PRACTICAL NO. 3

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In [19]:
```
from sklearn.datasets import load_iris
from sklearn.model_selection import train_te
from sklearn.neighbors import KNeighborsClas
from sklearn.metrics import accuracy_score
import matplotlib.pyplot as plt
```

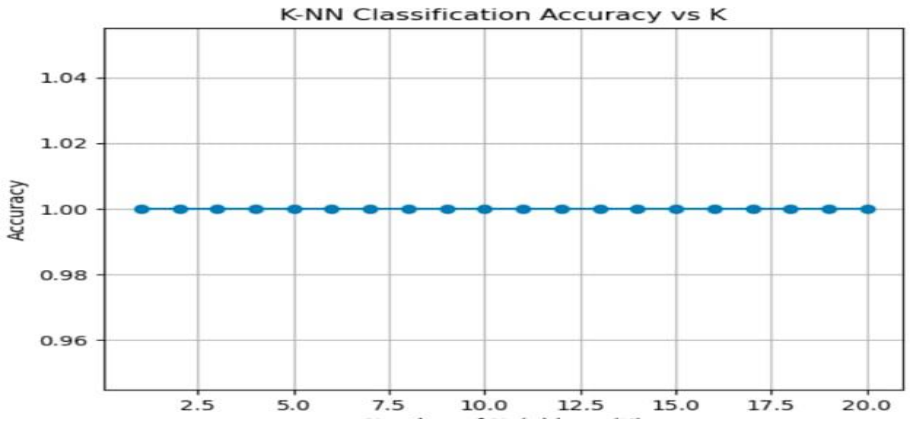
In [20]:
```
iris = load_iris()
X, y = iris.data, iris.target
```

In [21]:
```
X_train, X_test, y_train, y_test = train_tes
```

In [22]:
```
k_range = range(1, 21)
accuracies = []
```

In [23]:
```
for k in k_range:
    knn = KNeighborsClassifier(n_neighbors=k
    knn.fit(X_train, y_train)
    y_pred = knn.predict(X_test)
    acc = accuracy_score(y_test, y_pred)
    accuracies.append(acc)
```

In [24]:
```
plt.plot(k_range, accuracies, marker='o')
plt.title("K-NN Classification Accuracy vs K
plt.xlabel("Number of Neighbors (K)")
plt.ylabel("Accuracy")
plt.grid()
plt.show()
```



```
from sklearn.datasets import fetch_californi
from sklearn.model_selection import train_te
from sklearn.neighbors import KNeighborsRegr
from sklearn.metrics import mean_squared_err
import numpy as np
```

In [26]:

```
data = fetch_california_housing()
X, y = data.data, data.target
```

In [27]:

```
X_train, X_test, y_train, y_test = train_tes
```

In [28]:

```
k_range = range(1, 21)
mse_scores = []
```

In [29]:

```
for k in k_range:
    model = KNeighborsRegressor(n_neighbors=
    model.fit(X_train, y_train)
    y_pred = model.predict(X_test)
    mse = mean_squared_error(y_test, y_pred)
    mse_scores.append(mse)
```

In [30]:

```
plt.plot(k_range, mse_scores, marker='o', co
plt.title('k-NN Regression MSE vs K')
plt.xlabel('K value')
plt.ylabel('Mean Squared Error')
plt.grid(True)
plt.show()
best_k = mse_scores.index(min(mse_scores)) +
print(f"Best K: {best_k}, Lowest MSE: {min(m
```