HW 1

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*The source code .zip includes the environment.yml file if you want to run my code in a conda environment.

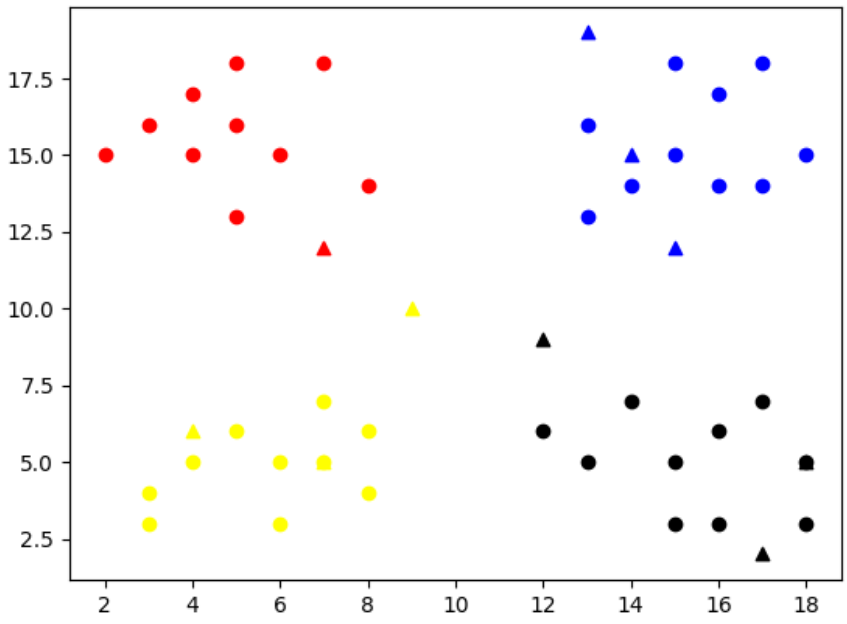
Problem 1:

I created a Python program named *prob1.py* to solve problem 1. Below is the output of the program. The test point [1, 0, 1] is classified into "Class A" for k = 1, k = 2, and k = 3.

```
PS C:\Users\rahim\Documents\Code\DeepLearning> & C:/Users/rahim/AppData
/Local/Programs/Python/Python310/python.exe c:/Users/rahim/Documents/Co
de/DeepLearning/prob1.py
random test points are: [[1 0 1]]
knn classfied labels for test when k = 1: ['A']
knn classfied labels for test when k = 2: ['A']
knn classfied labels for test when k = 3: ['A']
PS C:\Users\rahim\Documents\Code\DeepLearning>
```

Problem 2:

```
PS C:\Users\rahim\Documents\Code\DeepLearning> & C:/Users/rahim/AppData
/Local/Programs/Python/Python310/python.exe c:/Users/rahim/Documents/Co
de/DeepLearning/miniknn.py
random test points are: [[ 7  5]
 [15 12]
 [18  5]
 [ 9 10]
 [13 19]
 [ 7 12]
 [12  9]
 [ 4  6]
 [17  2]
 [14 15]]
knn classfied labels for test: [2.0, 1.0, 3.0, 2.0, 1.0, 0.0, 3.0, 2.0,
 3.0, 1.0]
PS C:\Users\rahim\Documents\Code\DeepLearning>
```



Problem 3:

```
Windows PowerShell
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Try the new cross-platform PowerShell https://aka.ms/pscore6

PS C:\Users\rahim\Documents\Code\DeepLearning> & C:/Users/rahim/AppData
/Local/Programs/Python/Python310/python.exe c:/Users/rahim/Documents/Co
de/DeepLearning/knn.py
---classification accuracy for knn on mnist: 1.0 ---
---execution time: 12.649322509765625 seconds ---
PS C:\Users\rahim\Documents\Code\DeepLearning>
```