Implement forward pass of Neural Networks:

1. Implement data structure for Neuron
2. Implement data structure for Layer
   (list of neurons)
3. Implement data structure for Neural network
   (list of Layers)

4. Layer 0 nodes take input from data set and compute output
   Repeat for i=1 to number_of_layers
   Layer i nodes output given as input to Layer i+1 nodes
   Find the output of the last layer nodes

Implement Back Propagation Step:

1. Implement Error/ Loss functions
   a) Classification :

$$logloss = -\frac{1}{N}\sum_{i=1}^{N}\sum_{j=1}^{M} y_{ij}\log(p_{ij})$$

(Where N is the number of samples, M is the number of classes)

For binary classification

$$\text{Log loss} = \frac{1}{N}\sum_{i=1}^{N} -\left(y_i * \log(p_i) + (1-y_i) * \log(1-p_i)\right)$$

   b) Regression:

$$\boldsymbol{MSE = \frac{1}{N}\sum_{j=1}^{N}(predicted - input)^2}$$

2. Implement gradient of activation function
3. Implement Delta discussed in the class
4. Implement Back propagation algorithm discussed in the class