In [1]:
```
import numpy as np
import matplotlib.pyplot as plt
```

In [2]:
```
raw_data_X = [[3.393533211, 2.331273381],
              [3.110073483, 1.781539638],
              [1.343808831, 3.368360954],
              [3.582294042, 4.679179110],
              [2.280362439, 2.866990263],
              [7.423436942, 4.696522875],
              [5.745051997, 3.533989803],
              [9.172168622, 2.511101045],
              [7.792783481, 3.424088941],
              [7.939820817, 0.791637231]
             ]
raw_data_y = [0, 0, 0, 0, 0, 1, 1, 1, 1, 1]
```

In [3]:
```
X_train = np.array(raw_data_X)
y_train = np.array(raw_data_y)
```

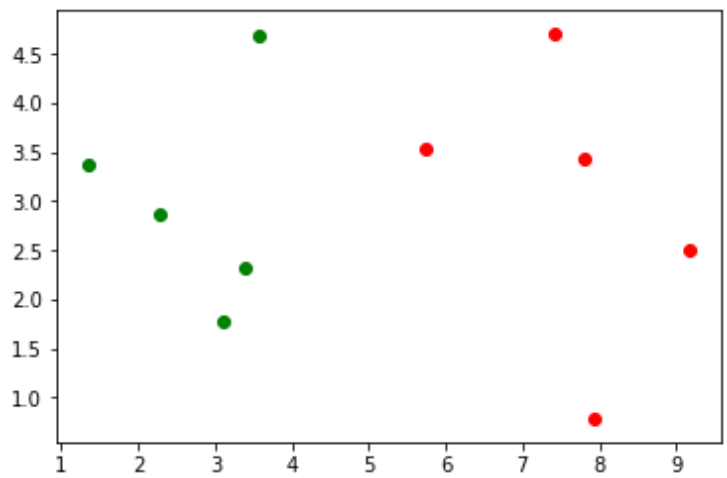
In [4]:
```
X_train
```

Out[4]:
```
array([[3.39353321, 2.33127338],
       [3.11007348, 1.78153964],
       [1.34380883, 3.36836095],
       [3.58229404, 4.67917911],
       [2.28036244, 2.86699026],
       [7.42343694, 4.69652288],
       [5.745052  , 3.5339898 ],
       [9.17216862, 2.51110105],
       [7.79278348, 3.42408894],
       [7.93982082, 0.79163723]])
```

In [5]:
```
y_train
```

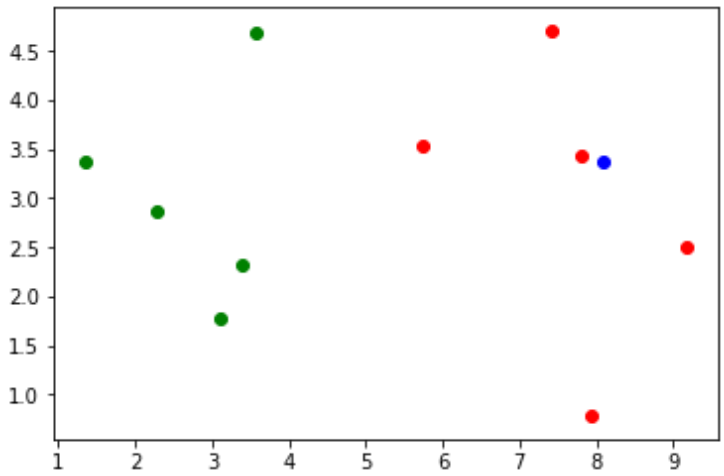
Out[5]:
```
array([0, 0, 0, 0, 0, 1, 1, 1, 1, 1])
```

In [6]:
```
plt.scatter(X_train[y_train == 0, 0], X_train[y_train == 0, 1],color = 'g')
plt.scatter(X_train[y_train == 1, 0], X_train[y_train == 1, 1],color = 'r')
plt.show()
```



In [7]:
```
x = np.array([8.093607318, 3.365731514])
```

In [8]:
```
plt.scatter(X_train[y_train == 0, 0], X_train[y_train == 0, 1],color = 'g')
plt.scatter(X_train[y_train == 1, 0], X_train[y_train == 1, 1],color = 'r')
plt.scatter(x[0], x[1], color = 'b')
plt.show()
```



In [9]:
```
from math import sqrt
distances = []
for x_train in X_train:
    d = sqrt(np.sum((x_train - x) ** 2))
    distances.append(d)
```

In [10]:
```
distances
```

Out[10]:
```
[4.812566907609877,
 5.229270827235305,
 6.749798999160064,
 4.6986266144110695,
 5.83460014556857,
 1.4900114024329525,
 2.354574897431513,
 1.3761132675144652,
 0.3064319992975,
 2.5786840957478887]
```

In [11]:
```
distances = [sqrt(np.sum((x_train - x)** 2))for x_train in X_train]
```

In [12]:
```
distances
```

Out[12]:
```
[4.812566907609877,
 5.229270827235305,
 6.749798999160064,
 4.6986266144110695,
 5.83460014556857,
 1.4900114024329525,
 2.354574897431513,
 1.3761132675144652,
 0.3064319992975,
 2.5786840957478887]
```

In [13]:
```
nearest = np.argsort(distances)
```

In [14]:
```
k = 6
```

In [15]:
```
topK_y = [y_train[i] for i in nearest[:k]]
```

In [16]:
```
topK_y
```

Out[16]: [1, 1, 1, 1, 1, 0]

In [17]:
```
from collections import Counter
Counter(topK_y)
```

Out[17]: Counter({0: 1, 1: 5})

In [18]:
```
votes = Counter(topK_y)
```

In [19]:
```
votes.most_common(1)
```

Out[19]: [(1, 5)]

In [20]:
```
votes.most_common(1)[0][0]
```

Out[20]: 1

In [21]:
```
predict_y = votes.most_common(1)[0][0]
```

In [22]:
```
predict_y
```

Out[22]: 1