**Part A**

Load the iris dataset from SkLearn as:

from sklearn.datasets import datasets

iris = datasets.load\_iris()

x=iris.data

y=iris.target

Complete the following steps:

* Create a classifier dictionary that contains the following classifiers:

1. 1-KNN (k=5)
2. Decision Tree with max depth of 5
3. Random Forest with max\_depth of 5, and number of estimators=10
4. Naive Bayes
5. Linear SVM with C=0.025
6. Kernel SVM (use the default RBF kernel) with gamma=2 and C=1

* Create six classifiers and use them to predict the labels of the testing set
* For testing, use 30% of the data in the original dataset. Use the built-in function train\_test\_split() and turn *True* the *shuffle* option
* Print the testing dataset labels to confirm the diversity of the selected data points
* Compute and print the accuracy of each classifier. Comment on your observation.

**Part B**

Start with the in-class example of classifying three distributions (moons, circles, blobs), and complete the following:

* Optimize the hyperparameter “k” for the KNN classifier
* Optimize the hyperparameter “maximum depth” for the Decision Tree classifier
* Optimize the hyperparameters “maximum depth” and “number of estimators” for the Random Forest classifier
* Optimize the hyperparameter “C” for the linear SVM classifier
* Optimize the hyperparameter “gamma” for the non-linear SVM classifier