Task # 4

Fill all the necessary gaps in **CNN_and_Transfer_Learning.ipynb** and fit neural networks for solving the binary classification task: *Dog or Cat on the image?*

Data:

https://drive.google.com/drive/folders/1nzVk4GOvKR6P87uPszUkKMPtaXV_wrZf?usp=sharing

Part 1:

1. Build and fit CNN with 3 convolutional layers for binary classification

2. Evaluate accuracy on test data

3. Plot the graphs for Loss(number_of_epochs) and Accuracy(number_of_epochs)

Part 2

1. Build and fit Transfer Learning model using pre-trained **VGG16-model** weights from keras application.

2. Do the same with **one more** available pre-trained deep learning model from keras application, for example Xception - https://keras.io/api/applications/ .

2. Evaluate accuracy on test data for p.1 and p.2

3. Plot the graphs for Loss(number_of_epochs) and Accuracy(number_of_epochs)

4. Check the performance of your model with **the custom image of cat or dog** (so the model will tell which class this image belongs to). Develop the function for the inference of the best algorithm.

Part 3* Contest** (not obligatory)

Train your own classificator with the highest possible accuracy on the test data. You can use any architecture/preprocessing/postprocessing/ensembling approach you want.

One student who will achieve the best score will be awarded with 5A for the course (Exam) automatically!

NB: you can do the task using PyTorch framework if it is more convenient for you