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Assignment:no:01

Question:

Write a program in python language with the dataset generated. Implement Decision Tree and Random Forest Algorithm and also dry run on assignment page line by line?

Answer:

```
 1 import numpy as np
 2 import pandas as pd
 3 from sklearn.datasets import make_classification
 4 from sklearn.model_selection import train_test_split
 5 from sklearn.tree import DecisionTreeClassifier
 6 from sklearn.ensemble import RandomForestClassifier
 7 from sklearn.metrics import accuracy_score
 8
 9 X, y = make_classification(
10     n_samples=100,
11     n_features=4,
12     n_informative=2,
13     n_redundant=0,
14     random_state=42
15 )
16
17 data = pd.DataFrame(X, columns=['Feature1', 'Feature2', 'Feature3', 'Feature4'])
18 data['Target'] = y
19
20 X_train, X_test, y_train, y_test = train_test_split(
21     X, y, test_size=0.2, random_state=42
22 )
23
24 dt = DecisionTreeClassifier()
25 dt.fit(X_train, y_train)
26 dt_predictions = dt.predict(X_test)
27
28 rf = RandomForestClassifier(n_estimators=100)
29 rf.fit(X_train, y_train)
30 rf_predictions = rf.predict(X_test)
31
32 dt_accuracy = accuracy_score(y_test, dt_predictions)
33 rf_accuracy = accuracy_score(y_test, rf_predictions)
34
35 print("Decision Tree Accuracy:", dt_accuracy)
36 print("Random Forest Accuracy:", rf_accuracy)
37
```

```
Decision Tree Accuracy: 0.95
Random Forest Accuracy: 0.95
```