Lab Assignment 10
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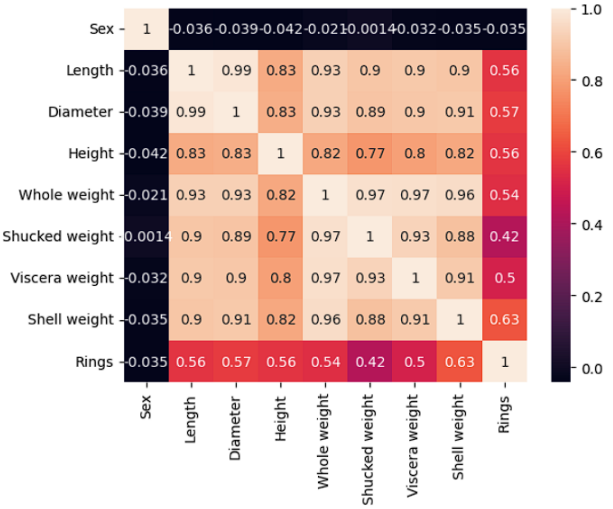
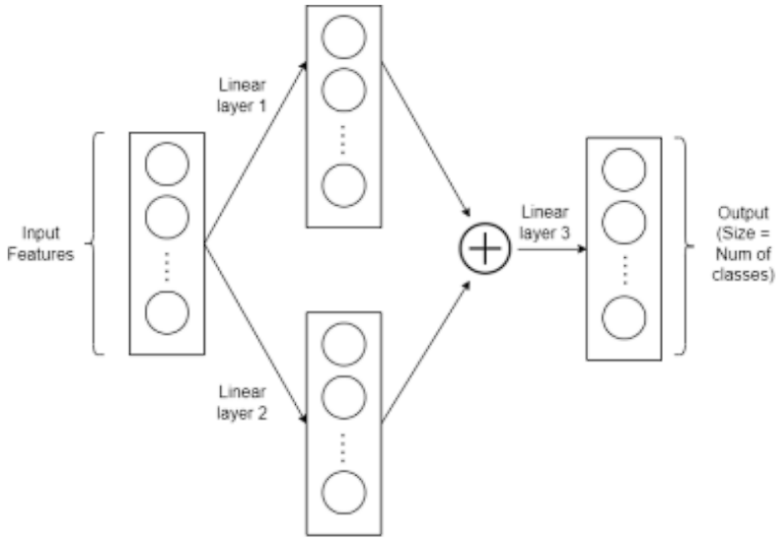
Question 1:

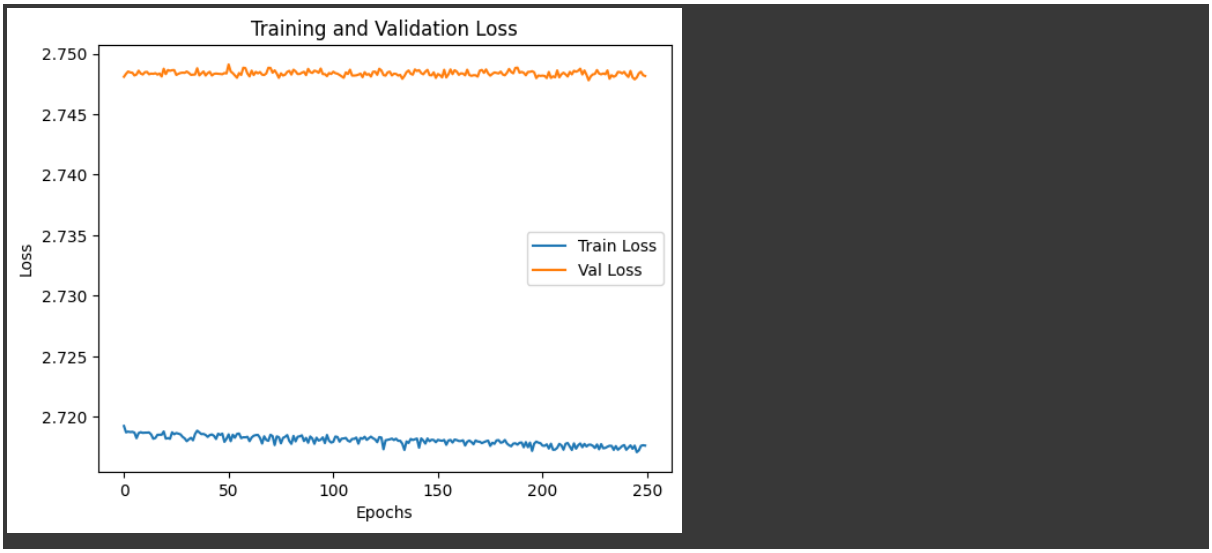
- Downloaded dataset using **wget** command called using **os.system**
- Loaded the **abalone.data** file into df using pd.read_csv
- Added column names **column_names = ["Sex", "Length", "Diameter", "Height", "Whole weight", "Shucked weight", "Viscera weight", "Shell weight", "Rings"]**
- Checked for not filled rows using **df.isnull().sum()**
- Used **df.describe()** to get insights about the dataset
- Converted **Gender ['I','F','M']** to `F -> 0 ,I -> 1 ,M -> 2`
- Plotted bar plots using **seaborn.barplot**
- Plotted **heatmap of covariance matrix**
- Applied **StandardScaler()** to normalise data
- Putting class labels which has less than 3 counts in **train data**
- Printed the distribution of class labels in **train and test**
- Applied **one-hot-encoding** as we are going to use **categorical_crossentropy**

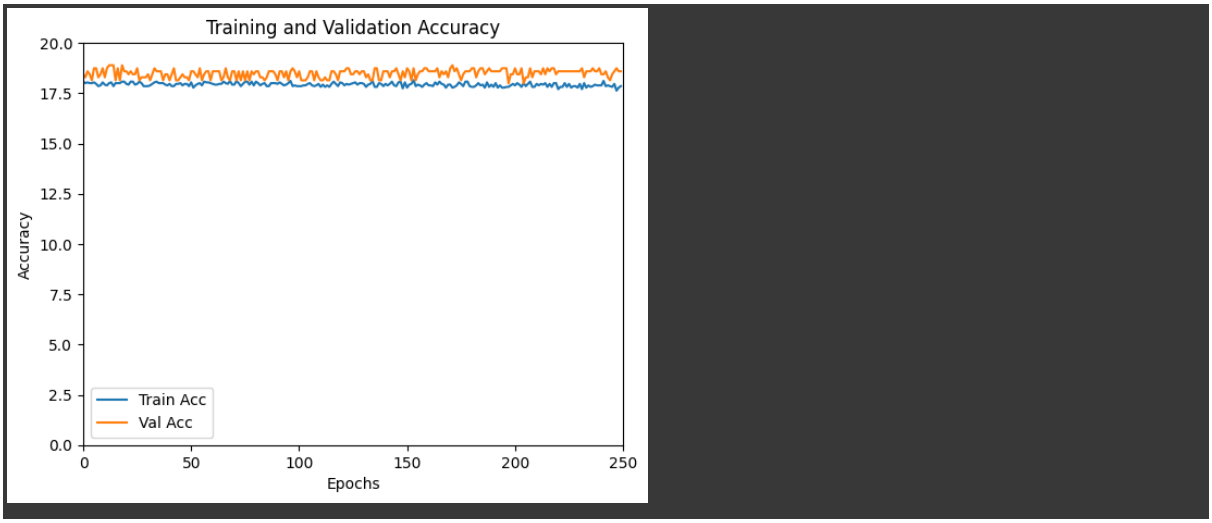


- Created a model using pytorch with architecture as below



- Used **Tanh** activation function for hidden layer and **Sigmoid** for output layer with **128** neurons in both hidden layers
- Defined accuracy function as we are using **categorical_cross_entropy loss**
- Used **Adam** as optimizer
- Used **torch.no_grad** and **scratch_written** code to find accuracy and loss for the epochs





- `Test Acc: 17.625898361206055`