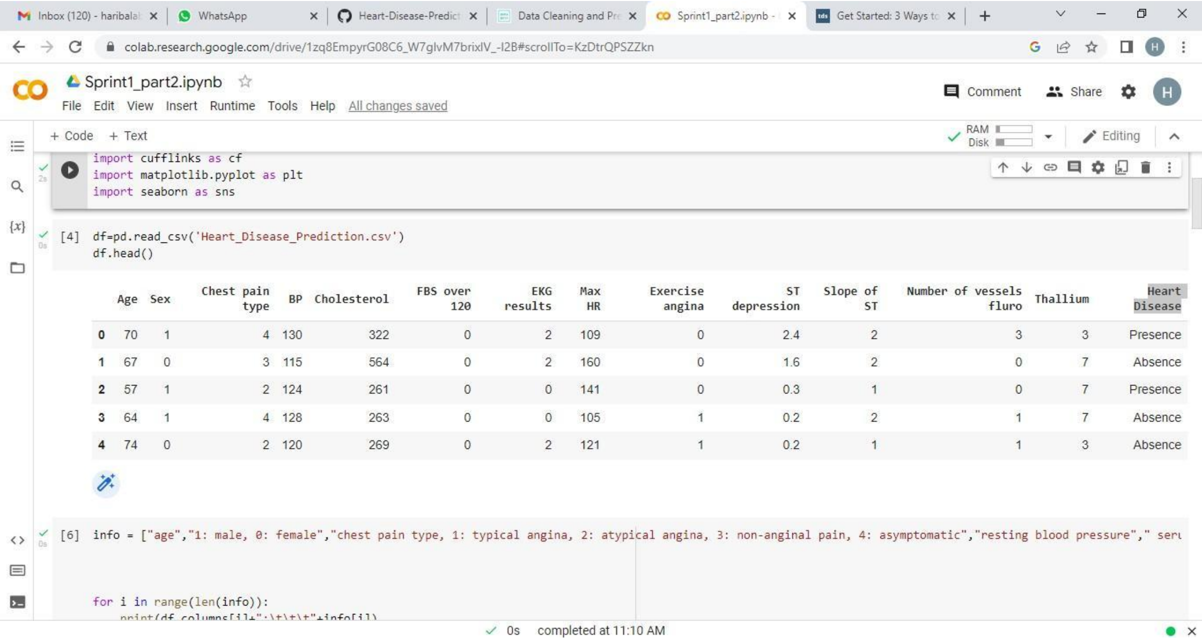
SPRINT 1-PART 2

Date	02 November 2022
Team ID	PNT2022TMID21605
Project Name	Visualizing and Predicting Heart Diseases with an Interactive Dash Board

1) Description:

->It tells about the dataset and their columns and values, and their variation in it.

->To help members of your organization quickly identify datasets that might be useful for them, provide a concise, informative description of your dataset in the dataset's settings. Users will see this description in the info tooltip next to the dataset's name in the datasets hub, as well as on the dataset's details page. Providing a meaningful description helps foster dataset reuse. For instance, based on a dataset's description, users may decide to explore reports that are based on the dataset, or to create their own reports based on the dataset.



```
import cufflinks as cf
import matplotlib.pyplot as plt
import seaborn as sns
```

```
[4] df=pd.read_csv('Heart_Disease_Prediction.csv')
    df.head()
```

	Age	Sex	Chest pain type	BP	Cholesterol	FBS over 120	EKG results	Max HR	Exercise angina	ST depression	Slope of ST	Number of vessels fluro	Thallium	Heart Disease
0	70	1	4	130	322	0	2	109	0	2.4	2	3	3	Presence
1	67	0	3	115	564	0	2	160	0	1.6	2	0	7	Absence
2	57	1	2	124	261	0	0	141	0	0.3	1	0	7	Presence
3	64	1	4	128	263	0	0	105	1	0.2	2	1	7	Absence
4	74	0	2	120	269	0	2	121	1	0.2	1	1	3	Absence

```
[6] info = ["age","1: male, 0: female","chest pain type, 1: typical angina, 2: atypical angina, 3: non-anginal pain, 4: asymptomatic","resting blood pressure"," seru



    for i in range(len(info)):
        print(df.columns[i]+":\t\t\t"+info[i])
```

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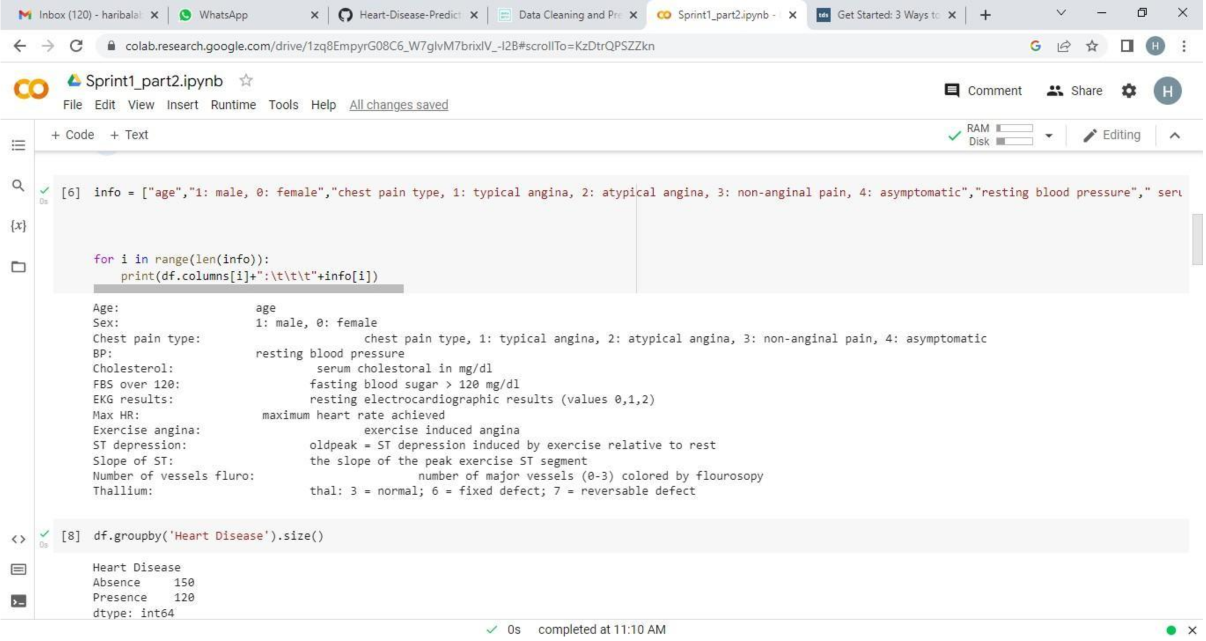
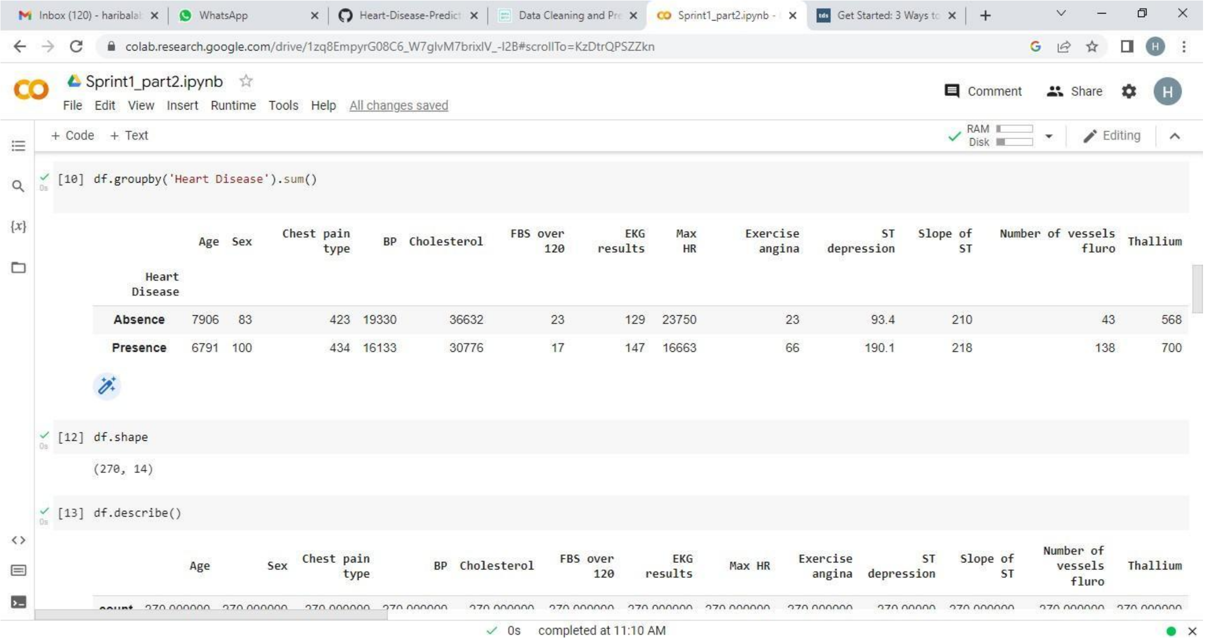


```
[6] info = ["age","1: male, 0: female","chest pain type, 1: typical angina, 2: atypical angina, 3: non-anginal pain, 4: asymptomatic","resting blood pressure"," seru



    for i in range(len(info)):
        print(df.columns[i]+":\t\t\t"+info[i])
```

```
Age:                    age
Sex:                    1: male, 0: female
Chest pain type:                        chest pain type, 1: typical angina, 2: atypical angina, 3: non-anginal pain, 4: asymptomatic
BP:                     resting blood pressure
Cholesterol:                     serum cholestoral in mg/dl
FBS over 120:                   fasting blood sugar > 120 mg/dl
EKG results:                    resting electrocardiographic results (values 0,1,2)
Max HR:                  maximum heart rate achieved
Exercise angina:                        exercise induced angina
ST depression:                  oldpeak = ST depression induced by exercise relative to rest
Slope of ST:                    the slope of the peak exercise ST segment
Number of vessels fluro:                        number of major vessels (0-3) colored by flourosopy
Thallium:                       thal: 3 = normal; 6 = fixed defect; 7 = reversable defect
```

```
[8] df.groupby('Heart Disease').size()
```

```
Heart Disease
Absence     150
Presence    120
dtype: int64
```



```
[10] df.groupby('Heart Disease').sum()
```

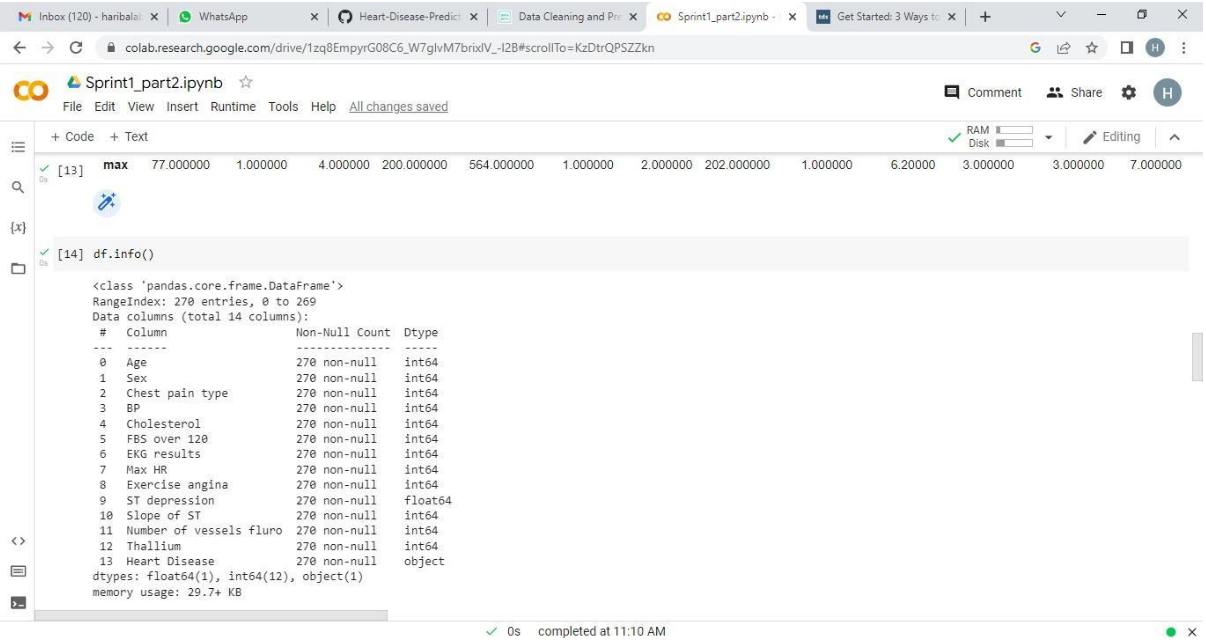
Heart Disease	Age	Sex	Chest pain type	BP	Cholesterol	FBS over 120	EKG results	Max HR	Exercise angina	ST depression	Slope of ST	Number of vessels fluro	Thallium
Absence	7906	83	423	19330	36632	23	129	23750	23	93.4	210	43	568
Presence	6791	100	434	16133	30776	17	147	16663	66	190.1	218	138	700

```
[12] df.shape
```

```
(270, 14)
```

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

	Age	Sex	Chest pain type	BP	Cholesterol	FBS over 120	EKG results	Max HR	Exercise angina	ST depression	Slope of ST	Number of vessels fluro	Thallium
count	270.000000	270.000000	270.000000	270.000000	270.000000	270.000000	270.000000	270.000000	270.000000	270.00000	270.000000	270.000000	270.000000


Inbox (120) - haribala
WhatsApp
Heart-Disease-Predict
Data Cleaning and Pre
Sprint1_part2.ipynb
Get Started: 3 Ways to
colab.research.google.com/drive/1zq8EmpyrG08C6_W7glvM7brixlV_-I2B#scrollTo=KzDtrQPSZZkn
Sprint1_part2.ipynb
File Edit View Insert Runtime Tools Help All changes saved
Comment
Share
+ Code + Text
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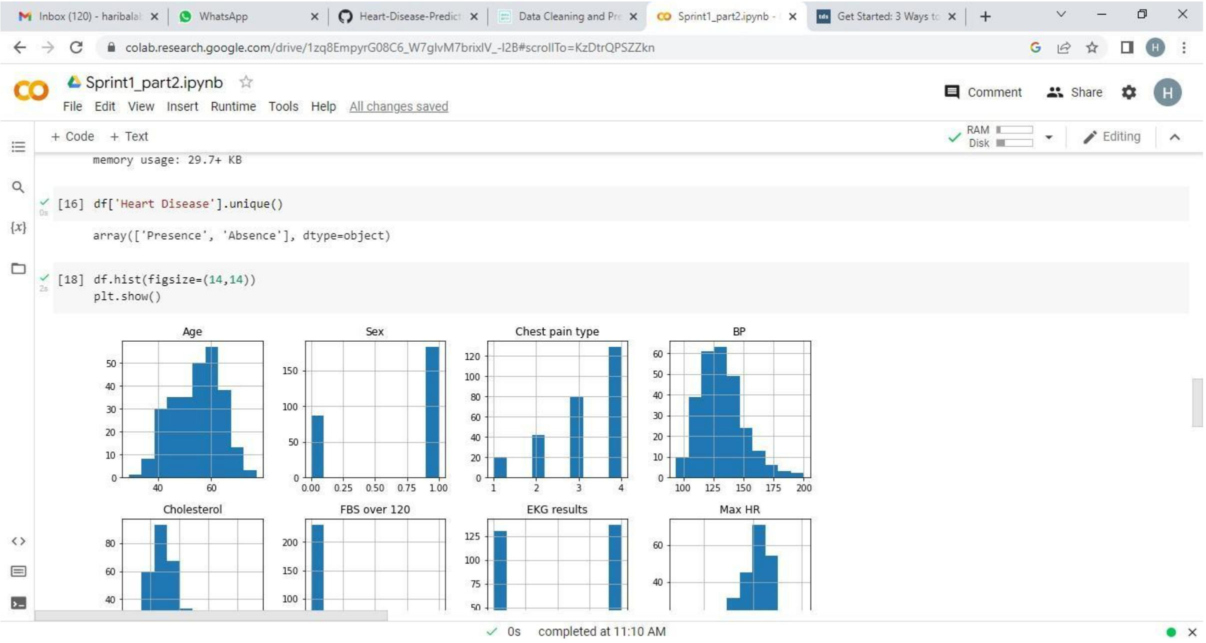
```
[13]  max   77.000000   1.000000   4.000000  200.000000  564.000000   1.000000   2.000000  202.000000   1.000000   6.20000   3.000000   3.000000   7.000000
```

```
[14] df.info()

     <class 'pandas.core.frame.DataFrame'>
     RangeIndex: 270 entries, 0 to 269
     Data columns (total 14 columns):
      #   Column                   Non-Null Count  Dtype  
     ---  ------                   --------------  -----  
      0   Age                      270 non-null    int64  
      1   Sex                      270 non-null    int64  
      2   Chest pain type          270 non-null    int64  
      3   BP                       270 non-null    int64  
      4   Cholesterol              270 non-null    int64  
      5   FBS over 120             270 non-null    int64  
      6   EKG results              270 non-null    int64  
      7   Max HR                   270 non-null    int64  
      8   Exercise angina          270 non-null    int64  
      9   ST depression            270 non-null    float64
      10  Slope of ST              270 non-null    int64  
      11  Number of vessels fluro  270 non-null    int64  
      12  Thallium                 270 non-null    int64  
      13  Heart Disease            270 non-null    object 
     dtypes: float64(1), int64(12), object(1)
     memory usage: 29.7+ KB
```



```
     memory usage: 29.7+ KB

[16] df['Heart Disease'].unique()

     array(['Presence', 'Absence'], dtype=object)

[18] df.hist(figsize=(14,14))
     plt.show()
```

2) Preprocessing:

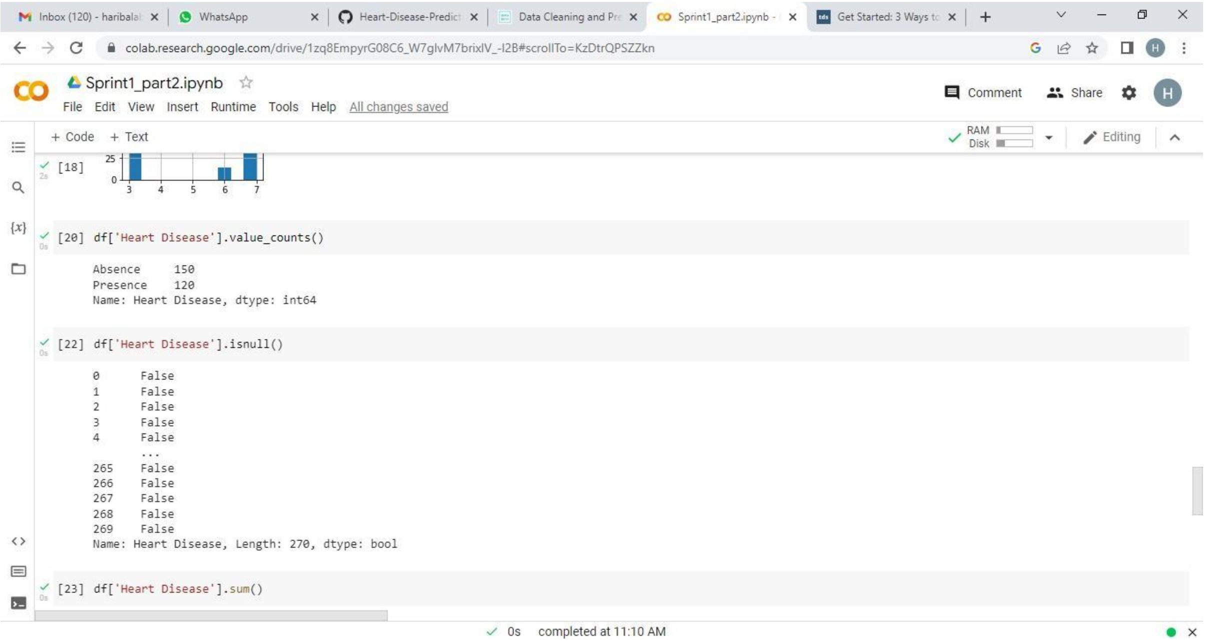
->Data preprocessing is a process of preparing the raw data and making it suitable for a machine learning model. It is the first and crucial step while creating a machine learning model.

When creating a machine learning project, it is not always a case that we come across the clean and formatted data. And while doing any operation with data, it is mandatory to clean it and put in a formatted way. So for this, we use data preprocessing task.

->A real-world data generally contains noises, missing values, and maybe in an unusable format which cannot be directly used for machine learning models. Data preprocessing is required tasks for cleaning the data and making it suitable for a machine learning model which also increases the accuracy and efficiency of a machine learning model.

Steps:

- **->Getting the dataset**
- **Importing libraries**
- **Importing datasets**
- **Finding Missing Data**
- **Encoding Categorical Data**
- **Splitting dataset into training and test set**
- **Feature scaling**



```
[18]
```

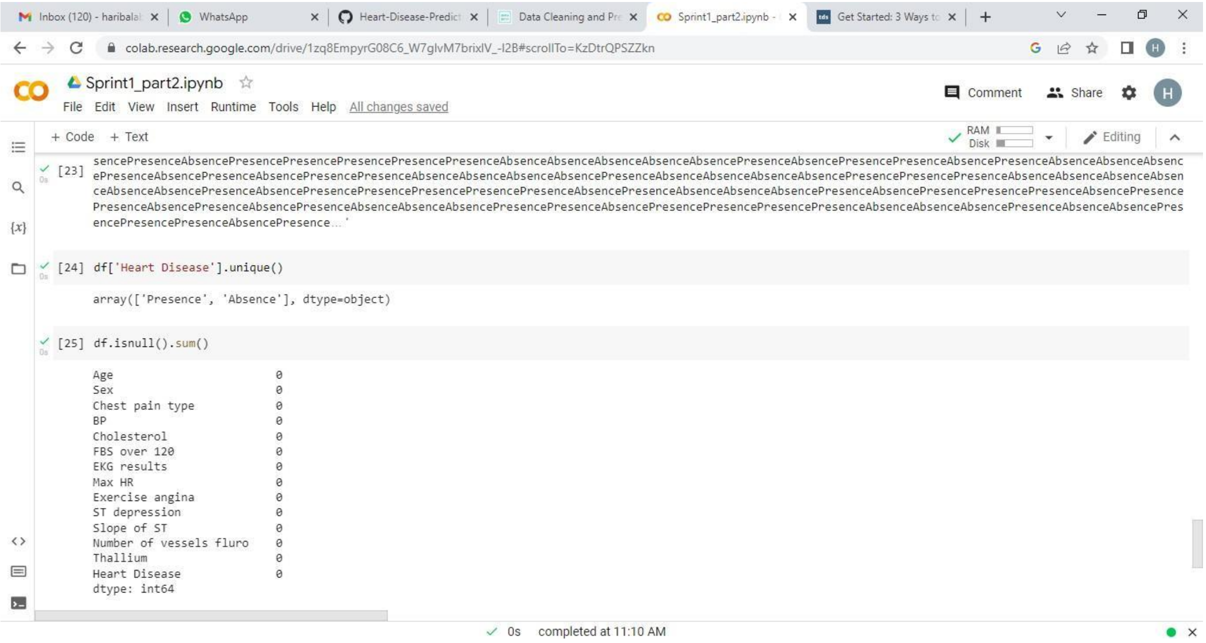
```
[20] df['Heart Disease'].value_counts()
```

```
Absence     150
Presence    120
Name: Heart Disease, dtype: int64
```

```
[22] df['Heart Disease'].isnull()
```

```
0      False
1      False
2      False
3      False
4      False
       ...
265    False
266    False
267    False
268    False
269    False
Name: Heart Disease, Length: 270, dtype: bool
```

```
[23] df['Heart Disease'].sum()
```



```
[23] sencePresenceAbsencePresencePresencePresencePresencePresenceAbsenceAbsenceAbsenceAbsenceAbsencePresenceAbsencePresencePresenceAbsencePresenceAbsenceAbsenceAbsenc
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     encePresencePresenceAbsencePresence...'
```

```
[24] df['Heart Disease'].unique()

     array(['Presence', 'Absence'], dtype=object)
```

```
[25] df.isnull().sum()

     Age                        0
     Sex                        0
     Chest pain type            0
     BP                         0
     Cholesterol                0
     FBS over 120               0
     EKG results                0
     Max HR                     0
     Exercise angina            0
     ST depression              0
     Slope of ST                0
     Number of vessels fluro    0
     Thallium                   0
     Heart Disease              0
     dtype: int64
```

3) Cleaning:

->Data scientists spend a large amount of their time cleaning datasets and getting them down to a form with which they can work. In fact, a lot of data scientists argue that the initial steps of obtaining and cleaning data constitute 80% of the job.

Therefore, if you are just stepping into this field or planning to step into this field, it is important to be able to deal with messy data, whether that means missing values, inconsistent formatting, malformed records, or nonsensical outliers.

->Cleaning is not needed as this dataset already ready to solve the problem.