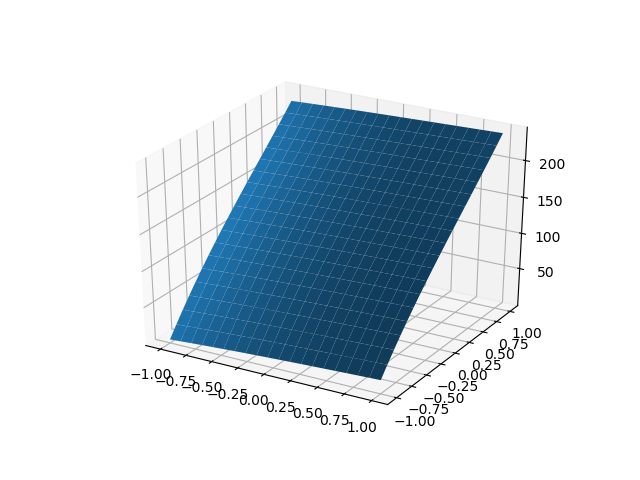
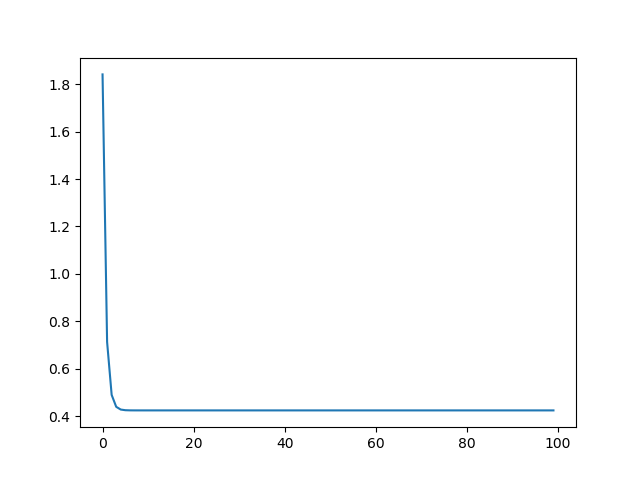
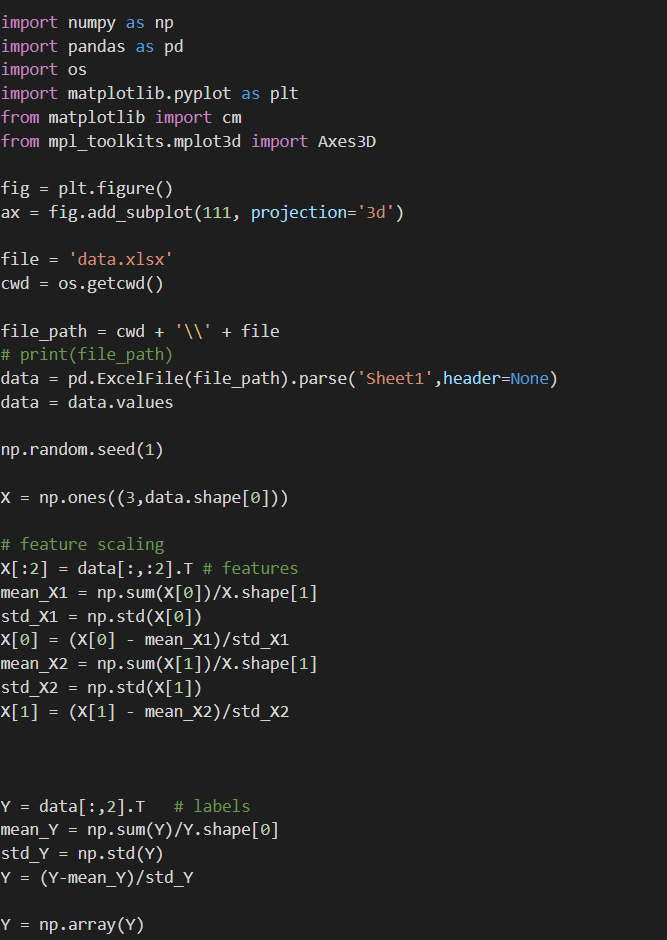
**Assignment 1**

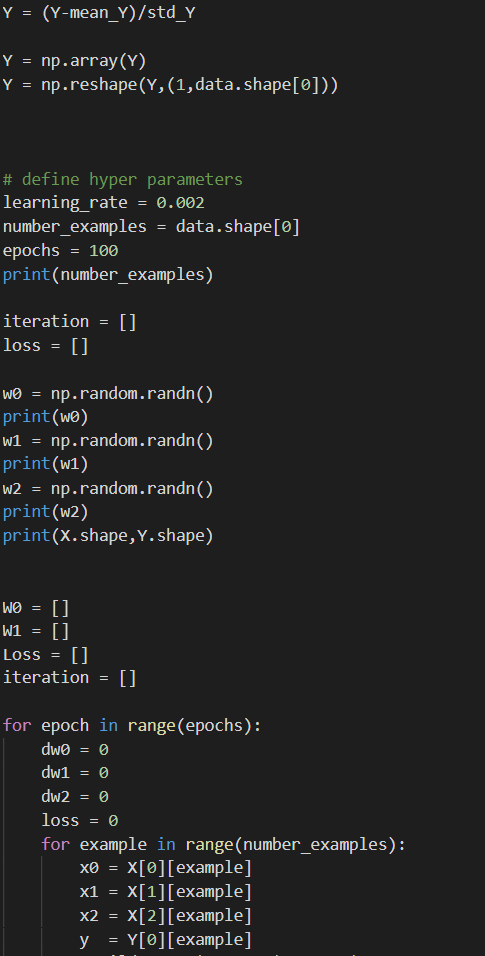
V Aditya Srikanth

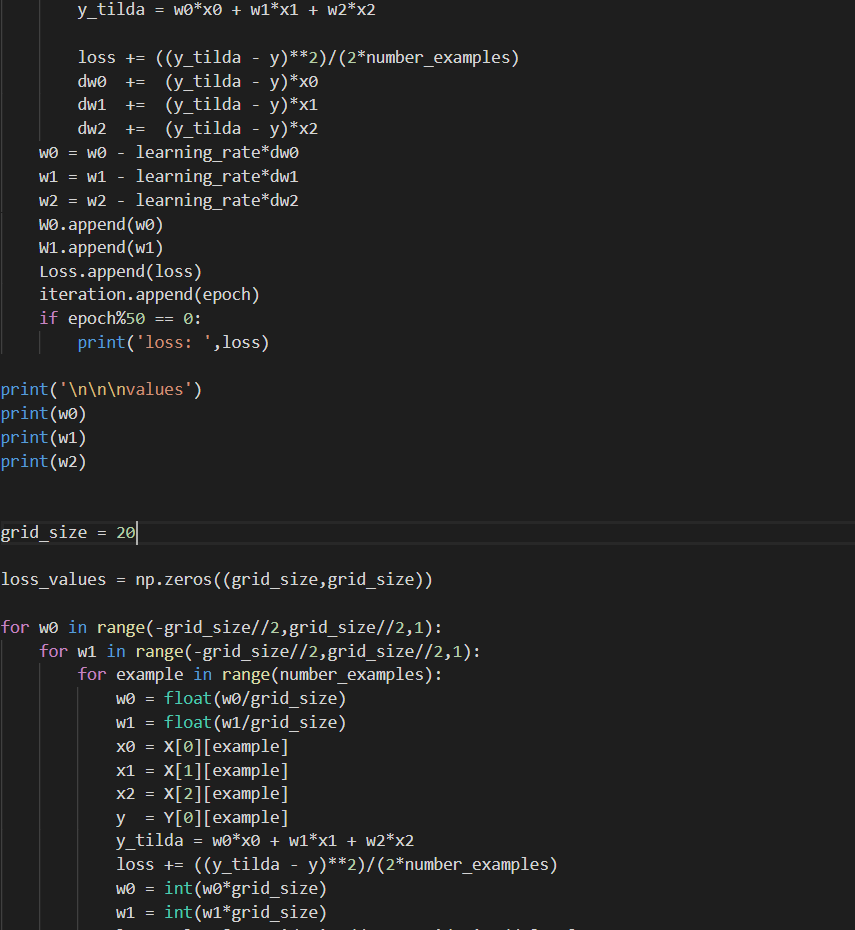
2016A7PS0091H

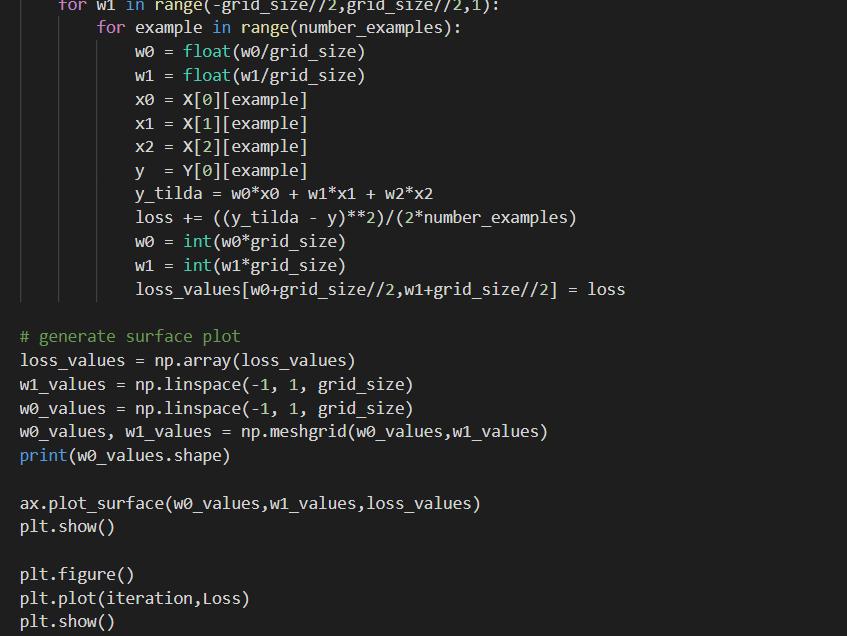
Q1:



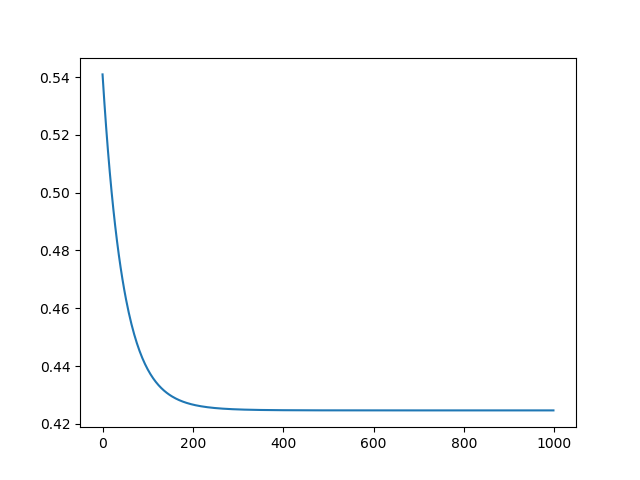


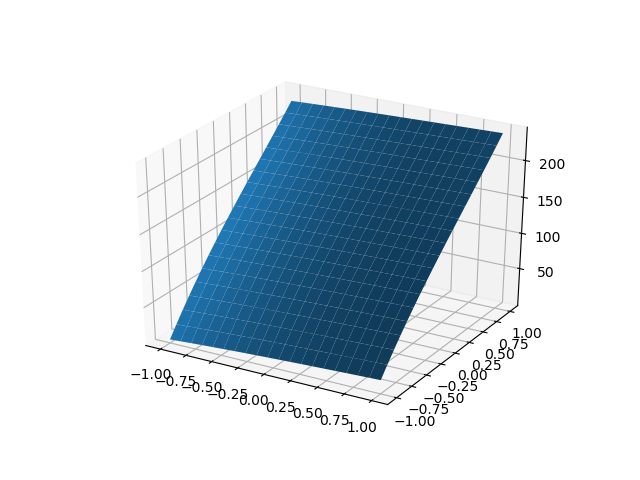


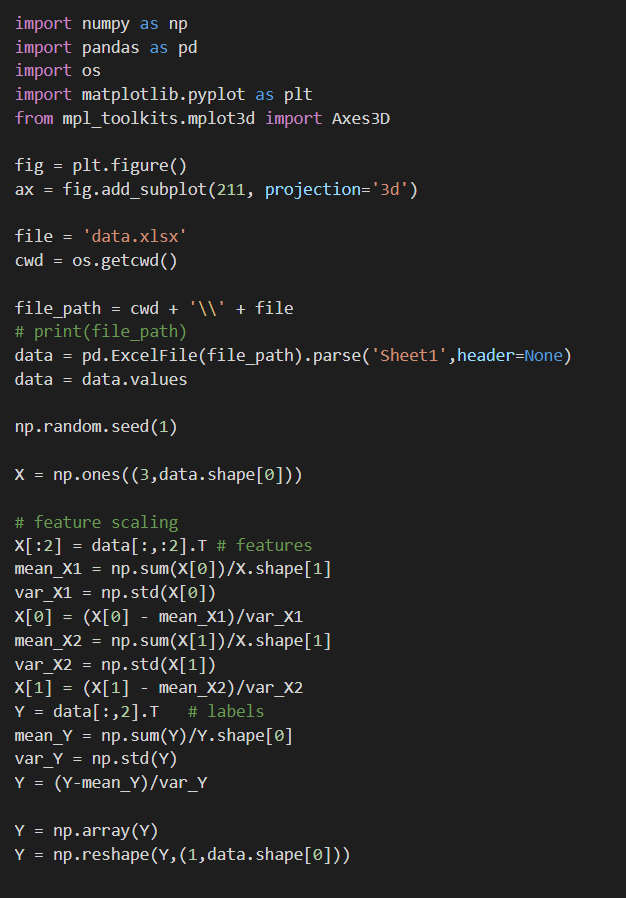


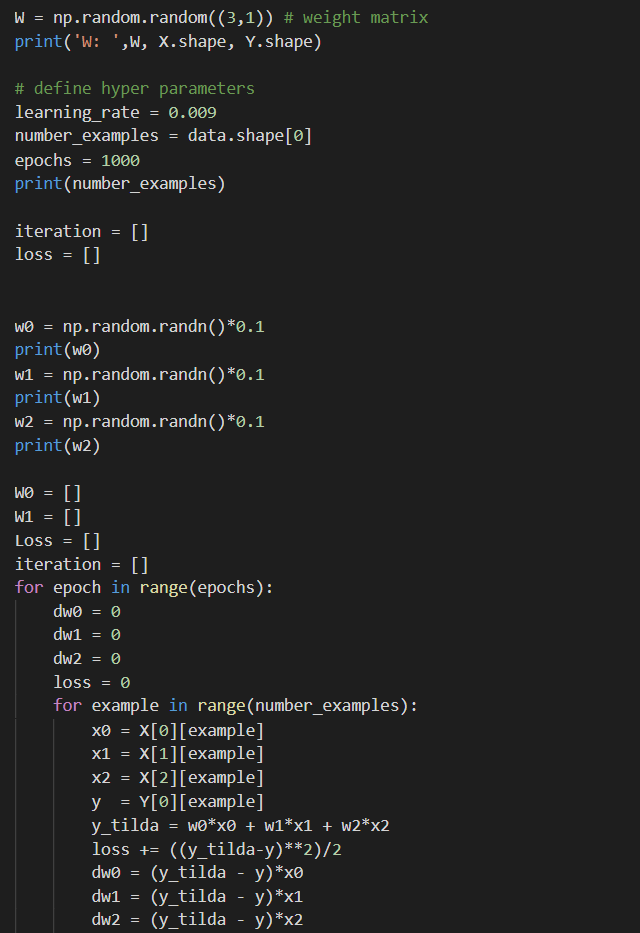


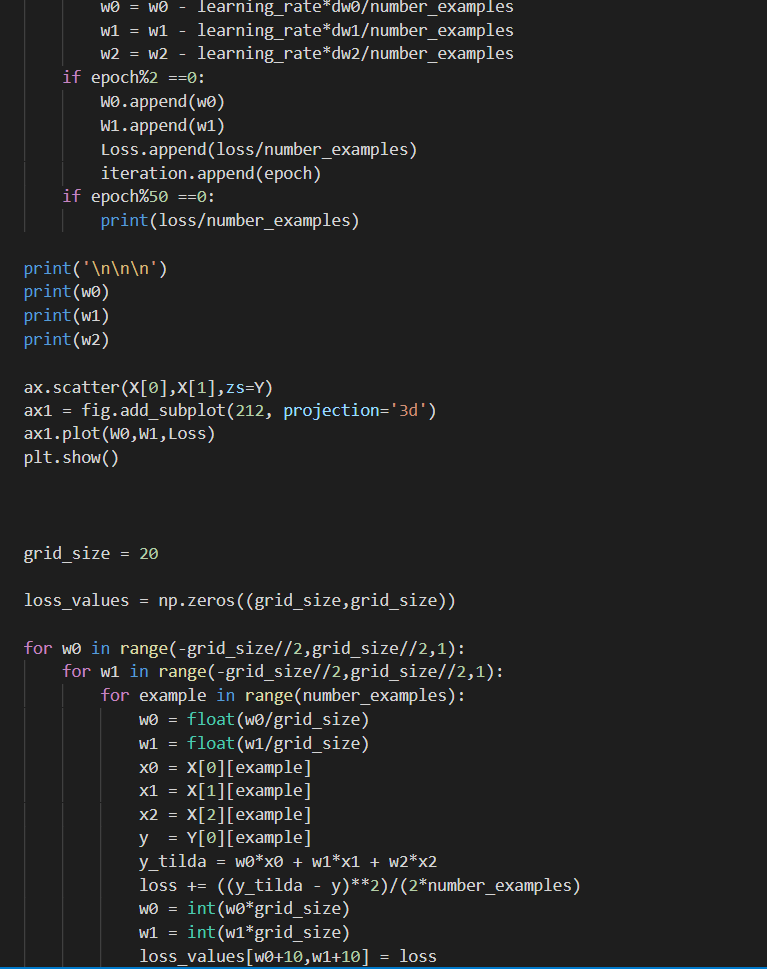
Q2:

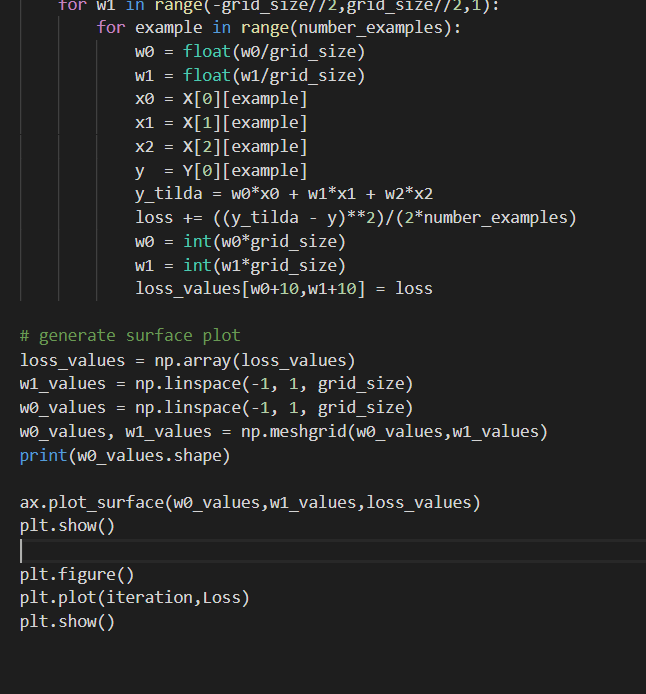




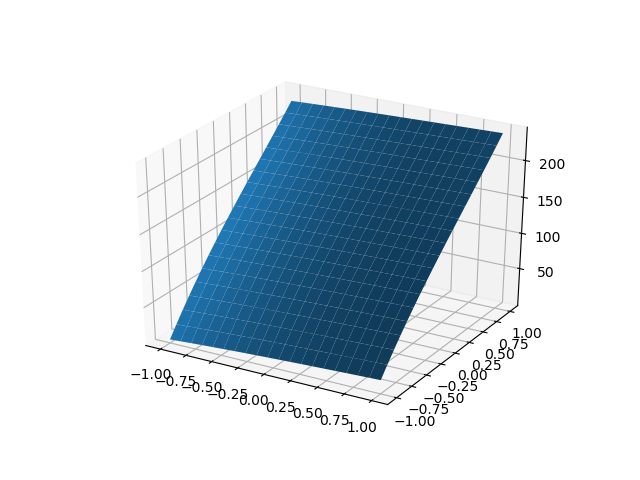


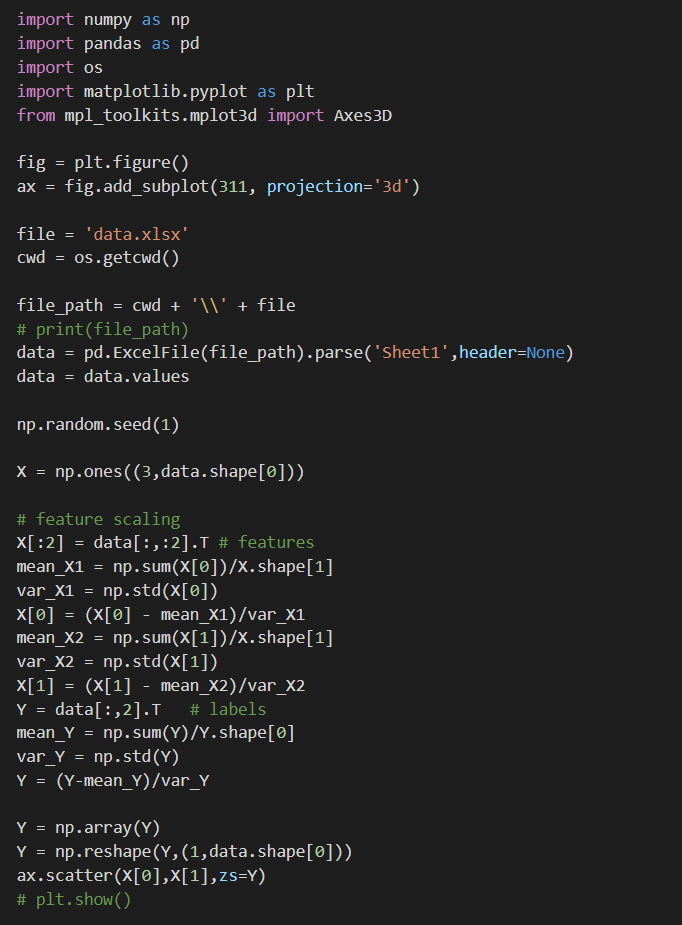


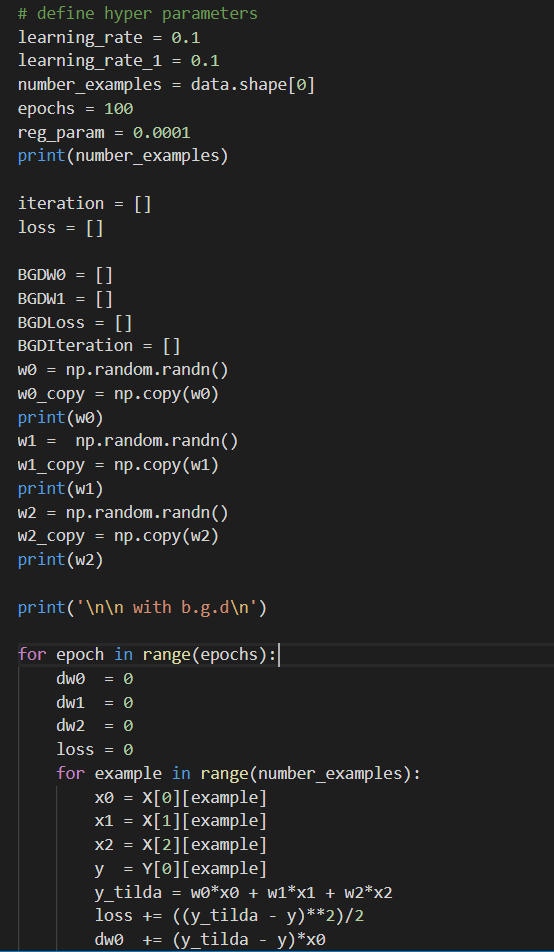


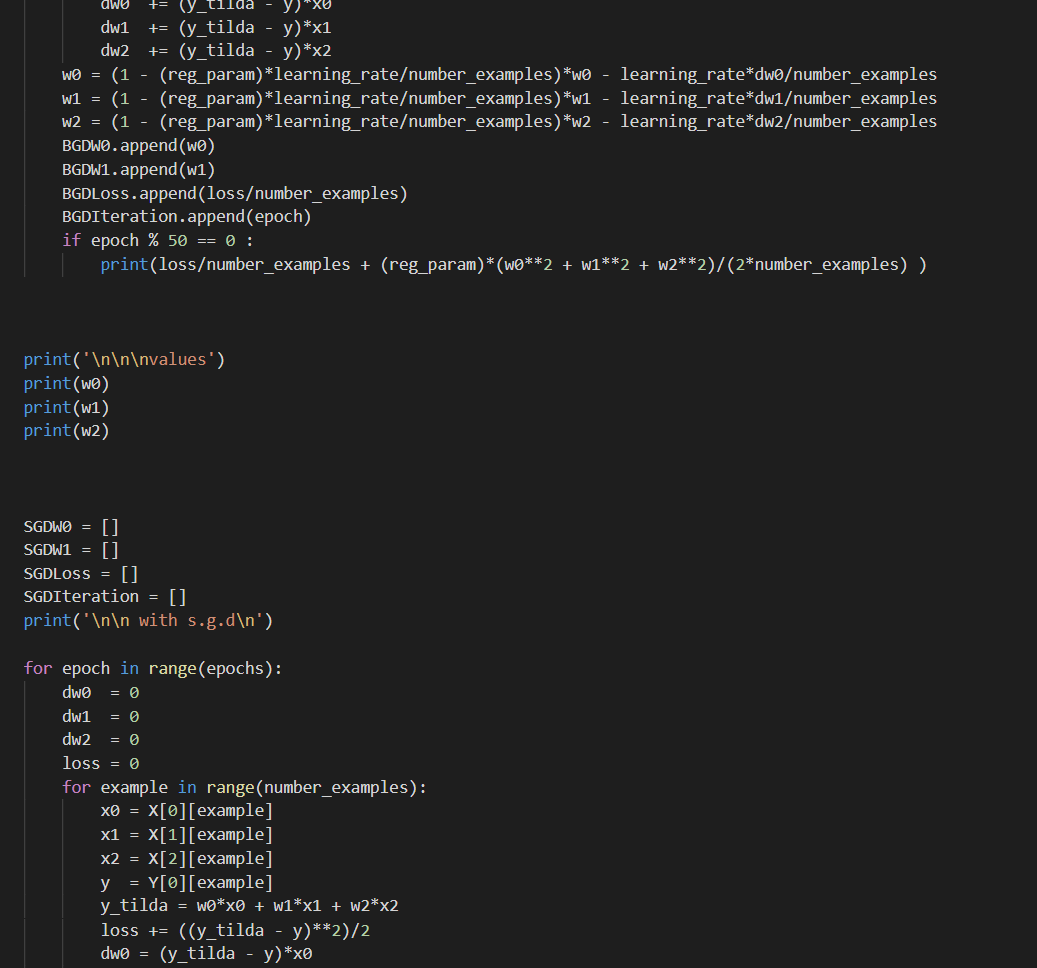


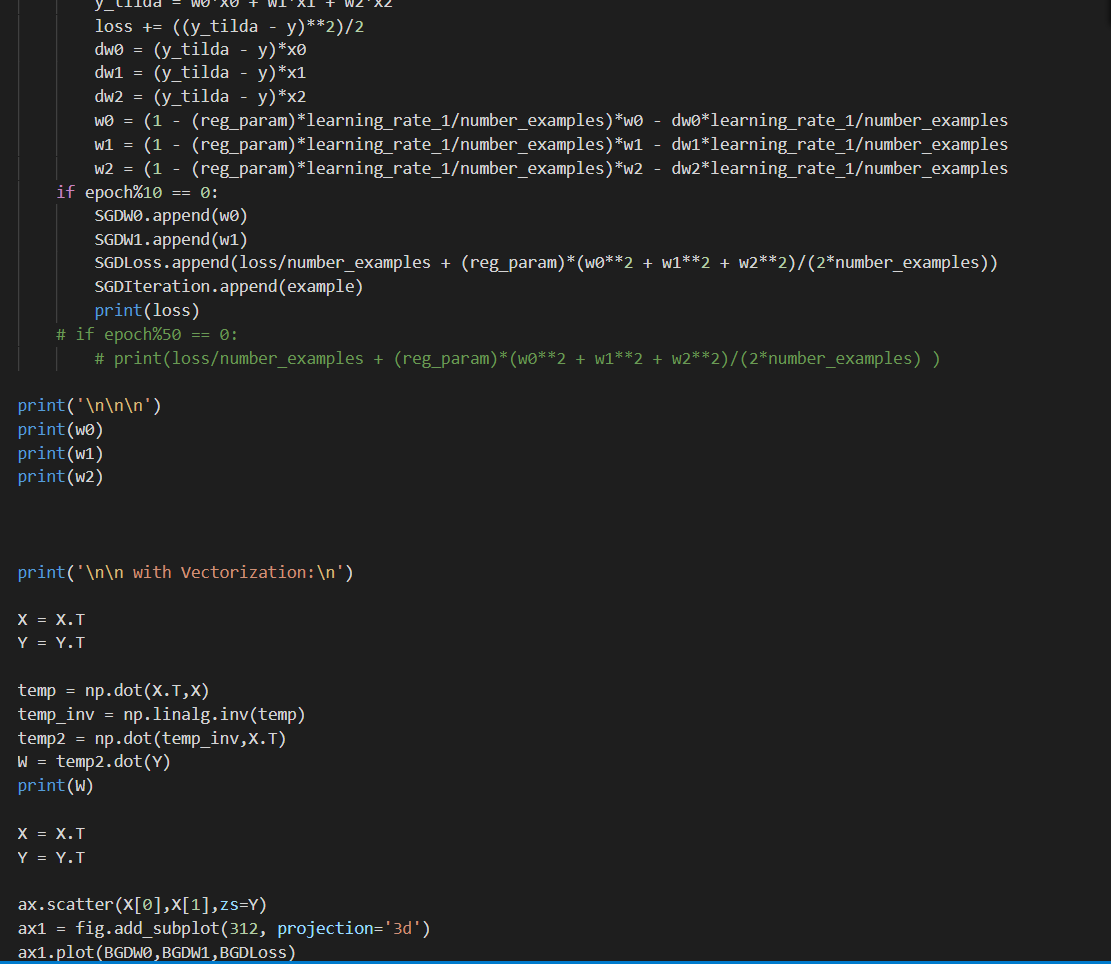
Q3:

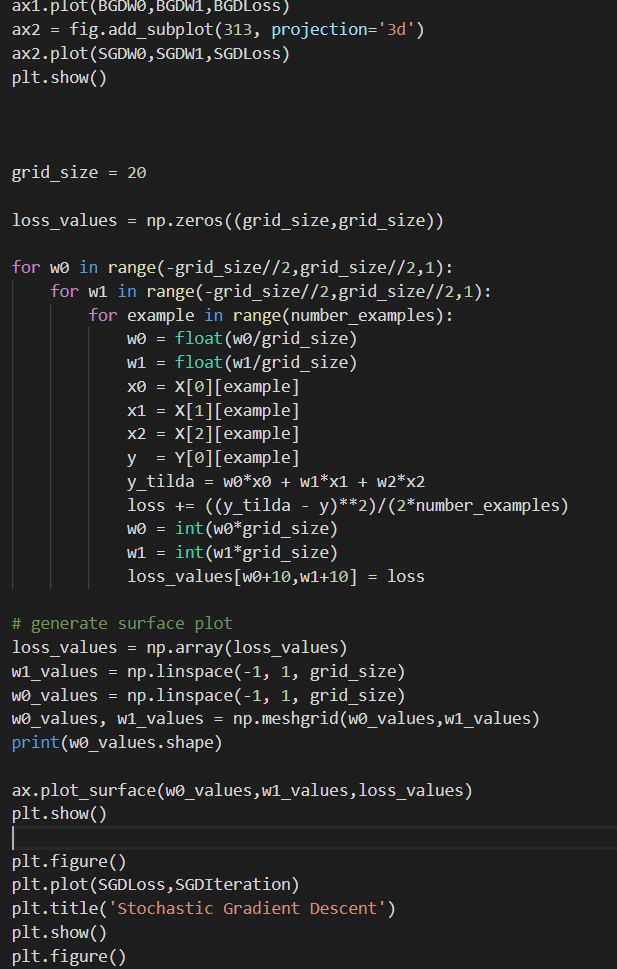


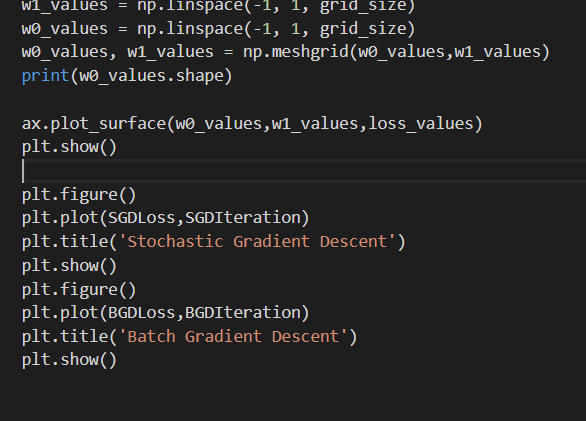


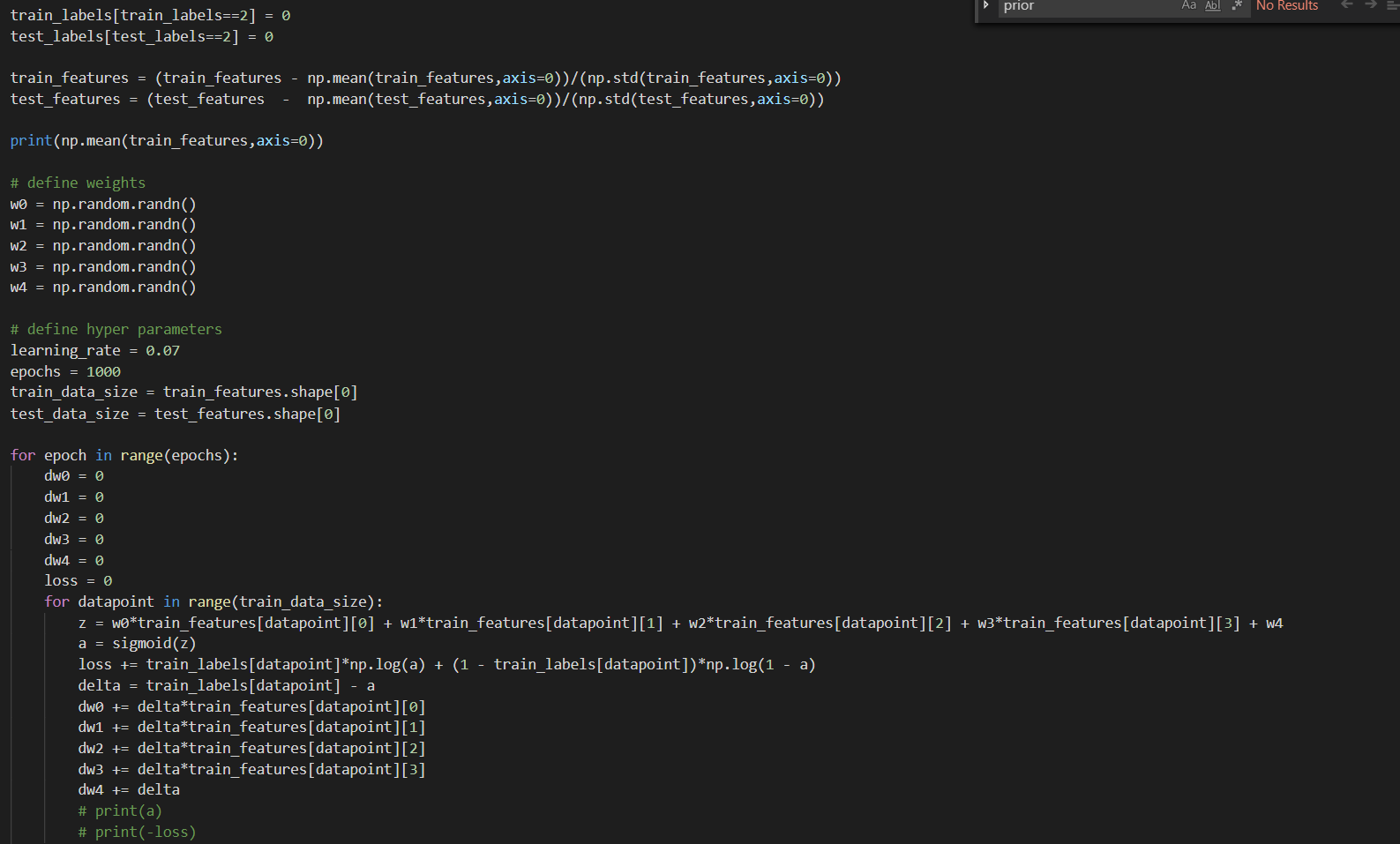


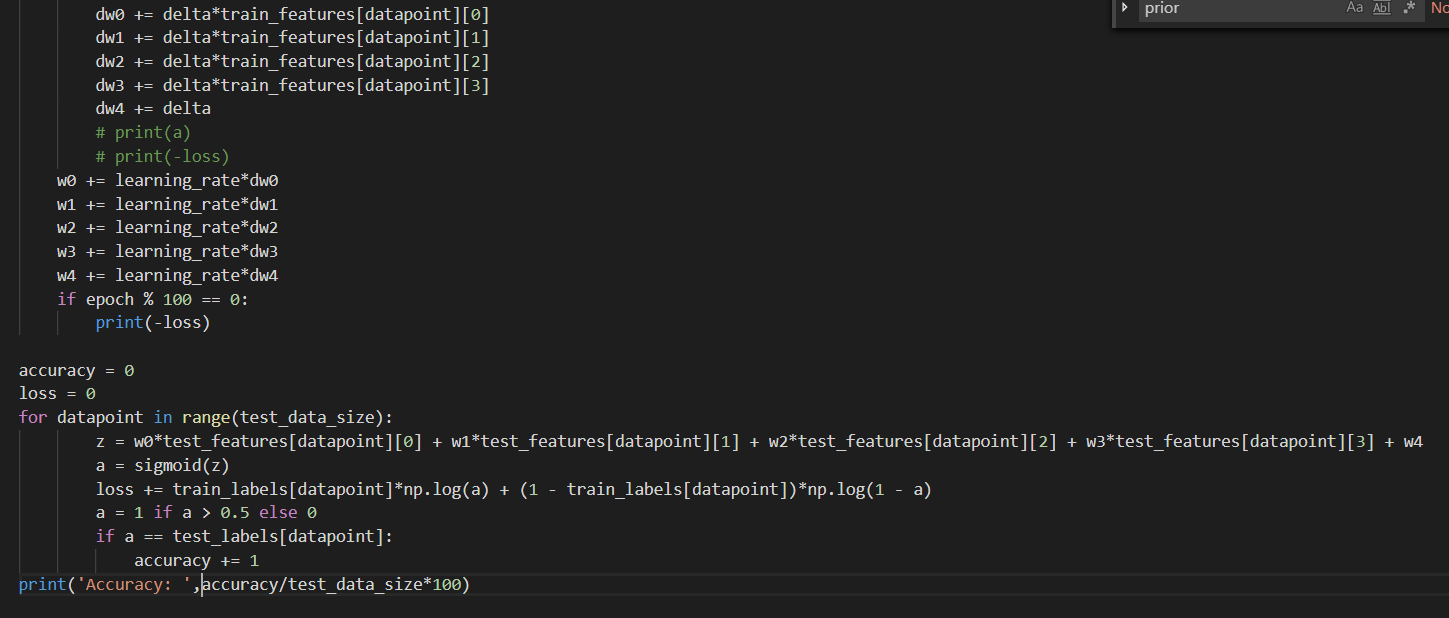




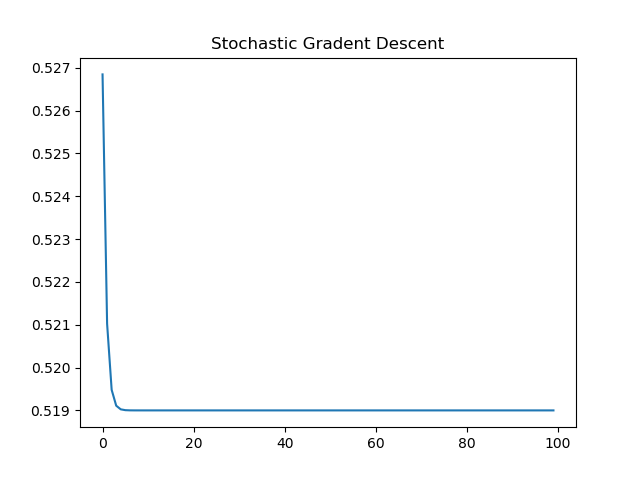




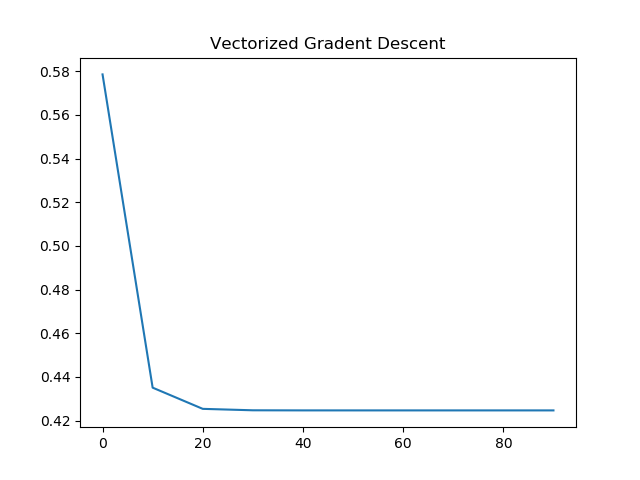


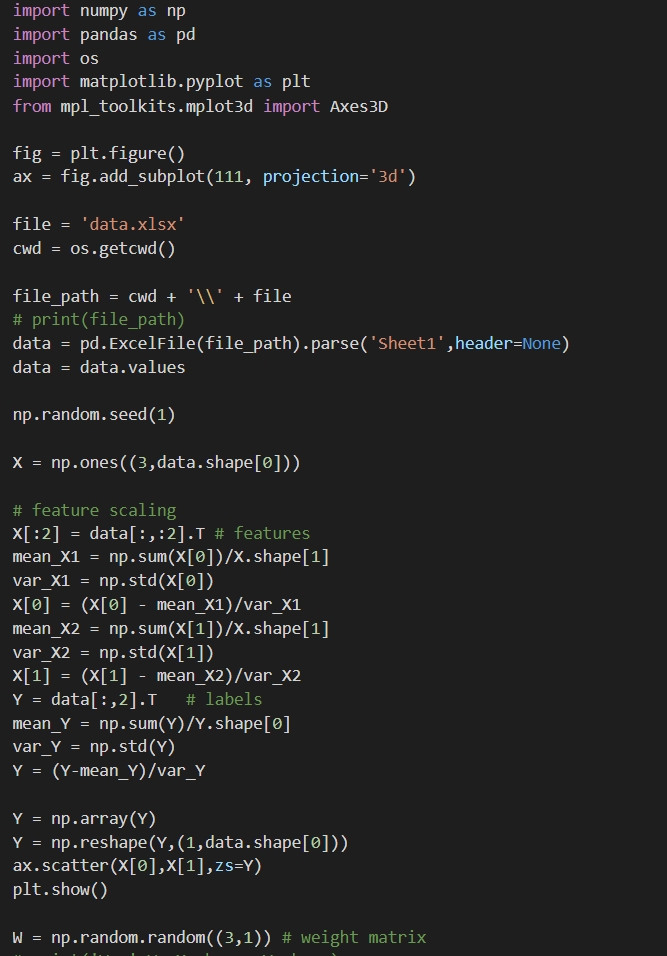


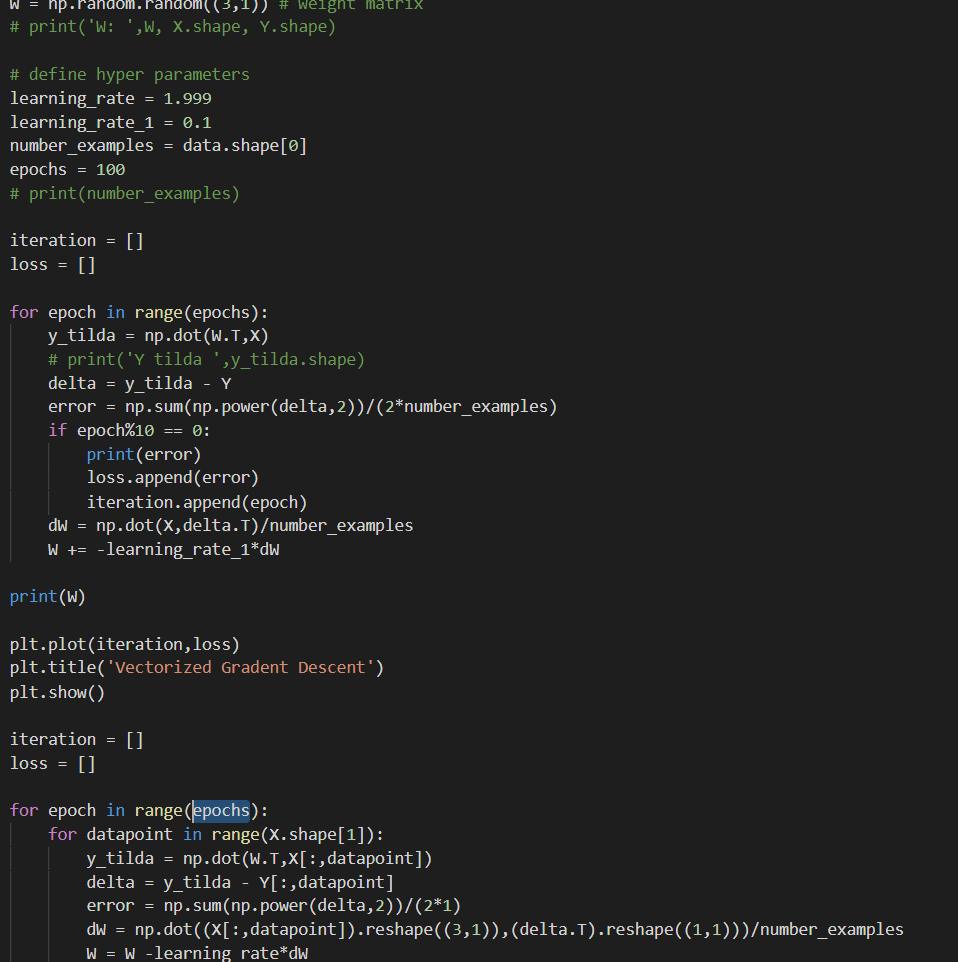
Q4:



**Averaged Over each EPOCH**

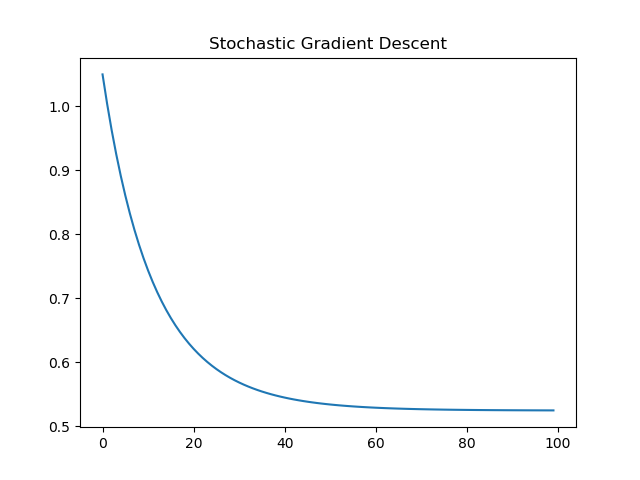




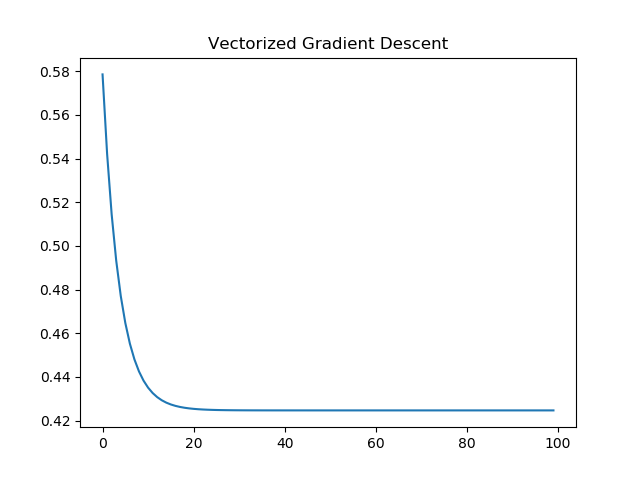


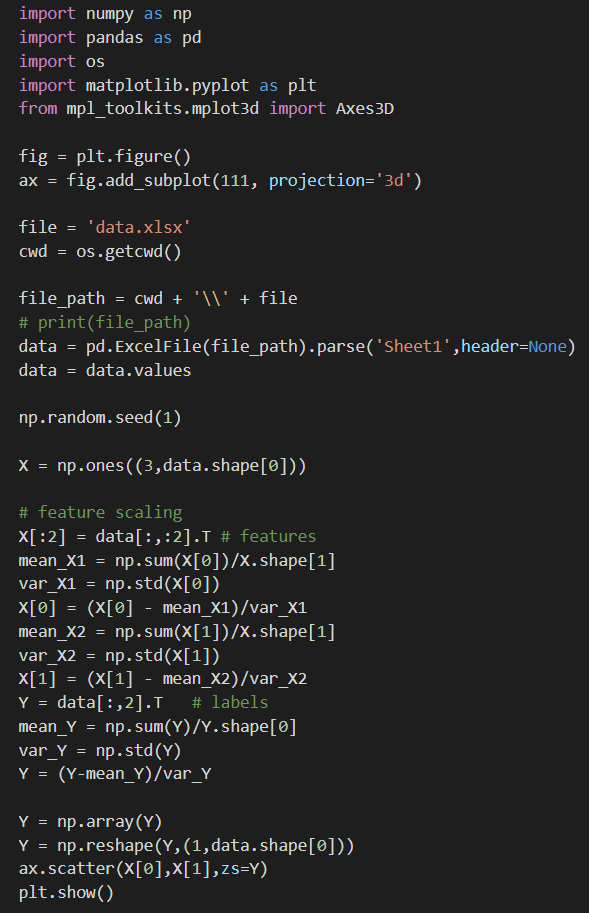


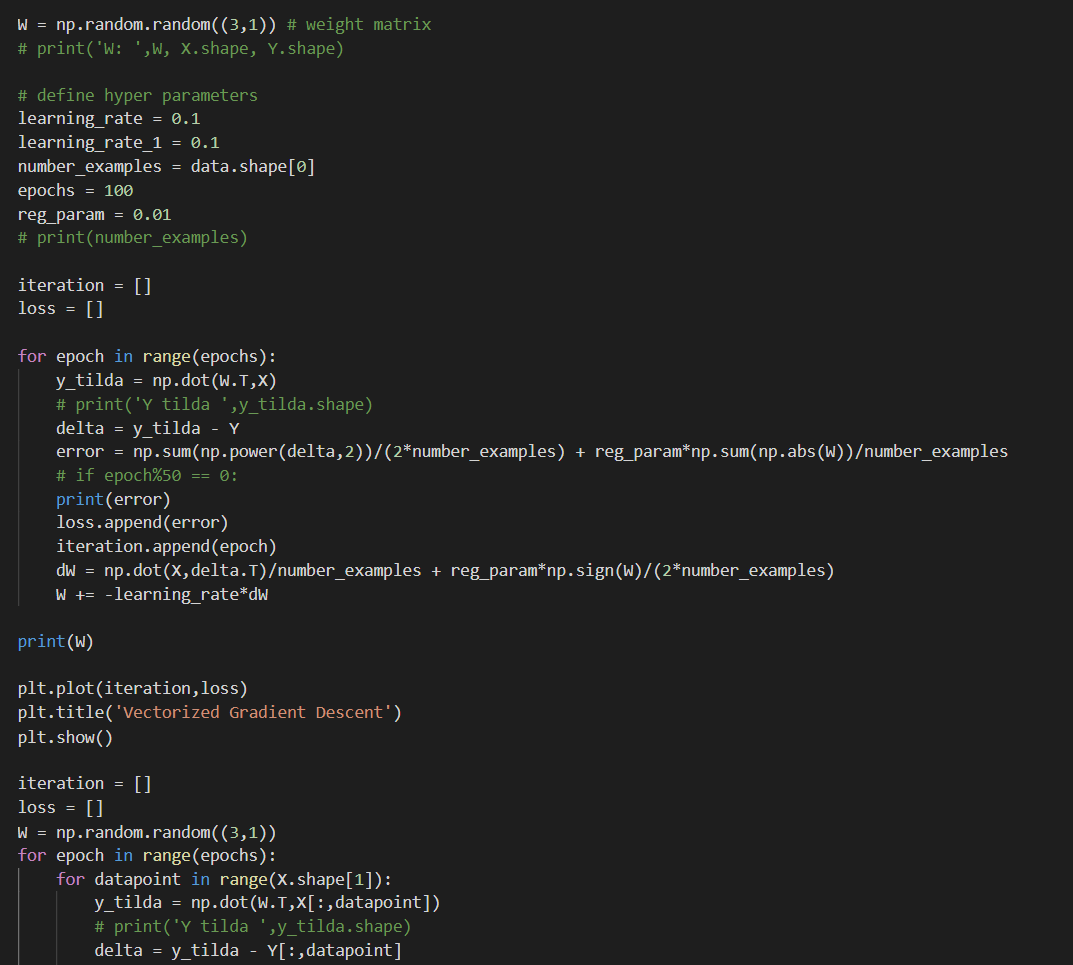
Q5:

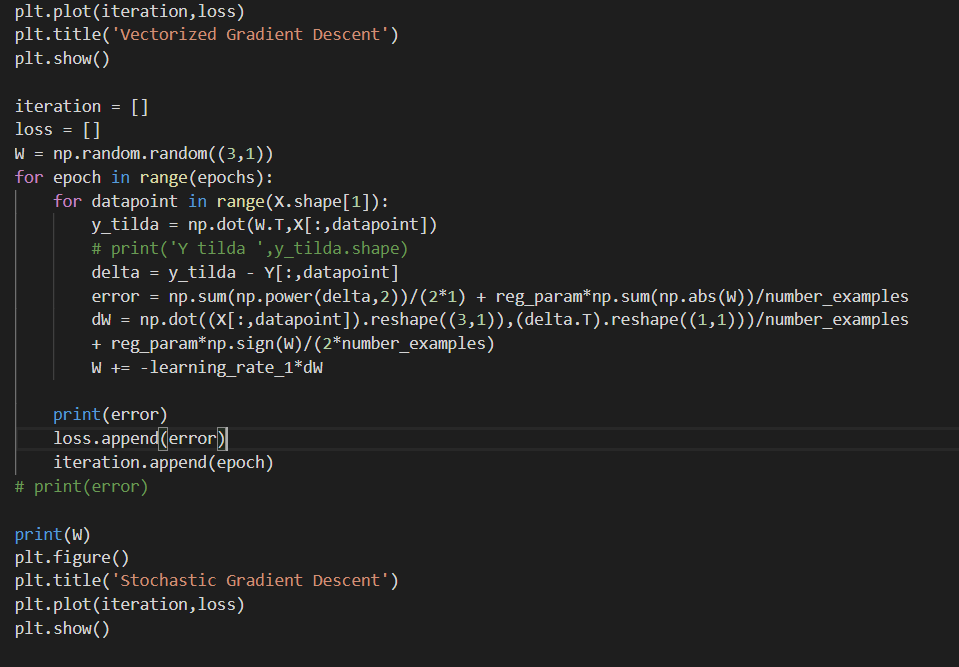


**Averaged Over Each EPOCH**

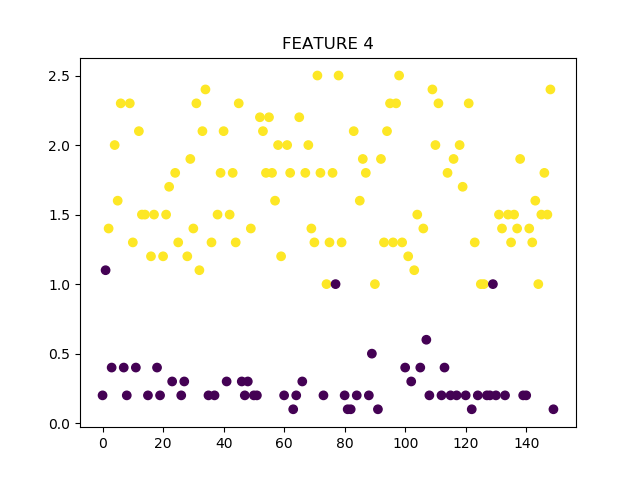
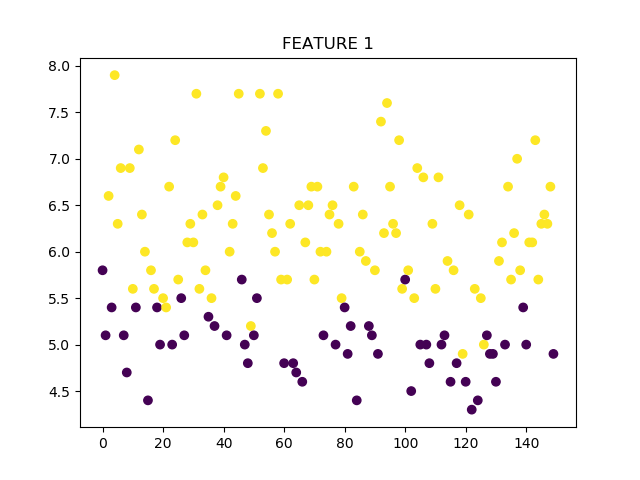
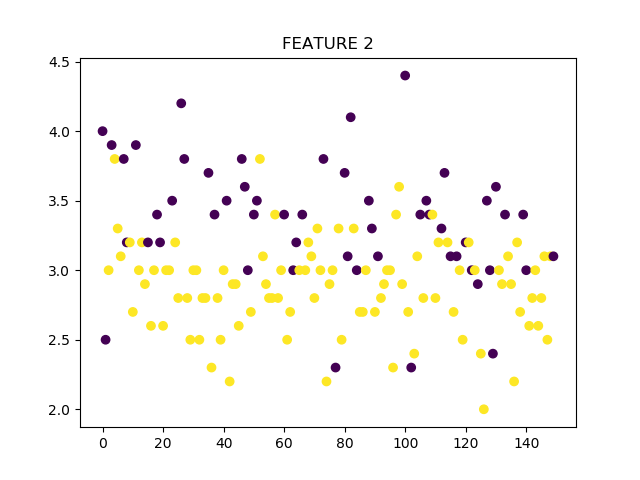
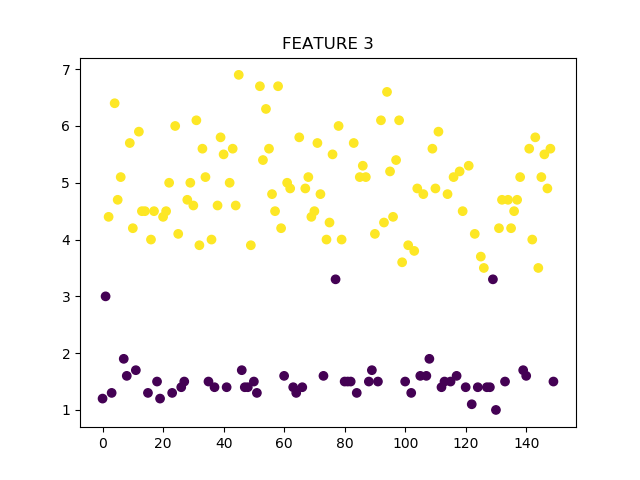


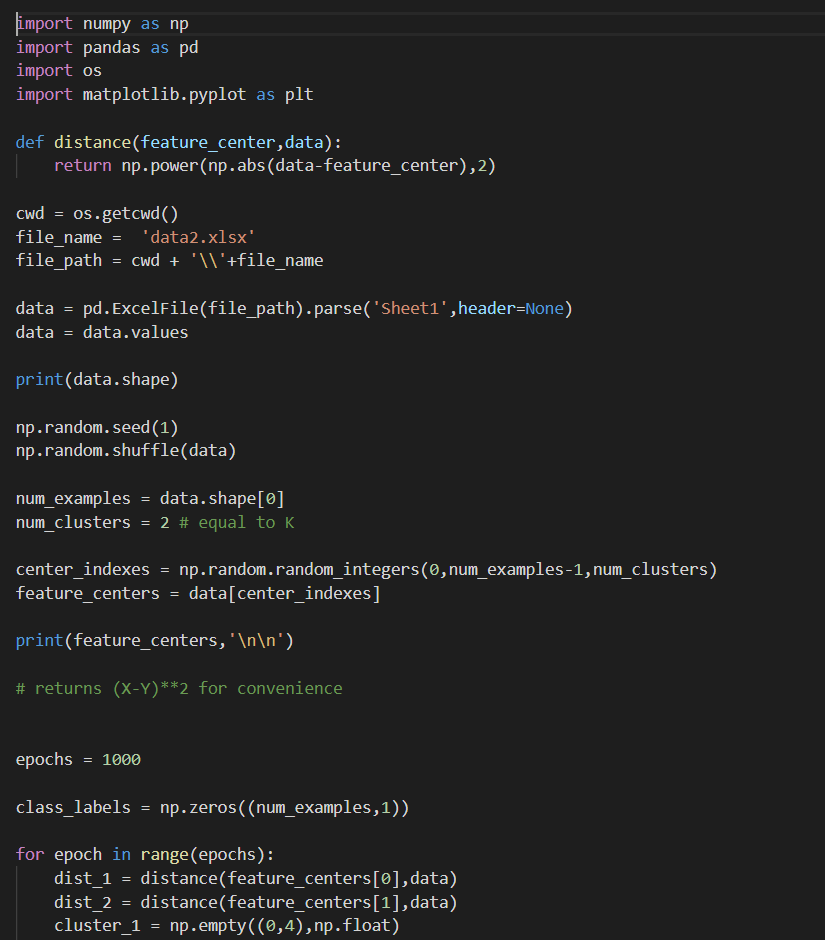


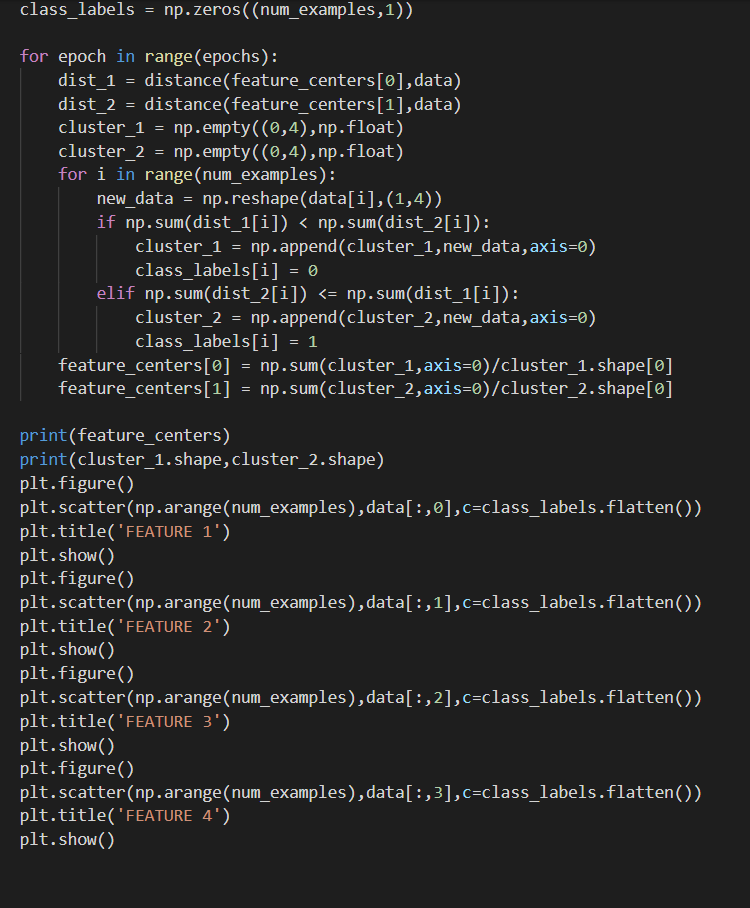




Q6:

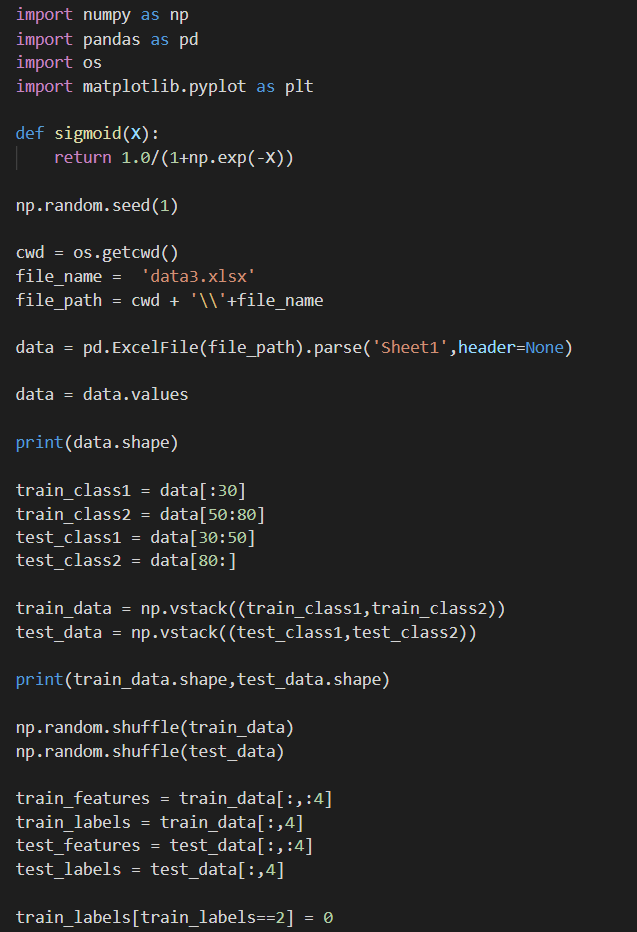


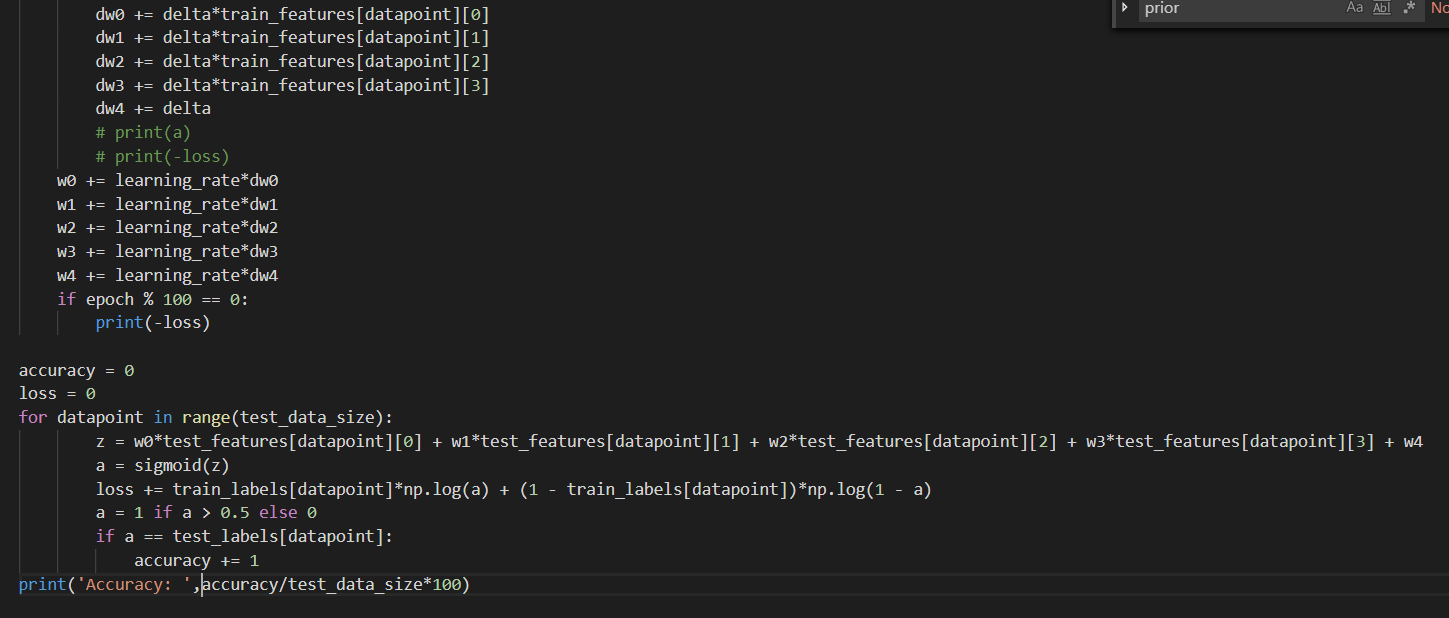




Q7:

Accuracy: 100%





Q8:

One Vs All

accuracy: 100.0

One Vs One

accuracy: 100.0

2 1

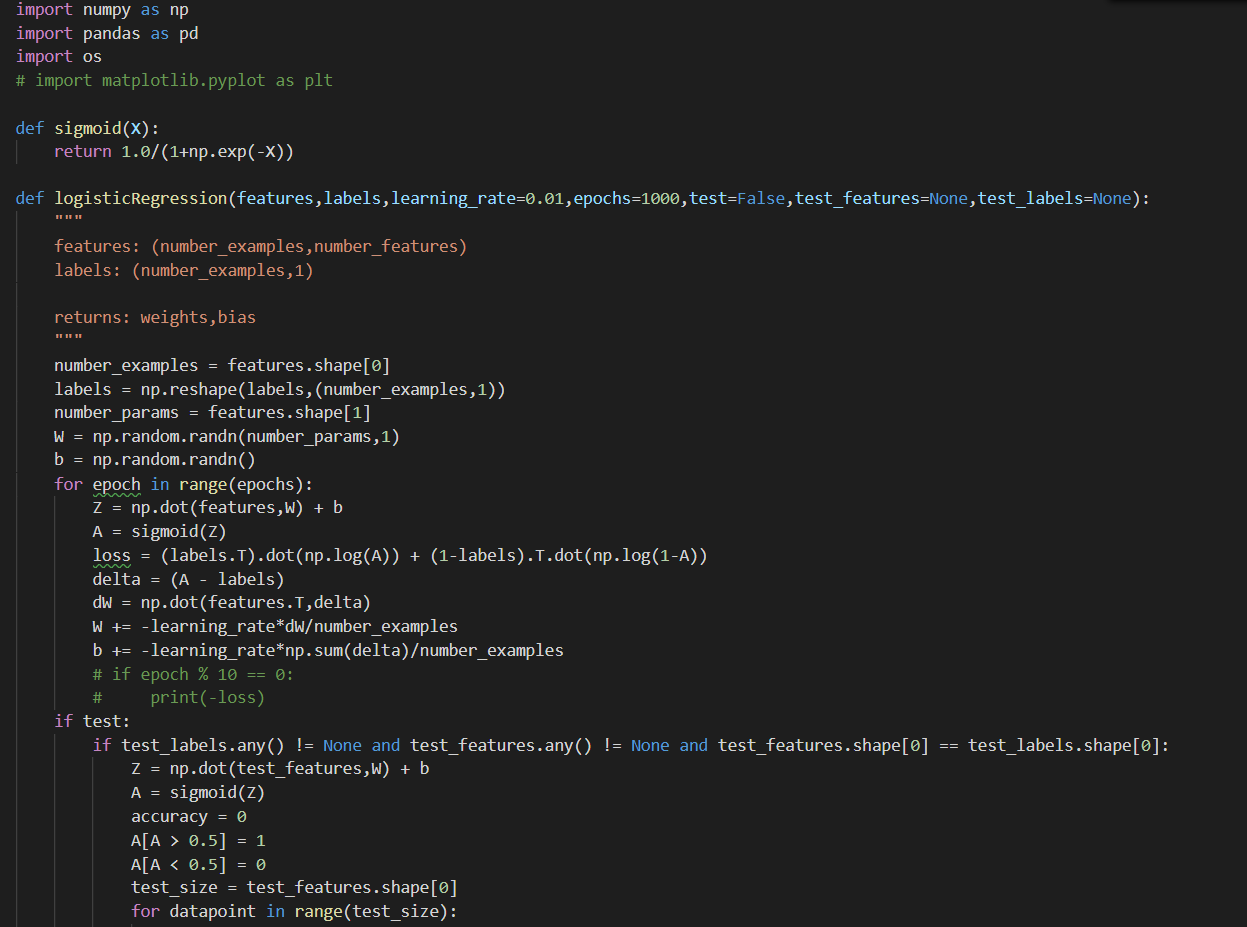
accuracy: 100.0

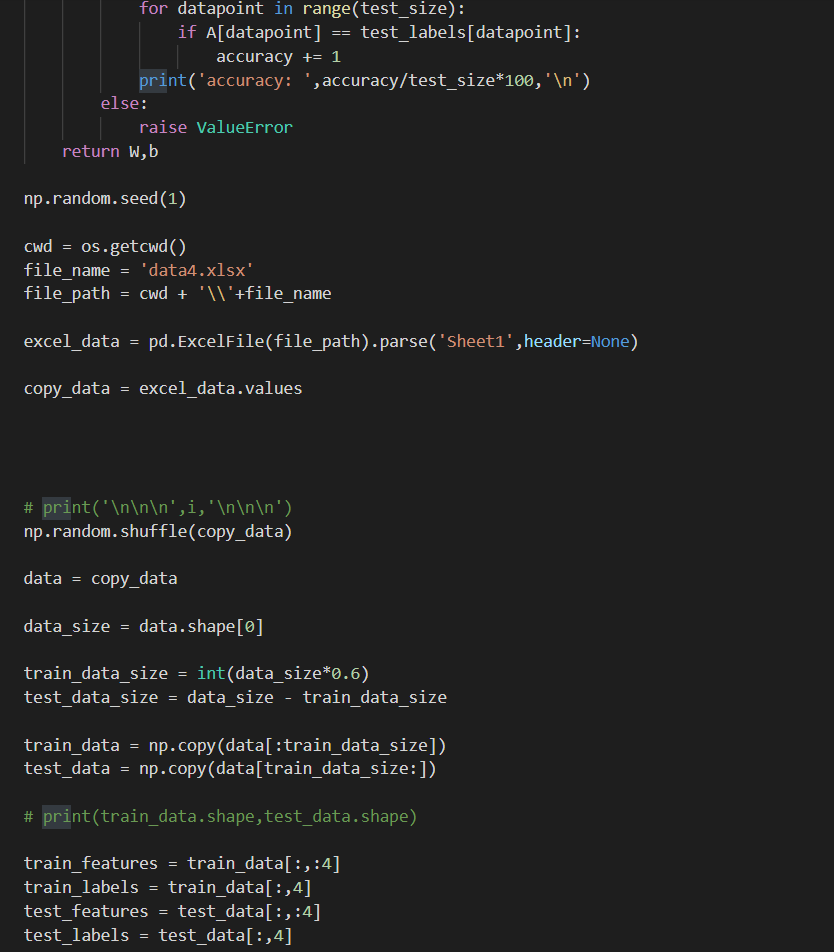
3 1

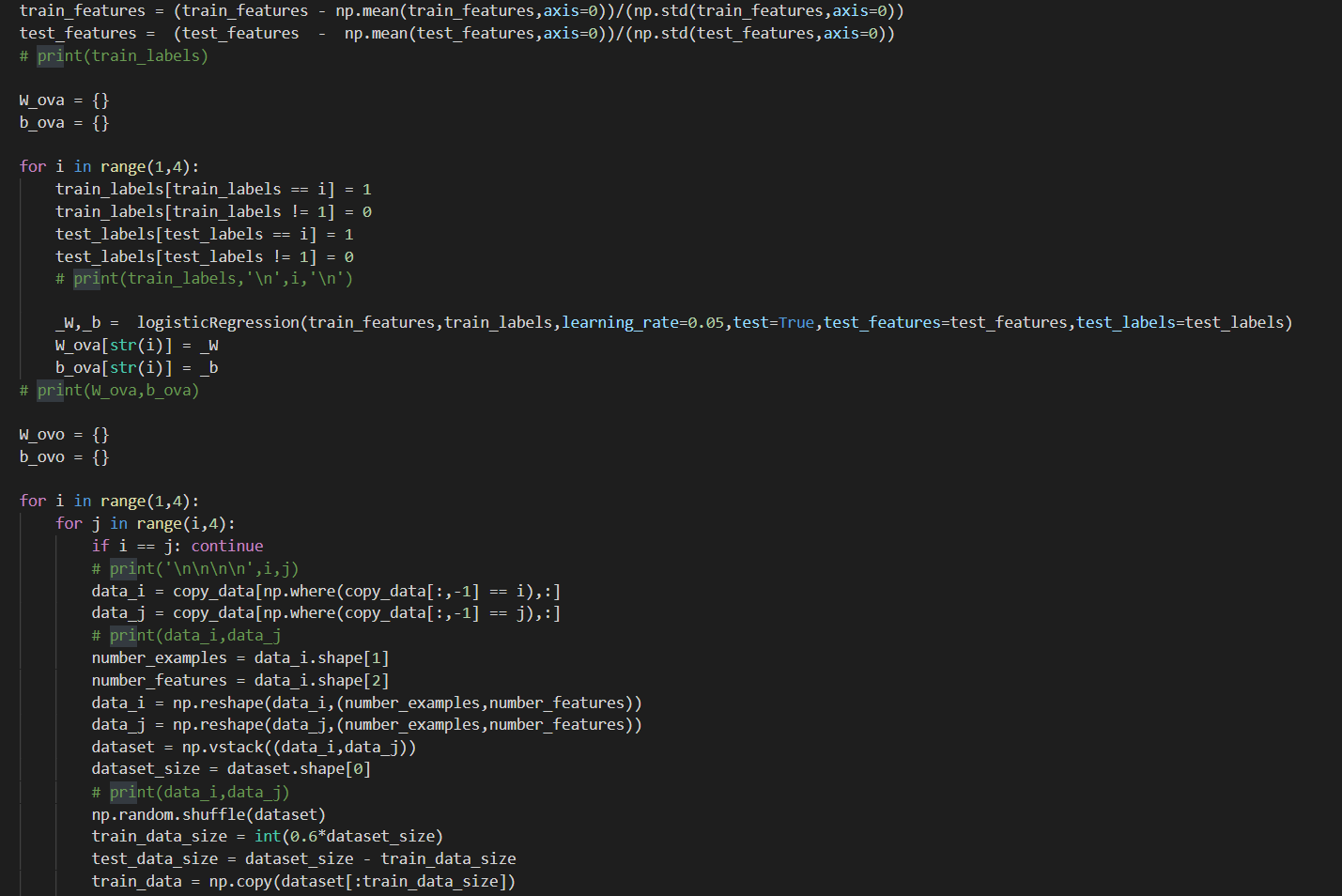
accuracy: 100.0

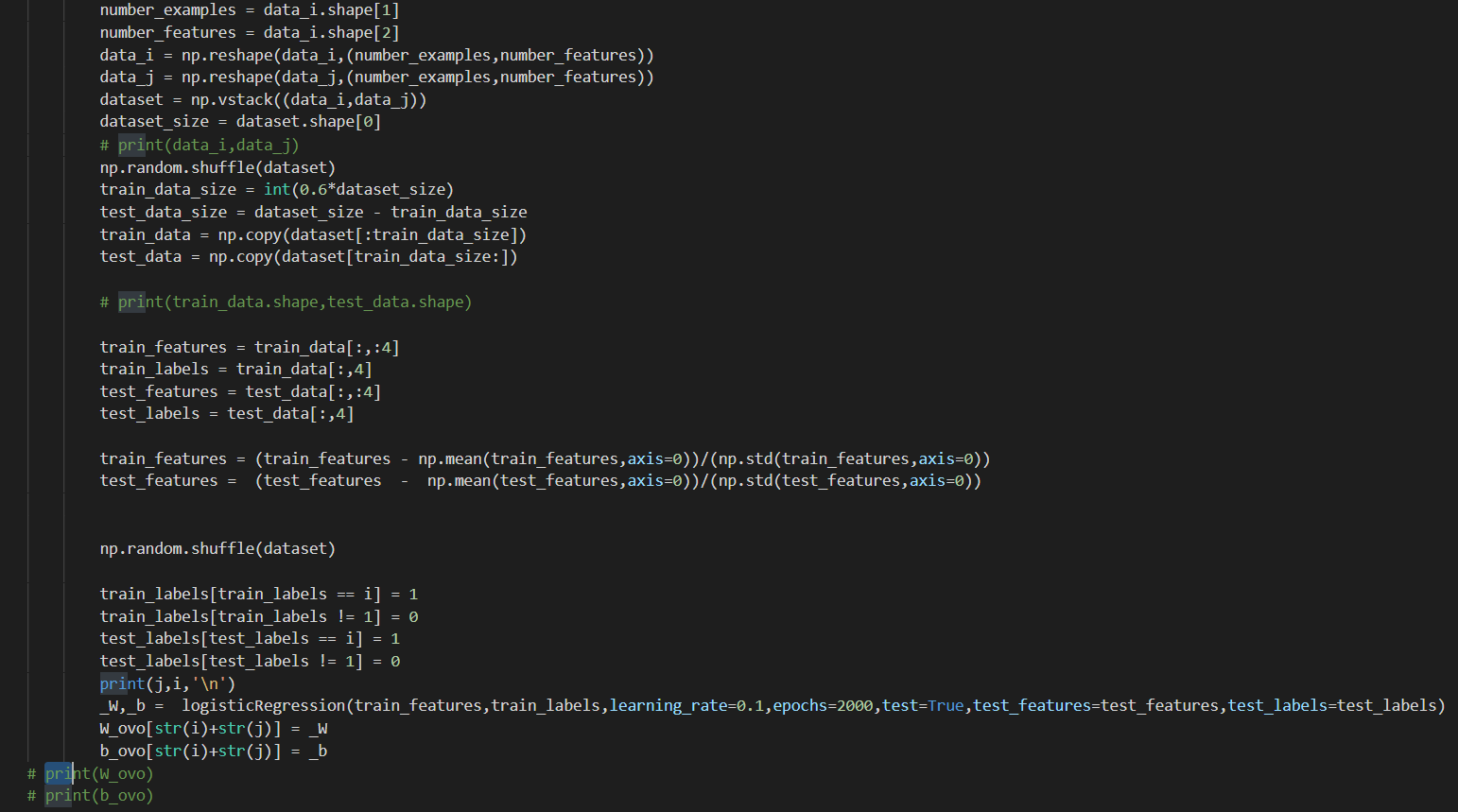
3 2

accuracy: 90.0







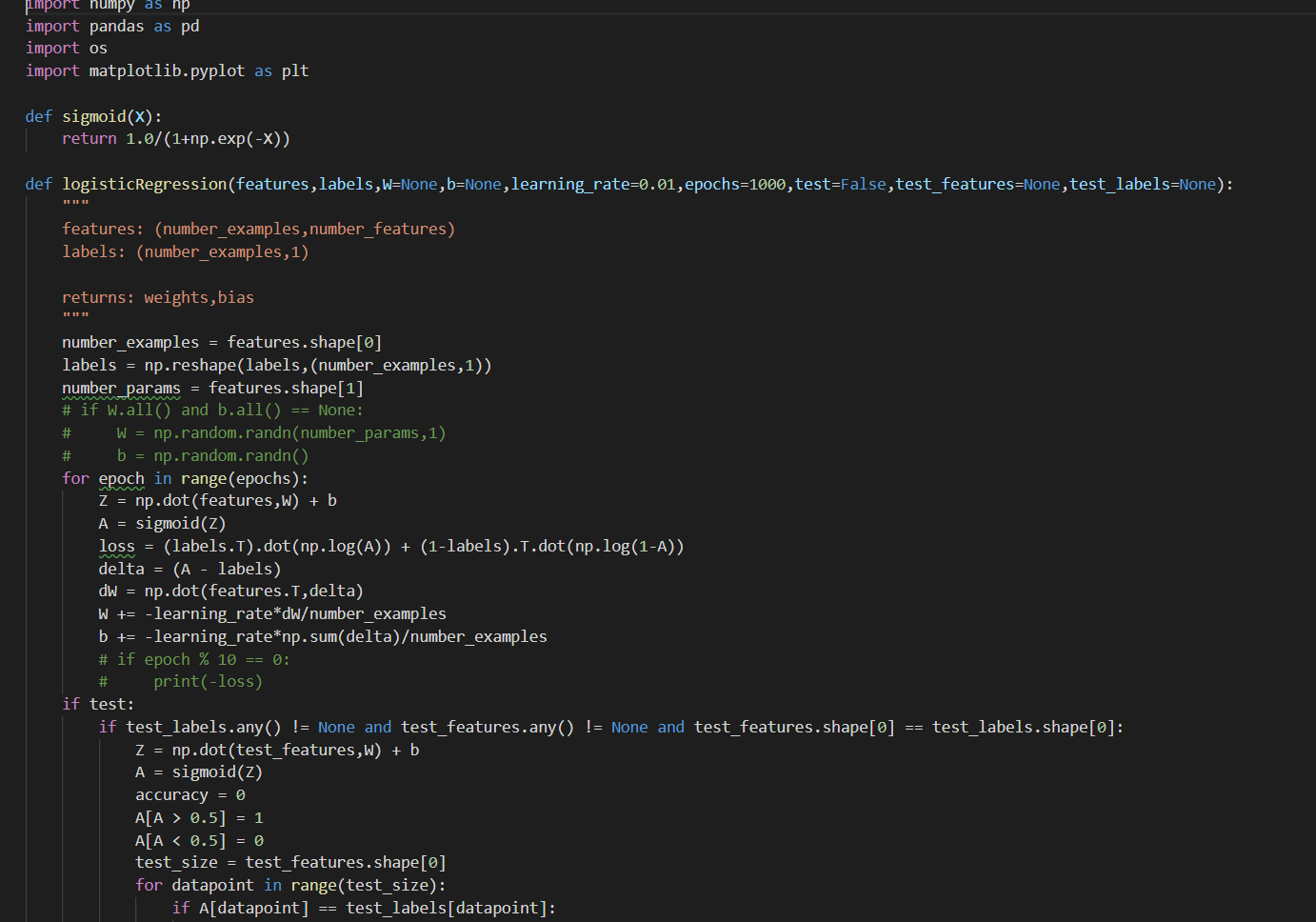


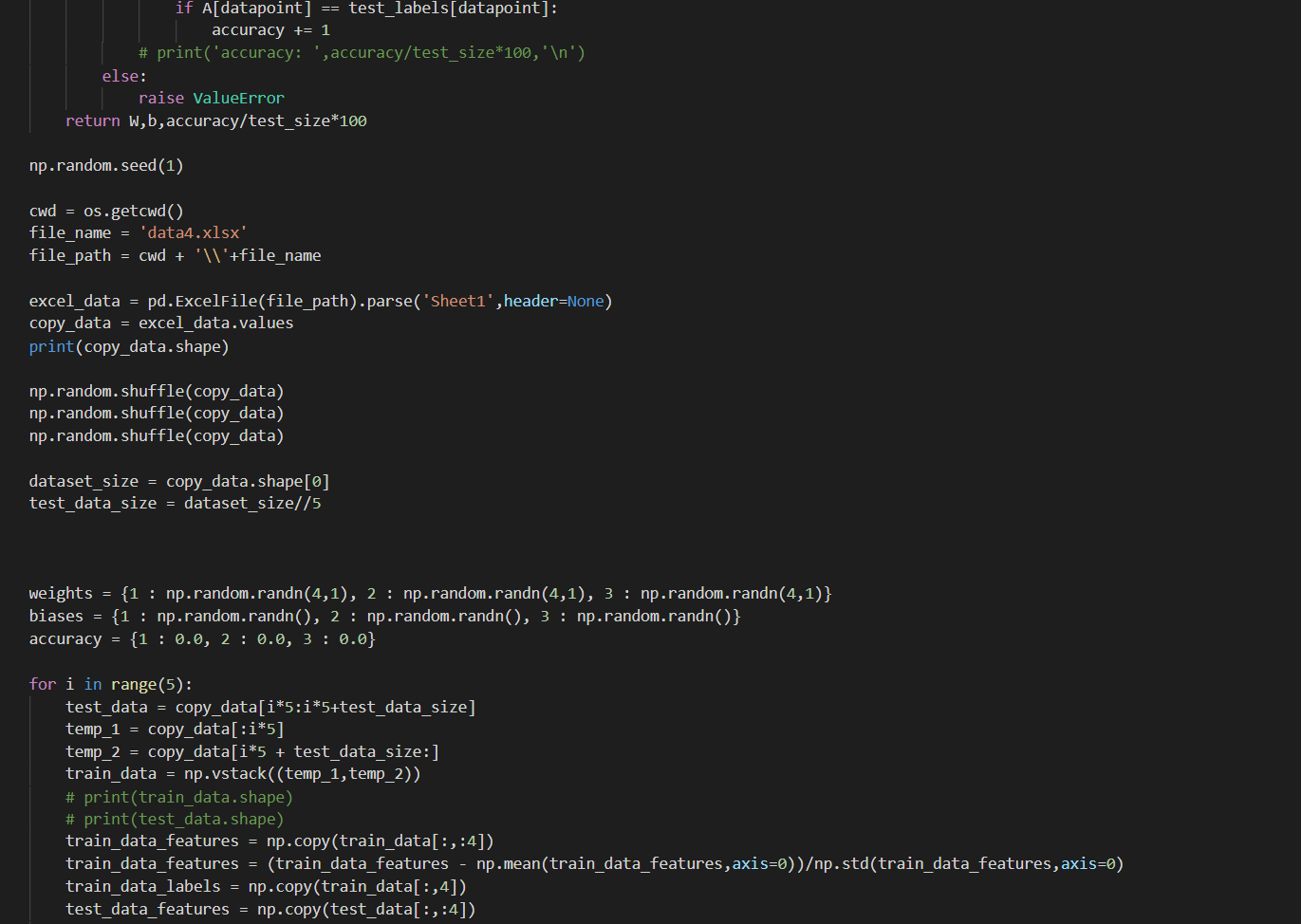
Q9:

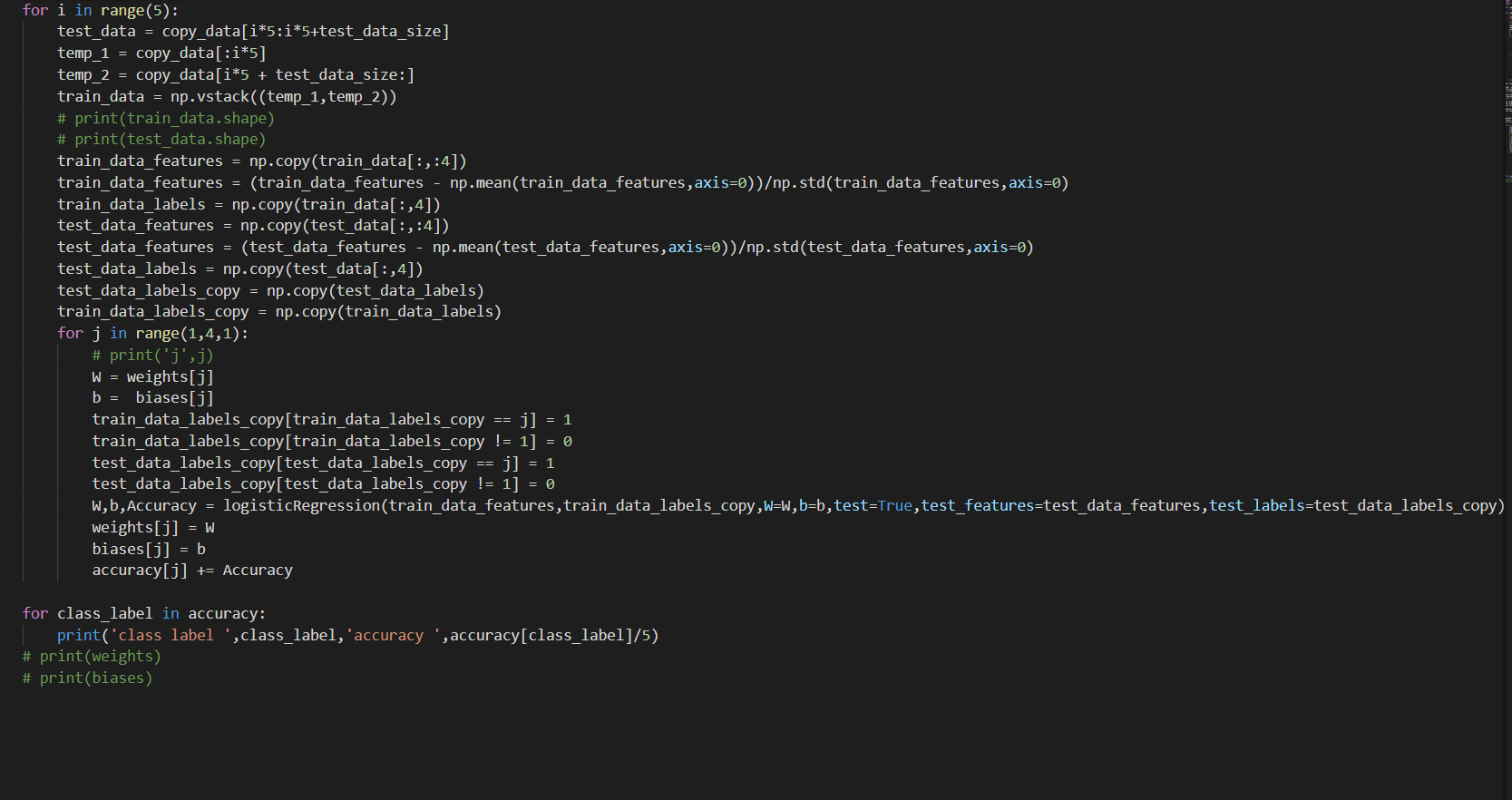
class label 1 accuracy 100.0

class label 2 accuracy 100.0

class label 3 accuracy 100.0





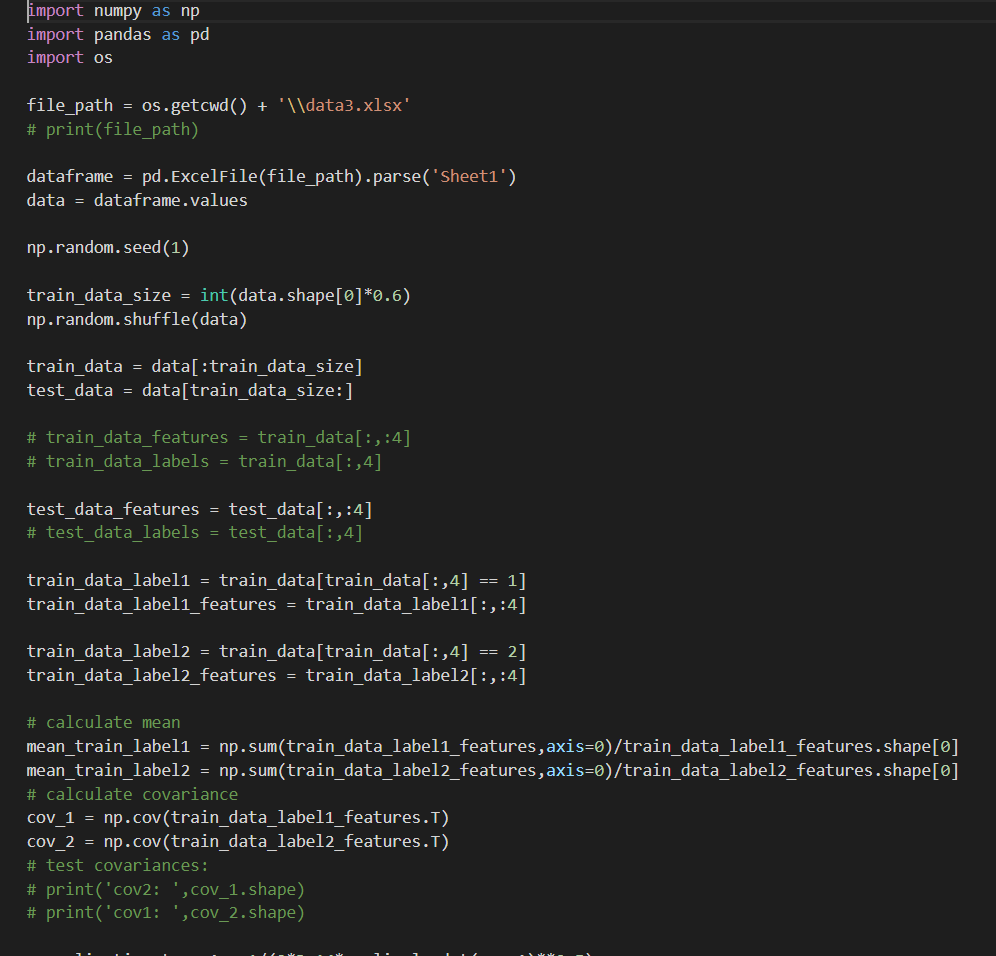


Q10:

ASSUMPTION: class 1 => positive class2 => negative

tp: 21 fp: 0 tn:19 fn: 0

accuracy: 1.0 sensitivity: 1.0 specificity: 1.0





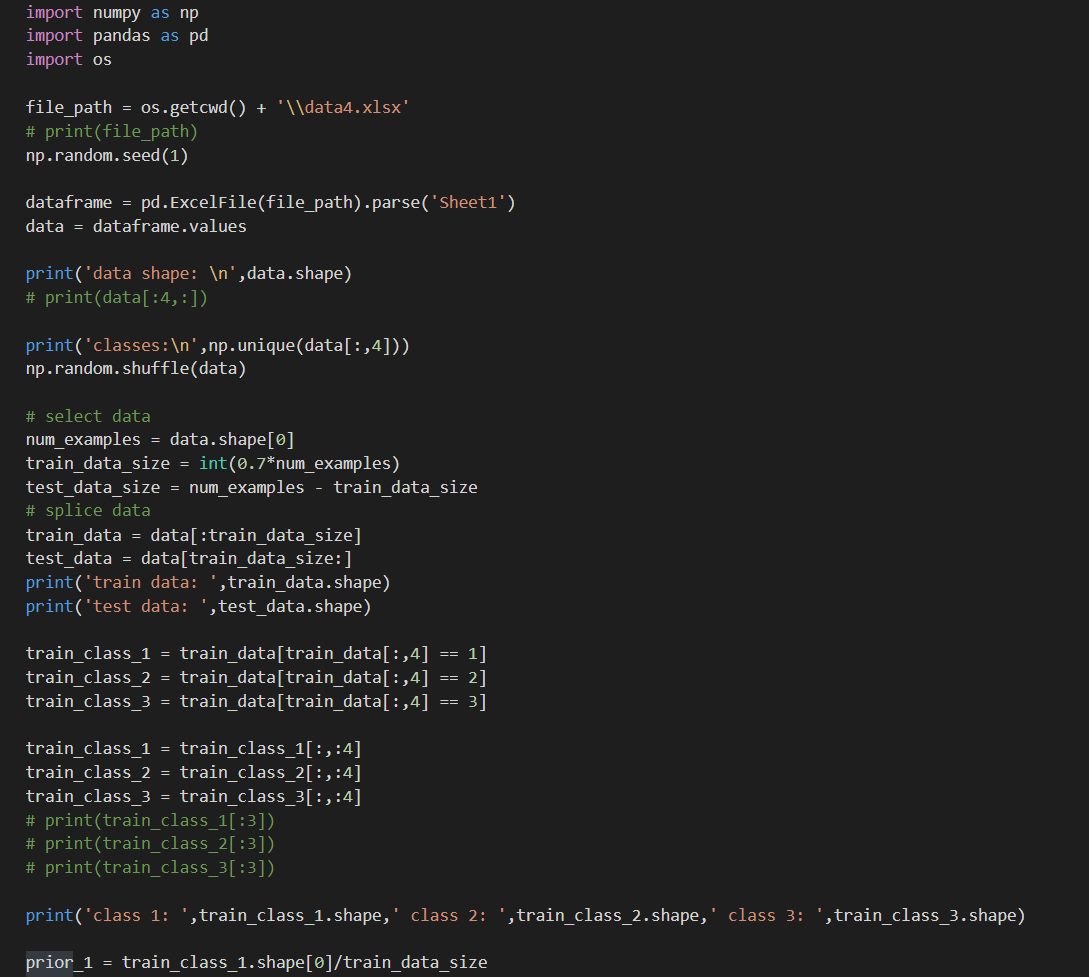
Q11:

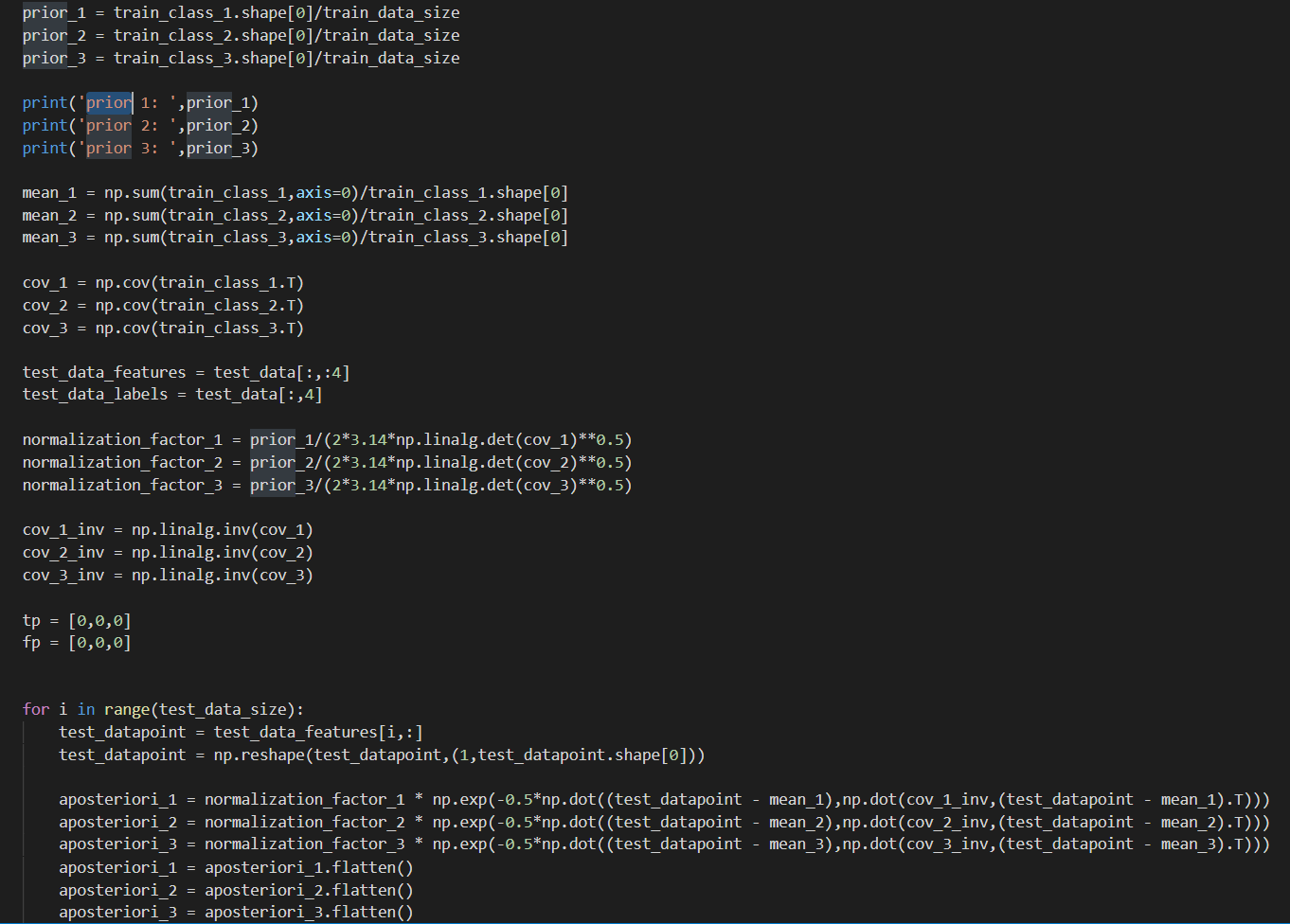
IA 1: 1.0

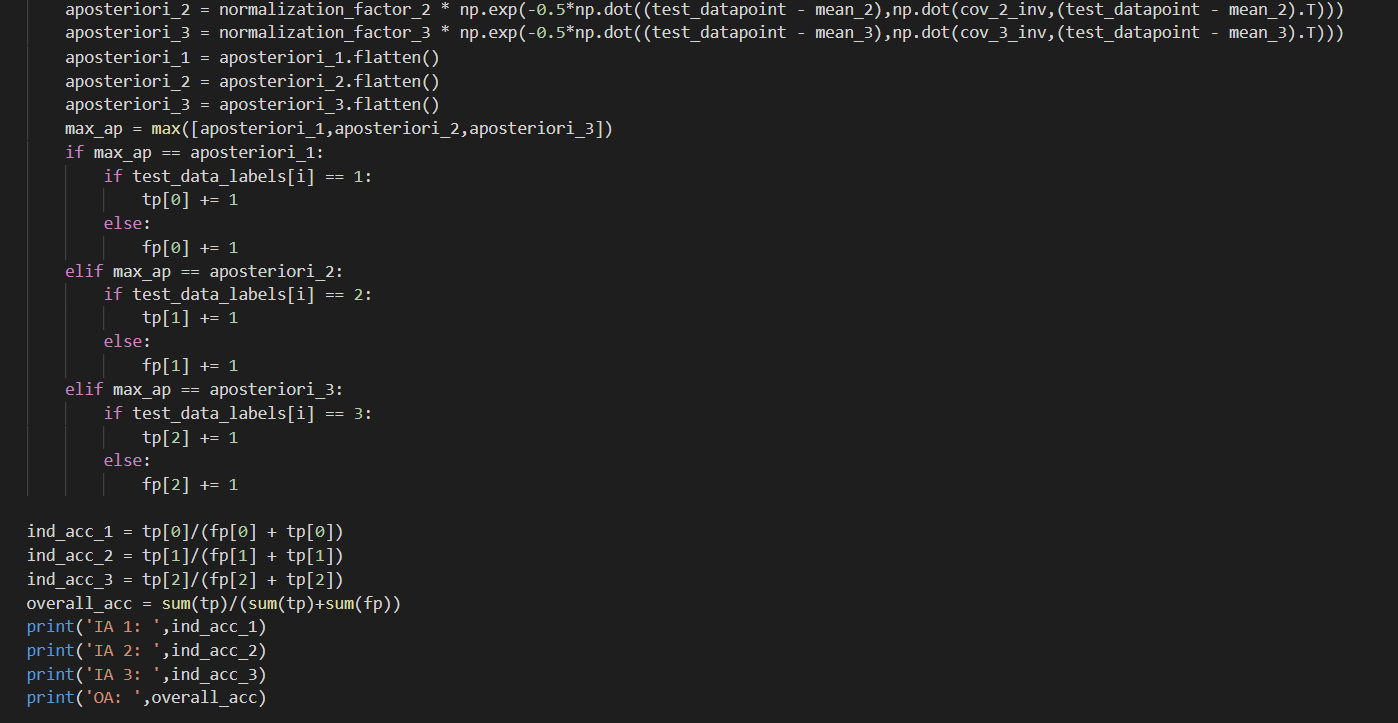
IA 2: 1.0

IA 3: 1.0

OA: 1.0







Q12:

prior 1: 0.3173076923076923

prior 2: 0.3269230769230769

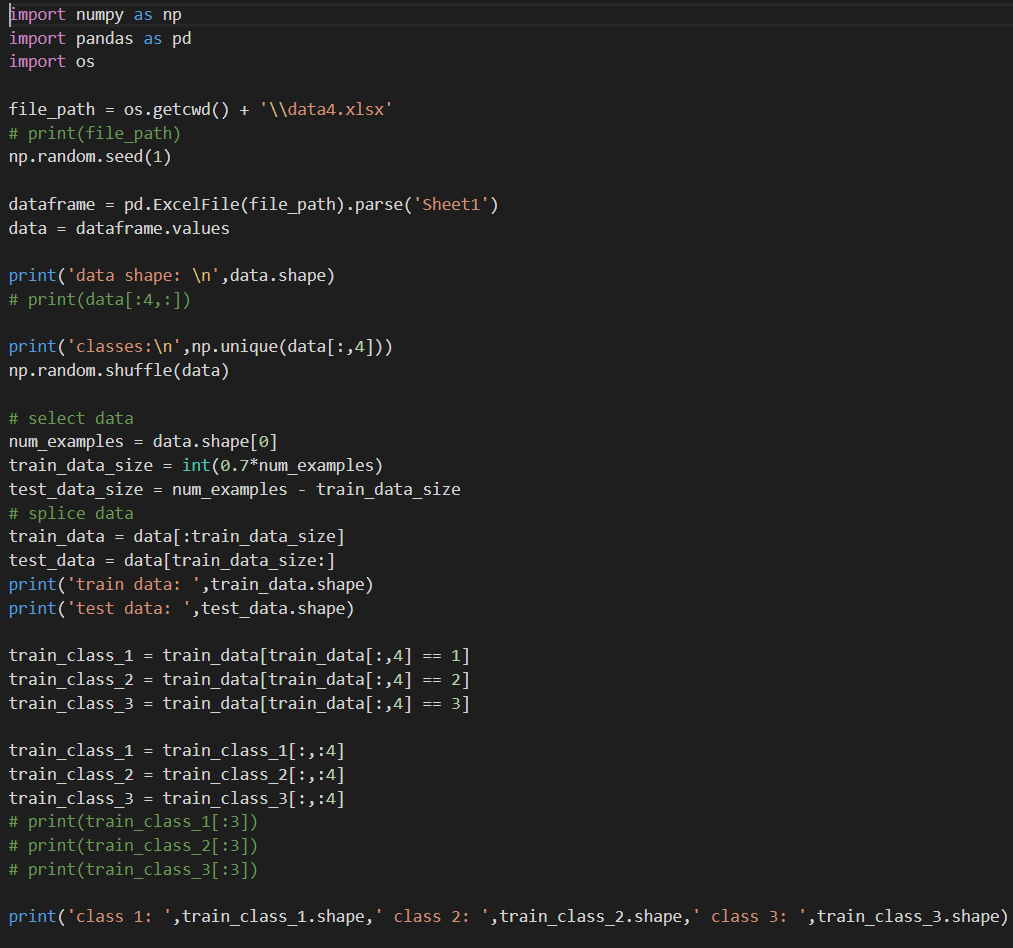
prior 3: 0.3557692307692308

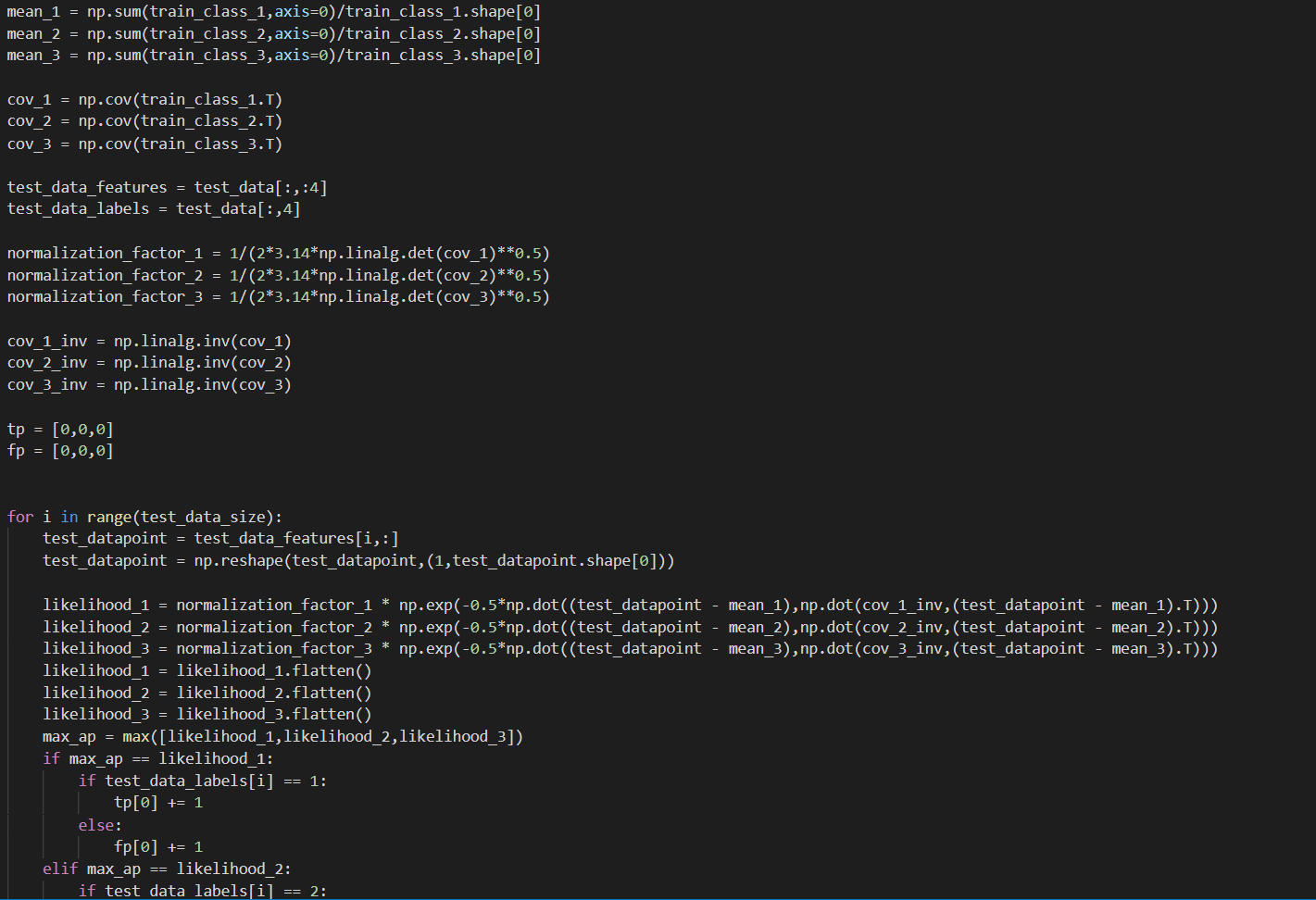
IA 1: 1.0

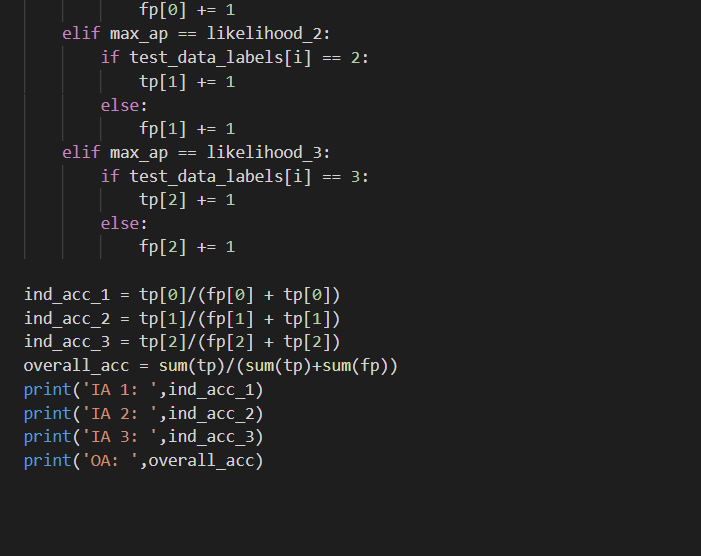
IA 2: 1.0

IA 3: 1.0

OA: 1.0







Q13:

**Things Learnt:**

1) Linear regression

2) Gradient Descent, Batch Gradient Descent and Stochastic Gradient Descent

3) Regularized linear regression (Ridge Regression and Lasso Regression/Least Angle Regression)

4) Logistic Regression

5) One-VS-All and One-Vs-One coding techniques

6) Vectorization

7) K-Means clustering

8) Probabilistic classifiers

9) Sensitivity, Specificity and Accuracy of classifiers

10) MAP, LRT, ML methods for classification

11) matplotlib and numpy