```
[ ] #Perfect Bansal
    #2408845
```

```
[6] import pandas as pd
```

```
[29] df=pd.read_csv('/content/drive/MyDrive/Concept and technology of AI/Titanic-Dataset.csv')
```

```
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
```

```
fare = df[['Fare']]
print(fare.head())
class_age = df[['Pclass', 'Age']]
print(class_age.head())
survived_gender = df[['Survived', 'Sex']]
print(survived_gender.head())
```

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

```
[32] fare_gt_100 = df[df['Fare'] > 100]
     print(fare_gt_100)
```

```
779  Robert, Mrs. Edward Scott (Elisabeth Walton Mc...  female  43.00      0
802                Carter, Master. William Thornton II    male  11.00      1
856         Wick, Mrs. George Dennick (Mary Hitchcock)  female  45.00      1

         Parch    Ticket      Fare           Cabin Embarked
```

```python
first_class = df[df['Pclass'] == 1]
print(first_class)
```

```
     PassengerId  Survived  Pclass  \
1              2         1       1
3              4         1       1
6              7         0       1
11            12         1       1
23            24         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
11                            Bonnell, Miss. Elizabeth  female  58.0      0
23                          Sloper, Mr. William Thompson    male  28.0      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
11       0    113783  26.5500         C103        S
23       0    113788  35.5000           A6        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

[216 rows x 12 columns]
```

```
fare_gt_100 = df[df['Fare'] > 100]
print(fare_gt_100)
```

```
                                                 Name     Sex    Age  SibSp  \
27                       Fortune, Mr. Charles Alexander    male  19.00      3
31       Spencer, Mrs. William Augustus (Marie Eugenie)  female    NaN      1
88                           Fortune, Miss. Mabel Helen  female  23.00      3
118                            Baxter, Mr. Quigg Edmond    male  24.00      0
195                                Lurette, Miss. Elise  female  58.00      0
215                             Newell, Miss. Madeleine  female  31.00      1
258                                   Ward, Miss. Anna  female  35.00      0
268       Graham, Mrs. William Thompson (Edith Junkins)  female  58.00      0
269                             Bissette, Miss. Amelia  female  35.00      0
297                      Allison, Miss. Helen Loraine  female   2.00      1
299    Baxter, Mrs. James (Helene DeLaudeniere Chaput)  female  50.00      0
305                     Allison, Master. Hudson Trevor    male   0.92      1
306                            Fleming, Miss. Margaret  female    NaN      0
307  Penasco y Castellana, Mrs. Victor de Satode (M...  female  17.00      1
311                          Ryerson, Miss. Emily Borie  female  18.00      2
318                            Wick, Miss. Mary Natalie  female  31.00      0
319  Spedden, Mrs. Frederic Oakley (Margaretta Corn...  female  40.00      1
325                            Young, Miss. Marie Grice  female  36.00      0
332                         Graham, Mr. George Edward    male  38.00      0
334  Frauenthal, Mrs. Henry William (Clara Heinshei...  female    NaN      1
337                     Burns, Miss. Elizabeth Margaret  female  41.00      0
341                     Fortune, Miss. Alice Elizabeth  female  24.00      3
373                               Ringhini, Mr. Sante    male  22.00      0
377                          Widener, Mr. Harry Elkins    male  27.00      0
380                              Bidois, Miss. Rosalie  female  42.00      0
390                         Carter, Mr. William Ernest    male  36.00      1
393                             Newell, Miss. Marjorie  female  23.00      1
435                          Carter, Miss. Lucile Polk  female  14.00      1
438                                  Fortune, Mr. Mark    male  64.00      1
498    Allison, Mrs. Hudson J C (Bessie Waldo Daniels)  female  25.00      1
505         Penasco y Castellana, Mr. Victor de Satode    male  18.00      1
527                                  Farthing, Mr. John    male    NaN      0
537                                LeRoy, Miss. Bertha  female  30.00      0
544                          Douglas, Mr. Walter Donald    male  50.00      1
550                        Thayer, Mr. John Borland Jr    male  17.00      0
```

```
first_class = df[df['Pclass'] == 1]
print(first_class)
```

```
     PassengerId  Survived  Pclass  \
1              2         1       1
3              4         1       1
6              7         0       1
11            12         1       1
23            24         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
11                            Bonnell, Miss. Elizabeth  female  58.0      0
23                         Sloper, Mr. William Thompson    male  28.0      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
11       0    113783  26.5500         C103        S
23       0    113788  35.5000           A6        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

[216 rows x 12 columns]
```

```
female_under_18 = df[(df['Age'] < 18) & (df['Sex'] == 'female')]
print(female_under_18)
```

```
     446          447         1       2
     448          449         1       3
     469          470         1       3
     479          480         1       3
     504          505         1       1
     530          531         1       2
     535          536         1       2
     541          542         0       3
     542          543         0       3
     618          619         1       2
     634          635         0       3
     642          643         0       3
     644          645         1       3
     689          690         1       1
     691          692         1       3
     720          721         1       2
     750          751         1       2
     777          778         1       3
     780          781         1       3
     781          782         1       1
     813          814         0       3
     830          831         1       3
     852          853         0       3
     853          854         1       1
     875          876         1       3

                                                  Name     Sex    Age  SibSp  \
     9                    Nasser, Mrs. Nicholas (Adele Achem)  female  14.00      1
     10                       Sandstrom, Miss. Marguerite Rut  female   4.00      1
```

```
embarked_c_or_s = df[df['Embarked'].isin(['C', 'S'])]
print(embarked_c_or_s)
```

```
     PassengerId  Survived  Pclass  \
0              1         0       3
1              2         1       1
2              3         1       3
3              4         1       1
4              5         0       3
..           ...       ...     ...
884          885         0       3
886          887         0       2
887          888         1       1
888          889         0       3
889          890         1       1

                                                 Name     Sex   Age  SibSp  \
0                             Braund, Mr. Owen Harris    male  22.0      1
1    Cumings, Mrs. John Bradley (Florence Briggs Th...  female  38.0      1
2                             Heikkinen, Miss. Laina  female  26.0      0
3         Futrelle, Mrs. Jacques Heath (Lily May Peel)  female  35.0      1
4                           Allen, Mr. William Henry    male  35.0      0
..                                               ...     ...   ...    ...
884                           Sutehall, Mr. Henry Jr    male  25.0      0
886                            Montvila, Rev. Juozas    male  27.0      0
887                     Graham, Miss. Margaret Edith  female  19.0      0
888         Johnston, Miss. Catherine Helen "Carrie"  female   NaN      1
889                            Behr, Mr. Karl Howell    male  26.0      0

     Parch            Ticket     Fare Cabin Embarked
0        0         A/5 21171   7.2500   NaN        S
1        0          PC 17599  71.2833   C85        C
2        0  STON/O2. 3101282   7.9250   NaN        S
3        0            113803  53.1000  C123        S
4        0            373450   8.0500   NaN        S
..     ...               ...      ...   ...      ...
884      0   SOTON/OQ 392076   7.0500   NaN        S
886      0            211536  13.0000   NaN        S
887      0            112053  30.0000   B42        S
888      2        W./C. 6607  23.4500   NaN        S
889      0            111369  30.0000  C148        C

[812 rows x 12 columns]
```

```
first_second_class = df[df['Pclass'].isin([1, 2])]
print(first_second_class)
```

```
     PassengerId  Survived  Pclass  \
1              2         1       1
3              4         1       1
6              7         0       1
9             10         1       2
11            12         1       1
..           ...       ...     ...
880           881         1       2
883           884         0       2
886           887         0       2
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
9                  Nasser, Mrs. Nicholas (Adele Achem)  female  14.0      1
11                             Bonnell, Miss. Elizabeth  female  58.0      0
..                                                  ...     ...   ...    ...
880       Shelley, Mrs. William (Imanita Parrish Hall)  female  25.0      0
883                      Banfield, Mr. Frederick James    male  28.0      0
886                             Montvila, Rev. Juozas    male  27.0      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
9        0            237736  30.0708   NaN        C
11       0            113783  26.5500  C103        S
..     ...               ...      ...   ...      ...
880      1            230433  26.0000   NaN        S
883      0  C.A./SOTON 34068  10.5000   NaN        S
886      0            211536  13.0000   NaN        S
887      0            112053  30.0000   B42        S
889      0            111369  30.0000  C148        C

[400 rows x 12 columns]
```

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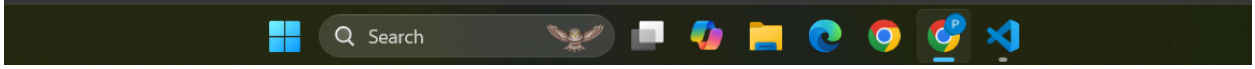

```
[37] df['Fare_per_year'] = df['Fare'] / df['Age']
```

```
high_fare_age = df[df['Fare_per_year'] > 5]
print(high_fare_age)
```

```
     PassengerId  Survived  Pclass                                     Name  \
7              8         0       3              Palsson, Master. Gosta Leonard
16            17         0       3                      Rice, Master. Eugene
27            28         0       1              Fortune, Mr. Charles Alexander
43            44         1       2  Laroche, Miss. Simonne Marie Anne Andree
50            51         0       3                  Panula, Master. Juha Niilo
..           ...       ...     ...                                        ...
813          814         0       3         Andersson, Miss. Ebba Iris Alfrida
824          825         0       3               Panula, Master. Urho Abraham
827          828         1       2                     Mallet, Master. Andre
831          832         1       2            Richards, Master. George Sibley
850          851         0       3    Andersson, Master. Sigvard Harald Elias

        Sex    Age  SibSp  Parch           Ticket      Fare        Cabin  \
7      male   2.00      3      1           349909   21.0750          NaN
16     male   2.00      4      1           382652   29.1250          NaN
27     male  19.00      3      2            19950  263.0000  C23 C25 C27
43   female   3.00      1      2    SC/Paris 2123   41.5792          NaN
50     male   7.00      4      1          3101295   39.6875          NaN
..      ...    ...    ...    ...              ...       ...          ...
813  female   6.00      4      2           347082   31.2750          NaN
824    male   2.00      4      1          3101295   39.6875          NaN
827    male   1.00      0      2  S.C./PARIS 2079   37.0042          NaN
831    male   0.83      1      1            29106   18.7500          NaN
850    male   4.00      4      2           347082   31.2750          NaN

    Embarked  Fare_per_year
7          S      10.537500
16         Q      14.562500
27         S      13.842105
43         C      13.859733
50         S       5.669643
..       ...            ...
813        S       5.212500
824        S      19.843750
827        C      37.004200
831        S      22.590361
```

```
high_fare_age_srt = high_fare_age.sort_values(by='Fare_per_year', ascending=False)
print(high_fare_age_srt)
```

```
     PassengerId  Survived  Pclass                                     Name  \
305          306         1       1          Allison, Master. Hudson Trevor
297          298         0       1            Allison, Miss. Helen Loraine
386          387         0       3         Goodwin, Master. Sidney Leonard
164          165         0       3            Panula, Master. Eino Viljami
183          184         1       2               Becker, Master. Richard F
..           ...       ...     ...                                     ...
318          319         1       1                Wick, Miss. Mary Natalie
348          349         1       3  Coutts, Master. William Loch "William"
205          206         0       3              Strom, Miss. Telma Matilda
813          814         0       3      Andersson, Miss. Ebba Iris Alfrida
480          481         0       3          Goodwin, Master. Harold Victor

        Sex    Age  SibSp  Parch      Ticket      Fare    Cabin Embarked  \
305    male   0.92      1      2      113781  151.5500  C22 C26        S
297  female   2.00      1      2      113781  151.5500  C22 C26        S
386    male   1.00      5      2     CA 2144   46.9000      NaN        S
164    male   1.00      4      1     3101295   39.6875      NaN        S
183    male   1.00      2      1      230136   39.0000       F4        S
..      ...    ...    ...    ...         ...       ...      ...      ...
318  female  31.00      0      2       36928  164.8667       C7        S
348    male   3.00      1      1  C.A. 37671   15.9000      NaN        S
205  female   2.00      0      1      347054   10.4625       G6        S
813  female   6.00      4      2      347082   31.2750      NaN        S
480    male   9.00      5      2     CA 2144   46.9000      NaN        S

     Fare_per_year
305     164.728261
297      75.775000
386      46.900000
164      39.687500
183      39.000000
..             ...
318       5.318281
```

```
[40] result = high_fare_age_srt[['Name', 'Fare_per_year']]
     print(result)
```

```
                                     Name  Fare_per_year
305          Allison, Master. Hudson Trevor     164.728261
297            Allison, Miss. Helen Loraine      75.775000
386         Goodwin, Master. Sidney Leonard      46.900000
164            Panula, Master. Eino Viljami      39.687500
183               Becker, Master. Richard F      39.000000
..                                      ...            ...
318                Wick, Miss. Mary Natalie       5.318281
348  Coutts, Master. William Loch "William"       5.300000
205              Strom, Miss. Telma Matilda       5.231250
813      Andersson, Miss. Ebba Iris Alfrida       5.212500
480          Goodwin, Master. Harold Victor       5.211111

[68 rows x 2 columns]
```

```
df['Fare_per_class'] = df['Fare'] / df['Pclass']
adult_males = df[(df['Sex'] == 'male') & (df['Age'] >= 18)]
print(adult_males)
adult_males_srt = adult_males.sort_values(by='Fare_per_class', ascending=False)
print(adult_males_srt)
result = adult_males_srt[['Name', 'Age', 'Fare_per_class']]
print(result)
```

```
889       1.153846       30.000000
890       0.242188        2.583333

[395 rows x 14 columns]
     PassengerId  Survived  Pclass                                Name   Sex  \
737          738         1       1               Lesurer, Mr. Gustave J  male
679          680         1       1  Cardeza, Mr. Thomas Drake Martinez  male
27            28         0       1      Fortune, Mr. Charles Alexander  male
438          439         0       1                  Fortune, Mr. Mark  male
118          119         0       1            Baxter, Mr. Quigg Edmond  male
..           ...       ...     ...                                 ...   ...
271          272         1       3        Tornquist, Mr. William Henry  male
179          180         0       3                Leonard, Mr. Lionel  male
302          303         0       3     Johnson, Mr. William Cahoone Jr  male
822          823         0       1     Reuchlin, Jonkheer. John George  male
806          807         0       1              Andrews, Mr. Thomas Jr  male
```

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```
[42] total_fare = df['Fare'].sum()
     first_class_fare = df[df['Pclass'] == 1]['Fare'].sum()
     second_class_fare = df[df['Pclass'] == 2]['Fare'].sum()
     third_class_fare = df[df['Pclass'] == 3]['Fare'].sum()
     class_fares = [first_class_fare, second_class_fare, third_class_fare]
     class_fare_percent = [fare / total_fare * 100 for fare in class_fares]
     print(class_fare_percent)
```

```
[63.349287718996564, 13.24962855496507, 23.401083726038365]
```

```
def categorize_age(age):
    if age < 18:
        return 'child'
    elif age < 65:
        return 'adult'
    else:
        return 'senior'
df['age_group'] = df['Age'].apply(categorize_age)
```

```
[47] total_passengers = df.shape[0]
```

```
[45] age_group_counts = df['age_group'].value_counts()
```

```
[46] age_group_percent = (age_group_counts / total_passengers) * 100
     print(age_group_percent)
```

```
age_group
adult     66.217733
senior    21.099888
child     12.682379
Name: count, dtype: float64
```

```
[46] Start coding or generate with AI
```