Darshan UNIVERSITY
योग: कर्मसु कौशलम्

Data Mining

Lab - 5

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1) First, you need to read the titanic dataset from local disk and display Last five records

In [1]:
```
import pandas as pd
```

In [27]:
```
df=pd.read_csv("titanic.csv")
df
```

Out[27]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	F
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.2
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.9
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.0
...	...	...	...	...	...	...	...	...	...	
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	13.0
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.0
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	NaN	1	2	W./C. 6607	23.4
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.0
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376	7.7

891 rows × 12 columns

In [10]:
```
df.tail(5)
```

Out[10]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	13.00
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.00
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	NaN	1	2	W./C. 6607	23.45
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.00
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376	7.75

2) Handle Missing Values in data set [use dropna(), fillna(), and interpolate]

In [ ]:
```
df.dropna(inplace=True)
df.dropna(how='all', axis=0) #if all the entries are NaN, drop the row
df.dropna(how='any', axis=0) # if any entry is NaN, drop the row
df
```

Out[ ]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Far
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.283
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.100
6	7	0	1	McCarthy, Mr. Timothy J	male	54.0	0	0	17463	51.862
10	11	1	3	Sandstrom, Miss. Marguerite Rut	female	4.0	1	1	PP 9549	16.700
11	12	1	1	Bonnell, Miss. Elizabeth	female	58.0	0	0	113783	26.550
...	...	...	...	...	...	...	...	...	...	.
871	872	1	1	Beckwith, Mrs. Richard Leonard (Sallie Monypeny)	female	47.0	1	1	11751	52.554
872	873	0	1	Carlsson, Mr. Frans Olof	male	33.0	0	0	695	5.000
879	880	1	1	Potter, Mrs. Thomas Jr (Lily Alexenia Wilson)	female	56.0	0	1	11767	83.158
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.000
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.000

183 rows × 12 columns

In [40]:
```
# df.fillna(0, inplace=True)
# df
mean_data=df['Age'].mean()
mode_cabin=df['Cabin'].mode()
mc=mode_cabin[[0][0]]
mode_data=mc[0:3]
df.fillna({'Age': mean_data, 'Cabin': mode_data}, inplace=True)
df
```

Out[40]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket
0	1	0	3	Braund, Mr. Owen Harris	male	22.000000	1	0	A/5 21171
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.000000	1	0	PC 17599
2	3	1	3	Heikkinen, Miss. Laina	female	26.000000	0	0	STON/O2. 3101282
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.000000	1	0	113803
4	5	0	3	Allen, Mr. William Henry	male	35.000000	0	0	373450
...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.000000	0	0	211536
887	888	1	1	Graham, Miss. Margaret Edith	female	19.000000	0	0	112053
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	29.699118	1	2	W./C. 6607
889	890	1	1	Behr, Mr. Karl Howell	male	26.000000	0	0	111369
890	891	0	3	Dooley, Mr. Patrick	male	32.000000	0	0	370376

891 rows × 12 columns

In [19]:
```
df.interpolate(inplace=True)
df
```

Out[19]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fa
0	1	0	3	Braund, Mr. Owen Harris	male	22.0	1	0	A/5 21171	7.25
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.28
2	3	1	3	Heikkinen, Miss. Laina	female	26.0	0	0	STON/O2. 3101282	7.92
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.10
4	5	0	3	Allen, Mr. William Henry	male	35.0	0	0	373450	8.05
...	...	...	...	...	...	...	...	...	...	
886	887	0	2	Montvila, Rev. Juozas	male	27.0	0	0	211536	13.00
887	888	1	1	Graham, Miss. Margaret Edith	female	19.0	0	0	112053	30.00
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	22.5	1	2	W./C. 6607	23.45
889	890	1	1	Behr, Mr. Karl Howell	male	26.0	0	0	111369	30.00
890	891	0	3	Dooley, Mr. Patrick	male	32.0	0	0	370376	7.75

891 rows × 12 columns

3) Apply Scaling to AGE attribute with min max, decimal scaling and z score.

In [41]:
```
dataminmax=df.copy()
max_age=df['Age'].max()
min_age=df['Age'].min()
scale_age=(df['Age']-min_age)/(max_age-min_age)
dataminmax['MinMax']=scale_age
dataminmax
```

Out[41]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket
0	1	0	3	Braund, Mr. Owen Harris	male	22.000000	1	0	A/5 21171
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.000000	1	0	PC 17599
2	3	1	3	Heikkinen, Miss. Laina	female	26.000000	0	0	STON/O2. 3101282
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.000000	1	0	113803
4	5	0	3	Allen, Mr. William Henry	male	35.000000	0	0	373450
...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.000000	0	0	211536
887	888	1	1	Graham, Miss. Margaret Edith	female	19.000000	0	0	112053
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	29.699118	1	2	W./C. 6607
889	890	1	1	Behr, Mr. Karl Howell	male	26.000000	0	0	111369
890	891	0	3	Dooley, Mr. Patrick	male	32.000000	0	0	370376

891 rows × 13 columns

In [42]:
```
#deciaml scaling
datadecimal=df.copy()
scale_age_decimal=df['Age']/100
datadecimal['Decimal']=scale_age_decimal
datadecimal
```

Out[42]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket
0	1	0	3	Braund, Mr. Owen Harris	male	22.000000	1	0	A/5 21171
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.000000	1	0	PC 17599
2	3	1	3	Heikkinen, Miss. Laina	female	26.000000	0	0	STON/O2. 3101282
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.000000	1	0	113803
4	5	0	3	Allen, Mr. William Henry	male	35.000000	0	0	373450
...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.000000	0	0	211536
887	888	1	1	Graham, Miss. Margaret Edith	female	19.000000	0	0	112053
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	29.699118	1	2	W./C. 6607
889	890	1	1	Behr, Mr. Karl Howell	male	26.000000	0	0	111369
890	891	0	3	Dooley, Mr. Patrick	male	32.000000	0	0	370376

891 rows × 13 columns

In [43]:
```
data_zscore=df.copy()
mean_age=df['Age'].mean()
std_age=df['Age'].std()
zscore_age=(df['Age']-mean_age)/std_age
data_zscore['ZScore']=zscore_age
data_zscore
```

Out[43]:

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket
0	1	0	3	Braund, Mr. Owen Harris	male	22.000000	1	0	A/5 21171
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.000000	1	0	PC 17599
2	3	1	3	Heikkinen, Miss. Laina	female	26.000000	0	0	STON/O2. 3101282
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.000000	1	0	113803
4	5	0	3	Allen, Mr. William Henry	male	35.000000	0	0	373450
...	...	...	...	...	...	...	...	...	...
886	887	0	2	Montvila, Rev. Juozas	male	27.000000	0	0	211536
887	888	1	1	Graham, Miss. Margaret Edith	female	19.000000	0	0	112053
888	889	0	3	Johnston, Miss. Catherine Helen "Carrie"	female	29.699118	1	2	W./C. 6607
889	890	1	1	Behr, Mr. Karl Howell	male	26.000000	0	0	111369
890	891	0	3	Dooley, Mr. Patrick	male	32.000000	0	0	370376

891 rows × 13 columns

In [ ]: