Epoch 70/100
                          - 0s 1ms/step - accuracy: 0.6558 - loss: 0.6925
16/16 -
Epoch 71/100
16/16 -
                          - 0s 932us/step - accuracy: 0.6059 - loss: 0.6931
Epoch 72/100
16/16 -
                           0s 867us/step - accuracy: 0.5708 - loss: 0.6925
Epoch 73/100
16/16 -
                           0s 885us/step - accuracy: 0.5673 - loss: 0.6927
Epoch 74/100
                          - 0s 935us/step - accuracy: 0.6573 - loss: 0.6923
16/16 -
Epoch 75/100
                          - 0s 872us/step - accuracy: 0.6108 - loss: 0.6929
16/16 -
Epoch 76/100
16/16 -
                           0s 1ms/step - accuracy: 0.4650 - loss: 0.6925
Epoch 77/100
                          • 0s 1000us/step - accuracy: 0.6320 - loss: 0.6923
16/16 -
Epoch 78/100
16/16 -
                           0s 989us/step - accuracy: 0.6183 - loss: 0.6928
Epoch 79/100
                          - 0s 891us/step - accuracy: 0.6587 - loss: 0.6922
16/16 -
Epoch 80/100
16/16
                          - 0s 1ms/step - accuracy: 0.4852 - loss: 0.6932
Epoch 81/100
16/16
                           0s 1ms/step - accuracy: 0.4859 - loss: 0.6934
Epoch 82/100
                          • 0s 977us/step - accuracy: 0.6773 - loss: 0.6921
16/16 -
Epoch 83/100
16/16 -
                           0s 1ms/step - accuracy: 0.5350 - loss: 0.6925
Epoch 84/100
16/16 -
                           0s 999us/step - accuracy: 0.4774 - loss: 0.6925
Epoch 85/100
16/16 -
                          - 0s 996us/step - accuracy: 0.5750 - loss: 0.6925
Epoch 86/100
16/16
                          - 0s 929us/step - accuracy: 0.5907 - loss: 0.6929
Epoch 87/100
16/16 -
                           0s 2ms/step - accuracy: 0.5741 - loss: 0.6924
Epoch 88/100
16/16 -
                           0s 1ms/step - accuracy: 0.5108 - loss: 0.6928
Epoch 89/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4846 - loss: 0.6930
Epoch 90/100
16/16
                          - 0s 868us/step - accuracy: 0.5826 - loss: 0.6924
Epoch 91/100
16/16 -
                          - 0s 838us/step - accuracy: 0.5544 - loss: 0.6933
Epoch 92/100
16/16
                           0s 883us/step - accuracy: 0.4786 - loss: 0.6926
Epoch 93/100
16/16
                           0s 1ms/step - accuracy: 0.5398 - loss: 0.6925
Epoch 94/100
16/16 -
                           0s 1000us/step - accuracy: 0.4410 - loss: 0.6925
```

```
Epoch 95/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.5431 - loss: 0.6921
Epoch 96/100
                          - 0s 897us/step - accuracy: 0.6612 - loss: 0.6923
16/16 •
Epoch 97/100
16/16 -
                          - 0s 856us/step - accuracy: 0.5100 - loss: 0.6931
Epoch 98/100
                          - 0s 867us/step - accuracy: 0.4524 - loss: 0.6925
16/16 -
Epoch 99/100
                           0s 867us/step - accuracy: 0.5849 - loss: 0.6922
16/16
Epoch 100/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.5452 - loss: 0.6923
                        - 0s 2ms/step - accuracy: 0.5450 - loss: 0.6930
5/5 -
Epoch 1/100
16/16 -
                          - 0s 869us/step - accuracy: 0.3226 - loss: 0.7231
Epoch 2/100
16/16 -
                          - 0s 927us/step - accuracy: 0.3702 - loss: 0.7086
Epoch 3/100
                          - 0s 1ms/step - accuracy: 0.4489 - loss: 0.7069
16/16 -
Epoch 4/100
16/16 -
                          - 0s 699us/step - accuracy: 0.4856 - loss: 0.7011
Epoch 5/100
16/16 -
                           0s 733us/step - accuracy: 0.4191 - loss: 0.7044
Epoch 6/100
16/16 -
                           0s 867us/step - accuracy: 0.4358 - loss: 0.6984
Epoch 7/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.5182 - loss: 0.6869
Epoch 8/100
16/16
                          - 0s 1000us/step - accuracy: 0.5691 - loss: 0.6835
Epoch 9/100
16/16 -
                          - 0s 1000us/step - accuracy: 0.6403 - loss: 0.6754
Epoch 10/100
16/16 -
                           0s 818us/step - accuracy: 0.6222 - loss: 0.6805
Epoch 11/100
16/16 -
                           0s 761us/step - accuracy: 0.7385 - loss: 0.6656
Epoch 12/100
                          - 0s 2ms/step - accuracy: 0.7407 - loss: 0.6605
16/16 -
Epoch 13/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.7466 - loss: 0.6564
Epoch 14/100
16/16 •
                           0s 1ms/step - accuracy: 0.8040 - loss: 0.6495
Epoch 15/100
16/16 -
                          • 0s 903us/step - accuracy: 0.7969 - loss: 0.6504
Epoch 16/100
                           0s 800us/step - accuracy: 0.8335 - loss: 0.6443
16/16 -
Epoch 17/100
16/16 -
                           0s 1ms/step - accuracy: 0.8416 - loss: 0.6405
Epoch 18/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.8157 - loss: 0.6471
Epoch 19/100
                          - 0s 1ms/step - accuracy: 0.8809 - loss: 0.6306
16/16 -
Epoch 20/100
16/16 -
                           0s 749us/step - accuracy: 0.8336 - loss: 0.6298
Epoch 21/100
16/16 -
                          • 0s 739us/step - accuracy: 0.8404 - loss: 0.6277
Epoch 22/100
                          - 0s 802us/step - accuracy: 0.7834 - loss: 0.6350
16/16 -
Epoch 23/100
16/16 -
                           0s 2ms/step - accuracy: 0.8636 - loss: 0.6146
Epoch 24/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.8557 - loss: 0.6175
```

Epoch 25/100

16/16		0s	1ms/step -	a	ccuracy: 0	.8502 -	loss: 0	.6245
	26/100				,			
16/16		0s	932us/step	-	accuracy:	0.8458	- loss:	0.6138
•	27/100							
=		0s	733us/step	-	accuracy:	0.8537	- loss:	0.6086
Epoch	28/100	0-	00000 / 5 + 5 15			0 0202	1	0 (020
	29/100	05	800us/step	-	accuracy:	0.8292	- 1055:	0.6039
		0s	1ms/step -	a	curacy. 0	8364 -	1055 · 0	6067
	30/100	05	23, 3 ccp	<u>.</u>	ccui acy. o	• • • • • • • • • • • • • • • • • • • •	1033. 0	• • • • • • • • • • • • • • • • • • • •
16/16		0s	1ms/step -	a	ccuracy: 0	.8255 -	loss: 0	.6018
Epoch	31/100							
		0s	741us/step	-	accuracy:	0.8310	- loss:	0.6020
	32/100	0 -	C11 / 1			0.0540	,	0 5000
	33/100	US	611us/step	-	accuracy:	0.8549	- loss:	0.5989
		95	665us/step	_	accuracy:	0.7717	- loss:	0.5994
	34/100		оория, в сер			••••		
•		0s	715us/step	-	accuracy:	0.9059	- loss:	0.5823
	35/100							
		0s	2ms/step -	a	ccuracy: 0	.8445 -	loss: 0	.5932
Epoch	36/100	0-	1 / - +	_		0024	1 0	F013
	37/100	05	1ms/step -	a	ccuracy: 0	.8024 -	1055: 0	.5912
		0s	941us/step	_	accuracv:	0.8322	- loss:	0.5883
	38/100				,			
16/16		0s	867us/step	-	accuracy:	0.8556	- loss:	0.5773
•	39/100							
		0s	798us/step	-	accuracy:	0.8325	- loss:	0.5791
	40/100	Q.c	673us/step		2661102611	0 0200	1055	0 5750
	41/100	62	0/3us/scep	_	accuracy.	0.0300	- 1055.	0.3/30
		0s	666us/step	_	accuracy:	0.8401	- loss:	0.5726
Epoch	42/100		•		•			
16/16		0s	1ms/step -	a	ccuracy: 0	.8452 -	loss: 0	.5691
•	43/100	_					-	
16/16	44/100	ØS.	867us/step	-	accuracy:	0.8248	- loss:	0.5699
16/16		95	734us/step	_	accuracy:	0.8465	- loss:	0.5580
	45/100		75 10.5, 5 00			0.0.05		0.000
16/16		0s	619us/step	-	accuracy:	0.8514	- loss:	0.5485
-	46/100							
		0s	637us/step	-	accuracy:	0.8819	- loss:	0.5326
	47/100 ———————————————————————————————————	۵c	666us/step	_	acciinaci.	0 8816	- loss:	0 5/15
	48/100	03	000us/scep	_	accuracy.	0.0040	- 1033.	0.5415
16/16		0s	801us/step	_	accuracy:	0.8453	- loss:	0.5320
Epoch	49/100		•		-			
		0s	1ms/step -	a	ccuracy: 0	.8318 -	loss: 0	.5485
-	50/100	_	,					
16/16		0s	727us/step	-	accuracy:	0.8666	- loss:	0.5372
-	51/100	۵s	726us/step	_	accuracy:	0 8295	- 1055.	0 5426
	52/100	03	720u3, 3ccp		accar acy.	0.0233	1033.	0.5420
		0s	972us/step	-	accuracy:	0.8933	- loss:	0.5211
Epoch	53/100		•		-			
		0s	764us/step	-	accuracy:	0.8633	- loss:	0.5361
-	54/100	0-	020/-+-		2001125	0.0004	1	0 5256
	55/100	ØS	839us/step	-	accuracy:	v.8394	- 1022:	Ø.5356
		0s	2ms/step -	a	ccuracy: 0	.8490 -	loss: 0	.5172
	56/100		, <b>-</b> F			-		
•								

```
16/16
                          - 0s 935us/step - accuracy: 0.8869 - loss: 0.4914
Epoch 57/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.8823 - loss: 0.4994
Epoch 58/100
16/16
                           0s 733us/step - accuracy: 0.8800 - loss: 0.4867
Epoch 59/100
16/16 -
                           0s 866us/step - accuracy: 0.8854 - loss: 0.4891
Epoch 60/100
                          - 0s 807us/step - accuracy: 0.8441 - loss: 0.5058
16/16 -
Epoch 61/100
16/16 -
                          - 0s 2ms/step - accuracy: 0.8105 - loss: 0.5186
Epoch 62/100
                           0s 796us/step - accuracy: 0.8864 - loss: 0.4909
16/16 -
Epoch 63/100
16/16 •
                          · 0s 843us/step - accuracy: 0.8932 - loss: 0.4854
Epoch 64/100
16/16 •
                          0s 1ms/step - accuracy: 0.8866 - loss: 0.4875
Epoch 65/100
                          - 0s 804us/step - accuracy: 0.8661 - loss: 0.4888
16/16 -
Epoch 66/100
16/16 -
                          - 0s 602us/step - accuracy: 0.8413 - loss: 0.4922
Epoch 67/100
16/16 -
                           0s 666us/step - accuracy: 0.8712 - loss: 0.4750
Epoch 68/100
16/16 •
                           0s 868us/step - accuracy: 0.9070 - loss: 0.4641
Epoch 69/100
16/16 -
                          0s 765us/step - accuracy: 0.8543 - loss: 0.4829
Epoch 70/100
16/16
                          - 0s 812us/step - accuracy: 0.8802 - loss: 0.4637
Epoch 71/100
16/16 -
                          - 0s 874us/step - accuracy: 0.8960 - loss: 0.4460
Epoch 72/100
                           0s 735us/step - accuracy: 0.8932 - loss: 0.4517
16/16 -
Epoch 73/100
16/16 -
                           0s 605us/step - accuracy: 0.8891 - loss: 0.4340
Epoch 74/100
16/16 -
                          - 0s 800us/step - accuracy: 0.8782 - loss: 0.4261
Epoch 75/100
                          - 0s 2ms/step - accuracy: 0.8577 - loss: 0.4582
16/16
Epoch 76/100
16/16 •
                           0s 1ms/step - accuracy: 0.8921 - loss: 0.4366
Epoch 77/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.8503 - loss: 0.4515
Epoch 78/100
                           0s 984us/step - accuracy: 0.8869 - loss: 0.4278
16/16 -
Epoch 79/100
16/16 -
                           0s 792us/step - accuracy: 0.8961 - loss: 0.4199
Epoch 80/100
16/16 -
                          - 0s 734us/step - accuracy: 0.9109 - loss: 0.4138
Epoch 81/100
16/16 •
                          - 0s 2ms/step - accuracy: 0.9173 - loss: 0.3877
Epoch 82/100
                           0s 867us/step - accuracy: 0.8715 - loss: 0.4440
16/16
Epoch 83/100
                          • 0s 1ms/step - accuracy: 0.8914 - loss: 0.4075
16/16 -
Epoch 84/100
                          - 0s 800us/step - accuracy: 0.8796 - loss: 0.4026
16/16 •
Epoch 85/100
16/16
                           0s 1ms/step - accuracy: 0.8379 - loss: 0.4265
Epoch 86/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.8834 - loss: 0.4075
Epoch 87/100
```

```
16/16
                          - 0s 1ms/step - accuracy: 0.9341 - loss: 0.4062
Epoch 88/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.9164 - loss: 0.3833
Epoch 89/100
16/16
                           0s 932us/step - accuracy: 0.9212 - loss: 0.3930
Epoch 90/100
16/16 -
                           0s 867us/step - accuracy: 0.9093 - loss: 0.3679
Epoch 91/100
                          - 0s 673us/step - accuracy: 0.8977 - loss: 0.3751
16/16 -
Epoch 92/100
16/16 -
                          - 0s 608us/step - accuracy: 0.9104 - loss: 0.3990
Epoch 93/100
                          - 0s 2ms/step - accuracy: 0.9119 - loss: 0.3712
16/16 -
Epoch 94/100
16/16 -
                          - 0s 968us/step - accuracy: 0.9404 - loss: 0.3688
Epoch 95/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.8913 - loss: 0.3987
Epoch 96/100
                          - 0s 673us/step - accuracy: 0.8985 - loss: 0.3781
16/16 -
Epoch 97/100
16/16 -
                          - 0s 777us/step - accuracy: 0.9498 - loss: 0.3500
Epoch 98/100
16/16 -
                          - 0s 751us/step - accuracy: 0.8851 - loss: 0.3942
Epoch 99/100
16/16 -
                          - 0s 734us/step - accuracy: 0.9206 - loss: 0.3517
Epoch 100/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.8875 - loss: 0.3759
5/5 -
                        • 0s 1ms/step - accuracy: 0.9353 - loss: 0.3347
Epoch 1/100
16/16 -
                           0s 1ms/step - accuracy: 0.4922 - loss: 0.6969
Epoch 2/100
                          - 0s 1ms/step - accuracy: 0.4513 - loss: 0.6995
16/16 -
Epoch 3/100
16/16 -
                          - 0s 881us/step - accuracy: 0.5199 - loss: 0.6938
Epoch 4/100
16/16 -
                          0s 867us/step - accuracy: 0.4962 - loss: 0.6975
Epoch 5/100
                          - 0s 867us/step - accuracy: 0.5165 - loss: 0.6945
16/16 -
Epoch 6/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4258 - loss: 0.6998
Epoch 7/100
16/16 -
                           • 0s 1ms/step - accuracy: 0.4675 - loss: 0.6979
Epoch 8/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4616 - loss: 0.6943
Epoch 9/100
16/16 -
                          - 0s 891us/step - accuracy: 0.5195 - loss: 0.6933
Epoch 10/100
16/16 -
                           0s 933us/step - accuracy: 0.5296 - loss: 0.6978
Epoch 11/100
                          - 0s 1ms/step - accuracy: 0.5578 - loss: 0.6927
16/16 -
Epoch 12/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.3916 - loss: 0.6994
Epoch 13/100
16/16 -
                          - 0s 1ms/step - accuracy: 0.4969 - loss: 0.6920
Epoch 14/100
16/16 -
                          - 0s 674us/step - accuracy: 0.4962 - loss: 0.6876
Epoch 15/100
16/16 -
                          - 0s 741us/step - accuracy: 0.4677 - loss: 0.6980
Epoch 16/100
16/16 •
                           0s 800us/step - accuracy: 0.5419 - loss: 0.6897
Epoch 17/100
16/16 -
                           0s 1ms/step - accuracy: 0.4845 - loss: 0.6873
```

Epoch	18/100		
•		0s	: 1ms/step - accuracy: 0.5088 - loss: 0.6947
Epoch	19/100		
-		0s	3 739us/step - accuracy: 0.5696 - loss: 0.6923
	20/100	_	
		0s	793us/step - accuracy: 0.5133 - loss: 0.6947
	21/100	۵c	800us/step - accuracy: 0.5221 - loss: 0.6933
	22/100	03	6 00003/3CEP - accuracy. 0.3221 - 1033. 0.0333
		0s	: 1ms/step - accuracy: 0.4693 - loss: 0.6956
Epoch	23/100		•
16/16		0s	1000us/step - accuracy: 0.4449 - loss: 0.6969
	24/100	_	
		0s	1ms/step - accuracy: 0.5794 - loss: 0.6936
	25/100 	۵c	910us/step - accuracy: 0.5297 - loss: 0.6919
	26/100	03	91003/3CEP - accuracy. 0.3297 - 1033. 0.0919
		0s	935us/step - accuracy: 0.5608 - loss: 0.6905
Epoch	27/100		•
		0s	s 1ms/step - accuracy: 0.5384 - loss: 0.6902
	28/100		
	29/100	0s	999us/step - accuracy: 0.5565 - loss: 0.6918
		95	1ms/step - accuracy: 0.4819 - loss: 0.6958
	30/100	0.5	2 in 3, 3 ccp
		0s	933us/step - accuracy: 0.4741 - loss: 0.6920
Epoch	31/100		
		0s	667us/step - accuracy: 0.4891 - loss: 0.6923
	32/100	0-	2007/2420 2000000000000000000000000000000000
	33/100	05	s 2ms/step - accuracy: 0.5312 - loss: 0.6921
		05	933us/step - accuracy: 0.4632 - loss: 0.6917
	34/100		2000 accar acy ( 01 100 = 2000 ( 0100 = 2
16/16		0s	867us/step - accuracy: 0.4875 - loss: 0.6951
	35/100		
		0s	8 853us/step - accuracy: 0.3919 - loss: 0.6987
•	36/100	00	6 671us/step - accuracy: 0.4759 - loss: 0.6944
	37/100	62	6 0/105/Step - accuracy. 0.4/39 - 1055. 0.0944
		0s	3 732us/step - accuracy: 0.5539 - loss: 0.6892
Epoch	38/100		
		0s	1ms/step - accuracy: 0.4748 - loss: 0.6915
	39/100	0 -	0.5054
	40/100	05	6 666us/step - accuracy: 0.5261 - loss: 0.6934
		0s	968us/step - accuracy: 0.5723 - loss: 0.6934
	41/100		,
16/16		0s	667us/step - accuracy: 0.5561 - loss: 0.6939
	42/100		
		0s	6 664us/step - accuracy: 0.4581 - loss: 0.6943
	43/100	00	720us/ston 255unasy: 0 E219 loss: 0 6026
	44/100	05	3 739us/step - accuracy: 0.5218 - loss: 0.6926
		0s	730us/step - accuracy: 0.6330 - loss: 0.6903
	45/100		
		0s	805us/step - accuracy: 0.4769 - loss: 0.6939
	46/100	_	
		0s	6 667us/step - accuracy: 0.4877 - loss: 0.6940
•	47/100 ———————————————————————————————————	۵c	729us/step - accuracy: 0.4801 - loss: 0.6928
	48/100	03	7.2545/ 500p   decardey: 0.4001 - 1055: 0.0520
		0s	606us/step - accuracy: 0.5276 - loss: 0.6935
			-

Epoch	49/100						
		0s	666us/step	- accuracy	y: 0.5314	- loss:	0.6961
•	50/100	0 -	CE2 / 1		0 5636	1	0 6040
	51/100	US	653us/step	- accuracy	y: 0.5636	- 10SS:	0.6918
•		0s	667us/step	- accuracy	v: 0.4985	- loss:	0.6931
	52/100		, ,	-	,		
		0s	600us/step	- accuracy	y: 0.4781	- loss:	0.6952
	53/100	0-	4		0 4073	1 0	c024
•	54/100	05	1ms/step -	accuracy:	0.49/3 -	1055: 0.	6931
		0s	1ms/step -	accuracy:	0.4628 -	loss: 0.	6922
	55/100						
		0s	734us/step	- accuracy	y: 0.5002	- loss:	0.6940
	56/100	0.0	797us/step	26611026	A E269	10551	0 6014
	57/100	05	/9/us/scep	- accurac	y. 0.5500	- 1055.	0.0914
		0s	799us/step	- accuracy	y: 0.4809	- loss:	0.6950
	58/100						
		0s	813us/step	- accuracy	y: 0.4860	- loss:	0.6937
•	59/100	۵c	1mc/ctan -	accuracy:	0 1995 -	1000 0	6953
	60/100	03	тіііз/ з сер	accuracy.	0.4555	1033. 0.	0000
		0s	1ms/step -	accuracy:	0.3917 -	loss: 0.	6978
	61/100	_					
-		0s	734us/step	- accuracy	y: 0.4454	- loss:	0.6929
	62/100	05	604us/step	- accuracy	v: 0.4914	- loss:	0.6951
	63/100		00 .u.s, 5 ccp		, , , , , , , , , , , , , , , , , , , ,		0.000
16/16		0s	720us/step	- accuracy	y: 0.4694	- loss:	0.6959
	64/100	0 -	4 / 1		0 5043	1 0	co47
	65/100	05	1ms/step -	accuracy:	0.5012 -	1055: 0.	6917
-	03/100	0s	1ms/step -	accuracy:	0.4492 -	loss: 0.	6934
	66/100		·	-			
		0s	1ms/step -	accuracy:	0.4886 -	loss: 0.	6960
•	67/100	۵c	697us/step	- 20011120	v. 0 6614	- 1055	0 6871
	68/100	03	097u3/3cep	- accurac	y. 0.0014	- 1033.	0.0074
		0s	608us/step	- accuracy	y: 0.5396	- loss:	0.6958
•	69/100						
-		0s	694us/step	- accuracy	y: 0.4897	- loss:	0.6935
•	70/100	0s	2ms/step -	accuracv:	0.5299 -	loss: 0.	6940
	71/100		-,				
		0s	1ms/step -	accuracy:	0.4578 -	loss: 0.	6930
	72/100	0.0	1mc/cton	2661102611	0 4201	10551 0	604E
	73/100	05	Illis/steb -	accuracy.	0.4201 -	1055. 0.	0943
		0s	792us/step	- accuracy	y: 0.5013	- loss:	0.6951
	74/100						
		0s	700us/step	- accuracy	y: 0.5836	- loss:	0.6925
-	75/100	95	690us/step	- accuracy	v: 0.5195	- loss:	0.6911
	76/100		ээ сар, эсер		,. 3.3133	1033.	
		0s	1ms/step -	accuracy:	0.5733 -	loss: 0.	6923
-	77/100	^	4		0 5000	1 0	6022
	78/100	US	1ms/step -	accuracy:	- צעטכ.ט	1022: 0.	0928
		0s	1ms/step -	accuracy:	0.4262 -	loss: 0.	6952
Epoch	79/100		·	-			
16/16		0s	1000us/step	o - accura	cy: 0.4778	8 - loss:	0.6957

```
Epoch 80/100
       16/16 -
                                - 0s 876us/step - accuracy: 0.4708 - loss: 0.6933
       Epoch 81/100
                                - 0s 817us/step - accuracy: 0.5366 - loss: 0.6946
       16/16 -
       Epoch 82/100
       16/16 -
                                - 0s 1ms/step - accuracy: 0.4421 - loss: 0.6922
       Epoch 83/100
      16/16 -
                                - 0s 802us/step - accuracy: 0.4822 - loss: 0.6950
       Epoch 84/100
                                - 0s 937us/step - accuracy: 0.5046 - loss: 0.6919
       16/16 •
       Epoch 85/100
                                - 0s 742us/step - accuracy: 0.4276 - loss: 0.6959
       16/16 -
       Epoch 86/100
       16/16 ---
                                - 0s 606us/step - accuracy: 0.5382 - loss: 0.6928
       Epoch 87/100
       16/16 -
                                - 0s 608us/step - accuracy: 0.4696 - loss: 0.6952
      Epoch 88/100
       16/16 -
                                - 0s 608us/step - accuracy: 0.4593 - loss: 0.6920
       Epoch 89/100
       16/16 -
                                - 0s 998us/step - accuracy: 0.4991 - loss: 0.6953
       Epoch 90/100
                                - 0s 1ms/step - accuracy: 0.5139 - loss: 0.6917
       16/16 -
       Epoch 91/100
                                - 0s 1ms/step - accuracy: 0.5446 - loss: 0.6918
       16/16 ---
       Epoch 92/100
       16/16 -
                                - 0s 731us/step - accuracy: 0.4275 - loss: 0.6963
       Epoch 93/100
                                - 0s 755us/step - accuracy: 0.4428 - loss: 0.6930
       16/16 -
       Epoch 94/100
       16/16 -
                                - 0s 660us/step - accuracy: 0.5273 - loss: 0.6934
       Epoch 95/100
                                - 0s 2ms/step - accuracy: 0.4963 - loss: 0.6931
       16/16 -
       Epoch 96/100
                               - 0s 933us/step - accuracy: 0.6483 - loss: 0.6920
       16/16 -
       Epoch 97/100
       16/16 -
                                - 0s 867us/step - accuracy: 0.4906 - loss: 0.6928
      Epoch 98/100
                                - 0s 867us/step - accuracy: 0.4735 - loss: 0.6926
       16/16 -
      Epoch 99/100
       16/16 -
                                - 0s 733us/step - accuracy: 0.4742 - loss: 0.6943
       Epoch 100/100
       16/16 -
                                - 0s 734us/step - accuracy: 0.4883 - loss: 0.6943
       5/5 -
                              - 0s 2ms/step - accuracy: 0.5320 - loss: 0.6912
        print("{:<10} {:<10}".format('Activation', 'Loss', 'Accuracy'))</pre>
In [8]:
        print("-----")
        for activation, result in act_res.items():
            print("{:<10} {:<10.4f} {:<10.4f}".format(activation, result['loss'], result['accuracy']))</pre>
       Activation Loss
                            Accuracy
          -----
                 0.6680
                            0.6438
       tanh
       sigmoid
                 0.6931
                            0.5000
       softplus
                 0.6913
                            0.6250
                 0.5424
                            0.6875
       relu
       softmax
                 0.6924
                            0.5750
       selu
                 0.3611
                            0.9062
       linear
                 0.6935
                            0.5063
```

Using the table above, we can see that the 'selu' function has the lowest loss, and also has the highest accuracy given the configuration and modeling (2 layers with 3 neurons each, 100 epochs/batch 10).

# 4. Again with the most optimal setup, try other optimizers (instead of SGD) and report on the loss score. (https://keras.io/optimizers/)

```
In [10]: opt_fun = ['SGD', 'RMSprop', 'Adam', 'Lion']
         def mod_opt(optimizer, epochs=100):
             model=Sequential()
             #add 2 Layers
             #layer 1
             model.add(Dense(3, input_dim = 2, activation='selu'))
             #Layer 2
             model.add(Dense(3, activation='selu'))
             #output
             model.add(Dense(1, activation='sigmoid'))
             model.compile(loss='binary_crossentropy', optimizer=optimizer, metrics=['accuracy'])
             model.fit(X, y, batch_size=10, epochs=100)
             loss, accuracy = model.evaluate(X, y)
             return loss, accuracy
         opt_res = {}
         for optimizer in opt_fun:
             loss, accuracy = mod_opt(optimizer)
             opt_res[optimizer] = {'loss': loss, 'accuracy': accuracy}
```

Epoch	1/100								
16/16		0s	976us/step	-	accuracy:	0.5834	-	loss:	0.7448
•	2/100								
		0s	800us/step	-	accuracy:	0.4945	-	loss:	0.7764
	3/100	0-	006/			0 5400		1	0 7575
	4/100	05	896us/step	_	accuracy:	0.5489	-	1055:	0.7575
•		05	834us/step	_	accuracy:	0.5497	_	loss:	0.7169
-	5/100		от нас, с сер		,				
16/16		0s	800us/step	-	accuracy:	0.5768	-	loss:	0.7282
•	6/100								
16/16		0s	807us/step	-	accuracy:	0.6036	-	loss:	0.7140
	7/100	00	762us/step		2661102614	0 6245		1000	0 6017
	8/100	62	702us/scep	_	accuracy.	0.0243	_	1055.	0.0317
•		0s	758us/step	_	accuracy:	0.6107	_	loss:	0.7110
	9/100								
		0s	701us/step	-	accuracy:	0.4961	-	loss:	0.7535
	10/100		<b>700</b> / /					,	
	11/100	0s	702us/step	-	accuracy:	0.6297	-	loss:	0.7078
	11/100	95	667us/sten	_	accuracy:	0.5906	_	loss:	0.7132
	12/100	0.5	оот из, эсср		accar acy.	0.3300		1033.	0., 131
16/16		0s	669us/step	-	accuracy:	0.6293	-	loss:	0.6928
•	13/100								
		0s	800us/step	-	accuracy:	0.6342	-	loss:	0.6901
•	14/100	۵c	800us/step		accuracy.	0 6157	_	1000	0 6992
	15/100	03	000и3/ 3сср		accuracy.	0.0137		1033.	0.0552
		0s	747us/step	-	accuracy:	0.6908	-	loss:	0.6674
•	16/100								
		0s	723us/step	-	accuracy:	0.5683	-	loss:	0.7134
•	17/100	05	695us/step	_	accuracy:	0.6078	_	loss:	0.6963
Epoch	18/100		·						
16/16		0s	667us/step	-	accuracy:	0.6496	-	loss:	0.6740
	19/100					0 (107		,	0 6076
	20/100	0s	688us/step	-	accuracy:	0.643/	-	loss:	0.68/6
•		0s	708us/step	_	accuracv:	0.6059	_	loss:	0.6986
	21/100		, ,		,				
		0s	673us/step	-	accuracy:	0.6669	-	loss:	0.6711
•	22/100	0 -	722 / 1			0 5060		,	0 6050
	23/100	65	733us/step	_	accuracy:	0.5962	-	1055:	0.6950
16/16		0s	762us/step	_	accuracy:	0.6527	_	loss:	0.6787
	24/100				-				
		0s	737us/step	-	accuracy:	0.5792	-	loss:	0.7132
	25/100	0.0	667us/ston		2661182614	0 6205		10001	0 (00)
	26/100	65	667us/step	-	accuracy:	0.6385	-	1055:	0.6892
•		0s	753us/step	_	accuracy:	0.6549	_	loss:	0.6884
	27/100		, ,		,				
		0s	752us/step	-	accuracy:	0.6164	-	loss:	0.6811
•	28/100	0 -	725 / 1			0 6040		,	0.6060
	29/100	ØS	735us/step	-	accuracy:	0.6219	-	TOSS:	0.6860
•		0s	667us/step	_	accuracv:	0.5678	_	loss:	0.7095
	30/100	-	, <b>F</b>		- , .			- 7	_
		0s	814us/step	-	accuracy:	0.6306	-	loss:	0.6857
	31/100	_				0 50=5		,	0.60==
16/16		ØS.	667us/step	-	accuracy:	0.6252	-	Toss:	Ø.6855

Epoch	32/100								
		0s	667us/step	-	accuracy:	0.6003	-	loss:	0.6960
	33/100	0-	720/-+			0 5071		1	0 6026
	34/100	05	720us/step	-	accuracy:	0.59/1	-	1055:	0.6926
		0s	735us/step	_	accuracy:	0.6395	_	loss:	0.6822
Epoch	35/100								
		0s	807us/step	-	accuracy:	0.6305	-	loss:	0.6833
	36/100	0-	727 / = + = =			0 5054		1	0 6077
•	37/100	05	737us/step	-	accuracy:	0.5954	-	1022:	0.09//
•		0s	802us/step	-	accuracy:	0.6670	_	loss:	0.6699
	38/100								
16/16		0s	752us/step	-	accuracy:	0.5691	-	loss:	0.6966
•	39/100	۵s	694us/step	_	accuracy:	0 6587	_	1055.	0 6766
	40/100	03	05-43/ 5сер		accui acy.	0.0507		1033.	0.0700
16/16		0s	765us/step	-	accuracy:	0.6719	-	loss:	0.6736
•	41/100	_	,						
	42/100	0s	752us/step	-	accuracy:	0.6331	-	loss:	0.6801
•		0s	795us/step	_	accuracy:	0.6973	_	loss:	0.6577
	43/100		·		-				
	44/100	0s	746us/step	-	accuracy:	0.6523	-	loss:	0.6680
•	44/100	95	802us/step	_	accuracy:	0 6699	_	1055.	0 6714
-	45/100	03	002и3/ 3 сер		accar acy.	0.0055		1033.	0.0714
16/16		0s	800us/step	-	accuracy:	0.6378	-	loss:	0.6850
	46/100	00	200115/5+00		2661102614	0 (510		10551	0 6601
	47/100	05	800us/step	-	accuracy:	0.6510	-	1022:	0.0091
•		0s	683us/step	-	accuracy:	0.6748	-	loss:	0.6664
•	48/100							_	
-	49/100	ØS	735us/step	-	accuracy:	0.6//4	-	loss:	0.66/8
		0s	734us/step	_	accuracy:	0.5948	-	loss:	0.6909
	50/100								
		0s	753us/step	-	accuracy:	0.6474	-	loss:	0.6645
•	51/100	0s	685us/step	_	accuracv:	0.6227	_	loss:	0.6864
	52/100		, ,		,				
		0s	777us/step	-	accuracy:	0.6345	-	loss:	0.6718
•	53/100	۵c	800us/step	_	accuracy:	0 6/19	_	1000	0 6693
-	54/100	03	000и3/ 3сср		accuracy.	0.0415		1033.	0.0055
		0s	667us/step	-	accuracy:	0.5848	-	loss:	0.6896
	55/100	00	((7us/stan		2661102614	0 (507		10551	0 ((10
	56/100	05	oo/us/step	-	accuracy:	0.0597	-	1022:	0.0018
		0s	747us/step	-	accuracy:	0.6933	-	loss:	0.6616
	57/100							_	
	58/100	0s	676us/step	-	accuracy:	0.6485	-	loss:	0.6737
		0s	681us/step	_	accuracy:	0.6715	_	loss:	0.6667
Epoch	59/100		·		-				
		0s	825us/step	-	accuracy:	0.6322	-	loss:	0.6799
•	60/100	٩c	751us/step	_	accuracy.	0.5950	_	loss	0.6895
	61/100	J.J	. э_чэ, эсср		acca, acy,	2.5550			2.00/5
16/16		0s	800us/step	-	accuracy:	0.6198	-	loss:	0.6711
	62/100	0-	66700/5450		2001102	0 (122		1000	0 6927
10/10		ØS	667us/step	-	accuracy:	a.p137	-	TOSS:	v.082/

Epoch	63/100								
16/16		0s	733us/step	-	accuracy:	0.6413	-	loss:	0.6797
	64/100								
	65/100	0s	799us/step	-	accuracy:	0.7090	-	loss:	0.6652
		0s	746us/step	_	accuracv:	0.7209	_	loss:	0.6583
	66/100		,		,				
		0s	734us/step	-	accuracy:	0.6412	-	loss:	0.6837
	67/100	0-	724/a+a			0 7100		1	0 (510
	68/100	05	734us/step	-	accuracy:	0.7190	-	1055:	0.0310
•		0s	700us/step	-	accuracy:	0.6656	-	loss:	0.6634
	69/100								
	70/100	0s	756us/step	-	accuracy:	0.6602	-	loss:	0.6697
		0s	667us/step	_	accuracv:	0.6731	_	loss:	0.6627
	71/100		, ,						
		0s	702us/step	-	accuracy:	0.6805	-	loss:	0.6579
	72/100	Q.c	759us/step		2661102671	0 6790		1000	0 6655
	73/100	03	739us/step	_	accur acy.	0.0780	_	1033.	0.0055
		0s	757us/step	-	accuracy:	0.6727	-	loss:	0.6608
	74/100	_	==== / .			0 6774		-	0 (700
	75/100	ØS	/33us/step	-	accuracy:	0.6//1	-	loss:	0.6/33
•		0s	719us/step	_	accuracy:	0.6423	_	loss:	0.6746
	76/100				-				
		0s	737us/step	-	accuracy:	0.5593	-	loss:	0.6900
	77/100	05	1ms/step -	a	ccuracy: 0.	7027 -	10	oss: 0	. 6484
	78/100		, с сор						
		0s	1ms/step -	a	ccuracy: 0	.6932 -	10	oss: 0	.6631
	79/100	۵s	1ms/step -	20	curacy. 0	6675 -	16	nss. 0	6653
	80/100	03	тшэ/ эсср	u	ceuracy: o	.0075		,,,,	.0033
		0s	853us/step	-	accuracy:	0.6430	-	loss:	0.6771
	81/100	00	740us/step		26611126144	0 6924		10001	0 6577
	82/100	03	740us/step	-	accuracy.	0.0024	_	1055.	0.03//
•		0s	734us/step	-	accuracy:	0.6751	-	loss:	0.6586
	83/100	0 -	702 / 1			0 7074		,	0.6444
	84/100	0S	782us/step	-	accuracy:	0./3/1	-	loss:	0.6441
		0s	665us/step	-	accuracy:	0.6567	-	loss:	0.6701
•	85/100	_						_	
	86/100	0s	672us/step	-	accuracy:	0.6343	-	loss:	0.6717
16/16		0s	783us/step	_	accuracy:	0.7446	_	loss:	0.6388
Epoch	87/100		•						
		0s	734us/step	-	accuracy:	0.7344	-	loss:	0.6409
	88/100	05	734us/step	_	accuracy:	0.6395	_	loss:	0.6659
	89/100	0.5	73 143, 3 ccp		acca, acy.	0.0333		1055.	0.0033
		0s	734us/step	-	accuracy:	0.6613	-	loss:	0.6622
•	90/100	Q.c	709us /ston		accunacy:	0 6776		1000	0 6550
	91/100	05	708us/step	-	accuracy:	0.0770	-	1022:	0.0000
•		0s	734us/step	-	accuracy:	0.6356	-	loss:	0.6706
•	92/100	•	001. / '			0 7454		1.	0.6435
	93/100	ØS	801us/step	-	accuracy:	v./151	-	TOSS:	0.6435
		0s	802us/step	-	accuracy:	0.6261	-	loss:	0.6634
10/10					-				

Epoch	94/100		
•	,	<b>9s</b> 733us/step - accuracy: 0.6507	- loss: 0.6590
Epoch	95/100		
		<b>9s</b> 730us/step - accuracy: 0.6617	- loss: 0.6610
	96/100		
		<b>9s</b> 730us/step - accuracy: 0.7077	- loss: 0.6524
	97/100	<b>9s</b> 796us/step - accuracy: 0.6918	- loss: 0 6//8
	98/100	73 73003/3CEP - accuracy. 0.0318	- 1033. 0.0440
		<b>9s</b> 810us/step - accuracy: 0.6794	- loss: 0.6497
Epoch	99/100		
		<b>9s</b> 740us/step - accuracy: 0.6758	- loss: 0.6461
	100/100		
		<b>9s</b> 796us/step - accuracy: 0.6532 1ms/step - accuracy: 0.8057 - lo	- loss: 0.6536
	1/100	Ims/step - accuracy: 0.8057 - 10	55: 0.00/4
•		<b>9s</b> 1ms/step - accuracy: 0.4863 -	loss: 0.7973
	2/100		
16/16		<b>8s</b> 873us/step - accuracy: 0.5350	- loss: 0.7544
	3/100		
		ns/step - accuracy: 0.5151 -	loss: 0.7534
16/16	4/100 ———————————————————————————————————	Os 867us/step - accuracy: 0.5196	- loss. 0 7239
	5/100	25 00743/3ccp accuracy: 0.3130	1033. 0.7233
•		9s 833us/step - accuracy: 0.5381	- loss: 0.7115
•	6/100		
		<b>9s</b> 868us/step - accuracy: 0.4850	- loss: 0.7200
•	7/100	722 / 5 + 5 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 0 6000
	8/100	3s 733us/step - accuracy: 0.4866	- 1055: 0.6989
•	0/100	<b>9s</b> 723us/step - accuracy: 0.4400	- loss: 0.7116
	9/100		
16/16		<b>9s</b> 732us/step - accuracy: 0.4895	- loss: 0.6956
•	10/100		
16/16		<b>9s</b> 866us/step - accuracy: 0.4808	- loss: 0.7002
16/16	11/100	<b>9s</b> 814us/step - accuracy: 0.4723	- loss· 0 6795
	12/100	25 014u3/3ccp uccui ucy: 0.4/23	1033. 0.0733
16/16		9s 804us/step - accuracy: 0.4417	- loss: 0.6765
•	13/100		
		<b>9s</b> 799us/step - accuracy: 0.4369	- loss: 0.6827
	14/100	26 907us/ston 255unnsuu 0 F167	loca. 0 (CEC
	15/100	9s 807us/step - accuracy: 0.5167	- 1055: 0.0050
		<b>9s</b> 800us/step - accuracy: 0.4829	- loss: 0.6671
	16/100		
		9s 866us/step - accuracy: 0.5813	- loss: 0.6560
•	17/100	0.072	1 0 6600
	18/100	9s 872us/step - accuracy: 0.5703	- 1055: 0.6688
16/16		<b>9s</b> 866us/step - accuracy: 0.5998	- loss: 0.6601
	19/100		
		9s 874us/step - accuracy: 0.6517	- loss: 0.6584
	20/100		1
	21 /100	<b>9s</b> 666us/step - accuracy: 0.6482	- 10ss: 0.6593
•	21/100	<b>9s</b> 733us/step - accuracy: <b>0.</b> 6865	- loss: 0.6515
	22/100		
•		<b>9s</b> 802us/step - accuracy: 0.7109	- loss: 0.6539
	23/100		
	24/100	<b>9s</b> 910us/step - accuracy: 0.6795	- loss: 0.6628
Epoch	24/100		

16/16		0s	888us/step	_	accuracv:	0.7094	_	loss:	0.6450
	25/100				,				
16/16		0s	735us/step	-	accuracy:	0.6996	-	loss:	0.6487
Epoch	26/100								
		0s	875us/step	-	accuracy:	0.6602	-	loss:	0.6489
	27/100	0.0	04005/5+00		2661182614	0 7400		10001	0 (214
	28/100	05	848us/step	-	accuracy:	0.7409	-	1055:	0.6314
16/16		05	734us/step	_	accuracy:	0.6383	_	loss:	0.6509
	29/100		75 . ш.б, Беер			0.0000			0.000
16/16		0s	800us/step	-	accuracy:	0.7123	-	loss:	0.6378
Epoch	30/100								
		0s	733us/step	-	accuracy:	0.7062	-	loss:	0.6360
	31/100	0-	722 / - +			0 7027		1	0.6300
	32/100	05	733us/step	-	accuracy:	0.7037	-	1055:	0.6308
		95	800us/step	_	accuracy:	0.6980	_	loss:	0.6448
	33/100		оссия, в сер			0.0200			
		0s	667us/step	-	accuracy:	0.7208	-	loss:	0.6321
Epoch	34/100								
		0s	867us/step	-	accuracy:	0.6976	-	loss:	0.6315
•	35/100	0-	000/			0.6602		1	0 6300
	36/100	05	800us/step	-	accuracy:	0.6602	-	1055:	0.6390
•		0s	800us/step	_	accuracv:	0.6591	_	loss:	0.6473
	37/100		оссия, в сер			0.000			010.75
16/16		0s	735us/step	-	accuracy:	0.6895	-	loss:	0.6283
	38/100								
		0s	801us/step	-	accuracy:	0.6805	-	loss:	0.6299
	39/100	0.0	72245/5+00		2661182614	0 (224		10001	0 (262
	40/100	05	733us/step	-	accuracy:	0.0334	-	1055:	0.0303
		0s	867us/step	_	accuracv:	0.7010	_	loss:	0.6332
	41/100		, ,		,				
16/16		0s	800us/step	-	accuracy:	0.7063	-	loss:	0.6199
	42/100								
16/16		0s	733us/step	-	accuracy:	0.7288	-	loss:	0.6116
	43/100	۵c	800us/step	_	accuracy.	0 7118	_	1000	0 6128
	44/100	03	000и3/3сср		accuracy.	0.7110		1033.	0.0120
		0s	732us/step	_	accuracy:	0.7005	-	loss:	0.6099
	45/100								
		0s	733us/step	-	accuracy:	0.7800	-	loss:	0.5944
Epoch	46/100	0-	000/			0 7000		1	0 6075
	47/100	05	800us/step	-	accuracy:	0.7023	-	1055:	0.60/5
	47/100	0s	1ms/step -	ac	curacy: 0	.6737 -	10	oss: 0	.6151
	48/100		, с сор						
		0s	1ms/step -	ad	ccuracy: 0	.7303 -	10	oss: 0	.6073
•	49/100								
		0s	866us/step	-	accuracy:	0.7461	-	loss:	0.5889
	50/100	0.0	20445/5+00		2661182614	0 7464		10001	0 5050
	51/100	65	894us/step	-	accuracy:	0.7464	-	1055:	0.5859
		0s	733us/step	_	accuracv:	0.6804	_	loss:	0.6054
	52/100		-,P						
16/16		0s	933us/step	-	accuracy:	0.7341	-	loss:	0.5931
	53/100								
	F4/100	0s	867us/step	-	accuracy:	0.6400	-	loss:	0.6004
±poch	54/100	Q.c	933115/5+05	_	accunacy	0 7300	_	1000	0 5830
	55/100	25	assus/step	-	accuracy:	0./309	-	TO22:	0.3639
-pocii	JJ/ ±00								

16/16	16/16		0s	936us/step	_	accuracv:	0.7153	_	loss:	0.5827
Epoch   S7/100   Epoch   S7/100   Epoch   S7/100   Epoch   S7/100   Epoch   S7/100   Epoch   S7/100   Epoch   S8/100   Epoc			0.5	ээоиз, эсср		accar acy.	0., 233		1033.	0.3027
16/16			0s	874us/step	-	accuracy:	0.6573	-	loss:	0.5919
Epoch 58/100										
16/16			0s	867us/step	-	accuracy:	0.7002	-	loss:	0.5944
Epoch 59/100   16/16	•		0.0	966us /ston		2661182614	0 6064		10001	0 5067
16/16			05	866us/step	-	accuracy:	0.0904	-	1055:	0.5867
Epoch 60/100	•		0s	740us/step	_	accuracv:	0.6999	_	loss:	0.5902
Epoch 61/100 16/16				,						
16/16	16/16		0s	737us/step	-	accuracy:	0.6700	-	loss:	0.5956
Epoch 62/100 16/16	•								_	
16/16			0s	807us/step	-	accuracy:	0.7390	-	loss:	0.5694
Epoch 63/100	•		۵s	800us/sten	_	accuracy:	0 6680	_	1055.	0 5875
16/16			03	000и3/3сср		accuracy.	0.0000		1033.	0.3073
16/16			0s	741us/step	-	accuracy:	0.6747	_	loss:	0.5801
Epoch 65/100 16/16										
16/16			0s	916us/step	-	accuracy:	0.6393	-	loss:	0.5994
Epoch   66/100   16/16	Epoch	65/100	00	76645/5+00		2661102614	0 6202		10551	0 5002
16/16			62	/oous/step	-	accuracy.	0.0393	-	1055.	0.5962
16/16			0s	796us/step	-	accuracy:	0.6946	-	loss:	0.5696
Epoch 68/100 16/16										
16/16			0s	891us/step	-	accuracy:	0.6862	-	loss:	0.5712
Epoch 69/100  16/16			۵c	800115/stan	_	accuracy.	0 7123	_	1000	0 5599
16/16			03	000и3/ 3сср		accuracy.	0.7123		1033.	0.5555
16/16	•		0s	782us/step	-	accuracy:	0.6845	-	loss:	0.5667
Epoch 71/100 16/16	•									
16/16			0s	765us/step	-	accuracy:	0.6972	-	loss:	0.5552
Epoch 72/100 16/16	•		95	692us/sten	_	accuracy:	0 7255	_	1055.	0 5464
16/16			0.5	03243, 300		accar acy.	01,233		1033.	0.5.0.
16/16	16/16		0s	766us/step	-	accuracy:	0.6904	-	loss:	0.5616
Epoch   74/100   16/16	•		_							
16/16       0s 676us/step - accuracy: 0.6803 - loss: 0.5651         Epoch 75/100       0s 751us/step - accuracy: 0.6671 - loss: 0.5641         Epoch 76/100       0s 733us/step - accuracy: 0.6855 - loss: 0.5581         Epoch 77/100       0s 733us/step - accuracy: 0.6761 - loss: 0.5442         Epoch 78/100       0s 732us/step - accuracy: 0.6989 - loss: 0.5434         Epoch 79/100       0s 800us/step - accuracy: 0.7549 - loss: 0.5206         Epoch 80/100       0s 781us/step - accuracy: 0.7049 - loss: 0.5333         Epoch 81/100       0s 666us/step - accuracy: 0.7404 - loss: 0.5343         Epoch 82/100       0s 800us/step - accuracy: 0.7278 - loss: 0.5465         Epoch 83/100       0s 800us/step - accuracy: 0.7278 - loss: 0.5233         Epoch 84/100       0s 800us/step - accuracy: 0.7618 - loss: 0.5233         Epoch 84/100       0s 800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100       0s 733us/step - accuracy: 0.7814 - loss: 0.5267			ØS.	66/us/step	-	accuracy:	0.7038	-	loss:	0.5492
Epoch 75/100   16/16			0s	676us/step	_	accuracy:	0.6803	_	loss:	0.5651
Epoch 76/100  16/16	Epoch			•		-				
16/16       0s 733us/step - accuracy: 0.6855 - loss: 0.5581         Epoch 77/100         16/16       0s 733us/step - accuracy: 0.6761 - loss: 0.5442         Epoch 78/100         16/16       0s 732us/step - accuracy: 0.6989 - loss: 0.5434         Epoch 79/100         16/16       0s 800us/step - accuracy: 0.7549 - loss: 0.5206         Epoch 80/100         16/16       0s 666us/step - accuracy: 0.7049 - loss: 0.5343         Epoch 82/100         16/16       0s 800us/step - accuracy: 0.7278 - loss: 0.5267         Epoch 84/100         16/16       0s 800us/step - accuracy: 0.7618 - loss: 0.5267         Epoch 85/100         16/16       0s 800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100         16/16       0s 733us/step - accuracy: 0.7814 - loss: 0.5185			0s	751us/step	-	accuracy:	0.6671	-	loss:	0.5641
Epoch 77/100  16/16	•	-	0.0	72245/5+00		2661182614	0 (055		10001	0 5501
16/16       0s       733us/step - accuracy:       0.6761 - loss:       0.5442         Epoch 78/100       0s       732us/step - accuracy:       0.6989 - loss:       0.5434         Epoch 79/100       0s       800us/step - accuracy:       0.7549 - loss:       0.5206         Epoch 80/100       0s       781us/step - accuracy:       0.7049 - loss:       0.5333         Epoch 81/100       0s       666us/step - accuracy:       0.7404 - loss:       0.5343         Epoch 82/100       0s       800us/step - accuracy:       0.7278 - loss:       0.5465         Epoch 83/100       0s       800us/step - accuracy:       0.7618 - loss:       0.5233         Epoch 84/100       0s       800us/step - accuracy:       0.7637 - loss:       0.5267         Epoch 85/100       0s       733us/step - accuracy:       0.7814 - loss:       0.5185			03	/33us/step	_	accuracy.	0.0655	_	1055.	0.5561
16/16       0s       732us/step - accuracy: 0.6989 - loss: 0.5434         Epoch 79/100       0s       800us/step - accuracy: 0.7549 - loss: 0.5206         Epoch 80/100       0s       781us/step - accuracy: 0.7049 - loss: 0.5333         Epoch 81/100       0s       666us/step - accuracy: 0.7404 - loss: 0.5343         Epoch 82/100       0s       800us/step - accuracy: 0.7278 - loss: 0.5465         Epoch 83/100       0s       800us/step - accuracy: 0.7618 - loss: 0.5233         Epoch 84/100       0s       800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100       0s       733us/step - accuracy: 0.7814 - loss: 0.5185	16/16	,	0s	733us/step	-	accuracy:	0.6761	-	loss:	0.5442
Epoch 79/100  16/16										
16/16       0s       800us/step - accuracy: 0.7549 - loss: 0.5206         Epoch 80/100       0s       781us/step - accuracy: 0.7049 - loss: 0.5333         Epoch 81/100       0s       666us/step - accuracy: 0.7404 - loss: 0.5343         Epoch 82/100       0s       800us/step - accuracy: 0.7278 - loss: 0.5465         Epoch 83/100       0s       800us/step - accuracy: 0.7618 - loss: 0.5233         Epoch 84/100       0s       800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100       0s       733us/step - accuracy: 0.7814 - loss: 0.5185			0s	732us/step	-	accuracy:	0.6989	-	loss:	0.5434
Epoch 80/100  16/16	•		۵c	800us/stan	_	accuracy:	0 75/19	_	1000	0 5206
16/16       0s 781us/step - accuracy: 0.7049 - loss: 0.5333         Epoch 81/100       0s 666us/step - accuracy: 0.7404 - loss: 0.5343         Epoch 82/100       0s 800us/step - accuracy: 0.7278 - loss: 0.5465         Epoch 83/100       0s 800us/step - accuracy: 0.7618 - loss: 0.5233         Epoch 84/100       0s 800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100       0s 733us/step - accuracy: 0.7814 - loss: 0.5185			03	000из/ з сер		accuracy.	0.7545		1033.	0.3200
16/16       0s 666us/step - accuracy: 0.7404 - loss: 0.5343         Epoch 82/100       0s 800us/step - accuracy: 0.7278 - loss: 0.5465         Epoch 83/100       0s 800us/step - accuracy: 0.7618 - loss: 0.5233         Epoch 84/100       0s 800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100       0s 733us/step - accuracy: 0.7814 - loss: 0.5185			0s	781us/step	-	accuracy:	0.7049	-	loss:	0.5333
Epoch 82/100  16/16	•									
16/16       0s       800us/step - accuracy: 0.7278 - loss: 0.5465         Epoch 83/100       0s       800us/step - accuracy: 0.7618 - loss: 0.5233         Epoch 84/100       0s       800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100       0s       733us/step - accuracy: 0.7814 - loss: 0.5185			0s	666us/step	-	accuracy:	0.7404	-	loss:	0.5343
Epoch 83/100  16/16			۵s	800us/sten	_	accuracy:	0 7278	_	1055.	0 5465
16/16       Os 800us/step - accuracy: 0.7618 - loss: 0.5233         Epoch 84/100       0s 800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100       Os 733us/step - accuracy: 0.7814 - loss: 0.5185			55	200и3, 3сер		accai acy .	5.,2,0			3.5405
16/16 — Os 800us/step - accuracy: 0.7637 - loss: 0.5267         Epoch 85/100         16/16 — Os 733us/step - accuracy: 0.7814 - loss: 0.5185			0s	800us/step	-	accuracy:	0.7618	-	loss:	0.5233
Epoch 85/100  16/16 ———— 0s 733us/step - accuracy: 0.7814 - loss: 0.5185			_	000 / :			0 ====		,	0 505
<b>16/16 Os</b> 733us/step - accuracy: 0.7814 - loss: 0.5185			ØS	გიისია/step	-	accuracy:	0./637	-	TOSS:	0.5267
	16/16		0s	733us/step	_	accuracy:	0.7814	_	loss:	0.5185
			-	, <b>F</b>		- , .			_ ~	

16/16		0s	867us/step	-	accuracy:	0.7883	_	loss:	0.5174
	87/100		,		,				
16/16		0s	901us/step	-	accuracy:	0.6980	-	loss:	0.5438
•	88/100								
-		0s	867us/step	-	accuracy:	0.7468	-	loss:	0.5413
Epoch	89/100 ————————	0-	067/			0.7026		1	0 5007
	90/100	05	867us/step	-	accuracy:	0.7836	-	1055:	0.5097
		0s	700us/step	_	accuracv:	0.8013	_	loss:	0.5150
-	91/100		,						
16/16		0s	667us/step	-	accuracy:	0.8194	-	loss:	0.4975
	92/100								
		0s	801us/step	-	accuracy:	0.7877	-	loss:	0.5113
•	93/100	0-	724/			0.0100		1	0 5035
	94/100	05	734us/step	-	accuracy:	0.8100	-	1055:	0.5035
		05	801us/step	_	accuracy:	0.7879	_	loss:	0.5107
	95/100		от = 0.0, о тор						
16/16		0s	734us/step	-	accuracy:	0.8168	-	loss:	0.5020
	96/100								
		0s	733us/step	-	accuracy:	0.7976	-	loss:	0.4984
Epoch	97/100	00	827us/step		2661182674	0 0205		10551	0 4005
	98/100	62	oz/us/step	-	accuracy.	0.0203	-	1055.	0.4905
•		0s	867us/step	_	accuracy:	0.8231	_	loss:	0.4817
	99/100		, ,		,				
16/16		0s	1ms/step -	ad	curacy: 0	.8181 -	10	oss: 0	.4946
	100/100								
16/16			968us/step		-				
	1/100	5 2n	ns/step - ad	CCL	ıracy: 0.8.	115 - 10	055	5: 0.46	529
•		05	940us/step	_	accuracy:	0.3731	_	loss:	0.7246
	2/100		э тошо, э сер			010752			0172.0
16/16		0s	800us/step	-	accuracy:	0.4071	-	loss:	0.7180
	3/100								
		0s	800us/step	-	accuracy:	0.3709	-	loss:	0.7130
•	4/100	00	800us/step		2661182674	0 2064		10551	0 7172
	5/100	62	800us/scep	-	accuracy.	0.3304	-	1055.	0.7173
		0s	735us/step	_	accuracy:	0.4283	_	loss:	0.7081
Epoch	6/100		•		-				
		0s	770us/step	-	accuracy:	0.3896	-	loss:	0.7091
•	7/100	0 -	067 / 1			0 2740		,	0.7065
	8/100	05	867us/step	-	accuracy:	0.3/19	-	1055:	0.7065
		0s	800us/step	_	accuracv:	0.4076	_	loss:	0.7055
	9/100		, , , , , ,						
16/16		0s	768us/step	-	accuracy:	0.4923	-	loss:	0.6961
	10/100								
		0s	733us/step	-	accuracy:	0.3809	-	loss:	0.7095
	11/100	00	722us /s+on		2661182674	0 4205		10551	0 7010
	12/100	05	733us/step	-	accuracy:	0.4393	-	1022:	0.7010
•		0s	667us/step	_	accuracy:	0.4282	_	loss:	0.7046
	13/100				,				
		0s	733us/step	-	accuracy:	0.4471	-	loss:	0.7042
	14/100	_				_			
		0s	667us/step	-	accuracy:	0.4052	-	loss:	0.7024
	15/100	۵c	716us/step	_	accuracy.	0 1162	_	10551	0 7036
	16/100	03	, 1003/3 (Εβ		accar acy.	J. 7700		1033.	3.7030
16/16		0s	708us/step	-	accuracy:	0.4775	-	loss:	0.6913

Epoch	17/100								
		0s	733us/step	-	accuracy:	0.4449	-	loss:	0.6932
	18/100	0-	667/-+			0 4242		1	0.6065
	19/100	0S	667us/step	-	accuracy:	0.4242	-	loss:	0.6965
		0s	734us/step	_	accuracy:	0.4682	_	loss:	0.6993
	20/100		, <sub>F</sub>						
		0s	800us/step	-	accuracy:	0.4227	-	loss:	0.6978
	21/100	0-	722/			0 4645		1	0.000
=	22/100	05	733us/step	-	accuracy:	0.4645	-	1055:	0.6963
		0s	734us/step	_	accuracy:	0.4002	_	loss:	0.7003
Epoch	23/100		•		-				
16/16		0s	735us/step	-	accuracy:	0.5204	-	loss:	0.6859
•	24/100	00	868us/step		2661182614	0 1676		10551	0 6021
	25/100	05	ooous/step	-	accuracy.	0.4676	-	1055.	0.0931
•		0s	800us/step	-	accuracy:	0.5114	-	loss:	0.6881
	26/100								
		0s	933us/step	-	accuracy:	0.4697	-	loss:	0.6950
•	27/100	95	1000us/step	h -	· accuracy	· 0 5199	a -	- 1055	· 0 6912
	28/100	0.5	2000437 5 6 6 1		accai acy	. 0.323		1033	. 0.0312
		0s	733us/step	-	accuracy:	0.5091	-	loss:	0.6894
•	29/100	0 -	724 / 1			0 5345		,	0.6074
-	30/100	0S	734us/step	-	accuracy:	0.5315	-	loss:	0.68/1
•		0s	667us/step	_	accuracy:	0.5329	_	loss:	0.6847
	31/100		•						
		0s	800us/step	-	accuracy:	0.5347	-	loss:	0.6872
•	32/100	۵c	667us/step		accuracy:	0 1110	_	1000	0 6065
	33/100	03	007u3/3tep	_	accur acy.	0.4419	_	1033.	0.0903
•		0s	802us/step	-	accuracy:	0.4957	-	loss:	0.6868
	34/100	_	<b>=</b> 22 / /			0 5404		-	0.6076
	35/100	0s	/33us/step	-	accuracy:	0.5434	-	loss:	0.68/6
		0s	734us/step	_	accuracy:	0.5062	_	loss:	0.6939
Epoch	36/100		•		,				
		0s	733us/step	-	accuracy:	0.5639	-	loss:	0.6832
•	37/100	۵c	733us/step		accuracy:	0 5678	_	1000	0 6857
	38/100	03	/ 3 3 u 3 / 3 t e p	_	accur acy.	0.3078	_	1033.	0.0837
•		0s	800us/step	-	accuracy:	0.6015	-	loss:	0.6865
•	39/100	_	<b>702</b> / /					-	0 1000
	40/100	0S	703us/step	-	accuracy:	0.6092	-	loss:	0.6880
		0s	801us/step	_	accuracy:	0.5837	_	loss:	0.6851
Epoch	41/100		•						
		0s	933us/step	-	accuracy:	0.6355	-	loss:	0.6851
	42/100	۵c	752us/step		accuracy:	0 6001	_	1000	0 6884
	43/100	03	732u3/3cep		accuracy.	0.0004		1033.	0.0004
		0s	801us/step	-	accuracy:	0.6236	-	loss:	0.6874
•	44/100	_	=== / :					-	
	45/100	Øs	735us/step	-	accuracy:	0.6693	-	Toss:	0.6816
•		0s	937us/step	_	accuracv:	0.6593	_	loss:	0.6825
	46/100		,p		·			<b>-</b> -	
		0s	733us/step	-	accuracy:	0.6845	-	loss:	0.6773
	47/100	0-	02200/-4		2001152	0 6340		1055	0 (040
16/16		ØS	933us/step	-	accuracy:	0.6349	-	TOSS:	0.6840

Epoch	48/100								
•		0s	803us/step	-	accuracy:	0.6612	- lo	ss:	0.6801
Epoch	49/100								
-		0s	1ms/step -	a	ccuracy: 0	.6167 -	loss	: 0.	6854
	50/100	0-	1	_		6650	1	. 0	6700
	51/100	05	ıms/step -	a	ccuracy: 0.	.6659 -	1055	: 0.	6/98
		05	1ms/step -	ac	ccuracy: 0.	.6573 -	loss	: 0.	6829
	52/100		э, э сер						0025
16/16		0s	733us/step	-	accuracy:	0.6450	- lo	ss:	0.6802
	53/100								
		0s	1ms/step -	a	ccuracy: 0.	.6588 -	loss	: 0.	6799
	54/100	0.0	02645/5400		2661182614	0 ((00	1.0		0 6705
	55/100	62	936us/step	_	accuracy.	0.0090	- 10	55.	0.0793
		0s	733us/step	_	accuracy:	0.6381	- lo	ss:	0.6845
	56/100								
		0s	667us/step	-	accuracy:	0.6909	- lo	ss:	0.6804
	57/100	_					_		
	58/100	0s	733us/step	-	accuracy:	0.6505	- 10	ss:	0.6800
	38/ 100	05	701us/sten	_	accuracy:	0.6850	- 10	55:	0.6779
Epoch	59/100	05	, 0203, 5 ccp		accui acy.	0.0050	10		0.0773
16/16		0s	720us/step	-	accuracy:	0.7057	- lo	ss:	0.6819
	60/100								
		0s	2ms/step -	a	ccuracy: 0.	.6694 -	loss	: 0.	6825
•	61/100	۵c	1ms/step -	21	ccuracy: 0	7063 -	1000	· a	6747
	62/100	03	тшэ/ эсср	a	ccar acy. o.	. 7003	1033	. 0.	07-77
		0s	800us/step	-	accuracy:	0.6543	- lo	ss:	0.6785
	63/100								
		0s	800us/step	-	accuracy:	0.6838	- 10	ss:	0.6772
	64/100	05	733us/step	_	accuracy:	0.6608	- 10	55:	0.6770
Epoch	65/100		·		-				
16/16		0s	800us/step	-	accuracy:	0.6404	- lo	ss:	0.6748
•	66/100	_	==== / .			0 6570	-		
	67/100	0s	733us/step	-	accuracy:	0.65/8	- 10	ss:	0.6/88
•		0s	673us/step	_	accuracv:	0.7097	- lo	ss:	0.6731
-	68/100		, ,		,				
		0s	801us/step	-	accuracy:	0.7362	- lo	ss:	0.6691
	69/100	0 -	722 / 1			0.6067	,		0 6744
	70/100	05	733us/step	_	accuracy:	0.6867	- 10	SS:	0.6/11
	70,100	0s	667us/step	_	accuracy:	0.6081	- lo	ss:	0.6839
Epoch	71/100		•		•				
		0s	667us/step	-	accuracy:	0.6584	- lo	ss:	0.6745
	72/100	0-	001/-+			0 6427	1.		0 6771
	73/100	05	801us/step	-	accuracy:	0.6427	- 10	ss:	0.6//1
		0s	667us/step	_	accuracv:	0.6450	- lo	ss:	0.6782
	74/100		, ,		,				
		0s	638us/step	-	accuracy:	0.7012	- lo	ss:	0.6730
•	75/100	0 -	722 / 1			0.6404	,		0 6766
	76/100	US	733us/step	-	accuracy:	0.6484	- 10	ss:	Ø.6/66
		0s	686us/step	_	accuracv:	0.6837	- lo	ss:	0.6693
	77/100	-	, p		, -			-	
		0s	667us/step	-	accuracy:	0.6645	- lo	ss:	0.6716
	78/100	•	CC7: / ·			0 6655	-		0.6601
16/16		ØS	667us/step	-	accuracy:	0.6657	- 10	ss:	v.6691

Epoch	79/100							
		<b>0</b> s	668us/step	-	accuracy:	0.6685	- loss:	0.6744
	80/100	_					_	
	81/100	<b>-</b> 0s	667us/step	-	accuracy:	0.7104	- loss:	0.6625
	81/100	<b>-</b> 0s	667us/step	_	accuracv:	0.6847	- loss:	0.6695
	82/100				,			
		<b>0</b> s	734us/step	-	accuracy:	0.6284	- loss:	0.6743
•	83/100	0 -	000 / 1			0 7007	1	0.6645
-	84/100	- 05	800us/step	-	accuracy:	0.7037	- 10SS:	0.6645
		<b>-</b> 0s	667us/step	_	accuracy:	0.6818	- loss:	0.6689
	85/100							
		<b>0</b> s	665us/step	-	accuracy:	0.6218	- loss:	0.6745
	86/100 	0.0	72245/5+00		2661102614	0 (507	1000	0 ((00
	87/100	05	733us/step	-	accuracy:	0.0597	- 1055:	0.0099
		<b>-</b> 0s	735us/step	_	accuracy:	0.6998	- loss:	0.6642
	88/100							
		<b>0</b> s	695us/step	-	accuracy:	0.6409	- loss:	0.6745
	89/100 	<b>-</b> 0s	747us/sten	_	accuracy:	0 6685	- loss:	0 6683
	90/100	03	747 d37 5 ccp		accui acy.	0.0003	1033.	0.0003
16/16		<b>0</b> s	1000us/step	<b>)</b> -	accuracy	0.7226	5 - loss	: 0.6605
	91/100	0 -	4 / 1		0	5044	1 0	6627
-	92/100	<b>-</b> 0s	1ms/step -	ac	curacy: 0	.6911 -	loss: 0	.662/
		<b>-</b> 0s	802us/step	_	accuracy:	0.6539	- loss:	0.6707
Epoch	93/100							
		<b>-</b> 0s	733us/step	-	accuracy:	0.6668	- loss:	0.6666
	94/100	<b>-</b> 0c	834us/step	_	accuracy:	0 6035	- 1055.	0 6705
	95/100	03	05-43, эсер		accui acy.	0.0033	1033.	0.0703
		<b>-</b> 0s	733us/step	-	accuracy:	0.6398	- loss:	0.6653
	96/100	0.0	200115/5+00		2661102614	0 (502	1000	0 ((57
-	97/100	05	800us/step	-	accuracy.	0.0595	- 1055.	0.0057
		<b>0</b> s	800us/step	-	accuracy:	0.7128	- loss:	0.6612
•	98/100							
	99/100	<b>-</b> 0s	801us/step	-	accuracy:	0.6767	- loss:	0.6606
		<b>-</b> 0s	800us/step	_	accuracy:	0.6381	- loss:	0.6640
	100/100							
			933us/step		-			
	1/100	<b>0S</b> In	ns/step - ad	CCL	ıracy: 0.84	465 - IO	oss: 0.6	354
		<b>0</b> s	933us/step	_	accuracy:	0.6075	- loss:	0.7093
Epoch	2/100		·		-			
		<b>0</b> s	1ms/step -	ac	ccuracy: 0	.4767 -	loss: 0	.7513
	3/100	<b>-</b> 0s	802us/step	_	accuracy:	0 5418	- loss:	0 7054
	4/100	03	002u3/3ccp		accur acy.	0.5410	1033.	0.7054
•		<b>0</b> s	867us/step	-	accuracy:	0.5068	- loss:	0.7097
•	5/100	^	000:/			0 445-	7	0.7050
	6/100	- 05	800us/step	-	accuracy:	v.415/	- 10SS:	0.7059
		<b>-</b> 0s	800us/step	_	accuracy:	0.4106	- loss:	0.6825
Epoch	7/100		,		,			
	0./1.00	<b>0</b> s	800us/step	-	accuracy:	0.3928	- loss:	0.6885
•	8/100	<b>-</b> 0c	734us/step	_	accuracy.	0.3955	- 1055.	0.6824
	9/100	<del>0</del> 3	, 5403/3CEP	-	accui acy.	دردر	- TO22.	0.0024
•								

16/16		0s	667us/step	-	accuracy:	0.3874	-	loss:	0.6899
•	10/100								
		0s	667us/step	-	accuracy:	0.5387	-	loss:	0.6791
	11/100	95	805us/step	_	accuracy:	0.4979	_	loss:	0.6738
	12/100		000 a.b, 0 ccp		acca. acy t	• • • • • • • • • • • • • • • • • • • •			
		0s	767us/step	-	accuracy:	0.5367	-	loss:	0.6633
	13/100	0-	CC7 / a + a.m.			0 5357		1	0.6633
	14/100	05	667us/step	-	accuracy.	0.5557	-	1055.	0.0032
16/16	-	0s	668us/step	-	accuracy:	0.5931	-	loss:	0.6589
•	15/100	_	==== / .			0 6400		-	
	16/100	0S	733us/step	-	accuracy:	0.6128	-	1055:	0.6616
•		0s	667us/step	-	accuracy:	0.6823	-	loss:	0.6489
•	17/100								
	18/100	0s	640us/step	-	accuracy:	0.6573	-	loss:	0.6512
•		0s	667us/step	_	accuracy:	0.6324	_	loss:	0.6529
	19/100		·						
		0s	745us/step	-	accuracy:	0.6394	-	loss:	0.6467
<b>16/16</b>	20/100	0s	667us/step	_	accuracy:	0.6183	_	loss:	0.6514
Epoch	21/100		·						
		0s	733us/step	-	accuracy:	0.6286	-	loss:	0.6443
•	22/100	0s	802us/step	_	accuracy:	0.6515	_	loss:	0.6353
Epoch	23/100								
		0s	684us/step	-	accuracy:	0.6537	-	loss:	0.6370
•	24/100	0s	668us/step	_	accuracy:	0.6538	_	loss:	0.6315
•	25/100		·						
-	26/100	0s	807us/step	-	accuracy:	0.6882	-	loss:	0.6252
16/16		0s	871us/step	_	accuracy:	0.6708	_	loss:	0.6181
	27/100								
16/16 Enoch	28/100	0s	600us/step	-	accuracy:	0.7527	-	loss:	0.6085
16/16		0s	733us/step	_	accuracy:	0.7214	_	loss:	0.6080
•	29/100								
	30/100	0s	672us/step	-	accuracy:	0.7187	-	loss:	0.5941
•		0s	667us/step	_	accuracy:	0.6955	_	loss:	0.6031
	31/100							_	
	32/100	0s	667us/step	-	accuracy:	0.6530	-	loss:	0.6083
		0s	667us/step	_	accuracy:	0.6955	-	loss:	0.5961
Epoch	33/100								
	34/100	0s	802us/step	-	accuracy:	0.7281	-	loss:	0.5965
16/16		0s	868us/step	_	accuracy:	0.7546	_	loss:	0.5813
	35/100		·						
		0s	867us/step	-	accuracy:	0.6970	-	loss:	0.6032
	36/100	0s	667us/step	_	accuracy:	0.7627	_	loss:	0.5865
Epoch	37/100		·						
		0s	733us/step	-	accuracy:	0.7652	-	loss:	0.5802
	38/100	0s	800us/step	_	accuracy:	0.8373	_	loss:	0.5443
Epoch	39/100		·						
	40/100	0s	968us/step	-	accuracy:	0.8117	-	loss:	0.5421
∟pocn	40/100								

16/16		0s	800us/step	_	accuracv:	0.7767	_	loss:	0.5616
	41/100		, , , , , , , , ,						
		0s	867us/step	-	accuracy:	0.8411	-	loss:	0.5331
	42/100		010 / /			0.0645			0 5065
	43/100	ØS.	818us/step	-	accuracy:	0.8645	-	TOSS:	0.5267
		0s	935us/step	_	accuracv:	0.8259	_	loss:	0.5383
	44/100		, ,		,				
16/16		0s	867us/step	-	accuracy:	0.8228	-	loss:	0.5399
•	45/100	0-	00000/2422			0.0200		1	0 5405
	46/100	65	868us/step	-	accuracy:	0.8390	-	1055:	0.5405
•		0s	667us/step	_	accuracy:	0.8694	_	loss:	0.5138
•	47/100								
		0s	867us/step	-	accuracy:	0.8928	-	loss:	0.4848
	48/100	۵s	801us/step	_	accuracy:	0 8693	_	1055.	0 4921
	49/100	03	001и3/ 3сср		accuracy.	0.0055		1033.	0.4321
		0s	667us/step	-	accuracy:	0.8348	-	loss:	0.5036
Epoch	50/100	_							
	51/100	0s	667us/step	-	accuracy:	0.8436	-	loss:	0.5121
•		0s	733us/step	_	accuracy:	0.8480	_	loss:	0.4811
•	52/100				,				
16/16		0s	606us/step	-	accuracy:	0.8306	-	loss:	0.4958
	53/100	۵s	667us/step	_	accuracy:	0 8614	_	1055.	0 4679
	54/100	03	007 u37 3 ccp		accur acy.	0.0014		1033.	0.40/5
		0s	733us/step	-	accuracy:	0.8685	-	loss:	0.4718
-	55/100	0-	725/-+			0 0073		1	0 4453
	56/100	05	735us/step	-	accuracy:	0.88/3	-	1055:	0.4453
•		0s	735us/step	-	accuracy:	0.8522	-	loss:	0.4481
	57/100								
		0s	667us/step	-	accuracy:	0.8369	-	loss:	0.4632
16/16	58/100	0s	733us/step	_	accuracv:	0.8625	_	loss:	0.4273
-	59/100		, ,						
		0s	901us/step	-	accuracy:	0.8657	-	loss:	0.4294
-	60/100	۵c	732us/step		accuracy:	0 8816	_	1000	0 1000
	61/100	03	732u3/3cep		accuracy.	0.0040		1033.	0.4005
		0s	800us/step	-	accuracy:	0.8599	-	loss:	0.4059
Epoch	62/100					0.0400		-	0 4044
	63/100	0S	667us/step	-	accuracy:	0.8482	-	TOSS:	0.4311
		0s	868us/step	_	accuracy:	0.8965	_	loss:	0.4018
Epoch	64/100								
	CF /400	0s	867us/step	-	accuracy:	0.8429	-	loss:	0.4312
	65/100	95	734us/sten	_	accuracy:	0 8383	_	1055.	a 4191
	66/100	03	754u3/3ccp		accuracy.	0.0505		1033.	0.4101
16/16		0s	733us/step	-	accuracy:	0.8458	-	loss:	0.4159
-	67/100	•	722 / /			0.00=2		1	0.2201
	68/100	US	733us/step	-	accuracy:	0.90/3	-	TOSS:	0.3394
		0s	667us/step	_	accuracy:	0.8492	_	loss:	0.4013
Epoch	69/100		•		-				
	70/100	0s	804us/step	-	accuracy:	0.8662	-	loss:	0.3808
16/16	70/100	05	667us/sten	_	accuracy:	0.8490	_	loss:	0.3839
	71/100		, э сер			2.0.20			

16/16		۵c	800us/step	_	accuracy.	0 8733	_	1000	0 3585
	72/100	03	800us/scep	_	accuracy.	0.8755	_	1033.	0.5565
		0s	667us/step	_	accuracy:	0.8655	_	loss:	0.3388
Epoch	73/100				_				
16/16		0s	669us/step	-	accuracy:	0.8153	-	loss:	0.4029
	74/100								
		0s	686us/step	-	accuracy:	0.9091	-	loss:	0.2952
	75/100 	0-	060/			0 0477		1	0 2500
	76/100	05	868us/step	-	accuracy:	0.84//	-	1055:	0.3388
		0s	667us/step	_	accuracv:	0.8353	_	loss:	0.3903
	77/100		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,						
16/16		0s	933us/step	-	accuracy:	0.8928	-	loss:	0.3204
	78/100								
		0s	933us/step	-	accuracy:	0.8659	-	loss:	0.3370
	79/100	ac.	768us/step		accupacy:	0 0727		1000	0 2242
	80/100	03	700u3/3cep	_	accuracy.	0.8727	_	1033.	0.5245
		0s	800us/step	_	accuracy:	0.8772	_	loss:	0.3075
Epoch	81/100								
		0s	800us/step	-	accuracy:	0.8704	-	loss:	0.3304
Epoch	82/100 	00	200115/5+00		2661182614	0 0262		10001	0 2570
	83/100	05	ooous/step	-	accuracy.	0.0202	-	1055.	0.3376
		0s	733us/step	_	accuracy:	0.8891	_	loss:	0.3019
	84/100		·		•				
		0s	667us/step	-	accuracy:	0.8850	-	loss:	0.3005
Epoch	85/100 	0-	725/-+			0.0050		1	0 2054
	86/100	05	735us/step	-	accuracy:	0.8858	-	1055:	0.2851
		0s	809us/step	_	accuracy:	0.8983	_	loss:	0.2749
Epoch	87/100		, ,		,				
		0s	734us/step	-	accuracy:	0.9134	-	loss:	0.2577
	88/100	•	722 / 1			0.0400		,	0 2000
	89/100	05	733us/step	-	accuracy:	0.8422	-	1055:	0.3080
		0s	769us/step	_	accuracy:	0.8686	_	loss:	0.3082
Epoch	90/100		·		-				
		0s	867us/step	-	accuracy:	0.8406	-	loss:	0.3253
	91/100	0-	722 / = + = =			0.0760		1	0 2041
	92/100	05	/33us/step	-	accuracy:	0.8760	-	1022:	0.2941
		0s	802us/step	_	accuracy:	0.8952	_	loss:	0.3021
Epoch	93/100				-				
		0s	667us/step	-	accuracy:	0.8516	-	loss:	0.3240
Epoch	94/100	00	200115/5+00		2661182614	0.000		10001	a 2200
	95/100	05	800us/step	-	accuracy:	0.0000	-	1022:	0.3389
		0s	734us/step	_	accuracy:	0.8772	_	loss:	0.3186
Epoch	96/100								
		0s	868us/step	-	accuracy:	0.8731	-	loss:	0.3148
	97/100	0-	722 / = + = =			0.000		1	0 2020
	98/100	65	/33uS/Step	-	accuracy:	0.8895	-	1055:	0.2839
		0s	600us/step	_	accuracy:	0.8835	_	loss:	0.2960
Epoch	99/100								
		0s	673us/step	-	accuracy:	0.8756	-	loss:	0.2853
	100/100	G-	900us /s+s=		2001102	0.000		1000	0 2052
	0:								
2, 3	0.	J 11	, эсер ас		ucy . 0.00	.,_ 1(	. د ر		

```
In [11]: print("{:<10} {:<10} {:<10}".format('Optimizer', 'Loss', 'Accuracy'))
    print("-----")
    for optimizer, result in opt_res.items():
        print("{:<10} {:<10.4f} {:<10.4f}".format(optimizer, result['loss'], result['accuracy']))</pre>
```

Loss	Accuracy			
0.6474	0.6750			
0.4861	0.8250			
0.6605	0.6750			
0.3013	0.8750			
	0.4861 0.6605			

## **Assessment of Optimal Optimizer**

Looking at the table above we see the lowest loss and highest accuracy with the Lion optimizer method, given this configuration (2 layers, 3 neurons each, 100 epoch, batch size 10).

### Part 2 - BYOD (Bring your own Dataset)

Using your own dataset, experiment and find the best Neural Network configuration. You may use any resource to improve results, just reference it.

While you may use any dataset, I'd prefer you didn't use the diabetes dataset used in the lesson.

https://stackoverflow.com/questions/34673164/how-to-train-and-tune-an-artificial-multilayer-perceptron-neural-network-using-k

https://keras.io/

```
In [58]: |
         import pandas as pd
         from keras.utils import to categorical
         wine = pd.read_csv('../data/wine.data', names = ['class', 'alcohol', 'malic acid', 'ash', 'aclal
                                                           'flavanoids', 'nonflavanoids phenols', 'proantho
                                                           'od280/od315 of diluted wines', 'proline'])
         wine.dropna(inplace=True)
         X = wine.drop(columns=['class'])
         y = wine['class'].copy()
         y = to_categorical(y -1)
         def byod2(layers, neurons, act, opt):
             model = Sequential()
             model.add(Dense(neurons, input_dim= 13, activation=act))
             for _ in range(layers - 1):
                 model.add(Dense(neurons, activation=act))
             model.add(Dense(3, activation='softmax'))
             model.compile(loss='categorical_crossentropy', optimizer=opt, metrics=['accuracy'])
             record = model.fit(X, y, epochs=100, batch_size=10, validation_split=0.4, verbose=0)
             loss, accuracy = model.evaluate(X, y, verbose=0)
             return loss, accuracy, record.history
```

{'layers': 1, 'neurons': 4, 'act': 'selu', 'opt': 'Lion'},
{'layers': 2, 'neurons': 3, 'act': 'tanh', 'opt': 'Adam'},

```
C:\Users\rober\AppData\Local\Programs\Python\Python311\Lib\site-packages\keras\src\layers\core\de
nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
Sequential models, prefer using an `Input(shape)` object as the first layer in the model instead.
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
C:\Users\rober\AppData\Local\Programs\Python\Python311\Lib\site-packages\keras\src\layers\core\de
nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
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C:\Users\rober\AppData\Local\Programs\Python\Python311\Lib\site-packages\keras\src\layers\core\de
nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
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C:\Users\rober\AppData\Local\Programs\Python\Python311\Lib\site-packages\keras\src\layers\core\de
nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
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nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
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  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
C:\Users\rober\AppData\Local\Programs\Python\Python311\Lib\site-packages\keras\src\layers\core\de
nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
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nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
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nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
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nse.py:87: UserWarning: Do not pass an `input_shape`/`input_dim` argument to a layer. When using
Sequential models, prefer using an `Input(shape)` object as the first layer in the model instead.
  super().__init__(activity_regularizer=activity_regularizer, **kwargs)
```

L	ayers	Neurons	Activation	Optimizer	Loss	Accuracy
2		3	tanh	Lion	1.5913	0.6348
5		3	tanh	Lion	2.6137	0.3315
1		4	tanh	Lion	2.7057	0.3315
2		3	selu	Lion	3.3941	0.3315
5		3	selu	Lion	3.8605	0.3315
1		4	selu	Lion	5.8608	0.6798
2		3	tanh	Adam	1.6706	0.3315
5		3	tanh	Adam	1.6418	0.3315
1		4	tanh	Adam	1.3295	0.6011
2		3	selu	Adam	1.8456	0.3315
5		2	selu	Adam	2.0812	0.3315
1		4	selu	Adam	6.2342	0.6629

#### Discussion

One major limitation is that I used the optimal configurations from the XOR dataset for the configurations in this dataset. However, the correct configuration would certainly be different for a wholly different dataset. A more robust function could be defined to evaluate layers and neurons, assuming network architecture existed to support the increase in computational power. For the sake of runtime and demonstration, I elected to use the known configurations from part one as part of the configurations for part 2.

Similarly, I elected to only test the 'tanh' and 'selu' activation methods, as well as the 'Lion' and 'Adam' optimizers, again using part 1 as a reference. The same discussion as above applies.

As we see, due to these limitations, as well as the batch size and epoch limit, none of these models is very accurate. The lowest loss is well over 1 (1.32, in the 1 layer, 4 neuron, tanh activation, Adam optimizer configuration). The highest accuracy is below 68% (67.98%, 1 layer 4 neuron, selu activation, lion optimizer). Given the models/configurations tested, I would elect to use the 2 layer, 3 neuron, tanh activation, lion optimizer configuration. It is the best combination of 'low' loss (1.59) and 'high' accuracy (63.5%). A close second would be the 1 layer, 4 neuron, tanh activation, Adam optimizer configuration, which has a lower loss figure (1.32), but also a lower accuracy (60.1%). Again, we could weigh the cost/benefit of multiple neurons across many layers and the effect on computational speed/power when determining the best model to go forward with. First, though, a more robust evaluation should be done (since none of these figures gives much confidence in the model).

#### Citations:

Data: https://archive.ics.uci.edu/dataset/109/wine

ChatGPT: Code help (tables, formatting of functions, categorical crossentropy modifications).