

Below is the output of all the questions.

```
(base) EdwardChao:109062703 chaoyangsheng$ python3 hw1.py
Q1 Bayesian accuracy: 0.983
Q1 Euclidean accuracy: 0.983
Q1 Mahalanobis accuracy: 0.983
Q2 Bayesian accuracy: 0.995
Q2 Euclidean accuracy: 0.985
Q2 Mahalanobis accuracy: 0.995
Q3 Bayesian accuracy: 0.925
Q3 Euclidean accuracy: 0.925
Q3 Mahalanobis accuracy: 0.925
Q4 Bayesian accuracy: 0.916
Q4 Euclidean accuracy: 0.889
Q4 Mahalanobis accuracy: 0.916
Q5 Bayesian accuracy: 0.928
Q5 Euclidean accuracy: 0.928
Q5 Mahalanobis accuracy: 0.928
Q5' Bayesian accuracy: 0.943
Q5' Euclidean accuracy: 0.943
Q5' Mahalanobis accuracy: 0.943
Q6 1NN accuracy: 0.882
Q6 11NN accuracy: 0.924
```

### Q5 conclusion:

In the condition that the priori probability of class 1 is larger than the other two classes. So the accuracy of all the classifiers is higher(the distribution of one of the classes is closer).

### Q6 conclusion:

11NN is more accurate since it takes more data point into account.