PRODIGY INFOTECH INTERNSHIP

TASK 2:Perform data cleaning and exploratory data analysis (EDA) on a dataset of your choice, such as the Titanic dataset from Kaggle. Explore the relationships between variables and identify patterns and trends in the data.

DONE BY: Krupa J Shetty

Email:krupajshetty@gmail.com

```
import pandas as pd
import numpy as np
import seaborn as sns
import matplotlib.pyplot as plt
```

```
df=pd.read_csv('train.csv')
df.head()
```

	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	female	38.0	1	0	PC 17599	71.2

```
df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 891 entries, 0 to 890
Data columns (total 12 columns):
 #   Column       Non-Null Count  Dtype
---  ------       --------------  -----
 0   PassengerId  891 non-null    int64
 1   Survived     891 non-null    int64
 2   Pclass       891 non-null    int64
 3   Name         891 non-null    object
 4   Sex          891 non-null    object
 5   Age          714 non-null    float64
 6   SibSp        891 non-null    int64
 7   Parch        891 non-null    int64
 8   Ticket       891 non-null    object
 9   Fare         891 non-null    float64
 10  Cabin        204 non-null    object
 11  Embarked     889 non-null    object
dtypes: float64(2), int64(5), object(5)
memory usage: 83.7+ KB
```

```
df.isna().sum()
```

```
PassengerId      0
Survived         0
Pclass           0
Name             0
Sex              0
Age            177
SibSp            0
Parch            0
Ticket           0
Fare             0
Cabin          687
Embarked         2
dtype: int64
```

```
df.dropna(inplace=True)
df_1=df.drop_duplicates()
df_1.info
```

```
<bound method DataFrame.info of      PassengerId  Survived  Pclass  \
1              2         1       1
3              4         1       1
6              7         0       1
10            11         1       3
11            12         1       1
..           ...       ...     ...
871          872         1       1
872          873         0       1
879          880         1       1
```

```
887         888        1       1
889         890        1       1

                                                Name     Sex   Age  SibSp  \
1    Cumings, Mrs. John Bradley (Florence Briggs Th...  female  38.0      1
3         Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
6                              McCarthy, Mr. Timothy J    male  54.0      0
10                    Sandstrom, Miss. Marguerite Rut  female   4.0      1
11                           Bonnell, Miss. Elizabeth  female  58.0      0
..                                                ...     ...   ...    ...
871   Beckwith, Mrs. Richard Leonard (Sallie Monypeny)  female  47.0      1
872                          Carlsson, Mr. Frans Olof    male  33.0      0
879      Potter, Mrs. Thomas Jr (Lily Alexenia Wilson)  female  56.0      0
887                      Graham, Miss. Margaret Edith  female  19.0      0
889                             Behr, Mr. Karl Howell    male  26.0      0

     Parch    Ticket     Fare        Cabin Embarked
1        0  PC 17599  71.2833          C85        C
3        0    113803  53.1000         C123        S
6        0     17463  51.8625          E46        S
10       1   PP 9549  16.7000           G6        S
11       0    113783  26.5500         C103        S
..     ...       ...      ...          ...      ...
871      1     11751  52.5542          D35        S
872      0       695   5.0000  B51 B53 B55        S
879      1     11767  83.1583          C50        C
887      0    112053  30.0000          B42        S
889      0    111369  30.0000         C148        C

[183 rows x 12 columns]>
```

```
pclass_names={
    1:'First Class',
    2:'Second Class',
    3:'Third Class'
}
df['Pclass name']=df['Pclass'].map(pclass_names)
df.head()
```

	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked	Pclass name
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C	First Class
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S	First Class
6	7	0	1	McCarthy, Mr. Timothy J	male	54.0	0	0	17463	51.8625	E46	S	First Class

```
df['Family']=df["SibSp"]+df["Parch"]
df.head()
```

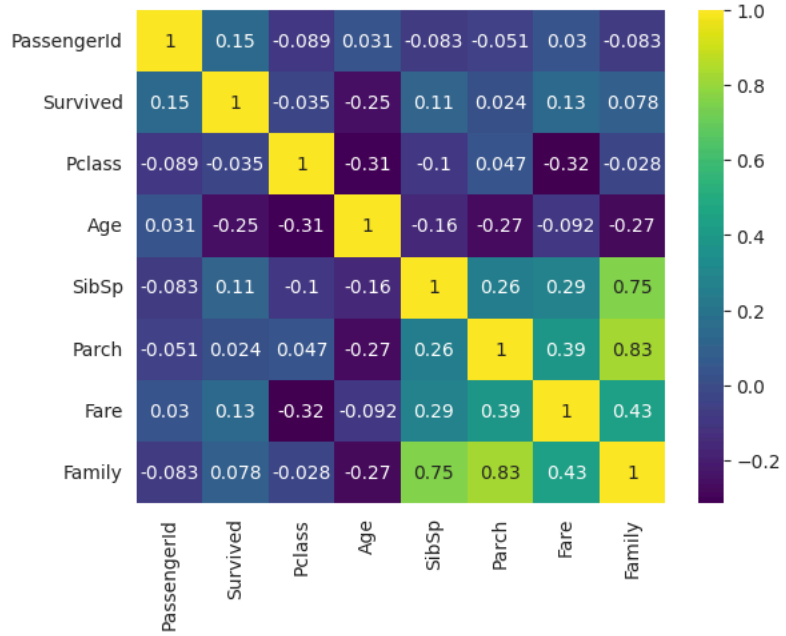
	PassengerId	Survived	Pclass	Name	Sex	Age	SibSp	Parch	Ticket	Fare	Cabin	Embarked	Pclass name	Family
1	2	1	1	Cumings, Mrs. John Bradley (Florence Briggs Th...	female	38.0	1	0	PC 17599	71.2833	C85	C	First Class	1
3	4	1	1	Futrelle, Mrs. Jacques Heath (Lily May Peel)	female	35.0	1	0	113803	53.1000	C123	S	First Class	1
				McCarthy, Mr.									First	

```
df.describe().T
```

	count	mean	std	min	25%	50%	75%	max
PassengerId	183.0	455.366120	247.052476	2.00	263.5	457.0	676.0	890.0000
Survived	183.0	0.672131	0.470725	0.00	0.0	1.0	1.0	1.0000
Pclass	183.0	1.191257	0.515187	1.00	1.0	1.0	1.0	3.0000
Age	183.0	35.674426	15.643866	0.92	24.0	36.0	47.5	80.0000
SibSp	183.0	0.464481	0.644159	0.00	0.0	0.0	1.0	3.0000
Parch	183.0	0.475410	0.754617	0.00	0.0	0.0	1.0	4.0000
Fare	183.0	78.682469	76.347843	0.00	29.7	57.0	90.0	512.3292
Family	183.0	0.939891	1.110239	0.00	0.0	1.0	1.0	5.0000

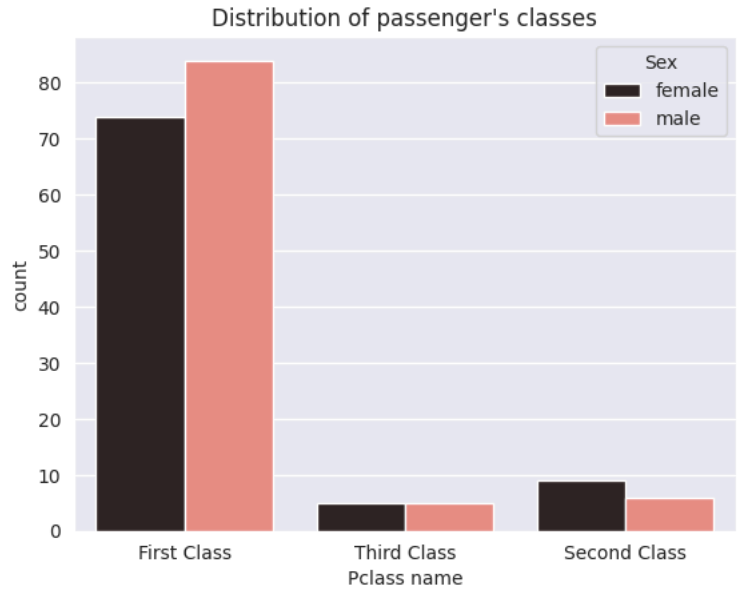
```
cont_val=df[['PassengerId','Survived','Pclass','Age','SibSp','Parch','Fare','Embarked','Family']]
sns.set_style('darkgrid')
sns.set_palette('pastel')
sns.heatmap(cont_val.corr(),cmap='viridis',annot=True)
```

```
<ipython-input-11-e51547040d5d>:4: FutureWarning: The default value of numeric_only in DataFrame.corr is deprecated. In a future ver
  sns.heatmap(cont_val.corr(),cmap='viridis',annot=True)
<Axes: >
```



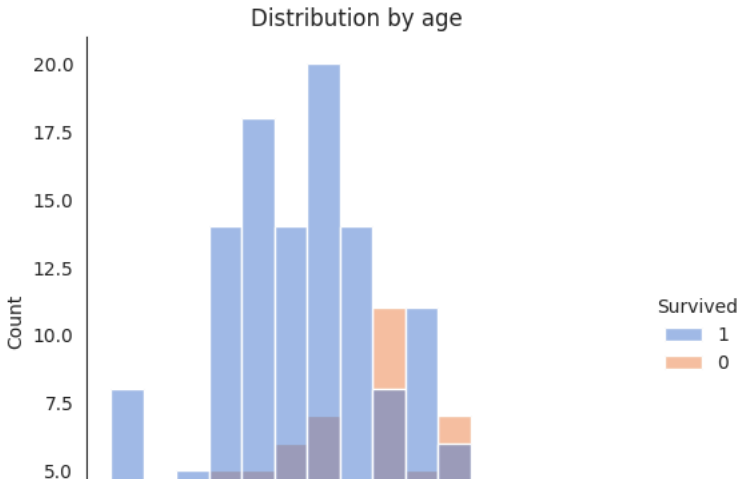

```
sns.countplot(data=df,x="Pclass name",hue='Sex',color='salmon')
plt.title("Distribution of passenger's classes")
```

```
<ipython-input-12-0ef6bf0c09f6>:1: FutureWarning:

Setting a gradient palette using color= is deprecated and will be removed in v0.14.0. Set `palette='dark:salmon'` for the same effec

  sns.countplot(data=df,x="Pclass name",hue='Sex',color='salmon')
Text(0.5, 1.0, "Distribution of passenger's classes")
```



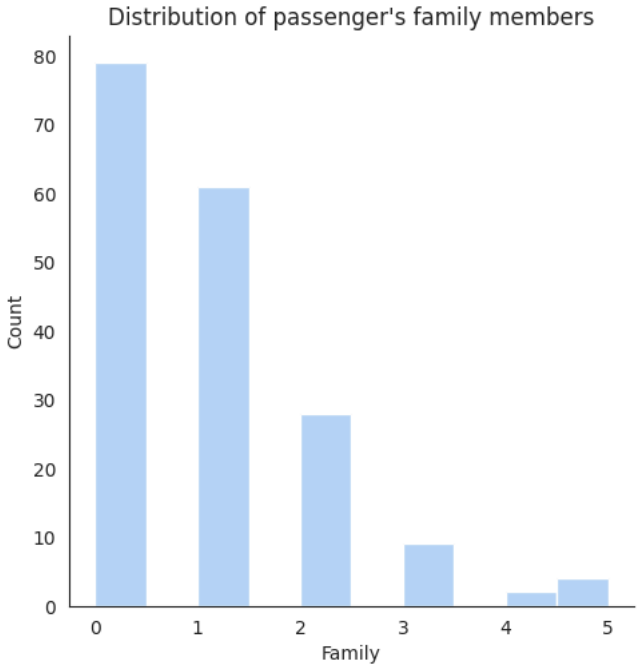

```
sns.set_style('white')
sns.displot(data=df,x="Age",bins=15,hue='Survived',palette='muted',hue_order=[1,0])
plt.title("Distribution by age")
```

```
Text(0.5, 1.0, 'Distribution by age')
```




```
sns.displot(data=df,x='Family',bins=10)
plt.title("Distribution of passenger's family members")
```

```
Text(0.5, 1.0, "Distribution of passenger's family members")
```



Start coding or generate with AI.