**Data Input and Output Classwork https://pandas.pydata.org/pandas-docs/stable/reference/io.html

**Data input and output exercises

In [1]:
```
#import the required libraries to read various files using
import numpy as np
import pandas as pd
```

In [3]:
```
#let us display the file nasa.csv using the system commands
import sys
!type data\nasa.csv
print("This is Bandish Patel")
```

Neo Reference ID,Name,Absolute Magnitude,Est Dia in KM(min),Est Dia in KM(max),Est D
ia in M(min),Est Dia in M(max),Est Dia in Miles(min),Est Dia in Miles(max),Est Dia i
n Feet(min),Est Dia in Feet(max),Close Approach Date,Epoch Date Close Approach,Relat
ive Velocity km per sec,Relative Velocity km per hr,Miles per hour,Miss Dist.(Astron
omical),Miss Dist.(lunar),Miss Dist.(kilometers),Miss Dist.(miles),Orbiting Body,Orb
it ID,Orbit Determination Date,Orbit Uncertainity,Minimum Orbit Intersection,Jupiter
Tisserand Invariant,Epoch Osculation,Eccentricity,Semi Major Axis,Inclination,Asc No
de Longitude,Orbital Period,Perihelion Distance,Perihelion Arg,Aphelion Dist,Perihel
ion Time,Mean Anomaly,Mean Motion,Equinox,Hazardous
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4,2017-04-06 08:24:07,8,.0197767,5.156,2457637.5,.3615122381962846,1.16142861284995
6,39.8804910829102,164.1833052860387,457.1799843926,.7415579555133625,276.3956972002
647,1.58129927018655,2457708.228252311514,304.3060245387305,.7874360477051257,J2000,
False
3759295,3759295,28.2,0.0060891262,0.0136157002,6.0891262211,13.6157001539,0.00378360
64,0.0084604012,19.9774488711,44.6709336928,2016-09-08,1473318000000,3.2251498826,11
610.5395772733,7214.3377723341,0.0064688915,2.5163989067,967732.4375,601321.0625,Ear
th,2,2017-04-06 08:23:58,6,.00645071,5.742,2458000.5,.07320030996390793,1.0751344422
97941,5.360248787502739,345.2252302789072,407.1857671217926,.9964342678688585,42.111
06385534595,1.153834616727024,2458087.616506017017,282.9787858553869,.88411734659753
24,J2000,False
3759714,3759714,22.7,0.0766575574,0.1714115092,76.6575573531,171.4115092306,0.047632
7831,0.1065101409,251.5011804664,562.3737359442,2016-09-08,1473318000000,7.191641840
5,25889.9106259199,16086.983633089,0.0610087216,23.7323932648,9126775,5671115,Earth,
17,2017-04-06 08:23:43,6,.0599725,4.410,2458000.5,.3680547030292997,1.52823409355284
8,4.405467043030848,37.02646769456528,690.0542788076862,.9657603480910034,274.692712
3513995,2.090707839014692,2458300.479730754856,203.5011471005674,.5216980910864401,J
2000,False
3759720,3759720,21.8,0.1160259082,0.2594418179,116.0259082094,259.4418179074,0.07209
51346,0.1612096218,380.6624406898,851.1870938635,2016-09-08,1473318000000,11.3520895
304,40867.5223094432,25393.4890705538,0.260759621,101.4354934692,39009084,24239122,E
arth,6,2017-04-06 08:23:42,5,.17751,4.477,2458000.5,.2025648142287438,1.486600189919
107,21.08024392659721,163.8029095254848,662.0483427912479,1.185467298615728,180.3460
898857109,1.787733081222486,2458288.261214860106,203.5249653931955,.543766937746889
7,J2000,False
3772978,3772978,19.109,0.4006406175,0.8958596554,400.6406175386,895.8596553637,0.248
9464612,0.5566612099,1314.4377636452,2939.1721917035,2016-09-08,1473318000000,35.946
8517369,129408.6662530081,80409.5126503761,0.4623719206,179.8626708984,69169856,4298
0156,Earth,13,2017-04-29 06:18:33,6,.0517769,4.108,2458000.5,.4056422128796646,1.474

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045131616315,53.57492250368969,187.642183340195,653.6790976660942,.8761102025429766,
222.4366879064714,2.071980060689654,2458318.586741341018,184.8204244382007,.55072894
52658797,J2000,False
```

In [4]:
```
#let us display the file titanic.csv using the system commands
import sys
!type data\titanic.csv
print("This is Bandish Patel")
```

```
PassengerId,Survived,Pclass,Sex,Age,SibSp,Parch,Ticket,Fare,Cabin,Embarked
1,0,3,male,22.0,1,0,A/5 21171,7.25,,S
2,1,1,female,38.0,1,0,PC 17599,71.2833,C85,C
3,1,3,female,26.0,0,0,STON/O2. 3101282,7.925,,S
4,1,1,female,35.0,1,0,113803,53.1,C123,S
5,0,3,male,35.0,0,0,373450,8.05,,S
6,0,3,male,,0,0,330877,8.4583,,Q
7,0,1,male,54.0,0,0,17463,51.8625,E46,S
8,0,3,male,2.0,3,1,349909,21.075,,S
9,1,3,female,27.0,0,2,347742,11.1333,,S
10,1,2,female,14.0,1,0,237736,30.0708,,C
11,1,3,female,4.0,1,1,PP 9549,16.7,G6,S
12,1,1,female,58.0,0,0,113783,26.55,C103,S
13,0,3,male,20.0,0,0,A/5. 2151,8.05,,S
14,0,3,male,39.0,1,5,347082,31.275,,S
15,0,3,female,14.0,0,0,350406,7.8542,,S
16,1,2,female,55.0,0,0,248706,16.0,,S
17,0,3,male,2.0,4,1,382652,29.125,,Q
18,1,2,male,,0,0,244373,13.0,,S
19,0,3,female,31.0,1,0,345763,18.0,,S
20,1,3,female,,0,0,2649,7.225,,C
21,0,2,male,35.0,0,0,239865,26.0,,S
22,1,2,male,34.0,0,0,248698,13.0,D56,S
23,1,3,female,15.0,0,0,330923,8.0292,,Q
24,1,1,male,28.0,0,0,113788,35.5,A6,S
25,0,3,female,8.0,3,1,349909,21.075,,S
26,1,3,female,38.0,1,5,347077,31.3875,,S
27,0,3,male,,0,0,2631,7.225,,C
28,0,1,male,19.0,3,2,19950,263.0,C23 C25 C27,S
29,1,3,female,,0,0,330959,7.8792,,Q
30,0,3,male,,0,0,349216,7.8958,,S
31,0,1,male,40.0,0,0,PC 17601,27.7208,,C
32,1,1,female,,1,0,PC 17569,146.5208,B78,C
33,1,3,female,,0,0,335677,7.75,,Q
34,0,2,male,66.0,0,0,C.A. 24579,10.5,,S
35,0,1,male,28.0,1,0,PC 17604,82.1708,,C
36,0,1,male,42.0,1,0,113789,52.0,,S
37,1,3,male,,0,0,2677,7.2292,,C
38,0,3,male,21.0,0,0,A./5. 2152,8.05,,S
39,0,3,female,18.0,2,0,345764,18.0,,S
40,1,3,female,14.0,1,0,2651,11.2417,,C
41,0,3,female,40.0,1,0,7546,9.475,,S
42,0,2,female,27.0,1,0,11668,21.0,,S
43,0,3,male,,0,0,349253,7.8958,,C
44,1,2,female,3.0,1,2,SC/Paris 2123,41.5792,,C
45,1,3,female,19.0,0,0,330958,7.8792,,Q
46,0,3,male,,0,0,S.C./A.4. 23567,8.05,,S
47,0,3,male,,1,0,370371,15.5,,Q
48,1,3,female,,0,0,14311,7.75,,Q
49,0,3,male,,2,0,2662,21.6792,,C
50,0,3,female,18.0,1,0,349237,17.8,,S
51,0,3,male,7.0,4,1,3101295,39.6875,,S
52,0,3,male,21.0,0,0,A/4. 39886,7.8,,S
53,1,1,female,49.0,1,0,PC 17572,76.7292,D33,C
54,1,2,female,29.0,1,0,2926,26.0,,S
55,0,1,male,65.0,0,1,113509,61.9792,B30,C
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56,1,1,male,,0,0,19947,35.5,C52,S
57,1,2,female,21.0,0,0,C.A. 31026,10.5,,S
58,0,3,male,28.5,0,0,2697,7.2292,,C
59,1,2,female,5.0,1,2,C.A. 34651,27.75,,S
60,0,3,male,11.0,5,2,CA 2144,46.9,,S
61,0,3,male,22.0,0,0,2669,7.2292,,C
62,1,1,female,38.0,0,0,113572,80.0,B28,
63,0,1,male,45.0,1,0,36973,83.475,C83,S
64,0,3,male,4.0,3,2,347088,27.9,,S
65,0,1,male,,0,0,PC 17605,27.7208,,C
66,1,3,male,,1,1,2661,15.2458,,C
67,1,2,female,29.0,0,0,C.A. 29395,10.5,F33,S
68,0,3,male,19.0,0,0,S.P. 3464,8.1583,,S
69,1,3,female,17.0,4,2,3101281,7.925,,S
70,0,3,male,26.0,2,0,315151,8.6625,,S
71,0,2,male,32.0,0,0,C.A. 33111,10.5,,S
72,0,3,female,16.0,5,2,CA 2144,46.9,,S
73,0,2,male,21.0,0,0,S.O.C. 14879,73.5,,S
74,0,3,male,26.0,1,0,2680,14.4542,,C
75,1,3,male,32.0,0,0,1601,56.4958,,S
76,0,3,male,25.0,0,0,348123,7.65,F G73,S
77,0,3,male,,0,0,349208,7.8958,,S
78,0,3,male,,0,0,374746,8.05,,S
79,1,2,male,0.83,0,2,248738,29.0,,S
80,1,3,female,30.0,0,0,364516,12.475,,S
81,0,3,male,22.0,0,0,345767,9.0,,S
82,1,3,male,29.0,0,0,345779,9.5,,S
83,1,3,female,,0,0,330932,7.7875,,Q
84,0,1,male,28.0,0,0,113059,47.1,,S
85,1,2,female,17.0,0,0,SO/C 14885,10.5,,S
86,1,3,female,33.0,3,0,3101278,15.85,,S
87,0,3,male,16.0,1,3,W./C. 6608,34.375,,S
88,0,3,male,,0,0,SOTON/OQ 392086,8.05,,S
89,1,1,female,23.0,3,2,19950,263.0,C23 C25 C27,S
90,0,3,male,24.0,0,0,343275,8.05,,S
91,0,3,male,29.0,0,0,343276,8.05,,S
92,0,3,male,20.0,0,0,347466,7.8542,,S
93,0,1,male,46.0,1,0,W.E.P. 5734,61.175,E31,S
94,0,3,male,26.0,1,2,C.A. 2315,20.575,,S
95,0,3,male,59.0,0,0,364500,7.25,,S
96,0,3,male,,0,0,374910,8.05,,S
97,0,1,male,71.0,0,0,PC 17754,34.6542,A5,C
98,1,1,male,23.0,0,1,PC 17759,63.3583,D10 D12,C
99,1,2,female,34.0,0,1,231919,23.0,,S
100,0,2,male,34.0,1,0,244367,26.0,,S
101,0,3,female,28.0,0,0,349245,7.8958,,S
102,0,3,male,,0,0,349215,7.8958,,S
103,0,1,male,21.0,0,1,35281,77.2875,D26,S
104,0,3,male,33.0,0,0,7540,8.6542,,S
105,0,3,male,37.0,2,0,3101276,7.925,,S
106,0,3,male,28.0,0,0,349207,7.8958,,S
107,1,3,female,21.0,0,0,343120,7.65,,S
108,1,3,male,,0,0,312991,7.775,,S
109,0,3,male,38.0,0,0,349249,7.8958,,S
110,1,3,female,,1,0,371110,24.15,,Q
111,0,1,male,47.0,0,0,110465,52.0,C110,S
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112,0,3,female,14.5,1,0,2665,14.4542,,C
113,0,3,male,22.0,0,0,324669,8.05,,S
114,0,3,female,20.0,1,0,4136,9.825,,S
115,0,3,female,17.0,0,0,2627,14.4583,,C
116,0,3,male,21.0,0,0,STON/O 2. 3101294,7.925,,S
117,0,3,male,70.5,0,0,370369,7.75,,Q
118,0,2,male,29.0,1,0,11668,21.0,,S
119,0,1,male,24.0,0,1,PC 17558,247.5208,B58 B60,C
120,0,3,female,2.0,4,2,347082,31.275,,S
121,0,2,male,21.0,2,0,S.O.C. 14879,73.5,,S
122,0,3,male,,0,0,A4. 54510,8.05,,S
123,0,2,male,32.5,1,0,237736,30.0708,,C
124,1,2,female,32.5,0,0,27267,13.0,E101,S
125,0,1,male,54.0,0,1,35281,77.2875,D26,S
126,1,3,male,12.0,1,0,2651,11.2417,,C
127,0,3,male,,0,0,370372,7.75,,Q
128,1,3,male,24.0,0,0,C 17369,7.1417,,S
129,1,3,female,,1,1,2668,22.3583,F E69,C
130,0,3,male,45.0,0,0,347061,6.975,,S
131,0,3,male,33.0,0,0,349241,7.8958,,C
132,0,3,male,20.0,0,0,SOTON/O.Q. 3101307,7.05,,S
133,0,3,female,47.0,1,0,A/5. 3337,14.5,,S
134,1,2,female,29.0,1,0,228414,26.0,,S
135,0,2,male,25.0,0,0,C.A. 29178,13.0,,S
136,0,2,male,23.0,0,0,SC/PARIS 2133,15.0458,,C
137,1,1,female,19.0,0,2,11752,26.2833,D47,S
138,0,1,male,37.0,1,0,113803,53.1,C123,S
139,0,3,male,16.0,0,0,7534,9.2167,,S
140,0,1,male,24.0,0,0,PC 17593,79.2,B86,C
141,0,3,female,,0,2,2678,15.2458,,C
142,1,3,female,22.0,0,0,347081,7.75,,S
143,1,3,female,24.0,1,0,STON/O2. 3101279,15.85,,S
144,0,3,male,19.0,0,0,365222,6.75,,Q
145,0,2,male,18.0,0,0,231945,11.5,,S
146,0,2,male,19.0,1,1,C.A. 33112,36.75,,S
147,1,3,male,27.0,0,0,350043,7.7958,,S
148,0,3,female,9.0,2,2,W./C. 6608,34.375,,S
149,0,2,male,36.5,0,2,230080,26.0,F2,S
150,0,2,male,42.0,0,0,244310,13.0,,S
151,0,2,male,51.0,0,0,S.O.P. 1166,12.525,,S
152,1,1,female,22.0,1,0,113776,66.6,C2,S
153,0,3,male,55.5,0,0,A.5. 11206,8.05,,S
154,0,3,male,40.5,0,2,A/5. 851,14.5,,S
155,0,3,male,,0,0,Fa 265302,7.3125,,S
156,0,1,male,51.0,0,1,PC 17597,61.3792,,C
157,1,3,female,16.0,0,0,35851,7.7333,,Q
158,0,3,male,30.0,0,0,SOTON/OQ 392090,8.05,,S
159,0,3,male,,0,0,315037,8.6625,,S
160,0,3,male,,8,2,CA. 2343,69.55,,S
161,0,3,male,44.0,0,1,371362,16.1,,S
162,1,2,female,40.0,0,0,C.A. 33595,15.75,,S
163,0,3,male,26.0,0,0,347068,7.775,,S
164,0,3,male,17.0,0,0,315093,8.6625,,S
165,0,3,male,1.0,4,1,3101295,39.6875,,S
166,1,3,male,9.0,0,2,363291,20.525,,S
167,1,1,female,,0,1,113505,55.0,E33,S
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168,0,3,female,45.0,1,4,347088,27.9,,S
169,0,1,male,,0,0,PC 17318,25.925,,S
170,0,3,male,28.0,0,0,1601,56.4958,,S
171,0,1,male,61.0,0,0,111240,33.5,B19,S
172,0,3,male,4.0,4,1,382652,29.125,,Q
173,1,3,female,1.0,1,1,347742,11.1333,,S
174,0,3,male,21.0,0,0,STON/O 2. 3101280,7.925,,S
175,0,1,male,56.0,0,0,17764,30.6958,A7,C
176,0,3,male,18.0,1,1,350404,7.8542,,S
177,0,3,male,,3,1,4133,25.4667,,S
178,0,1,female,50.0,0,0,PC 17595,28.7125,C49,C
179,0,2,male,30.0,0,0,250653,13.0,,S
180,0,3,male,36.0,0,0,LINE,0.0,,S
181,0,3,female,,8,2,CA. 2343,69.55,,S
182,0,2,male,,0,0,SC/PARIS 2131,15.05,,C
183,0,3,male,9.0,4,2,347077,31.3875,,S
184,1,2,male,1.0,2,1,230136,39.0,F4,S
185,1,3,female,4.0,0,2,315153,22.025,,S
186,0,1,male,,0,0,113767,50.0,A32,S
187,1,3,female,,1,0,370365,15.5,,Q
188,1,1,male,45.0,0,0,111428,26.55,,S
189,0,3,male,40.0,1,1,364849,15.5,,Q
190,0,3,male,36.0,0,0,349247,7.8958,,S
191,1,2,female,32.0,0,0,234604,13.0,,S
192,0,2,male,19.0,0,0,28424,13.0,,S
193,1,3,female,19.0,1,0,350046,7.8542,,S
194,1,2,male,3.0,1,1,230080,26.0,F2,S
195,1,1,female,44.0,0,0,PC 17610,27.7208,B4,C
196,1,1,female,58.0,0,0,PC 17569,146.5208,B80,C
197,0,3,male,,0,0,368703,7.75,,Q
198,0,3,male,42.0,0,1,4579,8.4042,,S
199,1,3,female,,0,0,370370,7.75,,Q
200,0,2,female,24.0,0,0,248747,13.0,,S
201,0,3,male,28.0,0,0,345770,9.5,,S
202,0,3,male,,8,2,CA. 2343,69.55,,S
203,0,3,male,34.0,0,0,3101264,6.4958,,S
204,0,3,male,45.5,0,0,2628,7.225,,C
205,1,3,male,18.0,0,0,A/5 3540,8.05,,S
206,0,3,female,2.0,0,1,347054,10.4625,G6,S
207,0,3,male,32.0,1,0,3101278,15.85,,S
208,1,3,male,26.0,0,0,2699,18.7875,,C
209,1,3,female,16.0,0,0,367231,7.75,,Q
210,1,1,male,40.0,0,0,112277,31.0,A31,C
211,0,3,male,24.0,0,0,SOTON/O.Q. 3101311,7.05,,S
212,1,2,female,35.0,0,0,F.C.C. 13528,21.0,,S
213,0,3,male,22.0,0,0,A/5 21174,7.25,,S
214,0,2,male,30.0,0,0,250646,13.0,,S
215,0,3,male,,1,0,367229,7.75,,Q
216,1,1,female,31.0,1,0,35273,113.275,D36,C
217,1,3,female,27.0,0,0,STON/O2. 3101283,7.925,,S
218,0,2,male,42.0,1,0,243847,27.0,,S
219,1,1,female,32.0,0,0,11813,76.2917,D15,C
220,0,2,male,30.0,0,0,W/C 14208,10.5,,S
221,1,3,male,16.0,0,0,SOTON/OQ 392089,8.05,,S
222,0,2,male,27.0,0,0,220367,13.0,,S
223,0,3,male,51.0,0,0,21440,8.05,,S
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224,0,3,male,,0,0,349234,7.8958,,S
225,1,1,male,38.0,1,0,19943,90.0,C93,S
226,0,3,male,22.0,0,0,PP 4348,9.35,,S
227,1,2,male,19.0,0,0,SW/PP 751,10.5,,S
228,0,3,male,20.5,0,0,A/5 21173,7.25,,S
229,0,2,male,18.0,0,0,236171,13.0,,S
230,0,3,female,,3,1,4133,25.4667,,S
231,1,1,female,35.0,1,0,36973,83.475,C83,S
232,0,3,male,29.0,0,0,347067,7.775,,S
233,0,2,male,59.0,0,0,237442,13.5,,S
234,1,3,female,5.0,4,2,347077,31.3875,,S
235,0,2,male,24.0,0,0,C.A. 29566,10.5,,S
236,0,3,female,,0,0,W./C. 6609,7.55,,S
237,0,2,male,44.0,1,0,26707,26.0,,S
238,1,2,female,8.0,0,2,C.A. 31921,26.25,,S
239,0,2,male,19.0,0,0,28665,10.5,,S
240,0,2,male,33.0,0,0,SCO/W 1585,12.275,,S
241,0,3,female,,1,0,2665,14.4542,,C
242,1,3,female,,1,0,367230,15.5,,Q
243,0,2,male,29.0,0,0,W./C. 14263,10.5,,S
244,0,3,male,22.0,0,0,STON/O 2. 3101275,7.125,,S
245,0,3,male,30.0,0,0,2694,7.225,,C
246,0,1,male,44.0,2,0,19928,90.0,C78,Q
247,0,3,female,25.0,0,0,347071,7.775,,S
248,1,2,female,24.0,0,2,250649,14.5,,S
249,1,1,male,37.0,1,1,11751,52.5542,D35,S
250,0,2,male,54.0,1,0,244252,26.0,,S
251,0,3,male,,0,0,362316,7.25,,S
252,0,3,female,29.0,1,1,347054,10.4625,G6,S
253,0,1,male,62.0,0,0,113514,26.55,C87,S
254,0,3,male,30.0,1,0,A/5. 3336,16.1,,S
255,0,3,female,41.0,0,2,370129,20.2125,,S
256,1,3,female,29.0,0,2,2650,15.2458,,C
257,1,1,female,,0,0,PC 17585,79.2,,C
258,1,1,female,30.0,0,0,110152,86.5,B77,S
259,1,1,female,35.0,0,0,PC 17755,512.3292,,C
260,1,2,female,50.0,0,1,230433,26.0,,S
261,0,3,male,,0,0,384461,7.75,,Q
262,1,3,male,3.0,4,2,347077,31.3875,,S
263,0,1,male,52.0,1,1,110413,79.65,E67,S
264,0,1,male,40.0,0,0,112059,0.0,B94,S
265,0,3,female,,0,0,382649,7.75,,Q
266,0,2,male,36.0,0,0,C.A. 17248,10.5,,S
267,0,3,male,16.0,4,1,3101295,39.6875,,S
268,1,3,male,25.0,1,0,347083,7.775,,S
269,1,1,female,58.0,0,1,PC 17582,153.4625,C125,S
270,1,1,female,35.0,0,0,PC 17760,135.6333,C99,S
271,0,1,male,,0,0,113798,31.0,,S
272,1,3,male,25.0,0,0,LINE,0.0,,S
273,1,2,female,41.0,0,1,250644,19.5,,S
274,0,1,male,37.0,0,1,PC 17596,29.7,C118,C
275,1,3,female,,0,0,370375,7.75,,Q
276,1,1,female,63.0,1,0,13502,77.9583,D7,S
277,0,3,female,45.0,0,0,347073,7.75,,S
278,0,2,male,,0,0,239853,0.0,,S
279,0,3,male,7.0,4,1,382652,29.125,,Q
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283,0,3,male,16.0,0,0,345778,9.5,,S
284,1,3,male,19.0,0,0,A/5. 10482,8.05,,S
285,0,1,male,,0,0,113056,26.0,A19,S
286,0,3,male,33.0,0,0,349239,8.6625,,C
287,1,3,male,30.0,0,0,345774,9.5,,S
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290,1,3,female,22.0,0,0,370373,7.75,,Q
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292,1,1,female,19.0,1,0,11967,91.0792,B49,C
293,0,2,male,36.0,0,0,SC/Paris 2163,12.875,D,C
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296,0,1,male,,0,0,PC 17612,27.7208,,C
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298,0,1,female,2.0,1,2,113781,151.55,C22 C26,S
299,1,1,male,,0,0,19988,30.5,C106,S
300,1,1,female,50.0,0,1,PC 17558,247.5208,B58 B60,C
301,1,3,female,,0,0,9234,7.75,,Q
302,1,3,male,,2,0,367226,23.25,,Q
303,0,3,male,19.0,0,0,LINE,0.0,,S
304,1,2,female,,0,0,226593,12.35,E101,Q
305,0,3,male,,0,0,A/5 2466,8.05,,S
306,1,1,male,0.92,1,2,113781,151.55,C22 C26,S
307,1,1,female,,0,0,17421,110.8833,,C
308,1,1,female,17.0,1,0,PC 17758,108.9,C65,C
309,0,2,male,30.0,1,0,P/PP 3381,24.0,,C
310,1,1,female,30.0,0,0,PC 17485,56.9292,E36,C
311,1,1,female,24.0,0,0,11767,83.1583,C54,C
312,1,1,female,18.0,2,2,PC 17608,262.375,B57 B59 B63 B66,C
313,0,2,female,26.0,1,1,250651,26.0,,S
314,0,3,male,28.0,0,0,349243,7.8958,,S
315,0,2,male,43.0,1,1,F.C.C. 13529,26.25,,S
316,1,3,female,26.0,0,0,347470,7.8542,,S
317,1,2,female,24.0,1,0,244367,26.0,,S
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323,1,2,female,30.0,0,0,234818,12.35,,Q
324,1,2,female,22.0,1,1,248738,29.0,,S
325,0,3,male,,8,2,CA. 2343,69.55,,S
326,1,1,female,36.0,0,0,PC 17760,135.6333,C32,C
327,0,3,male,61.0,0,0,345364,6.2375,,S
328,1,2,female,36.0,0,0,28551,13.0,D,S
329,1,3,female,31.0,1,1,363291,20.525,,S
330,1,1,female,16.0,0,1,111361,57.9792,B18,C
331,1,3,female,,2,0,367226,23.25,,Q
332,0,1,male,45.5,0,0,113043,28.5,C124,S
333,0,1,male,38.0,0,1,PC 17582,153.4625,C91,S
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362,0,2,male,29.0,1,0,SC/PARIS 2167,27.7208,,C
363,0,3,female,45.0,0,1,2691,14.4542,,C
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365,0,3,male,,1,0,370365,15.5,,Q
366,0,3,male,30.0,0,0,C 7076,7.25,,S
367,1,1,female,60.0,1,0,110813,75.25,D37,C
368,1,3,female,,0,0,2626,7.2292,,C
369,1,3,female,,0,0,14313,7.75,,Q
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383,0,3,male,32.0,0,0,STON/O 2. 3101293,7.925,,S
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386,0,2,male,18.0,0,0,S.O.C. 14879,73.5,,S
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389,0,3,male,,0,0,367655,7.7292,,Q
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422,0,3,male,21.0,0,0,A/5. 13032,7.7333,,Q
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429,0,3,male,,0,0,364851,7.75,,Q
430,1,3,male,32.0,0,0,SOTON/O.Q. 392078,8.05,E10,S
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436,1,1,female,14.0,1,2,113760,120.0,B96 B98,S
437,0,3,female,21.0,2,2,W./C. 6608,34.375,,S
438,1,2,female,24.0,2,3,29106,18.75,,S
439,0,1,male,64.0,1,4,19950,263.0,C23 C25 C27,S
440,0,2,male,31.0,0,0,C.A. 18723,10.5,,S
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455,0,3,male,,0,0,A/5 2817,8.05,,S
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527,1,2,female,50.0,0,0,W./C. 14258,10.5,,S
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537,0,1,male,45.0,0,0,113050,26.55,B38,S
538,1,1,female,30.0,0,0,PC 17761,106.425,,C
539,0,3,male,,0,0,364498,14.5,,S
540,1,1,female,22.0,0,2,13568,49.5,B39,C
541,1,1,female,36.0,0,2,WE/P 5735,71.0,B22,S
542,0,3,female,9.0,4,2,347082,31.275,,S
543,0,3,female,11.0,4,2,347082,31.275,,S
544,1,2,male,32.0,1,0,2908,26.0,,S
545,0,1,male,50.0,1,0,PC 17761,106.425,C86,C
546,0,1,male,64.0,0,0,693,26.0,,S
547,1,2,female,19.0,1,0,2908,26.0,,S
548,1,2,male,,0,0,SC/PARIS 2146,13.8625,,C
549,0,3,male,33.0,1,1,363291,20.525,,S
550,1,2,male,8.0,1,1,C.A. 33112,36.75,,S
551,1,1,male,17.0,0,2,17421,110.8833,C70,C
552,0,2,male,27.0,0,0,244358,26.0,,S
553,0,3,male,,0,0,330979,7.8292,,Q
554,1,3,male,22.0,0,0,2620,7.225,,C
555,1,3,female,22.0,0,0,347085,7.775,,S
556,0,1,male,62.0,0,0,113807,26.55,,S
557,1,1,female,48.0,1,0,11755,39.6,A16,C
558,0,1,male,,0,0,PC 17757,227.525,,C
559,1,1,female,39.0,1,1,110413,79.65,E67,S
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560,1,3,female,36.0,1,0,345572,17.4,,S
561,0,3,male,,0,0,372622,7.75,,Q
562,0,3,male,40.0,0,0,349251,7.8958,,S
563,0,2,male,28.0,0,0,218629,13.5,,S
564,0,3,male,,0,0,SOTON/OQ 392082,8.05,,S
565,0,3,female,,0,0,SOTON/O.Q. 392087,8.05,,S
566,0,3,male,24.0,2,0,A/4 48871,24.15,,S
567,0,3,male,19.0,0,0,349205,7.8958,,S
568,0,3,female,29.0,0,4,349909,21.075,,S
569,0,3,male,,0,0,2686,7.2292,,C
570,1,3,male,32.0,0,0,350417,7.8542,,S
571,1,2,male,62.0,0,0,S.W./PP 752,10.5,,S
572,1,1,female,53.0,2,0,11769,51.4792,C101,S
573,1,1,male,36.0,0,0,PC 17474,26.3875,E25,S
574,1,3,female,,0,0,14312,7.75,,Q
575,0,3,male,16.0,0,0,A/4. 20589,8.05,,S
576,0,3,male,19.0,0,0,358585,14.5,,S
577,1,2,female,34.0,0,0,243880,13.0,,S
578,1,1,female,39.0,1,0,13507,55.9,E44,S
579,0,3,female,,1,0,2689,14.4583,,C
580,1,3,male,32.0,0,0,STON/O 2. 3101286,7.925,,S
581,1,2,female,25.0,1,1,237789,30.0,,S
582,1,1,female,39.0,1,1,17421,110.8833,C68,C
583,0,2,male,54.0,0,0,28403,26.0,,S
584,0,1,male,36.0,0,0,13049,40.125,A10,C
585,0,3,male,,0,0,3411,8.7125,,C
586,1,1,female,18.0,0,2,110413,79.65,E68,S
587,0,2,male,47.0,0,0,237565,15.0,,S
588,1,1,male,60.0,1,1,13567,79.2,B41,C
589,0,3,male,22.0,0,0,14973,8.05,,S
590,0,3,male,,0,0,A./5. 3235,8.05,,S
591,0,3,male,35.0,0,0,STON/O 2. 3101273,7.125,,S
592,1,1,female,52.0,1,0,36947,78.2667,D20,C
593,0,3,male,47.0,0,0,A/5 3902,7.25,,S
594,0,3,female,,0,2,364848,7.75,,Q
595,0,2,male,37.0,1,0,SC/AH 29037,26.0,,S
596,0,3,male,36.0,1,1,345773,24.15,,S
597,1,2,female,,0,0,248727,33.0,,S
598,0,3,male,49.0,0,0,LINE,0.0,,S
599,0,3,male,,0,0,2664,7.225,,C
600,1,1,male,49.0,1,0,PC 17485,56.9292,A20,C
601,1,2,female,24.0,2,1,243847,27.0,,S
602,0,3,male,,0,0,349214,7.8958,,S
603,0,1,male,,0,0,113796,42.4,,S
604,0,3,male,44.0,0,0,364511,8.05,,S
605,1,1,male,35.0,0,0,111426,26.55,,C
606,0,3,male,36.0,1,0,349910,15.55,,S
607,0,3,male,30.0,0,0,349246,7.8958,,S
608,1,1,male,27.0,0,0,113804,30.5,,S
609,1,2,female,22.0,1,2,SC/Paris 2123,41.5792,,C
610,1,1,female,40.0,0,0,PC 17582,153.4625,C125,S
611,0,3,female,39.0,1,5,347082,31.275,,S
612,0,3,male,,0,0,SOTON/O.Q. 3101305,7.05,,S
613,1,3,female,,1,0,367230,15.5,,Q
614,0,3,male,,0,0,370377,7.75,,Q
615,0,3,male,35.0,0,0,364512,8.05,,S
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619,1,2,female,4.0,2,1,230136,39.0,F4,S
620,0,2,male,26.0,0,0,31028,10.5,,S
621,0,3,male,27.0,1,0,2659,14.4542,,C
622,1,1,male,42.0,1,0,11753,52.5542,D19,S
623,1,3,male,20.0,1,1,2653,15.7417,,C
624,0,3,male,21.0,0,0,350029,7.8542,,S
625,0,3,male,21.0,0,0,54636,16.1,,S
626,0,1,male,61.0,0,0,36963,32.3208,D50,S
627,0,2,male,57.0,0,0,219533,12.35,,Q
628,1,1,female,21.0,0,0,13502,77.9583,D9,S
629,0,3,male,26.0,0,0,349224,7.8958,,S
630,0,3,male,,0,0,334912,7.7333,,Q
631,1,1,male,80.0,0,0,27042,30.0,A23,S
632,0,3,male,51.0,0,0,347743,7.0542,,S
633,1,1,male,32.0,0,0,13214,30.5,B50,C
634,0,1,male,,0,0,112052,0.0,,S
635,0,3,female,9.0,3,2,347088,27.9,,S
636,1,2,female,28.0,0,0,237668,13.0,,S
637,0,3,male,32.0,0,0,STON/O 2. 3101292,7.925,,S
638,0,2,male,31.0,1,1,C.A. 31921,26.25,,S
639,0,3,female,41.0,0,5,3101295,39.6875,,S
640,0,3,male,,1,0,376564,16.1,,S
641,0,3,male,20.0,0,0,350050,7.8542,,S
642,1,1,female,24.0,0,0,PC 17477,69.3,B35,C
643,0,3,female,2.0,3,2,347088,27.9,,S
644,1,3,male,,0,0,1601,56.4958,,S
645,1,3,female,0.75,2,1,2666,19.2583,,C
646,1,1,male,48.0,1,0,PC 17572,76.7292,D33,C
647,0,3,male,19.0,0,0,349231,7.8958,,S
648,1,1,male,56.0,0,0,13213,35.5,A26,C
649,0,3,male,,0,0,S.O./P.P. 751,7.55,,S
650,1,3,female,23.0,0,0,CA. 2314,7.55,,S
651,0,3,male,,0,0,349221,7.8958,,S
652,1,2,female,18.0,0,1,231919,23.0,,S
653,0,3,male,21.0,0,0,8475,8.4333,,S
654,1,3,female,,0,0,330919,7.8292,,Q
655,0,3,female,18.0,0,0,365226,6.75,,Q
656,0,2,male,24.0,2,0,S.O.C. 14879,73.5,,S
657,0,3,male,,0,0,349223,7.8958,,S
658,0,3,female,32.0,1,1,364849,15.5,,Q
659,0,2,male,23.0,0,0,29751,13.0,,S
660,0,1,male,58.0,0,2,35273,113.275,D48,C
661,1,1,male,50.0,2,0,PC 17611,133.65,,S
662,0,3,male,40.0,0,0,2623,7.225,,C
663,0,1,male,47.0,0,0,5727,25.5875,E58,S
664,0,3,male,36.0,0,0,349210,7.4958,,S
665,1,3,male,20.0,1,0,STON/O 2. 3101285,7.925,,S
666,0,2,male,32.0,2,0,S.O.C. 14879,73.5,,S
667,0,2,male,25.0,0,0,234686,13.0,,S
668,0,3,male,,0,0,312993,7.775,,S
669,0,3,male,43.0,0,0,A/5 3536,8.05,,S
670,1,1,female,,1,0,19996,52.0,C126,S
671,1,2,female,40.0,1,1,29750,39.0,,S
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674,1,2,male,31.0,0,0,244270,13.0,,S
675,0,2,male,,0,0,239856,0.0,,S
676,0,3,male,18.0,0,0,349912,7.775,,S
677,0,3,male,24.5,0,0,342826,8.05,,S
678,1,3,female,18.0,0,0,4138,9.8417,,S
679,0,3,female,43.0,1,6,CA 2144,46.9,,S
680,1,1,male,36.0,0,1,PC 17755,512.3292,B51 B53 B55,C
681,0,3,female,,0,0,330935,8.1375,,Q
682,1,1,male,27.0,0,0,PC 17572,76.7292,D49,C
683,0,3,male,20.0,0,0,6563,9.225,,S
684,0,3,male,14.0,5,2,CA 2144,46.9,,S
685,0,2,male,60.0,1,1,29750,39.0,,S
686,0,2,male,25.0,1,2,SC/Paris 2123,41.5792,,C
687,0,3,male,14.0,4,1,3101295,39.6875,,S
688,0,3,male,19.0,0,0,349228,10.1708,,S
689,0,3,male,18.0,0,0,350036,7.7958,,S
690,1,1,female,15.0,0,1,24160,211.3375,B5,S
691,1,1,male,31.0,1,0,17474,57.0,B20,S
692,1,3,female,4.0,0,1,349256,13.4167,,C
693,1,3,male,,0,0,1601,56.4958,,S
694,0,3,male,25.0,0,0,2672,7.225,,C
695,0,1,male,60.0,0,0,113800,26.55,,S
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697,0,3,male,44.0,0,0,363592,8.05,,S
698,1,3,female,,0,0,35852,7.7333,,Q
699,0,1,male,49.0,1,1,17421,110.8833,C68,C
700,0,3,male,42.0,0,0,348121,7.65,F G63,S
701,1,1,female,18.0,1,0,PC 17757,227.525,C62 C64,C
702,1,1,male,35.0,0,0,PC 17475,26.2875,E24,S
703,0,3,female,18.0,0,1,2691,14.4542,,C
704,0,3,male,25.0,0,0,36864,7.7417,,Q
705,0,3,male,26.0,1,0,350025,7.8542,,S
706,0,2,male,39.0,0,0,250655,26.0,,S
707,1,2,female,45.0,0,0,223596,13.5,,S
708,1,1,male,42.0,0,0,PC 17476,26.2875,E24,S
709,1,1,female,22.0,0,0,113781,151.55,,S
710,1,3,male,,1,1,2661,15.2458,,C
711,1,1,female,24.0,0,0,PC 17482,49.5042,C90,C
712,0,1,male,,0,0,113028,26.55,C124,S
713,1,1,male,48.0,1,0,19996,52.0,C126,S
714,0,3,male,29.0,0,0,7545,9.4833,,S
715,0,2,male,52.0,0,0,250647,13.0,,S
716,0,3,male,19.0,0,0,348124,7.65,F G73,S
717,1,1,female,38.0,0,0,PC 17757,227.525,C45,C
718,1,2,female,27.0,0,0,34218,10.5,E101,S
719,0,3,male,,0,0,36568,15.5,,Q
720,0,3,male,33.0,0,0,347062,7.775,,S
721,1,2,female,6.0,0,1,248727,33.0,,S
722,0,3,male,17.0,1,0,350048,7.0542,,S
723,0,2,male,34.0,0,0,12233,13.0,,S
724,0,2,male,50.0,0,0,250643,13.0,,S
725,1,1,male,27.0,1,0,113806,53.1,E8,S
726,0,3,male,20.0,0,0,315094,8.6625,,S
727,1,2,female,30.0,3,0,31027,21.0,,S
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728,1,3,female,,0,0,36866,7.7375,,Q
729,0,2,male,25.0,1,0,236853,26.0,,S
730,0,3,female,25.0,1,0,STON/O2. 3101271,7.925,,S
731,1,1,female,29.0,0,0,24160,211.3375,B5,S
732,0,3,male,11.0,0,0,2699,18.7875,,C
733,0,2,male,,0,0,239855,0.0,,S
734,0,2,male,23.0,0,0,28425,13.0,,S
735,0,2,male,23.0,0,0,233639,13.0,,S
736,0,3,male,28.5,0,0,54636,16.1,,S
737,0,3,female,48.0,1,3,W./C. 6608,34.375,,S
738,1,1,male,35.0,0,0,PC 17755,512.3292,B101,C
739,0,3,male,,0,0,349201,7.8958,,S
740,0,3,male,,0,0,349218,7.8958,,S
741,1,1,male,,0,0,16988,30.0,D45,S
742,0,1,male,36.0,1,0,19877,78.85,C46,S
743,1,1,female,21.0,2,2,PC 17608,262.375,B57 B59 B63 B66,C
744,0,3,male,24.0,1,0,376566,16.1,,S
745,1,3,male,31.0,0,0,STON/O 2. 3101288,7.925,,S
746,0,1,male,70.0,1,1,WE/P 5735,71.0,B22,S
747,0,3,male,16.0,1,1,C.A. 2673,20.25,,S
748,1,2,female,30.0,0,0,250648,13.0,,S
749,0,1,male,19.0,1,0,113773,53.1,D30,S
750,0,3,male,31.0,0,0,335097,7.75,,Q
751,1,2,female,4.0,1,1,29103,23.0,,S
752,1,3,male,6.0,0,1,392096,12.475,E121,S
753,0,3,male,33.0,0,0,345780,9.5,,S
754,0,3,male,23.0,0,0,349204,7.8958,,S
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759,0,3,male,34.0,0,0,363294,8.05,,S
760,1,1,female,33.0,0,0,110152,86.5,B77,S
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762,0,3,male,41.0,0,0,SOTON/O2 3101272,7.125,,S
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764,1,1,female,36.0,1,2,113760,120.0,B96 B98,S
765,0,3,male,16.0,0,0,347074,7.775,,S
766,1,1,female,51.0,1,0,13502,77.9583,D11,S
767,0,1,male,,0,0,112379,39.6,,C
768,0,3,female,30.5,0,0,364850,7.75,,Q
769,0,3,male,,1,0,371110,24.15,,Q
770,0,3,male,32.0,0,0,8471,8.3625,,S
771,0,3,male,24.0,0,0,345781,9.5,,S
772,0,3,male,48.0,0,0,350047,7.8542,,S
773,0,2,female,57.0,0,0,S.O./P.P. 3,10.5,E77,S
774,0,3,male,,0,0,2674,7.225,,C
775,1,2,female,54.0,1,3,29105,23.0,,S
776,0,3,male,18.0,0,0,347078,7.75,,S
777,0,3,male,,0,0,383121,7.75,F38,Q
778,1,3,female,5.0,0,0,364516,12.475,,S
779,0,3,male,,0,0,36865,7.7375,,Q
780,1,1,female,43.0,0,1,24160,211.3375,B3,S
781,1,3,female,13.0,0,0,2687,7.2292,,C
782,1,1,female,17.0,1,0,17474,57.0,B20,S
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788,0,3,male,8.0,4,1,382652,29.125,,Q
789,1,3,male,1.0,1,2,C.A. 2315,20.575,,S
790,0,1,male,46.0,0,0,PC 17593,79.2,B82 B84,C
791,0,3,male,,0,0,12460,7.75,,Q
792,0,2,male,16.0,0,0,239865,26.0,,S
793,0,3,female,,8,2,CA. 2343,69.55,,S
794,0,1,male,,0,0,PC 17600,30.6958,,C
795,0,3,male,25.0,0,0,349203,7.8958,,S
796,0,2,male,39.0,0,0,28213,13.0,,S
797,1,1,female,49.0,0,0,17465,25.9292,D17,S
798,1,3,female,31.0,0,0,349244,8.6833,,S
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800,0,3,female,30.0,1,1,345773,24.15,,S
801,0,2,male,34.0,0,0,250647,13.0,,S
802,1,2,female,31.0,1,1,C.A. 31921,26.25,,S
803,1,1,male,11.0,1,2,113760,120.0,B96 B98,S
804,1,3,male,0.42,0,1,2625,8.5167,,C
805,1,3,male,27.0,0,0,347089,6.975,,S
806,0,3,male,31.0,0,0,347063,7.775,,S
807,0,1,male,39.0,0,0,112050,0.0,A36,S
808,0,3,female,18.0,0,0,347087,7.775,,S
809,0,2,male,39.0,0,0,248723,13.0,,S
810,1,1,female,33.0,1,0,113806,53.1,E8,S
811,0,3,male,26.0,0,0,3474,7.8875,,S
812,0,3,male,39.0,0,0,A/4 48871,24.15,,S
813,0,2,male,35.0,0,0,28206,10.5,,S
814,0,3,female,6.0,4,2,347082,31.275,,S
815,0,3,male,30.5,0,0,364499,8.05,,S
816,0,1,male,,0,0,112058,0.0,B102,S
817,0,3,female,23.0,0,0,STON/O2. 3101290,7.925,,S
818,0,2,male,31.0,1,1,S.C./PARIS 2079,37.0042,,C
819,0,3,male,43.0,0,0,C 7075,6.45,,S
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821,1,1,female,52.0,1,1,12749,93.5,B69,S
822,1,3,male,27.0,0,0,315098,8.6625,,S
823,0,1,male,38.0,0,0,19972,0.0,,S
824,1,3,female,27.0,0,1,392096,12.475,E121,S
825,0,3,male,2.0,4,1,3101295,39.6875,,S
826,0,3,male,,0,0,368323,6.95,,Q
827,0,3,male,,0,0,1601,56.4958,,S
828,1,2,male,1.0,0,2,S.C./PARIS 2079,37.0042,,C
829,1,3,male,,0,0,367228,7.75,,Q
830,1,1,female,62.0,0,0,113572,80.0,B28,
831,1,3,female,15.0,1,0,2659,14.4542,,C
832,1,2,male,0.83,1,1,29106,18.75,,S
833,0,3,male,,0,0,2671,7.2292,,C
834,0,3,male,23.0,0,0,347468,7.8542,,S
835,0,3,male,18.0,0,0,2223,8.3,,S
836,1,1,female,39.0,1,1,PC 17756,83.1583,E49,C
837,0,3,male,21.0,0,0,315097,8.6625,,S
838,0,3,male,,0,0,392092,8.05,,S
839,1,3,male,32.0,0,0,1601,56.4958,,S
```

```
840,1,1,male,,0,0,11774,29.7,C47,C
841,0,3,male,20.0,0,0,SOTON/O2 3101287,7.925,,S
842,0,2,male,16.0,0,0,S.O./P.P. 3,10.5,,S
843,1,1,female,30.0,0,0,113798,31.0,,C
844,0,3,male,34.5,0,0,2683,6.4375,,C
845,0,3,male,17.0,0,0,315090,8.6625,,S
846,0,3,male,42.0,0,0,C.A. 5547,7.55,,S
847,0,3,male,,8,2,CA. 2343,69.55,,S
848,0,3,male,35.0,0,0,349213,7.8958,,C
849,0,2,male,28.0,0,1,248727,33.0,,S
850,1,1,female,,1,0,17453,89.1042,C92,C
851,0,3,male,4.0,4,2,347082,31.275,,S
852,0,3,male,74.0,0,0,347060,7.775,,S
853,0,3,female,9.0,1,1,2678,15.2458,,C
854,1,1,female,16.0,0,1,PC 17592,39.4,D28,S
855,0,2,female,44.0,1,0,244252,26.0,,S
856,1,3,female,18.0,0,1,392091,9.35,,S
857,1,1,female,45.0,1,1,36928,164.8667,,S
858,1,1,male,51.0,0,0,113055,26.55,E17,S
859,1,3,female,24.0,0,3,2666,19.2583,,C
860,0,3,male,,0,0,2629,7.2292,,C
861,0,3,male,41.0,2,0,350026,14.1083,,S
862,0,2,male,21.0,1,0,28134,11.5,,S
863,1,1,female,48.0,0,0,17466,25.9292,D17,S
864,0,3,female,,8,2,CA. 2343,69.55,,S
865,0,2,male,24.0,0,0,233866,13.0,,S
866,1,2,female,42.0,0,0,236852,13.0,,S
867,1,2,female,27.0,1,0,SC/PARIS 2149,13.8583,,C
868,0,1,male,31.0,0,0,PC 17590,50.4958,A24,S
869,0,3,male,,0,0,345777,9.5,,S
870,1,3,male,4.0,1,1,347742,11.1333,,S
871,0,3,male,26.0,0,0,349248,7.8958,,S
872,1,1,female,47.0,1,1,11751,52.5542,D35,S
873,0,1,male,33.0,0,0,695,5.0,B51 B53 B55,S
874,0,3,male,47.0,0,0,345765,9.0,,S
875,1,2,female,28.0,1,0,P/PP 3381,24.0,,C
876,1,3,female,15.0,0,0,2667,7.225,,C
877,0,3,male,20.0,0,0,7534,9.8458,,S
878,0,3,male,19.0,0,0,349212,7.8958,,S
879,0,3,male,,0,0,349217,7.8958,,S
880,1,1,female,56.0,0,1,11767,83.1583,C50,C
881,1,2,female,25.0,0,1,230433,26.0,,S
882,0,3,male,33.0,0,0,349257,7.8958,,S
883,0,3,female,22.0,0,0,7552,10.5167,,S
884,0,2,male,28.0,0,0,C.A./SOTON 34068,10.5,,S
885,0,3,male,25.0,0,0,SOTON/OQ 392076,7.05,,S
886,0,3,female,39.0,0,5,382652,29.125,,Q
887,0,2,male,27.0,0,0,211536,13.0,,S
888,1,1,female,19.0,0,0,112053,30.0,B42,S
889,0,3,female,,1,2,W./C. 6607,23.45,,S
890,1,1,male,26.0,0,0,111369,30.0,C148,C
891,0,3,male,32.0,0,0,370376,7.75,,Q
This is Bandish Patel
```

In [8]:
```
# read the nasa csv file into a dataframe. Name the data frame nasa_df
nasa_df = pd.read_csv('data/nasa.csv')
```

```
nasa_df
#show only the head of the dataframe nasa_df
print(nasa_df.head())
print("This is Bandish Patel")
```

```
   Neo Reference ID     Name  Absolute Magnitude  Est Dia in KM(min)  \
0           3703080  3703080                21.6            0.127220
1           3723955  3723955                21.3            0.146068
2           2446862  2446862                20.3            0.231502
3           3092506  3092506                27.4            0.008801
4           3514799  3514799                21.6            0.127220

   Est Dia in KM(max)  Est Dia in M(min)  Est Dia in M(max)  \
0            0.284472         127.219879         284.472297
1            0.326618         146.067964         326.617897
2            0.517654         231.502122         517.654482
3            0.019681           8.801465          19.680675
4            0.284472         127.219879         284.472297

   Est Dia in Miles(min)  Est Dia in Miles(max)  Est Dia in Feet(min)  ...  \
0               0.079051               0.176763            417.388066  ...
1               0.090762               0.202951            479.225620  ...
2               0.143849               0.321655            759.521423  ...
3               0.005469               0.012229             28.876199  ...
4               0.079051               0.176763            417.388066  ...

   Asc Node Longitude Orbital Period  Perihelion Distance  Perihelion Arg  \
0          314.373913     609.599786             0.808259       57.257470
1          136.717242     425.869294             0.718200      313.091975
2          259.475979     643.580228             0.950791      248.415038
3           57.173266     514.082140             0.983902       18.707701
4           84.629307     495.597821             0.967687      158.263596

   Aphelion Dist  Perihelion Time  Mean Anomaly  Mean Motion  Equinox  \
0       2.005764     2.458162e+06    264.837533     0.590551    J2000
1       1.497352     2.457795e+06    173.741112     0.845330    J2000
2       1.966857     2.458120e+06    292.893654     0.559371    J2000
3       1.527904     2.457902e+06     68.741007     0.700277    J2000
4       1.483543     2.457814e+06    135.142133     0.726395    J2000

   Hazardous
0       True
1      False
2       True
3      False
4       True

[5 rows x 40 columns]
This is Bandish Patel
```

In [9]:
```
# let us say you want to know the columns and their data types of this dataframe na
print(nasa_df.dtypes)
print("This is Bandish Patel")
```

```
Neo Reference ID                  int64
Name                              int64
Absolute Magnitude              float64
Est Dia in KM(min)              float64
Est Dia in KM(max)              float64
Est Dia in M(min)               float64
Est Dia in M(max)               float64
Est Dia in Miles(min)           float64
Est Dia in Miles(max)           float64
Est Dia in Feet(min)            float64
Est Dia in Feet(max)            float64
Close Approach Date              object
Epoch Date Close Approach         int64
Relative Velocity km per sec    float64
Relative Velocity km per hr     float64
Miles per hour                  float64
Miss Dist.(Astronomical)        float64
Miss Dist.(lunar)               float64
Miss Dist.(kilometers)          float64
Miss Dist.(miles)               float64
Orbiting Body                    object
Orbit ID                          int64
Orbit Determination Date         object
Orbit Uncertainity                int64
Minimum Orbit Intersection      float64
Jupiter Tisserand Invariant     float64
Epoch Osculation                float64
Eccentricity                    float64
Semi Major Axis                 float64
Inclination                     float64
Asc Node Longitude              float64
Orbital Period                  float64
Perihelion Distance             float64
Perihelion Arg                  float64
Aphelion Dist                   float64
Perihelion Time                 float64
Mean Anomaly                    float64
Mean Motion                     float64
Equinox                          object
Hazardous                          bool
dtype: object
This is Bandish Patel
```

In [14]:

```
# read the titanic csv file into a dataframe. Name the data frame mydf

mydf = pd.read_csv('data/titanic.csv')
mydf

#show only the head of the dataframe mydf
print(mydf.head())
print("This is Bandish Patel")
```

```
   PassengerId  Survived  Pclass     Sex   Age  SibSp  Parch  \
0            1         0       3    male  22.0      1      0
1            2         1       1  female  38.0      1      0
2            3         1       3  female  26.0      0      0
3            4         1       1  female  35.0      1      0
4            5         0       3    male  35.0      0      0

             Ticket     Fare Cabin Embarked
0         A/5 21171   7.2500   NaN        S
1          PC 17599  71.2833   C85        C
2  STON/O2. 3101282   7.9250   NaN        S
3            113803  53.1000  C123        S
4            373450   8.0500   NaN        S
This is Bandish Patel
```

In [19]:
```
#specifying 10 of rows to be read starting from the top
pd.read_csv('data/titanic.csv', nrows = 10)
```

Out[19]:

| | PassengerId | Survived | Pclass | Sex | Age | SibSp | Parch | Ticket | Fare | Cabin |
|---|---|---|---|---|---|---|---|---|---|---|
| **0** | 1 | 0 | 3 | male | 22.0 | 1 | 0 | A/5 21171 | 7.2500 | NaN |
| **1** | 2 | 1 | 1 | female | 38.0 | 1 | 0 | PC 17599 | 71.2833 | C85 |
| **2** | 3 | 1 | 3 | female | 26.0 | 0 | 0 | STON/O2. 3101282 | 7.9250 | NaN |
| **3** | 4 | 1 | 1 | female | 35.0 | 1 | 0 | 113803 | 53.1000 | C123 |
| **4** | 5 | 0 | 3 | male | 35.0 | 0 | 0 | 373450 | 8.0500 | NaN |
| **5** | 6 | 0 | 3 | male | NaN | 0 | 0 | 330877 | 8.4583 | NaN |
| **6** | 7 | 0 | 1 | male | 54.0 | 0 | 0 | 17463 | 51.8625 | E46 |
| **7** | 8 | 0 | 3 | male | 2.0 | 3 | 1 | 349909 | 21.0750 | NaN |
| **8** | 9 | 1 | 3 | female | 27.0 | 0 | 2 | 347742 | 11.1333 | NaN |
| **9** | 10 | 1 | 2 | female | 14.0 | 1 | 0 | 237736 | 30.0708 | NaN |

In [21]:
```
#read the titantic.csv file but skip 10 rows at the top while reading it and assign
new_df = pd.read_csv('data/titanic.csv',skiprows = 10)
new_df

#display onl the head of the data frame new_df
print(new_df.head())
print("This is Bandish Patel")
```

```
   10  1  2  female  14.0  1.1  0     237736  30.0708 Unnamed: 9  C
0  11  1  3  female   4.0    1  1    PP 9549  16.7000         G6  S
1  12  1  1  female  58.0    0  0     113783  26.5500       C103  S
2  13  0  3    male  20.0    0  0  A/5. 2151   8.0500        NaN  S
3  14  0  3    male  39.0    1  5     347082  31.2750        NaN  S
4  15  0  3  female  14.0    0  0     350406   7.8542        NaN  S
This is Bandish Patel
```

In [25]:
```
#show only PassengerId, Survived, Sex , Age, Ticket columns. Save it to a dataframe
info = pd.read_csv('data/titanic.csv')
df = info[['PassengerId', 'Survived', 'Sex', 'Age', 'Ticket']]
df

#Show only the head of the dataframe df
print(df.head())
print("This is Bandish Patel")
```

```
   PassengerId  Survived     Sex   Age            Ticket
0            1         0    male  22.0         A/5 21171
1            2         1  female  38.0          PC 17599
2            3         1  female  26.0  STON/O2. 3101282
3            4         1  female  35.0            113803
4            5         0    male  35.0            373450
This is Bandish Patel
```

In [27]:
```
# Handling missing values is an important and frequently nuanced part of the file p
# Missing data is usually either not present (empty string) or marked by some senti
# By default, pandas uses a set of commonly occurring sentinels, such as NA and NUL
values = na_values = ['NA', 'NULL', 'NaN', '']
info = pd.read_csv('data/titanic.csv',  na_values=na_values)
df = info[['PassengerId', 'Survived', 'Sex', 'Age', 'Ticket']]
print(df.head())
print("This is Bandish Patel")
```

```
   PassengerId  Survived     Sex   Age            Ticket
0            1         0    male  22.0         A/5 21171
1            2         1  female  38.0          PC 17599
2            3         1  female  26.0  STON/O2. 3101282
3            4         1  female  35.0            113803
4            5         0    male  35.0            373450
This is Bandish Patel
```

In [28]:
```
# The na_values option can take either a list or set of strings to consider missing
info = pd.read_csv('data/titanic.csv', na_values = 'Null')
df = info[['PassengerId', 'Survived', 'Sex', 'Age', 'Ticket']]

#show only the head of the dataframe
print(df.head())
print("This is Bandish Patel")
```

```
   PassengerId  Survived     Sex   Age            Ticket
0            1         0    male  22.0         A/5 21171
1            2         1  female  38.0          PC 17599
2            3         1  female  26.0  STON/O2. 3101282
3            4         1  female  35.0            113803
4            5         0    male  35.0            373450
This is Bandish Patel
```

**If I want to read any file. I type pd.read_ and click the tab. It will show me drop down menu of the variety of formats that pandas can read from. Pandas can read from clipboard, csv, excel, hdf, html, json, pickle, sas, sql, sql_query, sql_table,stata, and more. Let us see how can we use read_table to read a csv file

In [30]:
```
#use read_table to read the titanic.csv file. Save it to a dataframe call the dataf
titanic_df = pd.read_table('data/titanic.csv', sep = ',')
titanic_df

#Show only the head of the dataframe titanic_df
print(titanic_df.head())
print("This is Bandish Patel")
```

```
   PassengerId  Survived  Pclass     Sex   Age  SibSp  Parch  \
0            1         0       3    male  22.0      1      0
1            2         1       1  female  38.0      1      0
2            3         1       3  female  26.0      0      0
3            4         1       1  female  35.0      1      0
4            5         0       3    male  35.0      0      0

             Ticket     Fare Cabin Embarked
0         A/5 21171   7.2500   NaN        S
1          PC 17599  71.2833   C85        C
2  STON/O2. 3101282   7.9250   NaN        S
3            113803  53.1000  C123        S
4            373450   8.0500   NaN        S
This is Bandish Patel
```

In [31]:
```
#write dataframe df to a csv file name it myTitanic.csv. Save it at data subfolder
df.to_csv('data/myTitanic.csv', index = 'False')
```

In [34]:
```
#let us see the myTitanic.csv using the type command
import sys
!type data\myTitanic.csv
print("This is Bandish Patel")
```

```
,PassengerId,Survived,Sex,Age,Ticket
0,1,0,male,22.0,A/5 21171
1,2,1,female,38.0,PC 17599
2,3,1,female,26.0,STON/O2. 3101282
3,4,1,female,35.0,113803
4,5,0,male,35.0,373450
5,6,0,male,,330877
6,7,0,male,54.0,17463
7,8,0,male,2.0,349909
8,9,1,female,27.0,347742
9,10,1,female,14.0,237736
10,11,1,female,4.0,PP 9549
11,12,1,female,58.0,113783
12,13,0,male,20.0,A/5. 2151
13,14,0,male,39.0,347082
14,15,0,female,14.0,350406
15,16,1,female,55.0,248706
16,17,0,male,2.0,382652
17,18,1,male,,244373
18,19,0,female,31.0,345763
19,20,1,female,,2649
20,21,0,male,35.0,239865
21,22,1,male,34.0,248698
22,23,1,female,15.0,330923
23,24,1,male,28.0,113788
24,25,0,female,8.0,349909
25,26,1,female,38.0,347077
26,27,0,male,,2631
27,28,0,male,19.0,19950
28,29,1,female,,330959
29,30,0,male,,349216
30,31,0,male,40.0,PC 17601
31,32,1,female,,PC 17569
32,33,1,female,,335677
33,34,0,male,66.0,C.A. 24579
34,35,0,male,28.0,PC 17604
35,36,0,male,42.0,113789
36,37,1,male,,2677
37,38,0,male,21.0,A./5. 2152
38,39,0,female,18.0,345764
39,40,1,female,14.0,2651
40,41,0,female,40.0,7546
41,42,0,female,27.0,11668
42,43,0,male,,349253
43,44,1,female,3.0,SC/Paris 2123
44,45,1,female,19.0,330958
45,46,0,male,,S.C./A.4. 23567
46,47,0,male,,370371
47,48,1,female,,14311
48,49,0,male,,2662
49,50,0,female,18.0,349237
50,51,0,male,7.0,3101295
51,52,0,male,21.0,A/4. 39886
52,53,1,female,49.0,PC 17572
53,54,1,female,29.0,2926
54,55,0,male,65.0,113509
```

```
55,56,1,male,,19947
56,57,1,female,21.0,C.A. 31026
57,58,0,male,28.5,2697
58,59,1,female,5.0,C.A. 34651
59,60,0,male,11.0,CA 2144
60,61,0,male,22.0,2669
61,62,1,female,38.0,113572
62,63,0,male,45.0,36973
63,64,0,male,4.0,347088
64,65,0,male,,PC 17605
65,66,1,male,,2661
66,67,1,female,29.0,C.A. 29395
67,68,0,male,19.0,S.P. 3464
68,69,1,female,17.0,3101281
69,70,0,male,26.0,315151
70,71,0,male,32.0,C.A. 33111
71,72,0,female,16.0,CA 2144
72,73,0,male,21.0,S.O.C. 14879
73,74,0,male,26.0,2680
74,75,1,male,32.0,1601
75,76,0,male,25.0,348123
76,77,0,male,,349208
77,78,0,male,,374746
78,79,1,male,0.83,248738
79,80,1,female,30.0,364516
80,81,0,male,22.0,345767
81,82,1,male,29.0,345779
82,83,1,female,,330932
83,84,0,male,28.0,113059
84,85,1,female,17.0,SO/C 14885
85,86,1,female,33.0,3101278
86,87,0,male,16.0,W./C. 6608
87,88,0,male,,SOTON/OQ 392086
88,89,1,female,23.0,19950
89,90,0,male,24.0,343275
90,91,0,male,29.0,343276
91,92,0,male,20.0,347466
92,93,0,male,46.0,W.E.P. 5734
93,94,0,male,26.0,C.A. 2315
94,95,0,male,59.0,364500
95,96,0,male,,374910
96,97,0,male,71.0,PC 17754
97,98,1,male,23.0,PC 17759
98,99,1,female,34.0,231919
99,100,0,male,34.0,244367
100,101,0,female,28.0,349245
101,102,0,male,,349215
102,103,0,male,21.0,35281
103,104,0,male,33.0,7540
104,105,0,male,37.0,3101276
105,106,0,male,28.0,349207
106,107,1,female,21.0,343120
107,108,1,male,,312991
108,109,0,male,38.0,349249
109,110,1,female,,371110
110,111,0,male,47.0,110465
```

```
111,112,0,female,14.5,2665
112,113,0,male,22.0,324669
113,114,0,female,20.0,4136
114,115,0,female,17.0,2627
115,116,0,male,21.0,STON/O 2. 3101294
116,117,0,male,70.5,370369
117,118,0,male,29.0,11668
118,119,0,male,24.0,PC 17558
119,120,0,female,2.0,347082
120,121,0,male,21.0,S.O.C. 14879
121,122,0,male,,A4. 54510
122,123,0,male,32.5,237736
123,124,1,female,32.5,27267
124,125,0,male,54.0,35281
125,126,1,male,12.0,2651
126,127,0,male,,370372
127,128,1,male,24.0,C 17369
128,129,1,female,,2668
129,130,0,male,45.0,347061
130,131,0,male,33.0,349241
131,132,0,male,20.0,SOTON/O.Q. 3101307
132,133,0,female,47.0,A/5. 3337
133,134,1,female,29.0,228414
134,135,0,male,25.0,C.A. 29178
135,136,0,male,23.0,SC/PARIS 2133
136,137,1,female,19.0,11752
137,138,0,male,37.0,113803
138,139,0,male,16.0,7534
139,140,0,male,24.0,PC 17593
140,141,0,female,,2678
141,142,1,female,22.0,347081
142,143,1,female,24.0,STON/O2. 3101279
143,144,0,male,19.0,365222
144,145,0,male,18.0,231945
145,146,0,male,19.0,C.A. 33112
146,147,1,male,27.0,350043
147,148,0,female,9.0,W./C. 6608
148,149,0,male,36.5,230080
149,150,0,male,42.0,244310
150,151,0,male,51.0,S.O.P. 1166
151,152,1,female,22.0,113776
152,153,0,male,55.5,A.5. 11206
153,154,0,male,40.5,A/5. 851
154,155,0,male,,Fa 265302
155,156,0,male,51.0,PC 17597
156,157,1,female,16.0,35851
157,158,0,male,30.0,SOTON/OQ 392090
158,159,0,male,,315037
159,160,0,male,,CA. 2343
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655,656,0,male,24.0,S.O.C. 14879
656,657,0,male,,349223
657,658,0,female,32.0,364849
658,659,0,male,23.0,29751
659,660,0,male,58.0,35273
660,661,1,male,50.0,PC 17611
661,662,0,male,40.0,2623
662,663,0,male,47.0,5727
663,664,0,male,36.0,349210
664,665,1,male,20.0,STON/O 2. 3101285
665,666,0,male,32.0,S.O.C. 14879
666,667,0,male,25.0,234686
667,668,0,male,,312993
668,669,0,male,43.0,A/5 3536
669,670,1,female,,19996
670,671,1,female,40.0,29750
```

```
671,672,0,male,31.0,F.C. 12750
672,673,0,male,70.0,C.A. 24580
673,674,1,male,31.0,244270
674,675,0,male,,239856
675,676,0,male,18.0,349912
676,677,0,male,24.5,342826
677,678,1,female,18.0,4138
678,679,0,female,43.0,CA 2144
679,680,1,male,36.0,PC 17755
680,681,0,female,,330935
681,682,1,male,27.0,PC 17572
682,683,0,male,20.0,6563
683,684,0,male,14.0,CA 2144
684,685,0,male,60.0,29750
685,686,0,male,25.0,SC/Paris 2123
686,687,0,male,14.0,3101295
687,688,0,male,19.0,349228
688,689,0,male,18.0,350036
689,690,1,female,15.0,24160
690,691,1,male,31.0,17474
691,692,1,female,4.0,349256
692,693,1,male,,1601
693,694,0,male,25.0,2672
694,695,0,male,60.0,113800
695,696,0,male,52.0,248731
696,697,0,male,44.0,363592
697,698,1,female,,35852
698,699,0,male,49.0,17421
699,700,0,male,42.0,348121
700,701,1,female,18.0,PC 17757
701,702,1,male,35.0,PC 17475
702,703,0,female,18.0,2691
703,704,0,male,25.0,36864
704,705,0,male,26.0,350025
705,706,0,male,39.0,250655
706,707,1,female,45.0,223596
707,708,1,male,42.0,PC 17476
708,709,1,female,22.0,113781
709,710,1,male,,2661
710,711,1,female,24.0,PC 17482
711,712,0,male,,113028
712,713,1,male,48.0,19996
713,714,0,male,29.0,7545
714,715,0,male,52.0,250647
715,716,0,male,19.0,348124
716,717,1,female,38.0,PC 17757
717,718,1,female,27.0,34218
718,719,0,male,,36568
719,720,0,male,33.0,347062
720,721,1,female,6.0,248727
721,722,0,male,17.0,350048
722,723,0,male,34.0,12233
723,724,0,male,50.0,250643
724,725,1,male,27.0,113806
725,726,0,male,20.0,315094
726,727,1,female,30.0,31027
```

```
727,728,1,female,,36866
728,729,0,male,25.0,236853
729,730,0,female,25.0,STON/O2. 3101271
730,731,1,female,29.0,24160
731,732,0,male,11.0,2699
732,733,0,male,,239855
733,734,0,male,23.0,28425
734,735,0,male,23.0,233639
735,736,0,male,28.5,54636
736,737,0,female,48.0,W./C. 6608
737,738,1,male,35.0,PC 17755
738,739,0,male,,349201
739,740,0,male,,349218
740,741,1,male,,16988
741,742,0,male,36.0,19877
742,743,1,female,21.0,PC 17608
743,744,0,male,24.0,376566
744,745,1,male,31.0,STON/O 2. 3101288
745,746,0,male,70.0,WE/P 5735
746,747,0,male,16.0,C.A. 2673
747,748,1,female,30.0,250648
748,749,0,male,19.0,113773
749,750,0,male,31.0,335097
750,751,1,female,4.0,29103
751,752,1,male,6.0,392096
752,753,0,male,33.0,345780
753,754,0,male,23.0,349204
754,755,1,female,48.0,220845
755,756,1,male,0.67,250649
756,757,0,male,28.0,350042
757,758,0,male,18.0,29108
758,759,0,male,34.0,363294
759,760,1,female,33.0,110152
760,761,0,male,,358585
761,762,0,male,41.0,SOTON/O2 3101272
762,763,1,male,20.0,2663
763,764,1,female,36.0,113760
764,765,0,male,16.0,347074
765,766,1,female,51.0,13502
766,767,0,male,,112379
767,768,0,female,30.5,364850
768,769,0,male,,371110
769,770,0,male,32.0,8471
770,771,0,male,24.0,345781
771,772,0,male,48.0,350047
772,773,0,female,57.0,S.O./P.P. 3
773,774,0,male,,2674
774,775,1,female,54.0,29105
775,776,0,male,18.0,347078
776,777,0,male,,383121
777,778,1,female,5.0,364516
778,779,0,male,,36865
779,780,1,female,43.0,24160
780,781,1,female,13.0,2687
781,782,1,female,17.0,17474
782,783,0,male,29.0,113501
```

```
783,784,0,male,,W./C. 6607
784,785,0,male,25.0,SOTON/O.Q. 3101312
785,786,0,male,25.0,374887
786,787,1,female,18.0,3101265
787,788,0,male,8.0,382652
788,789,1,male,1.0,C.A. 2315
789,790,0,male,46.0,PC 17593
790,791,0,male,,12460
791,792,0,male,16.0,239865
792,793,0,female,,CA. 2343
793,794,0,male,,PC 17600
794,795,0,male,25.0,349203
795,796,0,male,39.0,28213
796,797,1,female,49.0,17465
797,798,1,female,31.0,349244
798,799,0,male,30.0,2685
799,800,0,female,30.0,345773
800,801,0,male,34.0,250647
801,802,1,female,31.0,C.A. 31921
802,803,1,male,11.0,113760
803,804,1,male,0.42,2625
804,805,1,male,27.0,347089
805,806,0,male,31.0,347063
806,807,0,male,39.0,112050
807,808,0,female,18.0,347087
808,809,0,male,39.0,248723
809,810,1,female,33.0,113806
810,811,0,male,26.0,3474
811,812,0,male,39.0,A/4 48871
812,813,0,male,35.0,28206
813,814,0,female,6.0,347082
814,815,0,male,30.5,364499
815,816,0,male,,112058
816,817,0,female,23.0,STON/O2. 3101290
817,818,0,male,31.0,S.C./PARIS 2079
818,819,0,male,43.0,C 7075
819,820,0,male,10.0,347088
820,821,1,female,52.0,12749
821,822,1,male,27.0,315098
822,823,0,male,38.0,19972
823,824,1,female,27.0,392096
824,825,0,male,2.0,3101295
825,826,0,male,,368323
826,827,0,male,,1601
827,828,1,male,1.0,S.C./PARIS 2079
828,829,1,male,,367228
829,830,1,female,62.0,113572
830,831,1,female,15.0,2659
831,832,1,male,0.83,29106
832,833,0,male,,2671
833,834,0,male,23.0,347468
834,835,0,male,18.0,2223
835,836,1,female,39.0,PC 17756
836,837,0,male,21.0,315097
837,838,0,male,,392092
838,839,1,male,32.0,1601
```

```
839,840,1,male,,11774
840,841,0,male,20.0,SOTON/O2 3101287
841,842,0,male,16.0,S.O./P.P. 3
842,843,1,female,30.0,113798
843,844,0,male,34.5,2683
844,845,0,male,17.0,315090
845,846,0,male,42.0,C.A. 5547
846,847,0,male,,CA. 2343
847,848,0,male,35.0,349213
848,849,0,male,28.0,248727
849,850,1,female,,17453
850,851,0,male,4.0,347082
851,852,0,male,74.0,347060
852,853,0,female,9.0,2678
853,854,1,female,16.0,PC 17592
854,855,0,female,44.0,244252
855,856,1,female,18.0,392091
856,857,1,female,45.0,36928
857,858,1,male,51.0,113055
858,859,1,female,24.0,2666
859,860,0,male,,2629
860,861,0,male,41.0,350026
861,862,0,male,21.0,28134
862,863,1,female,48.0,17466
863,864,0,female,,CA. 2343
864,865,0,male,24.0,233866
865,866,1,female,42.0,236852
866,867,1,female,27.0,SC/PARIS 2149
867,868,0,male,31.0,PC 17590
868,869,0,male,,345777
869,870,1,male,4.0,347742
870,871,0,male,26.0,349248
871,872,1,female,47.0,11751
872,873,0,male,33.0,695
873,874,0,male,47.0,345765
874,875,1,female,28.0,P/PP 3381
875,876,1,female,15.0,2667
876,877,0,male,20.0,7534
877,878,0,male,19.0,349212
878,879,0,male,,349217
879,880,1,female,56.0,11767
880,881,1,female,25.0,230433
881,882,0,male,33.0,349257
882,883,0,female,22.0,7552
883,884,0,male,28.0,C.A./SOTON 34068
884,885,0,male,25.0,SOTON/OQ 392076
885,886,0,female,39.0,382652
886,887,0,male,27.0,211536
887,888,1,female,19.0,112053
888,889,0,female,,W./C. 6607
889,890,1,male,26.0,111369
890,891,0,male,32.0,370376
```

### Reading JSON

In [56]:
```
# Here is an example of what a JSON (JavaScript Object Notation) looks like:
```

```
obj = """
{
   "article": [

      {
         "id":"01",
         "language": "JSON",
         "edition": "first",
         "author": "Derrick Mwiti"
      },

      {
         "id":"02",
         "language": "Python",
         "edition": "second",
         "author": "Derrick Mwiti"
      }
   ],

   "blog":[
   {
       "name": "Datacamp",
       "URL":"datacamp.com"
   }
   ]
}
"""
```

In [42]:

```
#add required import statements
import json
obj = """
{
   "article": [

      {
         "id":"01",
         "language": "JSON",
         "edition": "first",
         "author": "Derrick Mwiti"
      },

      {
         "id":"02",
         "language": "Python",
         "edition": "second",
         "author": "Derrick Mwiti"
      }
   ],

   "blog":[
   {
       "name": "Datacamp",
       "URL":"datacamp.com"
   }
   ]
}
```

```
"""
#Let import json module
x = json.loads(obj)
print(x)
print("This is Bandish patel")
```

```
{'article': [{'id': '01', 'language': 'JSON', 'edition': 'first', 'author': 'Derrick
Mwiti'}, {'id': '02', 'language': 'Python', 'edition': 'second', 'author': 'Derrick
Mwiti'}], 'blog': [{'name': 'Datacamp', 'URL': 'datacamp.com'}]}
This is Bandish patel
```

In [46]:

```
# - To convert a JSON string to Python form, use json.loads:
json_string = """
{
   "article": [
      {
         "id":"01",
         "language": "JSON",
         "edition": "first",
         "author": "Derrick Mwiti"
      },
      {
         "id":"02",
         "language": "Python",
         "edition": "second",
         "author": "Derrick Mwiti"
      }
   ],
   "blog":[
      {
         "name": "Datacamp",
         "URL":"datacamp.com"
      }
   ]
}
"""

# Convert the JSON string to a Python object
python = json.loads(json_string)
print(python)
print("This is Bandish patel")
```

```
{'article': [{'id': '01', 'language': 'JSON', 'edition': 'first', 'author': 'Derrick
Mwiti'}, {'id': '02', 'language': 'Python', 'edition': 'second', 'author': 'Derrick
Mwiti'}], 'blog': [{'name': 'Datacamp', 'URL': 'datacamp.com'}]}
This is Bandish patel
```

In [49]:

```
# json.dumps, on the other hand, converts a Python object back to JSON: use dumps
string = json.dumps(python)
print(string)
print("This is Bandish Patel")
```

```
{"article": [{"id": "01", "language": "JSON", "edition": "first", "author": "Derrick
Mwiti"}, {"id": "02", "language": "Python", "edition": "second", "author": "Derrick
Mwiti"}], "blog": [{"name": "Datacamp", "URL": "datacamp.com"}]}
This is Bandish Patel
```

In [53]:
```
# How you convert a JSON object or list of objects to a DataFrame or some other dat
# Conveniently, you can pass a list of dicts (which were previously JSON objects) t
# constructor and select a subset of the data fields: Let us say blog
import pandas as pd
import json
obj = """
{
   "article": [
      {
         "id":"01",
         "language": "JSON",
         "edition": "first",
         "author": "Derrick Mwiti"
      },
      {
         "id":"02",
         "language": "Python",
         "edition": "second",
         "author": "Derrick Mwiti"
      }
   ],
   "blog":[
      {
         "name": "Datacamp",
         "URL":"datacamp.com"
      }
   ]
}
"""

x = json.loads(obj)
df = pd.DataFrame(x['blog'])
print(df)
print("This is Bandish Patel")
```

```
      name           URL
0  Datacamp  datacamp.com
This is Bandish Patel
```

**Working with Excel Files

In [6]:
```
#load sheet 2002 of battledeath.xlsx to a dataframe call it df5
#import required libraries
import pandas as pd
import numpy as np
#read the required sheet of the excel file to a dataframe df5
df5 = pd.read_excel('data/battledeath.xlsx', sheet_name='2002')

#show the data frame df5
df5
```

Out[6]:

| | War, age-adjusted mortality due to | 2002 |
|---|---|---|
| **0** | Afghanistan | 36.083990 |
| **1** | Albania | 0.128908 |
| **2** | Algeria | 18.314120 |
| **3** | Andorra | 0.000000 |
| **4** | Angola | 18.964560 |
| **...** | ... | ... |
| **187** | Venezuela | 0.000000 |
| **188** | Vietnam | 0.040222 |
| **189** | Yemen, Rep. | 0.074510 |
| **190** | Zambia | 0.044548 |
| **191** | Zimbabwe | 33.796200 |

192 rows × 2 columns

In [9]:
```
# Open the excel file data/Lec_28_test.xlsx as an object
xlsfile = pd.ExcelFile('data/Lec_28_test.xlsx')
print(xlsfile)
print("This is Bandish Patel")
```

```
<pandas.io.excel._base.ExcelFile object at 0x00000221029690A0>
```

In [18]:
```
# Parse the first sheet of the excel file and set as DataFrame
dframe = xlsfile.parse('Sheet1')
print("This is Bandish patel")
```

```
This is Bandish patel
```

In [16]:
```
#Show dataframe
dframe
```

Out[16]:

| | This is a test | Unnamed: 1 | Unnamed: 2 |
|---|---|---|---|
| **0** | 23 | 6678 | 456 |
| **1** | 234 | 678 | 456 |
| **2** | 234 | 7 | 345 |
| **3** | 34 | 56 | 234 |
| **4** | 5 | 456 | 4365 |

In [20]:
```
# Print sheet names
print(xlsfile.sheet_names)
print("This is Bandish patel")
```

```
['Sheet1', 'Sheet2', 'Sheet3']
This is Bandish patel
```

**Excel Output:

In [27]:
```
#write the line of code to  output the dataframe df to a sheet named sheet1 in the
dframe.to_excel("data/Excel_Sample2.xlsx", sheet_name='sheet1', index=False)
print("This is Bandish patel")
```

```
This is Bandish patel
```

***Retrieve information from html

**HTML Input Pandas read_html function will read tables off of a webpage and return a list of DataFrame objects:

In [30]:
```
#retrieve infromation from the following html https://www.fnb.co.za/Controller?nav=
#read the html file using pandas and save the result in data
import pandas as pd
data = pd.read_html('https://www.fnb.co.za/Controller?nav=rates.forex.list.ForexRat
print(data)
print("This is Bandish Patel")
```

```
[   Unnamed: 0              Currency Code  Bank Selling  Bank Buying
0         NaN                   EURO  EUR           NaN          NaN
1         NaN          BRITISH POUND  GBP           NaN          NaN
2         NaN  UNITED STATES DOLLAR  USD           NaN          NaN,     Unnamed: 0
Currency Code  Bank Selling  Bank Buying
0          NaN        BOTSWANA PULA  BWP           NaN          NaN
1          NaN        GHANAIAN CEDI  GHS           NaN          NaN
2          NaN     KENYAN SCHILLING  KES           NaN          NaN
3          NaN         LESOTHO LOTI  LSL           NaN          NaN
4          NaN      MAURITIAN RUPEE  MUR           NaN          NaN
5          NaN      MALAWIAN KWACHA  MWK           NaN          NaN
6          NaN      NAMIBIAN DOLLAR  NAD           NaN          NaN
7          NaN       NIGERIAN NAIRA  NGN           NaN          NaN
8          NaN      SWAZI LILANGENI  SZL           NaN          NaN
9          NaN  TANZANIAN SCHILLING  TZS           NaN          NaN
10         NaN    UGANDAN SCHILLING  UGX           NaN          NaN
11         NaN       ZAMBIAN KWACHA  ZMW           NaN          NaN,    Unnamed: 0
Currency Code  Bank Selling  Bank Buying
0         NaN  UNITED ARAB EMIRATES DIRHAM  AED           NaN          NaN
1         NaN            AUSTRALIAN DOLLAR  AUD           NaN          NaN
2         NaN             CHINESE RENMINBI  CNY           NaN          NaN
3         NaN             HONG KONG DOLLAR  HKD           NaN          NaN
4         NaN                 INDIAN RUPEE  INR           NaN          NaN
5         NaN                 JAPANESE YEN  JPY           NaN          NaN
6         NaN           NEW ZEALAND DOLLAR  NZD           NaN          NaN
7         NaN             SINGAPORE DOLLAR  SGD           NaN          NaN
8         NaN                THAILAND BAHT  THB           NaN          NaN,    Unnam
ed: 0         Currency Code  Bank Selling  Bank Buying
0         NaN  CANADIAN DOLLAR  CAD           NaN          NaN
1         NaN      SWISS FRANC  CHF           NaN          NaN
2         NaN     DANISH KRONE  DKK           NaN          NaN
3         NaN  NORWEGIAN KRONE  NOK           NaN          NaN
4         NaN     POLISH ZLOTY  PLN           NaN          NaN
5         NaN    SWEDISH KRONA  SEK           NaN          NaN]
This is Bandish Patel
```

**Note this does not directly create a dataframe. If we checked the data type of df that is produced, you will find that it is a list. This is essentially what pandas tried to do was to find every table element that was in the html file. Try the following on the html page mentioned above. Right click on the page and view page source you'll see table references. So pandas will make a list of those table and make a list of them and convert each item in the list into a data frame. So to get the first table we can use the index zero

In [33]:
```
#display the data type of data
print(type(data))
print("This is Bandish Patel")
```

```
<class 'list'>
This is Bandish Patel
```

In [36]:
```
#convert the result to dataframe
df = data[0]

#show the dataframe
df
```

Out[36]:

| | Unnamed: 0 | Currency | Code | Bank Selling | Bank Buying |
|---|---|---|---|---|---|
| **0** | NaN | EURO | EUR | NaN | NaN |
| **1** | NaN | BRITISH POUND | GBP | NaN | NaN |
| **2** | NaN | UNITED STATES DOLLAR | USD | NaN | NaN |

In [37]:

```
# let us say you want to know the columns of this dataframe
print(df.columns)
print("This is Bandish Patel")
```

```
Index(['Unnamed: 0', 'Currency', 'Code', 'Bank Selling', 'Bank Buying'], dtype='obje
ct')
This is Bandish Patel
```

In [59]:

```
#find number of unique columns from our nasa data set
#this is worth 10 points
import pandas as pd
nasa = pd.read_csv('data/nasa.csv')
unique_columns = nasa.columns.nunique()
print(unique_columns)
print("This is Bandish Patel")
```

```
40
This is Bandish Patel
```

In [63]:

```
#find the number of columns and rows of our nasa data set
#this is worth 10 points
rows = nasa.shape[0]
columns = nasa.shape[1]
print(f"Number of rows are: {rows}")
print(f"Number of columns are: {columns}")
print("This is Bandish Patel")
```

```
Number of rows are: 4687
Number of columns are: 40
This is Bandish Patel
```

In [ ]: