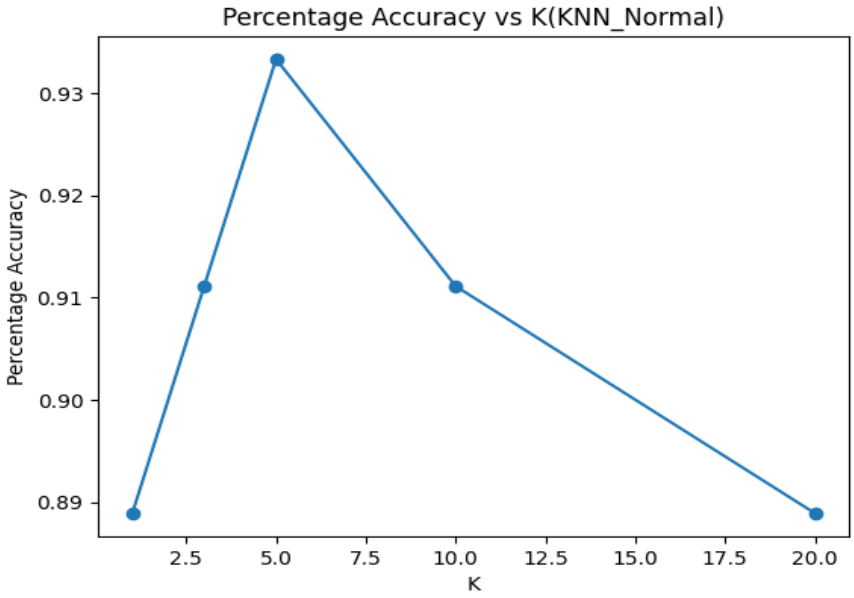
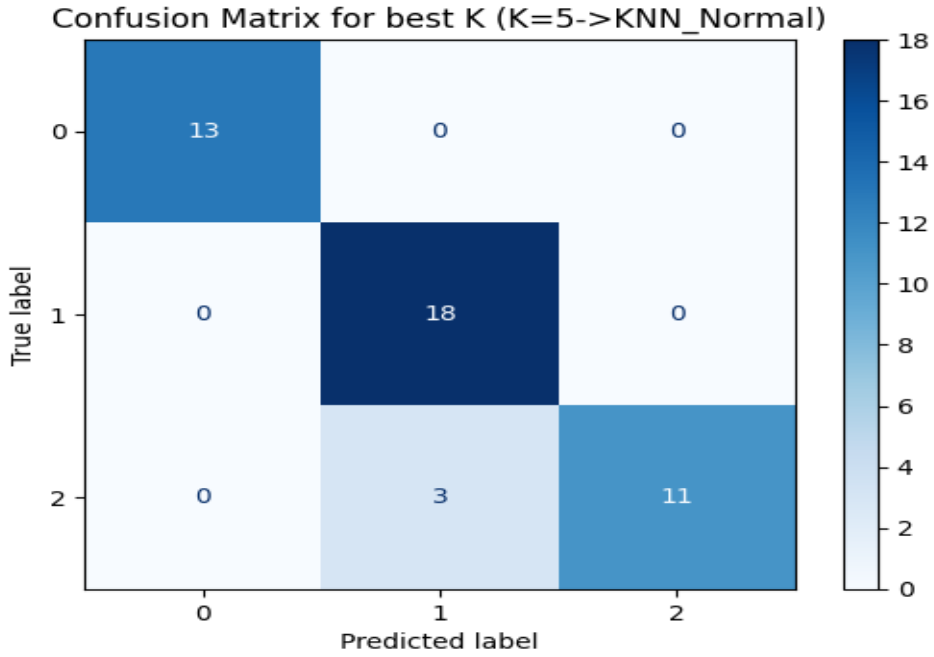
Name- Aritra Ray

Roll No.- 21IM10008

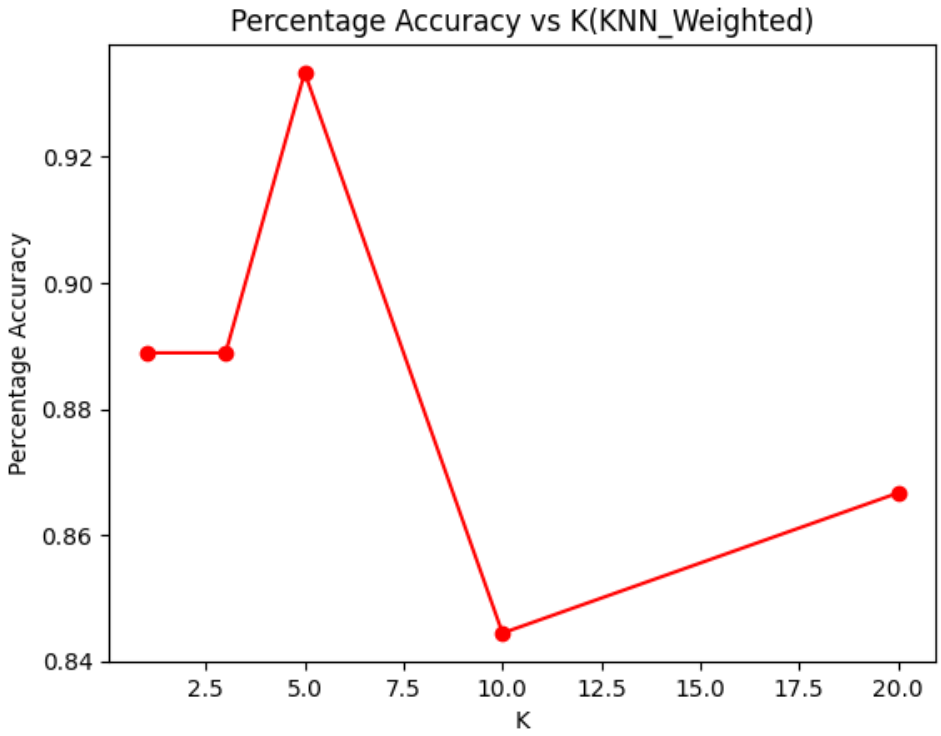
#Experiment 1



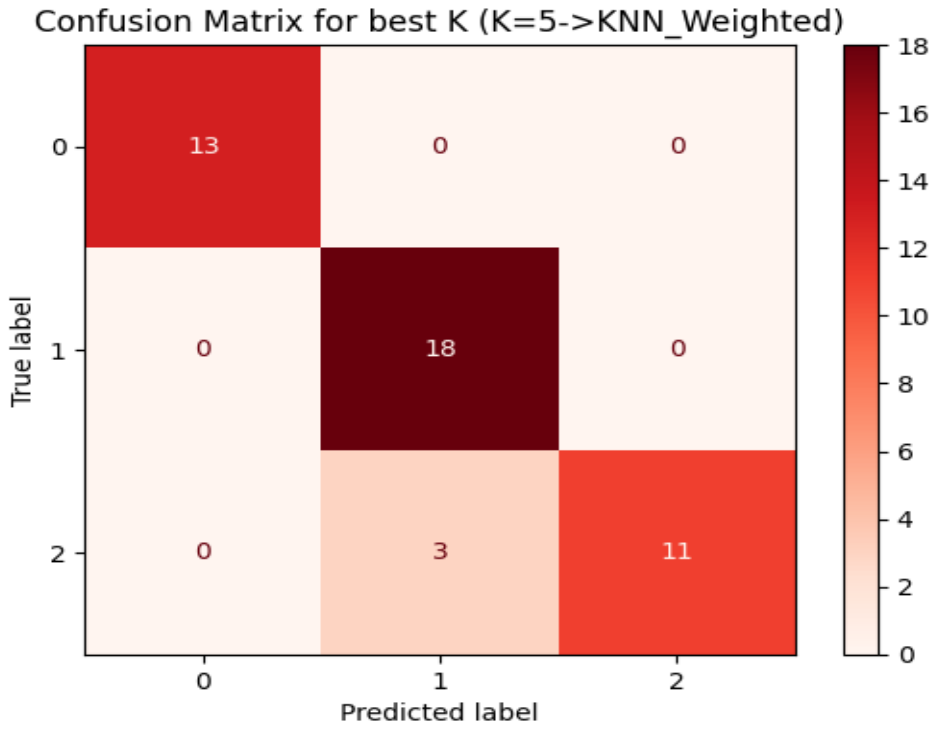
- Best value of K: 5 with accuracy: 93.33%



#Experiment 2

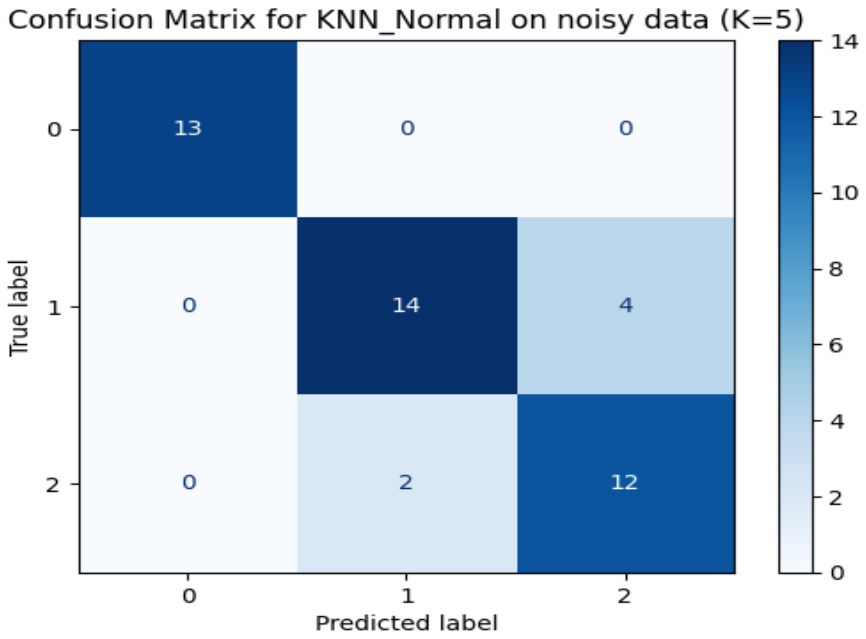


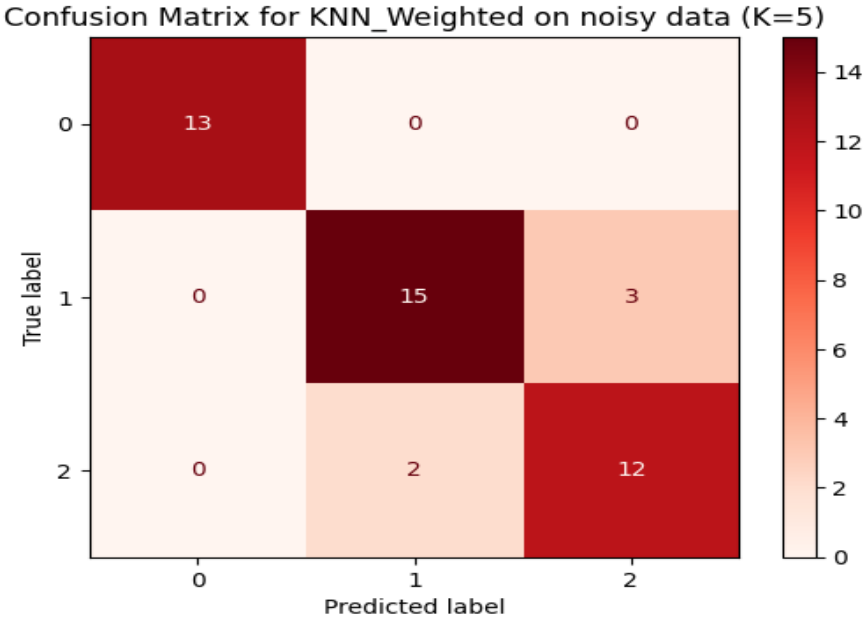
- Best value of K: 5 with accuracy: 93.33%



#Experiment 3

- Accuracy of KNN_Normal on noiseless data: 93.33%
- Accuracy of KNN_Normal on noisy data: 86.67%
- Accuracy of KNN_Weighted on noiseless data: 93.33%
- Accuracy of KNN_Weighted on noisy data: 88.89%





#Experiment 4

- **All four inputs (sepal length, sepal width, petal length, petal width):**
  - Accuracy: 0.89 for K=5.
  - This case includes all available features, providing baseline accuracy.
- **Only petal parameters (petal length and petal width):**
  - Accuracy: 0.93 for K=5.
  - The higher accuracy suggests that, in this dataset, petal parameters are more informative and contribute significantly to the performance of the model.
- **Only sepal parameters (sepal length and sepal width):**
  - Accuracy: 0.76 for K=5.
  - The lower accuracy indicates that using only sepal parameters may not be as effective in distinguishing between classes.
- **Only length parameters (sepal length and petal length):**
  - Accuracy: 0.89 for K=5.
  - Similar accuracy to using all features suggests that petal length and sepal length together provide sufficient information.
- **Only width parameters (petal width and sepal width):**
  - Accuracy: 0.84 for K=5.
  - A moderate accuracy suggests that using only width parameters is not sufficient.

Analysis:

- The higher accuracy when using only petal parameters indicates that petal features play a crucial role in classifying the iris species in your dataset.
- Using only sepal parameters results in a lower accuracy, indicating that sepal parameters alone may not be sufficient for accurate classification.
- Similar accuracy for the case of all features and length parameters suggests that sepal length and petal length are informative and contribute significantly to the model's performance.
- The moderate accuracy when using only width parameters suggests that width features are less informative compared to length and petal features.