Tugas Materi 6

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3 – D4 IT - B

Code 1

```
In [2]: dataset = pd.read_csv('titanic.csv')
        dataset
```

Out[2]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2500	NaN	S
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9250	NaN	S
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0500	NaN	S
...	...	...	...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	13.0000	NaN	S
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.0000	B42	S
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	NaN	1	2	W./C. 6607	23.4500	NaN	S
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.0000	C148	C
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376	7.7500	NaN	Q

Membaca data csv titanic

Code 2

In [3]:
```
test_dataset = pd.read_csv('titanic_test.csv')
test_dataset
```

Out[3]:

	PassengerId	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked
0	892	3	Kelly, Mr. James	male	34.5	0	0	330911	7.8292	NaN	Q
1	893	3	Wilkes, Mrs. James (Ellen Needs)	female	47.0	1	0	363272	7.0000	NaN	S
2	894	2	Myles, Mr. Thomas Francis	male	62.0	0	0	240276	9.6875	NaN	Q
3	895	3	Wirz, Mr. Albert	male	27.0	0	0	315154	8.6625	NaN	S
4	896	3	Hirvonen, Mrs. Alexander (Helga E Lindqvist)	female	22.0	1	1	3101298	12.2875	NaN	S
...	...	...	...	...	...	...	...	...	...	...	...
413	1305	3	Spector, Mr. Woolf	male	NaN	0	0	A.5. 3236	8.0500	NaN	S
414	1306	1	Oliva y Ocana, Dona. Fermina	female	39.0	0	0	PC 17758	108.9000	C105	C
415	1307	3	Saether, Mr. Simon Sivertsen	male	38.5	0	0	SOTON/O.Q. 3101262	7.2500	NaN	S
416	1308	3	Ware, Mr. Frederick	male	NaN	0	0	359309	8.0500	NaN	S
417	1309	3	Peter, Master. Michael J	male	NaN	1	1	2668	22.3583	NaN	C

Membaca data csv titanic_test

Code 3

In [4]:
```
test_label = pd.read_csv('titanic_testlabel.csv')
test_label
```

Out[4]:

	PassengerId	Survived
0	892	0
1	893	1
2	894	0
3	895	0
4	896	1
...	...	...
413	1305	0
414	1306	1
415	1307	0
416	1308	0
417	1309	0

Membaca data csv titanic_testlabel

Code 4

```
In [26]: train_data = dataset[['Sex', 'Age', 'Pclass', 'Fare']]
```

```
In [27]: train_data
```

Out[27]:

	Sex	Age	Pclass	Fare
0	male	22.0	3	7.2500
1	female	38.0	1	71.2833
2	female	26.0	3	7.9250
3	female	35.0	1	53.1000
4	male	35.0	3	8.0500
...	...	...	...	...
886	male	27.0	2	13.0000
887	female	19.0	1	30.0000
888	female	NaN	3	23.4500
889	male	26.0	1	30.0000
890	male	32.0	3	7.7500

Mengambil data csv titanic kolom sex age pclass fare

Code 5

```
In [28]: train_data= train_data.replace('male', 1)
         train_data = train_data.replace('female', 0)
```

```
In [29]: train_data
```

Out[29]:

	Sex	Age	Pclass	Fare
0	1	22.0	3	7.2500
1	0	38.0	1	71.2833
2	0	26.0	3	7.9250
3	0	35.0	1	53.1000
4	1	35.0	3	8.0500
...	...	...	...	...
886	1	27.0	2	13.0000
887	0	19.0	1	30.0000
888	0	NaN	3	23.4500
889	1	26.0	1	30.0000
890	1	32.0	3	7.7500

Mengubah male dan female menjadi 1 dan 0

Code 6

```
In [30]: mean = train_data['Age'].mean()

         train_data = train_data.replace(np.nan, mean)
```

```
In [31]: train_data
```

Out[31]:

	Sex	Age	Pclass	Fare
0	1	22.000000	3	7.2500
1	0	38.000000	1	71.2833
2	0	26.000000	3	7.9250
3	0	35.000000	1	53.1000
4	1	35.000000	3	8.0500
...	...	...	...	...
886	1	27.000000	2	13.0000
887	0	19.000000	1	30.0000
888	0	29.699118	3	23.4500
889	1	26.000000	1	30.0000
890	1	32.000000	3	7.7500

Mengisi missing value pada kolom age dengan rata2 kolom age

Code 7

In [32]:
```
test_data = test_dataset[['Sex', 'Age', 'Pclass', 'Fare']]
test_data
```

Out[32]:

	Sex	Age	Pclass	Fare
0	male	34.5	3	7.8292
1	female	47.0	3	7.0000
2	male	62.0	2	9.6875
3	male	27.0	3	8.6625
4	female	22.0	3	12.2875
...	...	...	...	...
413	male	NaN	3	8.0500
414	female	39.0	1	108.9000
415	male	38.5	3	7.2500
416	male	NaN	3	8.0500
417	male	NaN	3	22.3583

Mengambil test_dataset kolom sex age pclass fare

Code 8

In [34]:
```
test_data= test_data.replace('male', 1)
test_data = test_data.replace('female', 0)
test_data
```

Out[34]:

	Sex	Age	Pclass	Fare
0	1	34.5	3	7.8292
1	0	47.0	3	7.0000
2	1	62.0	2	9.6875
3	1	27.0	3	8.6625
4	0	22.0	3	12.2875
...	...	...	...	...
413	1	NaN	3	8.0500
414	0	39.0	1	108.9000
415	1	38.5	3	7.2500
416	1	NaN	3	8.0500
417	1	NaN	3	22.3583

Mengubah male female menjadi 1 dan 0

Code 9

In [35]:
```
mean = test_data['Age'].mean()

test_data = test_data.replace(np.nan, mean)
test_data
```

Out[35]:

	Sex	Age	Pclass	Fare
0	1	34.50000	3	7.8292
1	0	47.00000	3	7.0000
2	1	62.00000	2	9.6875
3	1	27.00000	3	8.6625
4	0	22.00000	3	12.2875
...	...	...	...	...
413	1	30.27259	3	8.0500
414	0	39.00000	1	108.9000
415	1	38.50000	3	7.2500
416	1	30.27259	3	8.0500
417	1	30.27259	3	22.3583

Mengisi missing value pada kolom age dengan rata2 kolom age

Code 10

```
In [36]: train_label=dataset['Survived']
         train_label
```

```
Out[36]: 0      0
         1      1
         2      1
         3      1
         4      0
               ..
         886    0
         887    1
         888    0
         889    1
         890    0
         Name: Survived, Length: 891, dtype: int64
```

Mengambil dataset kolom survived untuk train label

Code 11

```
In [38]: test_label = test_label['Survived']
         test_label
```

```
Out[38]: 0      0
         1      1
         2      0
         3      0
         4      1
               ..
         413    0
         414    1
         415    0
         416    0
         417    0
         Name: Survived, Length: 418, dtype: int64
```

Mengambil testlabel kolom survived untuk test label

Code 12

```
In [40]: dtc=DecisionTreeClassifier()
         dtc.fit(train_data, train_label)
         class_result=dtc.predict(test_data)

In [43]: class_result

Out[43]: array([0, 0, 1, 1, 1, 0, 0, 0, 1, 0, 0, 0, 1, 1, 1, 1, 0, 1, 1, 0, 0, 1,
                1, 0, 1, 0, 1, 1, 1, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 0, 1,
                1, 0, 0, 0, 1, 1, 1, 0, 1, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 0, 1,
                1, 0, 0, 1, 1, 0, 1, 0, 1, 0, 0, 1, 0, 1, 1, 0, 0, 0, 0, 0, 1, 1,
                0, 1, 1, 0, 1, 0, 0, 0, 1, 0, 1, 0, 1, 0, 0, 0, 1, 0, 0, 0, 1, 0,
                0, 0, 1, 1, 1, 0, 0, 1, 0, 1, 1, 0, 1, 0, 0, 0, 0, 1, 0, 0, 1, 0,
                0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 1, 0, 0, 1,
                0, 0, 1, 1, 0, 1, 0, 1, 1, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1,
                1, 0, 1, 1, 0, 1, 1, 0, 1, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 1, 0,
                0, 0, 1, 1, 0, 1, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0,
                1, 0, 1, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 1, 1, 1, 1, 1,
                1, 0, 0, 0, 1, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 1, 1,
                0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0,
                0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1,
                1, 0, 0, 1, 0, 0, 1, 1, 0, 0, 0, 0, 0, 0, 0, 1, 1, 0, 1, 0, 0, 0,
                1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 0, 1, 1, 0,
                0, 0, 0, 0, 1, 0, 0, 1, 0, 1, 1, 1, 1, 0, 0, 0, 1, 1, 0, 1, 0, 0,
                1, 1, 0, 0, 0, 0, 0, 0, 0, 0, 0, 0, 1, 0, 0, 0, 0, 0, 0, 1, 1, 0, 0, 1,
                0, 1, 0, 0, 1, 0, 1, 0, 0, 0, 0, 0, 0, 0, 1, 0, 1, 0, 0, 1, 0, 0, 0],
               dtype=int64)
```

Membuat model decision tree menggunakan library sklearn

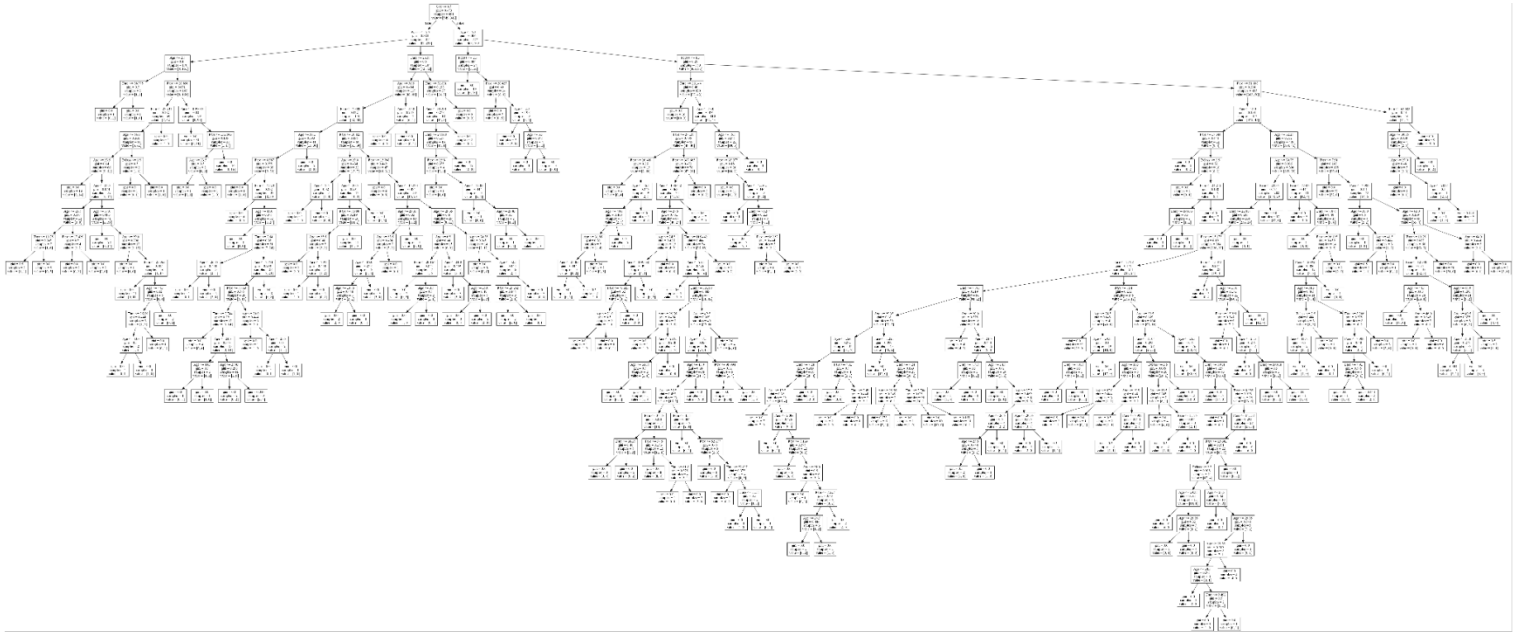
Code 13

```
In [44]: acc=dtc.score(train_data, train_label)

In [45]: acc
Out[45]: 0.9797979797979798

In [46]: err=round((1-acc)*100, 2)
         print('\n\nError ratio = ', err, '%')


Error ratio =  2.02 %
```

```
In [68]: acc=dtc.score(test_data, test_label)

In [69]: acc
Out[69]: 0.8086124401913876

In [70]: err=round((1-acc)*100, 2)
         print('\n\nError ratio = ', err, '%')


Error ratio =  19.14 %
```

Menghitung nilai akurasi dan error rasio

Code 14



Menampilkan model decision tree menggunakan library graphviz