Input/Output

```
import numpy as np
import pandas as pd
import matplotlib.pyplot as plt
import seaborn as sns
sns.set()
%matplotlib inline

df = pd.read_csv('creditcard.csv')
print(df.shape)
df.head()
```

```
(273262, 31)
```

	Time	V1	V2	V3	V4	V5	V6	V7	V8	V9	V10	V11	V12	V13	V14
0	0.0	-1.359807	-0.072781	2.536347	1.378155	-0.338321	0.462388	0.239599	0.098698	0.363787	0.090794	-0.551600	-0.617801	-0.991390	-0.311169
1	0.0	1.191857	0.266151	0.166480	0.448154	0.060018	-0.082361	-0.078803	0.085102	-0.255425	-0.166974	1.612727	1.065235	0.489095	-0.143772
2	1.0	-1.358354	-1.340163	1.773209	0.379780	-0.503198	1.800499	0.791461	0.247676	-1.514654	0.207643	0.624501	0.066084	0.717293	-0.165946
3	1.0	-0.966272	-0.185226	1.792993	-0.863291	-0.010309	1.247203	0.237609	0.377436	-1.387024	-0.054952	-0.226487	0.178228	0.507757	-0.287924
4	2.0	-1.158233	0.877737	1.548718	0.403034	-0.407193	0.095921	0.592941	-0.270533	0.817739	0.753074	-0.822843	0.538196	1.345852	-1.119670

```
[55] df.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 273262 entries, 0 to 273261
Data columns (total 31 columns):
 #   Column  Non-Null Count   Dtype  
---  ------  --------------   -----  
 0   Time    273262 non-null  float64
 1   V1      273262 non-null  float64
 2   V2      273262 non-null  float64
 3   V3      273262 non-null  float64
 4   V4      273262 non-null  float64
 5   V5      273262 non-null  float64
 6   V6      273262 non-null  float64
 7   V7      273262 non-null  float64
 8   V8      273262 non-null  float64
 9   V9      273262 non-null  float64
 10  V10     273262 non-null  float64
 11  V11     273262 non-null  float64
 12  V12     273262 non-null  float64
 13  V13     273262 non-null  float64
 14  V14     273262 non-null  float64
 15  V15     273261 non-null  float64
 16  V16     273261 non-null  float64
 17  V17     273261 non-null  float64
 18  V18     273261 non-null  float64
 19  V19     273261 non-null  float64
 20  V20     273261 non-null  float64
 21  V21     273261 non-null  float64
 22  V22     273261 non-null  float64
 23  V23     273261 non-null  float64
 24  V24     273261 non-null  float64
 25  V25     273261 non-null  float64
 26  V26     273261 non-null  float64
 27  V27     273261 non-null  float64
 28  V28     273261 non-null  float64
 29  Amount  273261 non-null  float64
 30  Class   273261 non-null  float64
dtypes: float64(31)
memory usage: 64.6 MB
```

```
[56] df.describe()
```

V20	V21	V22	V23	V24	V25	V26	V27	V28	Amount	Class
261.000000	273261.000000	273261.000000	273261.000000	273261.000000	273261.000000	273261.000000	273261.000000	273261.000000	273261.000000	273261.000000
0.000901	-0.000234	-0.003195	-0.001665	0.000393	0.006193	0.000533	-0.000148	0.000419	89.176571	0.001764
0.770396	0.737152	0.723127	0.629038	0.605856	0.519090	0.483242	0.398821	0.331547	247.094518	0.041962
-28.009635	-34.830382	-10.933144	-44.807735	-2.836627	-10.295397	-2.604551	-22.565679	-11.710896	0.000000	0.000000
-0.210674	-0.227212	-0.539137	-0.162686	-0.353296	-0.309694	-0.327807	-0.070674	-0.052197	5.900000	0.000000
-0.060880	-0.029935	0.004605	-0.013175	0.042383	0.027731	-0.054306	0.001580	0.012000	22.500000	0.000000
0.135069	0.183407	0.519566	0.144295	0.437124	0.354752	0.243041	0.089967	0.077859	78.480000	0.000000
39.420904	27.202839	10.503090	22.528412	4.022866	7.519589	3.517346	12.152401	33.847808	19656.530000	1.000000

```
[58] fig = plt.figure(figsize = (15, 12))

     plt.subplot(5, 6, 1) ; plt.plot(df.V1) ; plt.subplot(5, 6, 15) ; plt.plot(df.V15)
     plt.subplot(5, 6, 2) ; plt.plot(df.V2) ; plt.subplot(5, 6, 16) ; plt.plot(df.V16)
     plt.subplot(5, 6, 3) ; plt.plot(df.V3) ; plt.subplot(5, 6, 17) ; plt.plot(df.V17)
     plt.subplot(5, 6, 4) ; plt.plot(df.V4) ; plt.subplot(5, 6, 18) ; plt.plot(df.V18)
     plt.subplot(5, 6, 5) ; plt.plot(df.V5) ; plt.subplot(5, 6, 19) ; plt.plot(df.V19)
     plt.subplot(5, 6, 6) ; plt.plot(df.V6) ; plt.subplot(5, 6, 20) ; plt.plot(df.V20)
     plt.subplot(5, 6, 7) ; plt.plot(df.V7) ; plt.subplot(5, 6, 21) ; plt.plot(df.V21)
     plt.subplot(5, 6, 8) ; plt.plot(df.V8) ; plt.subplot(5, 6, 22) ; plt.plot(df.V22)
     plt.subplot(5, 6, 9) ; plt.plot(df.V9) ; plt.subplot(5, 6, 23) ; plt.plot(df.V23)
     plt.subplot(5, 6, 10) ; plt.plot(df.V10) ; plt.subplot(5, 6, 24) ; plt.plot(df.V24)
     plt.subplot(5, 6, 11) ; plt.plot(df.V11) ; plt.subplot(5, 6, 25) ; plt.plot(df.V25)
     plt.subplot(5, 6, 12) ; plt.plot(df.V12) ; plt.subplot(5, 6, 26) ; plt.plot(df.V26)
     plt.subplot(5, 6, 13) ; plt.plot(df.V13) ; plt.subplot(5, 6, 27) ; plt.plot(df.V27)
     plt.subplot(5, 6, 14) ; plt.plot(df.V14) ; plt.subplot(5, 6, 28) ; plt.plot(df.V28)
     plt.subplot(5, 6, 29) ; plt.plot(df.Amount)
     plt.show()
```

[58]