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Roll no : 41310
Assignment No : 03 (ML)

Code:

```
import numpy as np

x = np.array([2, 4, 4, 4, 6, 6])
y = np.array([4, 2, 4, 6, 2, 4])
classlist = np.array([1, 1, 2, 1, 2, 1])
test_tuple = [6, 6]

k = 3
knn_array = []

dict = {}

for i in range(np.size(x)):
    dict[i] = np.sqrt(((x[i] - test_tuple[0])**2) + ((y[i] - test_tuple[1])**2))

dict = sorted(dict.items(), key = lambda kv : (kv[1], kv[0]))

for i in range(k):
    knn_array.append(dict[i][0])

my_class = []

for i in range(k):
    my_class.append(classlist[knn_array[i]])

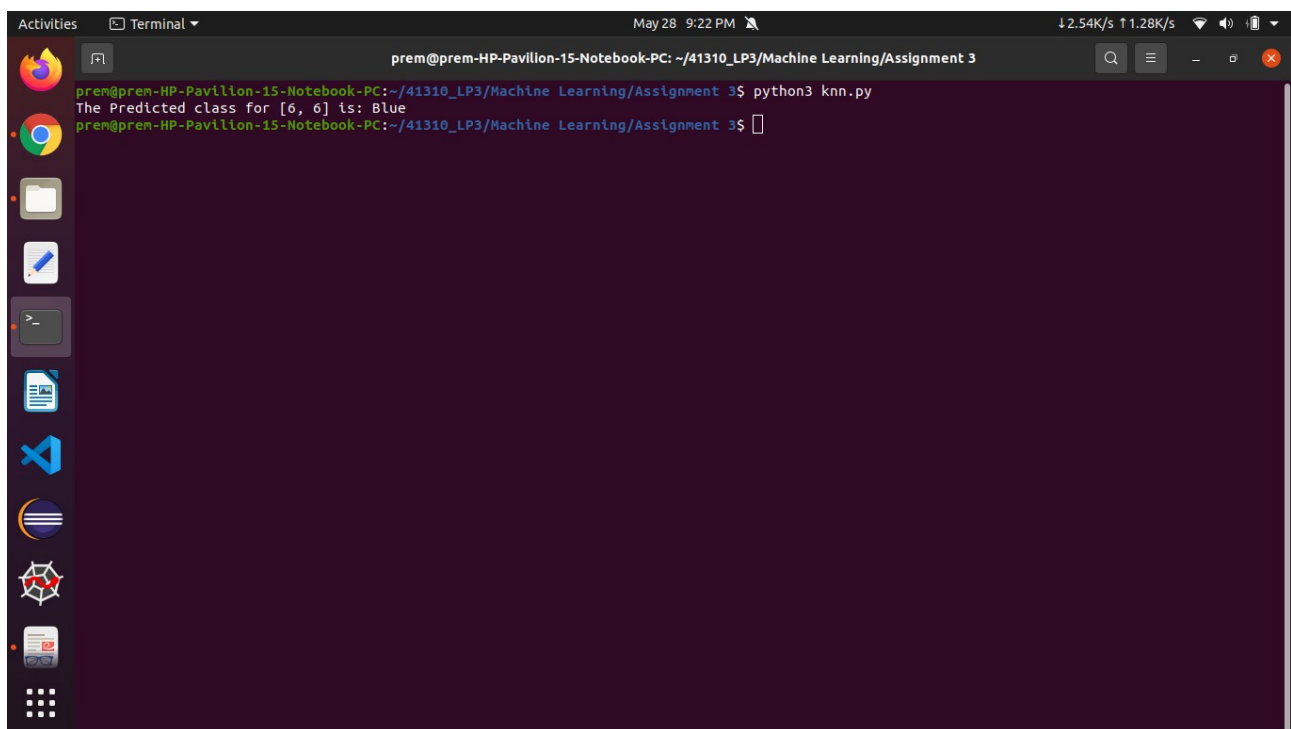
my_class = {i: my_class.count(i) for i in range(k)}

max = 0

for key, value in my_class.items():
    if value > max:
        max = value
        maxclass = key

if maxclass == 1:
    print ("The Predicted class for [6, 6] is: Blue")
elif maxclass == 2:
    print ("The predicted class for [6, 6] is: Orange")
```

Output:



A terminal window titled "Terminal" is shown. The window's title bar includes the text "Activities", "Terminal", and a dropdown arrow. The system status bar at the top right displays "May 28 9:22 PM", network speed "↓2.54K/s ↑1.28K/s", and icons for Wi-Fi, volume, and battery. The terminal's address bar shows the path "prem@prem-HP-Pavilion-15-Notebook-PC: ~/41310_LP3/Machine Learning/Assignment 3". The terminal content shows the command "python3 knn.py" being executed, followed by the output "The Predicted class for [6, 6] is: Blue". The prompt "prem@prem-HP-Pavilion-15-Notebook-PC:~/41310_LP3/Machine Learning/Assignment 3\$" is visible on the line below. On the left side of the terminal window, a vertical dock contains icons for various applications: Firefox, Chrome, a file manager, a text editor, a terminal, a document, a code editor, a presentation, a network diagram, and a calendar. The terminal background is dark purple.

```
prem@prem-HP-Pavilion-15-Notebook-PC: ~/41310_LP3/Machine Learning/Assignment 3
prem@prem-HP-Pavilion-15-Notebook-PC:~/41310_LP3/Machine Learning/Assignment 3$ python3 knn.py
The Predicted class for [6, 6] is: Blue
prem@prem-HP-Pavilion-15-Notebook-PC:~/41310_LP3/Machine Learning/Assignment 3$
```