

Loading and processing the credit card fraud detectio

INPUT :

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

INPUT :

```
credit_card_data =
pd.read_csv("/kaggle/input/creditcardfraud/creditcard.csv")
```

INPUT :

```
credit_card_data.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 284807 entries, 0 to 284806
Data columns (total 31 columns):
#   Column      Non-Null Count  Dtype
---  -
0   Time        284807 non-null float64
1   V1          284807 non-null float64
2   V2          284807 non-null float64
3   V3          284807 non-null float64
4   V4          284807 non-null float64
5   V5          284807 non-null float64
6   V6          284807 non-null float64
7   V7          284807 non-null float64
8   V8          284807 non-null float64
```

9	V9	284807	non-null	float64
10	V10	284807	non-null	float64
11	V11	284807	non-null	float64
12	V12	284807	non-null	float64
13	V13	284807	non-null	float64
14	V14	284807	non-null	float64
15	V15	284807	non-null	float64
16	V16	284807	non-null	float64
17	V17	284807	non-null	float64
18	V18	284807	non-null	float64
19	V19	284807	non-null	float64
20	V20	284807	non-null	float64
21	V21	284807	non-null	float64
22	V22	284807	non-null	float64
23	V23	284807	non-null	float64
24	V24	284807	non-null	float64
25	V25	284807	non-null	float64
26	V26	284807	non-null	float64
27	V27	284807	non-null	float64
28	V28	284807	non-null	float64
29	Amount	284807	non-null	float64
30	Class	284807	non-null	int64

dtypes: float64(30), int64(1)

memory usage: 67.4 MB

INPUT :

```
credit_card_data.describe()
```

Output :

T i m e	V 1	V 2	V 3	V 4	V 5	V 6	V 7	V 8	V 9	...	V 2 1	V 2 2	V 2 3	V 2 4	V 2 5	V 2 6	V 2 7	V 2 8	A m o u n t	C l a s s	
c o u n t	2 8 4 8 0 7. 0 0 0 0 0 0	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5		2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7 0 e + 0 5	2. 8 4 8 0 7. 0 0 0 0 0 0	2 8 4 8 0 7. 0 0 0 0 0 0		
m e a n	9 4 8 1 3. 8 5 9 5 7 5	1. 1 6 8 3 7 5 e- 1 5	3. 4 1 6 9 0 8 e- 1 6	-1 .3 7 9 5 3 7 e- 1 5	2. 0 7 4 0 9 5 e- 1 5	9. 6 0 4 0 6 6 e- 1 6	1. 4 8 7 3 1 3 e- 1 5	-5 .5 5 6 4 6 7 e- 1 6	1. 2 1 3 4 8 1 e- 1 6	-2 .4 0 6 3 3 1 e- 1 5		1. 6 5 4 0 6 7 e- 1 6	-3 .5 6 8 5 9 3 e- 1 6	2. 5 7 8 6 4 8 e- 1 6	4. 4 7 3 2 6 6 e- 1 5	5. 3 4 0 9 1 5 e- 1 6	1. 6 8 3 4 3 7 e- 1 5	-3 .6 6 0 9 1 e- 1 6	-1 .2 2 7 3 9 0 e- 1 6	8 8. 3 4 9 6 1 9	0. 0 0 1 7 2 7
s t d	4 7 4 8 8. 1 4 5 9 5 5	1. 9 5 8 6 9 6 e + 0 0	1. 6 5 1 3 0 9 e + 0 0	1. 5 1 6 2 5 5 e + 0 0	1. 4 1 5 8 6 9 e + 0 0	1. 3 8 0 2 4 7 e + 0 0	1. 3 3 2 2 7 1 e + 0 0	1. 2 3 7 0 9 4 e + 0 0	1. 1 9 4 3 5 3 e + 0 0	1. 0 9 8 6 3 2 e + 0 0		7. 3 4 5 2 4 0 e- 0 1	7. 2 5 7 0 1 e- 0 1	6. 2 4 4 6 0 3 e- 0 1	6. 0 5 6 4 7 1 e- 0 1	5. 2 1 2 2 7 8 1 e- 0 1	4. 8 2 2 2 7 0 e- 0 1	4. 0 3 6 3 2 5 e- 0 1	3. 3 0 0 8 3 3 e- 0 1	2 5 0. 1 2 0 1 0 9	0. 0 4 1 5 2 7

	m i n	0. 0 0 0 0 0 0	-5 .6 4 0 7 5 1 e + 0 1	-7 .2 7 1 5 7 3 e + 0 1	-4 .8 3 2 5 5 9 e + 0 1	-5 .6 8 3 1 7 3 e + 0 2	-1 .1 3 7 4 3 e + 0 1	-2 .6 1 6 0 5 1 e + 0 1	-4 .3 5 7 2 4 e + 0 1	-7 .3 2 1 6 7 2 e + 0 1	-1 .3 4 3 4 0 7 e + 0 1		-3 .4 8 3 0 3 8 e + 0 1	-1 .0 9 3 3 1 4 e + 0 1	-4 .4 8 0 7 4 e + 0 1	-2 .8 3 6 6 2 7 e + 0 0	-1 .0 2 9 5 4 0 e + 0 1	-2 .6 0 4 5 5 1 e + 0 0	-2 .2 5 6 5 8 e + 0 1	-1 .5 4 3 0 0 8 e + 0 1	0. 0 0 0 0 0 0	0. 0 0 0 0 0 0
	2 5 %	5 4 2 0 1. 5 0 0 0 0 0 0	-9 .2 0 3 7 3 4 e - 0 1	-5 .9 8 5 4 9 e - 0 1	-8 .9 0 3 6 4 8 e - 0 1	-8 .4 8 6 4 0 1 e - 0 1	-6 .9 1 5 9 7 1 e - 0 1	-7 .6 8 2 9 5 6 e - 0 1	-5 .5 4 0 7 9 e - 0 1	-2 .0 8 6 2 9 7 e - 0 1	-6 .4 3 0 9 6 e - 0 1		-2 .2 8 3 9 4 e - 0 1	-5 .4 2 3 5 0 4 e - 0 1	-1 .6 1 8 4 6 3 e - 0 1	-3 .5 4 5 8 6 1 e - 0 1	-3 .1 7 1 4 5 1 e - 0 1	-3 .2 6 9 8 3 9 e - 0 1	-7 .0 8 3 9 5 3 e - 0 2	-5 .2 9 5 9 7 9 e - 0 2	5. 6 0 0 0 0 0 0	0. 0 0 0 0 0 0 0
	5 0 %	8 4 6 9 2. 0 0 0 0 0 0 0	1. 8 1 0 8 8 0 e - 0 2	6. 5 4 8 5 6 e - 0 2	1. 7 9 8 4 6 3 e - 0 2	-1 .9 8 3 4 5 8 e - 0 2	-5 .4 3 3 5 8 3 e - 0 2	-2 .7 4 1 8 7 1 e - 0 1	4. 0 1 0 3 0 e - 0 2	2. 2 3 5 8 0 4 e - 0 2	-5 .1 4 2 8 7 3 e - 0 2		-2 .9 4 5 0 1 7 e - 0 2	6. 7 8 1 9 4 3 e - 0 3	-1 .1 1 9 2 9 3 e - 0 2	4. 0 9 7 6 0 6 e - 0 2	1. 6 5 9 3 5 0 e - 0 2	-5 .2 1 3 9 11 e - 0 2	1. 3 4 2 1 4 6 e - 0 3	1. 1 2 4 3 8 3 e - 0 2	2. 2. 0 0 0 0 0 0	0. 0 0 0 0 0 0 0
	7 5 %	1 3 9 3 2 0. 5 0 0 0 0 0 0	1. 3 1 5 6 4 2 e + 0 0	8. 0 3 7 2 3 9 e - 0 1	1. 0 2 7 1 9 6 e + 0 0	7. 4 3 3 4 1 3 e - 0 1	6. 11 9 2 6 4 e - 0 1	3. 9 8 5 6 4 9 e - 0 1	5. 7 0 4 3 6 1 e - 0 1	3. 2 7 3 4 5 9 e - 0 1	5. 9 7 1 3 9 0 e - 0 1		1. 8 6 3 7 7 2 e - 0 1	5. 2 8 5 3 6 e - 0 1	1. 4 7 6 4 2 1 e - 0 1	4. 3 9 5 2 6 6 e - 0 1	3. 5 0 7 1 5 6 e - 0 1	2. 4 0 9 5 2 2 e - 0 1	9. 1 0 4 5 1 2 e - 0 2	7. 8 2 7 9 9 5 e - 0 2	7 7. 1 6 5 0 0 0	0. 0 0 0 0 0 0 0

m	1	2.	2.	9.	1.	3.	7.	1.	2.	1.		2.	1.	2.	4.	7.	3.	3.	3.	2	
a	7	4	2	3	6	4	3	2	0	5		7	0	2	5	5	5	1	3	5	1.
x	2	5	0	8	8	8	3	0	0	5		2	5	5	8	1	1	6	8	6	0
	7	4	5	2	7	0	0	5	0	9		0	0	2	4	9	7	1	4	9	0
	9	9	7	5	5	1	1	8	7	4	.	2	3	8	5	5	3	2	7	1.	0
	2.	3	7	5	3	6	6	9	2	9	.	8	0	4	4	8	4	2	8	1	0
	0	0	3	8	4	7	3	5	1	9		4	9	1	9	9	6	0	1	6	0
	0	e	e	e	e	e	e	e	e	e		e	e	e	e	e	e	e	e	0	0
	0	+	+	+	+	+	+	+	+	+		+	+	+	+	+	+	+	+	0	0
	0	0	0	0	0	0	0	0	0	0		0	0	0	0	0	0	0	0	0	0
	0	0	1	0	1	1	1	2	1	1		1	1	1	0	0	0	1	1	0	0