Machine Learning LAB-4:

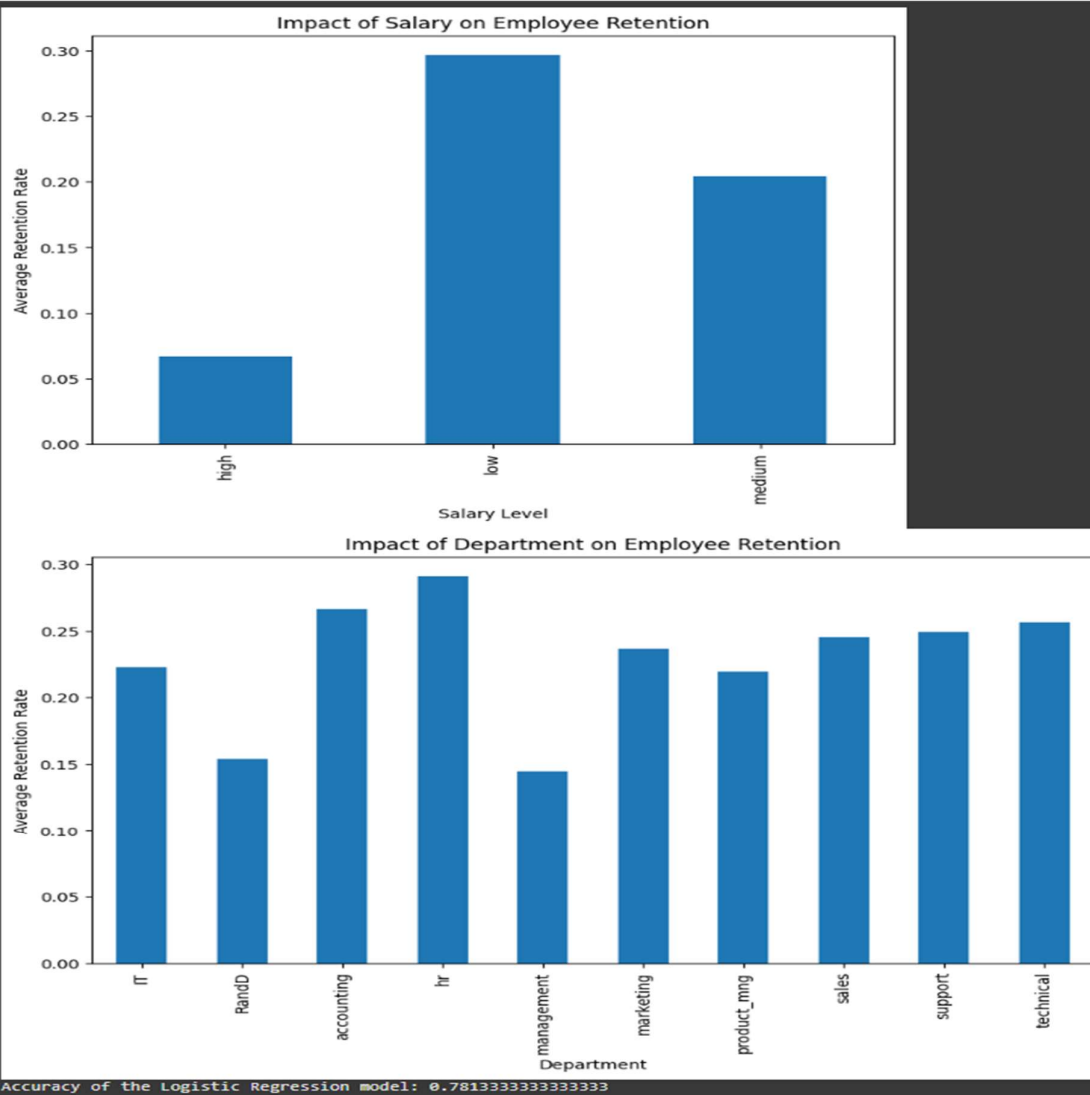# 1BM22CS255 Shashank Patel C J

Logistic Regression Outputs:

```
The probability of passing with 7 study hours is: 0.6457
Predicted class for 7 study hours: pass

Probabilities after applying Softmax:
Class 1: 0.6652
Class 2: 0.2447
Class 3: 0.0900
```
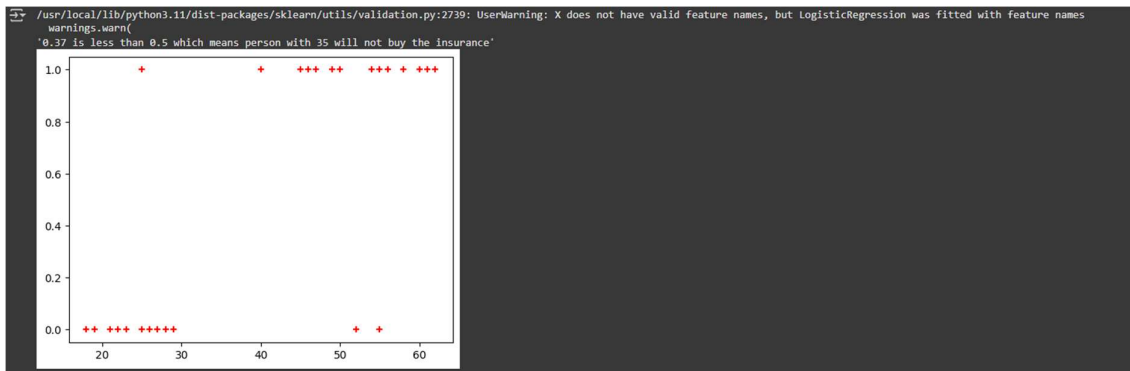

Impact of Salary on Employee Retention

Impact of Department on Employee Retention

```
Accuracy of the Logistic Regression model: 0.7813333333333333
```

'0.37 is less than 0.5 which means person with 35 will not buy the insurance'

The probability of passing with 7 study hours is: 0.6457
Predicted class for 7 study hours: pass

Probabilities after applying Softmax:
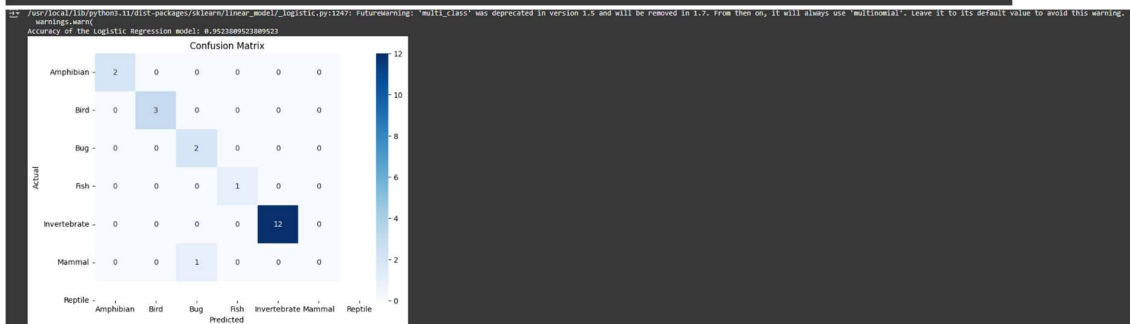Class 1: 0.6652
Class 2: 0.2447
Class 3: 0.0900

Accuracy of the Logistic Regression model: 0.9523809523809523

KNN Outputs:

```
Iris Dataset:
Accuracy: 1.0
Confusion Matrix:
 [[10  0  0]
 [ 0  9  0]
 [ 0  0 11]]
Classification Report:
              precision    recall  f1-score   support

      setosa       1.00      1.00      1.00        10
  versicolor       1.00      1.00      1.00         9
   virginica       1.00      1.00      1.00        11

    accuracy                           1.00        30
   macro avg       1.00      1.00      1.00        30
weighted avg       1.00      1.00      1.00        30
```


Confusion Matrix - Iris

```
Diabetes Dataset:
Accuracy: 0.6883116883116883
Confusion Matrix:
 [[79 20]
 [28 27]]
```


Confusion Matrix - Diabetes

```
Heart Dataset:
Best k: 6
Accuracy: 0.9344262295081968
Confusion Matrix:
 [[28  1]
 [ 3 29]]
```


Confusion Matrix - Heart

Classification Report - Heart