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Roll No - TETB19

Sub : Soft Computitng

Batch -B2

Experiment 3 : Implementation of Decision Tree, Random Forest, KNN, Naïve Bayes with hyperparameter tunning.

1. DECISION TREE

```python
import pandas as pd
```

```python
from google.colab import drive
drive.mount('/content/drive')
```

```
Mounted at /content/drive
```

```python
df = pd.read_csv("/content/drive/MyDrive/ML/Titanic-Dataset.csv")
df.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.

```python
df.drop(['PassengerId','Name','SibSp','Parch','Ticket','Cabin','Embarked'],axis='columns',
```

```python
df.head()
```

	Survived	Pclass	Sex	Age	Fare
0	0	3	male	22.0	7.2500
1	1	1	female	38.0	71.2833
2	1	3	female	26.0	7.9250

```python
inputs = df.drop('Survived',axis='columns')
target = df.Survived
```

| 4 | 0 | 3 | male | 35.0 | 8.0500 |

```python
inputs.Sex = inputs.Sex.map({'male': 1, 'female': 2})
```

```python
inputs.Age[:10]
```

```
0    22.0
1    38.0
2    26.0
3    35.0
4    35.0
5     NaN
6    54.0
7     2.0
8    27.0
9    14.0
Name: Age, dtype: float64
```

```python
inputs.Age = inputs.Age.fillna(inputs.Age.mean())
```

```python
inputs.head()
```

	Pclass	Sex	Age	Fare
0	3	1	22.0	7.2500
1	1	2	38.0	71.2833
2	3	2	26.0	7.9250
3	1	2	35.0	53.1000
4	3	1	35.0	8.0500

```python
from sklearn.model_selection import train_test_split
```

```python
X_train, X_test, y_train, y_test = train_test_split(inputs,target,test_size=0.2)
```

```python
len(X_train)
```

```
712
```

```python
len(X_test)
```

```python
from sklearn import tree
model = tree.DecisionTreeClassifier()
```

```python
model.fit(X_train,y_train)
```

```
DecisionTreeClassifier()
```

```python
model.score(X_test,y_test)
```

```
0.7877094972067039
```

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