**COMS3007 – Machine Learning**

*Neural Networks Tutorial 2*

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**Question 1**

a) i.

Input to :

Input to :

Input to h:

ii.

Input to :

Input to :

Input to h:

iii.

Input to :

Input to :

Input to h:

b) i. , Target class:

ii. . Target class: 1

ii. . Target class: 0

3a) Done in notebook

b) Done in notebook

c) Done in notebook

d) Done in notebook

e) Gradients calculated within loops of notebook. Gradients are given as:

f) Done in notebook

g) Done in notebook, error is printed.

h) Actual Class

|  |  |  |
| --- | --- | --- |
|  | Class 0 | Class 1 |
| Class 0 | 0 | 0 |
| Class  1 | 52 | 48 |

Accuracy = . There is still a significant error present in the model, parameters need to be adjusted.

k) It’s important to split our data into these 3 sets in order to evaluate our model. It allows us to test the accuracy of our model. Which allows us to tweak and adjust our hyper parameters to improve our accuracy.