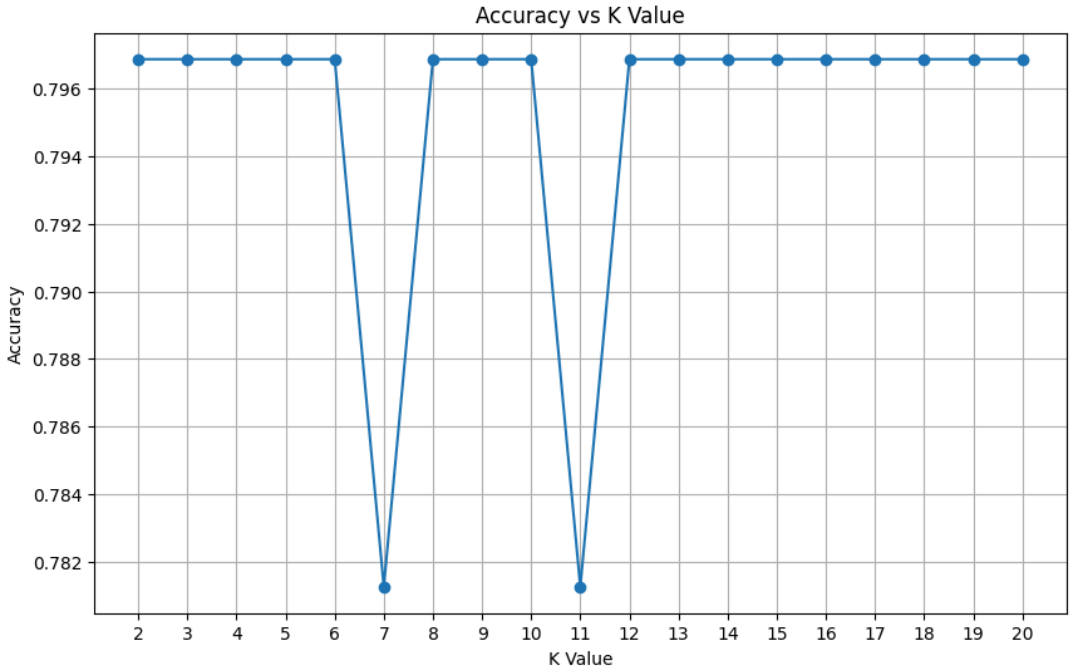
```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.neighbors import KNeighborsClassifier
from sklearn.metrics import accuracy_score
import matplotlib.pyplot as plt
data=pd.read_csv("/content/breast_cancer_survival.csv")
data = data.dropna()
X = data[['Age', 'Gender', 'Protein1', 'Protein2', 'Protein3', 'Protein4','Tumour_Stage']]
y = data['Patient_Status']
# Convert categorical variables to one-hot encoding
X_encoded = pd.get_dummies(X)
# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X_encoded, y, test_size=0.2, random_state=42)
# Train KNN for different K values and find accuracies
accuracies = []
for k in range(2, 21):
    knn = KNeighborsClassifier(n_neighbors=k)
    knn.fit(X_train, y_train)
    y_pred = knn.predict(X_test)
    accuracy = accuracy_score(y_test, y_pred)
    accuracies.append(accuracy)
print(f"Accuracy:{accuracy}")
# Plot the graph

plt.figure(figsize=(10, 6))
plt.plot(range(2, 21), accuracies, marker='o', linestyle='-')

plt.title('Accuracy vs K Value')
plt.xlabel('K Value')
plt.ylabel('Accuracy')
plt.xticks(range(2, 21))
plt.grid(True)
plt.show()
```

```
Accuracy:0.796875
```



```
import pandas as pd
from sklearn.model_selection import train_test_split
from sklearn.tree import DecisionTreeClassifier
from sklearn.metrics import accuracy_score, precision_score, recall_score,f1_score
# Load the dataset
data = pd.read_csv("/content/breast_cancer_survival.csv")
# Drop rows with NaN values
data = data.dropna()
# Extract features and target variable
X = data[['Age', 'Gender', 'Protein1', 'Protein2', 'Protein3', 'Protein4','Tumour_Stage']]

y = data['Patient_Status']
 # Convert categorical variables to one-hot encoding
X_encoded = pd.get_dummies(X)
# Split the data into training and testing sets
X_train, X_test, y_train, y_test = train_test_split(X_encoded, y, test_size=0.2, random_state=42)
# Train Decision Tree classifier
decision_tree = DecisionTreeClassifier()
decision_tree.fit(X_train, y_train)
# Predict on the test set
y_pred = decision_tree.predict(X_test)
 # Calculate performance metrics
accuracy = accuracy_score(y_test, y_pred)
precision = precision_score(y_test, y_pred, average='weighted')
recall = recall_score(y_test, y_pred, average='weighted')
f1 = f1_score(y_test, y_pred, average='weighted')
# Print the metrics
print("Decision Tree Classifier:")
print("Accuracy:", accuracy)
print("Precision:", precision)
print("Recall:", recall)
print("F1 Score:", f1)
```

```
Decision Tree Classifier:
Accuracy: 0.65625
Precision: 0.6920760325406758
Recall: 0.65625
F1 Score: 0.6721513605442176
```