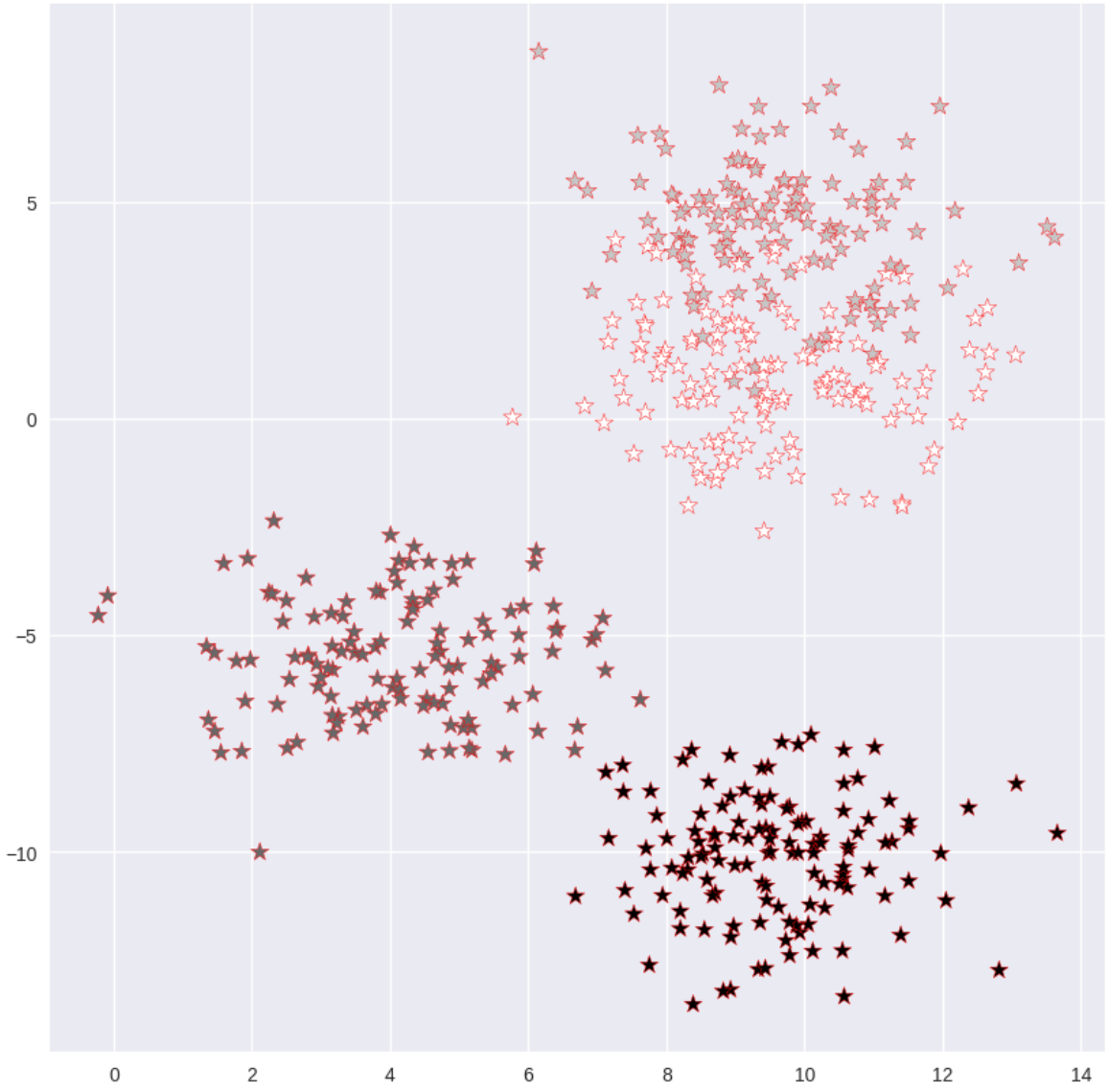
Praticle 6 : Implementation of K-Nearest Neighbours (KNN) Algorithm

In [1]:
```
import numpy as np
import pandas as pd

import matplotlib.pyplot as plt

from sklearn.datasets import make_blobs
from sklearn.neighbors import KNeighborsClassifier
from sklearn.model_selection import train_test_split
```

In [2]:
```
X, y = make_blobs(n_samples = 500, n_features = 2, centers = 4,cluster_st
```

In [3]:
```
plt.style.use('seaborn')
plt.figure(figsize = (10,10))
plt.scatter(X[:,0], X[:,1], c=y, marker= '*',s=100,edgecolors='red')
plt.show()
```

```
/tmp/ipykernel_31336/1687554796.py:1: MatplotlibDeprecationWarning: The se
aborn styles shipped by Matplotlib are deprecated since 3.6, as they no lo
nger correspond to the styles shipped by seaborn. However, they will remai
n available as 'seaborn-v0_8-<style>'. Alternatively, directly use the sea
born API instead.
  plt.style.use('seaborn')
```



In [4]:
```
X_train, X_test, y_train, y_test = train_test_split(X, y, random_state =
```

In [5]:
```
knn5 = KNeighborsClassifier(n_neighbors = 5)
knn1 = KNeighborsClassifier(n_neighbors=1)
```

In [6]:
```
knn5.fit(X_train, y_train)
knn1.fit(X_train, y_train)

y_pred_5 = knn5.predict(X_test)
y_pred_1 = knn1.predict(X_test)
```

In [7]:
```
from sklearn.metrics import accuracy_score
print("Accuracy with k=5", accuracy_score(y_test, y_pred_5)*100)
print("Accuracy with k=1", accuracy_score(y_test, y_pred_1)*100)
```

```
Accuracy with k=5 93.60000000000001
Accuracy with k=1 90.4
```

In [8]:
```
plt.figure(figsize = (15,5))
plt.subplot(1,2,1)
plt.scatter(X_test[:,0], X_test[:,1], c=y_pred_5, marker= '*', s=100,edge
plt.title("Predicted values with k=5", fontsize=20)

plt.subplot(1,2,2)
```

```
plt.scatter(X_test[:,0], X_test[:,1], c=y_pred_1, marker= '*', s=100,edge
plt.title("Predicted values with k=1", fontsize=20)
plt.show()
```