| In [159  | <pre>import numpy as np import pandas as pd import matplotlib.pyplot as plt</pre>  |
|--|--|
| In [160  | <pre>import data set  df=pd.read_csv('train2.csv')</pre>   |
| In [161<br>Out[161]:   | Passengerld 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       STON/O2. 3101282       7.9250       NaN       S         3       4       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 0 370376 7.7500 NaN Q   |
|  | 891 rows × 12 columns  |
|  | survived yes=1, No=0  Fare mean ticket price   |
|  | Cabin mean seat No   |
| In [162  | 1=1st class, 2=2nd class , 3=3rd class  df.head(10)  |
| Out[162]:  | PassengerIdSurvivedPclassNameSexAgeSibSpParchTicketFareCabinEmbarked0103Braund, Mr. Owen Harrismale22.010A/5 211717.2500NaNS1211Cumings, Mrs. John Bradley (Florence Briggs Thfemale38.010PC 1759971.2833C85C  |
|  | 2       3       1       3       Heikkinen, Miss. Laina female female genale  |
|  | 5       6       0       3       Moran, Mr. James       male       NaN       0       0       330877       8.4583       NaN       Q         6       7       0       1       McCarthy, Mr. Timothy J       male       54.0       0       0       17463       51.8625       E46       S         7       8       0       3       Palsson, Master. Gosta Leonard       male       2.0       3       1       349909       21.0750       NaN       S   |
| In [163  | 8       9       1       3 Johnson, Mrs. Oscar W (Elisabeth Vilhelmina Berg) female 27.0       0       2       347742 11.1333 NaN S         9       10       1       2       Nasser, Mrs. Nicholas (Adele Achem) female 14.0       1       0       237736 30.0708 NaN C   |
| Out[163]:  | PassengerIdSurvivedPclassNameSexAgeSibSpParchTicketFareCabinEmbarked88188203Markun, Mr. Johannmale33.0003492577.8958NaNS   |
|  | 882       883       0       3       Dahlberg, Miss. Gerda Ulrika       female       22.0       0       0       7552       10.5167       NaN       S         883       884       0       2       Banfield, Mr. Frederick James       male       28.0       0       0       C.A./SOTON 34068       10.5000       NaN       S         884       885       0       3       Sutehall, Mr. Henry Jr       male       25.0       0       0       SOTON/OQ 392076       7.0500       NaN       S         885       886       0       3       Rice, Mrs. William (Margaret Norton)       female       39.0       0       5       382652       29.1250       NaN       Q   |
|  | 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  |
| T. 5404  | 889 890 1 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  |
| In [164<br>Out[164]:   | <pre>df.isnull().sum()  PassengerId    0 Survived    0 Pclass    0 Name    0</pre>   |
|  | Sex 0 Age 177 SibSp 0 Parch 0 Ticket 0   |
|  | Fare 0 Cabin 687 Embarked 2 dtype: int64   |
| In [165 In [166 Out[166]:  |  |
| out[100].  | 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         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         891 rows × 12 columns  |
| In [167<br>Out[167]:   | df.isnull().sum()  PassengerId 0   |
| 045[20.].  | Survived 0 Pclass 0 Name 0 Sex 0 Age 177   |
|  | SibSp 0 Parch 0 Ticket 0 Fare 0 Cabin 687  |
|  | target var= Survived   |
|  | independent var =(gender,class,embarked)   |
| In [168<br>In [169   | <pre># get dummies gender dummies1= pd.get_dummies(df.Sex )  dummies1</pre>  |
| Out[169]:  |  |
|  | 2 1 0<br>3 1 0<br>4 0 1  |
|  | 886       0       1         887       1       0  |
|  | 888       1       0         889       0       1         890       0       1  |
| In [170  | # get dummies embarked dummies2=pd.get_dummies(df.Embarked)  |
| In [171<br>Out[171]:   | dummies2   |
|  | <ul> <li>0 0 0 1</li> <li>1 1 0 0</li> <li>2 0 0 1</li> <li>3 0 0 1</li> </ul>   |
|  | 3 0 0 1<br>4 0 0 1<br><br>886 0 0 1  |
|  | 886       0       0       1         887       0       0       1         888       0       0       1         889       1       0       0  |
|  | 890 0 1 0 891 rows × 3 columns   |
|  | concat an drop Sex   |
| In [172 In [173 Out[173]:  | <pre>update1=df.drop(['Name', 'PassengerId', 'Age', 'SibSp', 'Parch', 'Ticket', 'Fare', 'Cabin', 'Sex', 'Embarked'], axis='columns') update1 Survived Pclass</pre>   |
|  | 0       0       3         1       1       1         2       1       3  |
|  | 3 1 1<br>4 0 3<br>   |
|  | 886       0       2         887       1       1         888       0       3         889       1       1  |
|  | 890 0 3 891 rows × 2 columns   |
| In [174<br>In [175   | <pre>final=pd.concat([update1, dummies1, dummies2], axis='columns') final</pre>  |
| Out[175]:  | Survived         Pclass         female         male         C         Q         S           0         0         3         0         1         0         0         1           1         1         1         0         1         0         0  |
|  | 2 1 3 1 0 0 0 1<br>3 1 1 1 0 0 0 1<br>4 0 3 0 1 0 0 1  |
|  |  |
|  | 886         0         2         0         1         0         0         1           887         1         1         1         0         0         0         1  |
|  | <b>886</b> 0 2 0 1 0 0 1   |
| In [176  | 886  |
| In [176<br>Out[176]:   | 886  |
|  | 886  |
|  | 886  |
|  | 886  |
|  | 886  |
| Out[176]:  | 866 0 2 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 0 0 1 0  |
| Out[176]:  | May  |
| Out[176]:  | Note   |
| Out[176]:  | 1  |
| Out[176]: In [177 Out[177]:  | Marie  |
| Out[176]:  In [177  Out[177]:  Out[178]:   | Main   |
| Out[176]:  In [177  Out[177]:  In [179  In [180  | Main   |
| Out[176]:  In [177  Out[177]:  In [179  In [180  | Min  |
| Out[176]:  In [177  Out[177]:  In [179  In [180  | Mile   |
| Out[176]:  In [177  Out[177]:  In [179  In [180  | Mail   |
| Out[176]:  In [177  Out[177]:  In [179  In [180  | March   Marc |
| Out[176]:  In [177  Out[177]:  In [179  In [180  | Marie   Mari |
| <pre>In [177 Out[177]:  In [179 In [180 Out[180]:  In [181 Out[181]:</pre>   | Martin   M |
| <pre>In [177 Out[177]:  In [179  In [180 Out[180]:</pre>   | Mary   |
| <pre>In [177 Out[177]: In [178 Out[178]: In [180 Out[180]: In [182 Out[182]:</pre>   | March  |
| In [177  Out [177]:  In [178  Out [180]:  In [182  Out [182]:  In [183  Out [183]:   | Mathematical Content   |
| Out [176]:  In [177  Out [177]:  In [179  In [180  Out [180]:  In [182  Out [182]:  In [184  | Second   Control   Contr |
| Out [176]:  In [177  Out [177]:  In [179  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  | 1  |
| Out [176]:  In [177  Out [177]:  In [179  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [185]:   | Mary   |
| In [177  Out [177]:  In [177  Out [177]:  In [180  Out [180]:  In [181  Out [181]:  In [184  Out [184]:  In [185  Out [185]:   | The content of the  |
| Out [176]:  Out [176]:  In [177  Out [177]:  In [180  Out [180]:  In [181  Out [181]:  In [184  Out [184]:  In [185  Out [186]:  In [186  Out [186]:   | Table  |
| Out [176]:  In [177  Out [177]:  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [185  Out [186]:  In [186  Out [186]:   | Martin   |
| Out [176]:  Out [176]:  In [177  Out [177]:  In [180  Out [180]:  In [181  Out [181]:  In [182  Out [182]:  In [185  Out [186]:  In [186  Out [186]:   |  |
| Out [176]:  Out [176]:  In [177  Out [177]:  In [180  Out [180]:  In [182  Out [183]:  In [184  Out [184]:  In [185  Out [186]:  In [187  In [18                              | March   Marc |
| In [177 Out [177]:  In [179 Out [180]:  In [180 Out [181]:  In [182 Out [182]:  In [184 Out [184]:  In [186 Out [187]:   | Mary    |
| In [177  Out [177]:  In [177  Out [177]:  In [180  Out [180]:  In [184  Out [184]:  In [186  Out [187]:  In [187  Out [187]:  In [187  Out [187]:  In [187  Out [187]:   | ## 1   |
| In [177  Out [177]:  In [177  Out [177]:  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [185  Out [187]:  In [187  Out [187]:  In [187  Out [187]:  In [190  In [191  In [191  In [191   | ## 1   |
| In [179  In [181  Out [183]:  In [182  Out [184]:  In [185  Out [184]:  In [186  Out [187]:  In [187  Out [187]:  In [187  Out [187]:  In [187  Out [187]:   | ## 1   |
| In [177  Out [177]:  In [178  Out [178]:  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [187  Out [187]:  In [187  Out [187]:  In [190  In [191  In [191  In [192  In [192   | ## 1   |
| In [177  Out [177]:  In [177  Out [177]:  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [186  Out [187]:  In [187  Out [187]:  In [190  In [191  In [191  In [191  In [192  In [192  | ## 1   |
| In [177  Out [177]:  In [177  Out [177]:  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [186  Out [187]:  In [187  Out [187]:  In [190  In [190  In [191  In [191  In [192  In [192  | ## 1   |
| In [177  Out [177]:  In [177  Out [177]:  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [186  Out [187]:  In [187  Out [187]:  In [190  In [190  In [191  In [191  In [192  In [192  | March   Marc |
| In [177  Out [177]:  In [178  Out [178]:  In [180  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [187  Out [187]:  In [190  In [191  Out [187]:  In [192  Out [187]:  | Martin   M |
| In [177  Out [177]:  In [178  Out [178]:  In [180  Out [181]:  In [182  Out [183]:  In [184  Out [184]:  In [186  Out [187]:  In [190  In [191  In [192  Out [192]:  Out [192]:  | March   Marc |
| In [177  Out [177]:  In [178  Out [180]:  In [181  Out [180]:  In [182  Out [182]:  In [184  Out [184]:  In [187  Out [187]:  In [190  In [191  Out [187]:  In [191  Out [192]:  In [192  Out [192]:   | Mary    |
| In [177  Out [177]:  In [178  Out [178]:  In [180  Out [180]:  In [181  Out [181]:  In [182  Out [183]:  In [184  Out [184]:  In [190  In [191  In [192  Out [192]:  In [192  Out [192]:   | Mary    |
| In [177  Out [177]:  Out [177]:  In [178  Out [178]:  In [180  Out [181]:  In [182  Out [182]:  In [184  Out [184]:  In [187  Out [185]:  In [187  Out [187]:  In [191  In [192  Out [192]:  In [192  Out [192]:   | The content of the  |
| In [177  Out [177]:  Out [177]:  In [178  Out [178]:  In [180  Out [181]:  In [182  Out [182]:  In [184  Out [184]:  In [187  Out [185]:  In [186  Out [187]:  In [191  In [192  Out [192]:  In [192  Out [192]:   | The content of the  |
| In [177  Out [177]:  Out [177]:  In [180  Out [180]:  In [181  Out [182]:  In [182  Out [182]:  In [184  Out [184]:  In [186  Out [187]:  In [192  Out [192]:  In [192  Out [192]:   | The content of the  |
| In [177 Out [177]: Out [177]: Out [178]: In [180 Out [180]: In [181 Out [181]: In [182 Out [182]: In [185 Out [184]: In [190 In [191 In [191 In [192 Out [187]: In [192 Out [193]: In [193 Out [193]: In [193 In [193 In [191 In [192 Out [193]:   | Compare   Comp |
| In [177 Out [177]: Out [177]: Out [178]: In [180 Out [180]: In [181 Out [181]: Out [182]: In [182 Out [183]: In [184 Out [184]: In [187 Out [187]: In [190 In [191 In [192 Out [187]: Out [187]: Out [192]: Out [193]:   | The content of the  |
| In [177 Out [177].: Out [177].: Out [178].: Out [188].: In [188 Out [183].: In [181 In [181 In [181 In [181 Out [183].: In [181 In [181 Out [181].: In [181 In [181 In [181 In [181 Out [181].: In [181 In [181 In [181 In [181 Out [181].: In [181 In | The content of the  |
| In [173 Out [177]:  In [177 Out [177]:  In [179 In [180 Out [180]:  In [181 Out [181]:  In [182 Out [182]:  In [185 Out [184]:  In [186 Out [187]:  In [190 In [191 In [191 In [192 Out [192]:  In [193 Out [193]:  In [193 Out [193]:  In [193 Out [193]:   | The content of the  |
| In [173 Out [177].:  In [177 Out [177].:  In [180 Out [180].:  In [181 Out [181].:  In [182 Out [183].:  In [184 Out [184].:  In [185 Out [185].:  In [190 In [191 In [191 In [192 Out [187].:  Out [187].:  Out [187].:  In [193 Out [193].:  In [193 Out [193].:  In [193 Out [193].:  In [193 Out [193].:   | 1  |
| In [173  In [177  Out [177]:  In [178  Out [177]:  In [180  Out [180]:  In [181  Out [181]:  Out [182]:  In [184  Out [184]:  In [185  Out [185]:  In [186  Out [187]:  In [192  Out [192]:  In [193  In [193  In [193  In [193  Out [193]:  In [193  In [193  Out [193]:  In [193  In [193  Out [193]:  In [193  Out [193]:  In [233  In [233  Out [233]:   |  |
| In [173 Out [176]:  In [177 Out [177]:  In [179 Out [178]:  In [181 Out [180]:  In [181 Out [181]: Out [182]:  In [182 Out [182]:  In [184 Out [184]: In [191 In [192 Out [192]:  In [193 Out [193]:   | 1  |