PROJECT DEVELOPMENT PHASE

SPRINT 1

Date	30 October 2022
Team ID	PNT2022TMID40488
Project Name	Corporate Employee Attrition Analysis

SOURCE CODE:

It is with the understanding of the given set if datasets and fetching the data and cleaning the data with the provided three set of datasets.

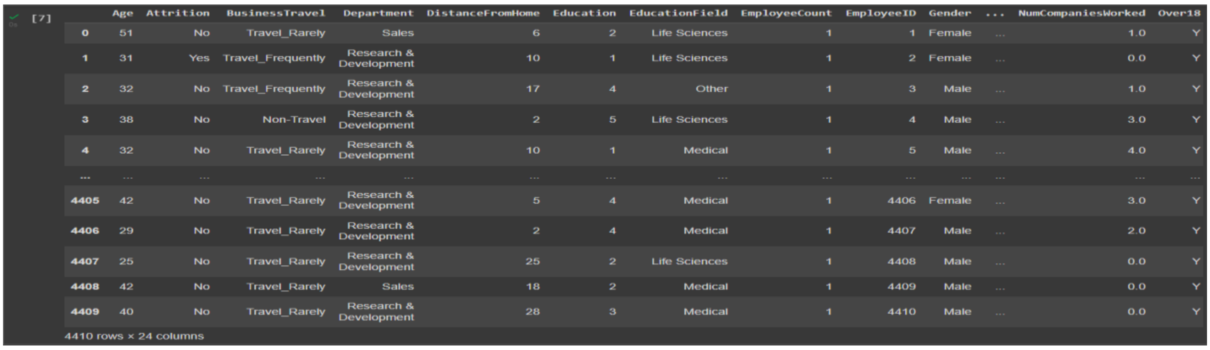
These are the results for the various datasets provided:

1. General Data CSV file:

- To fetch the dataset,

```
df1=pd.read_csv('general_data.csv')
```

- To view the data by
  df1

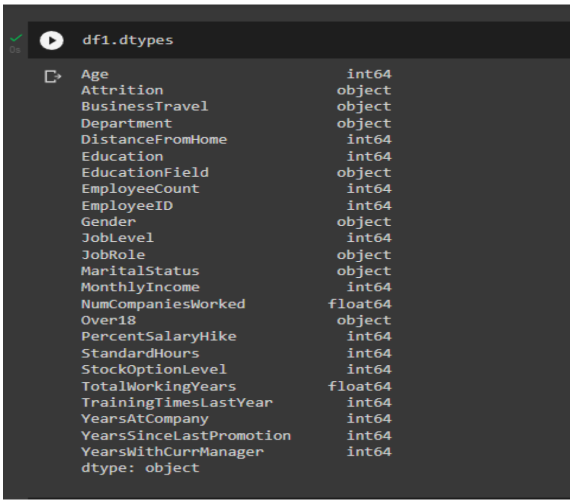


[7]

	Age	Attrition	BusinessTravel	Department	DistanceFromHome	Education	EducationField	EmployeeCount	EmployeeID	Gender	...	NumCompaniesWorked	Over18
0	51	No	Travel_Rarely	Sales	6	2	Life Sciences	1	1	Female	...	1.0	Y
1	31	Yes	Travel_Frequently	Research & Development	10	1	Life Sciences	1	2	Female	...	0.0	Y
2	32	No	Travel_Frequently	Research & Development	17	4	Other	1	3	Male	...	1.0	Y
3	38	No	Non-Travel	Research & Development	2	5	Life Sciences	1	4	Male	...	3.0	Y
4	32	No	Travel_Rarely	Research & Development	10	1	Medical	1	5	Male	...	4.0	Y
...	...	...	...	...	...	...	...	...	...	...	...	...	...
4405	42	No	Travel_Rarely	Research & Development	5	4	Medical	1	4406	Female	...	3.0	Y
4406	29	No	Travel_Rarely	Research & Development	2	4	Medical	1	4407	Male	...	2.0	Y
4407	25	No	Travel_Rarely	Research & Development	25	2	Life Sciences	1	4408	Male	...	0.0	Y
4408	42	No	Travel_Rarely	Sales	18	2	Medical	1	4409	Male	...	0.0	Y
4409	40	No	Travel_Rarely	Research & Development	28	3	Medical	1	4410	Male	...	0.0	Y

4410 rows × 24 columns

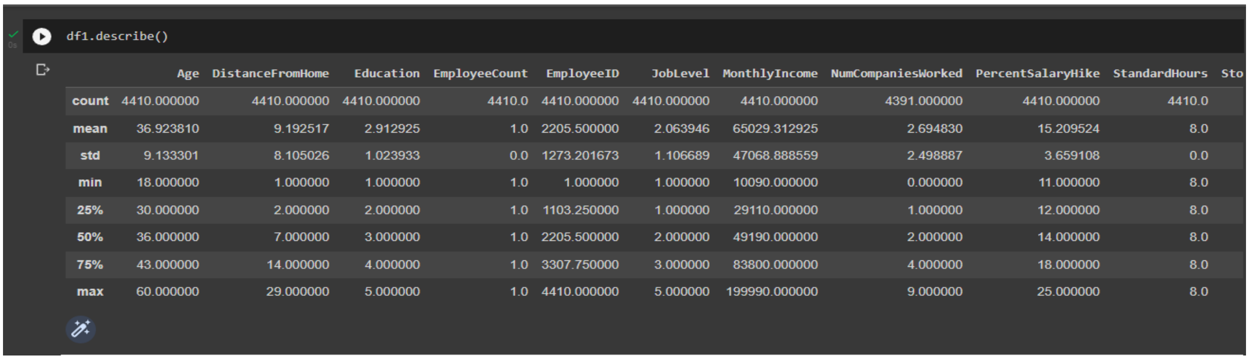
- To view the various datatypes of the respected columns given in the dataset that is been loaded to the df1.



```
df1.dtypes
```

```
Age                         int64
Attrition                  object
BusinessTravel             object
Department                 object
DistanceFromHome            int64
Education                   int64
EducationField             object
EmployeeCount               int64
EmployeeID                  int64
Gender                     object
JobLevel                    int64
JobRole                    object
MaritalStatus              object
MonthlyIncome               int64
NumCompaniesWorked        float64
Over18                     object
PercentSalaryHike           int64
StandardHours               int64
StockOptionLevel            int64
TotalWorkingYears         float64
TrainingTimesLastYear       int64
YearsAtCompany              int64
YearsSinceLastPromotion     int64
YearsWithCurrManager        int64
dtype: object
```

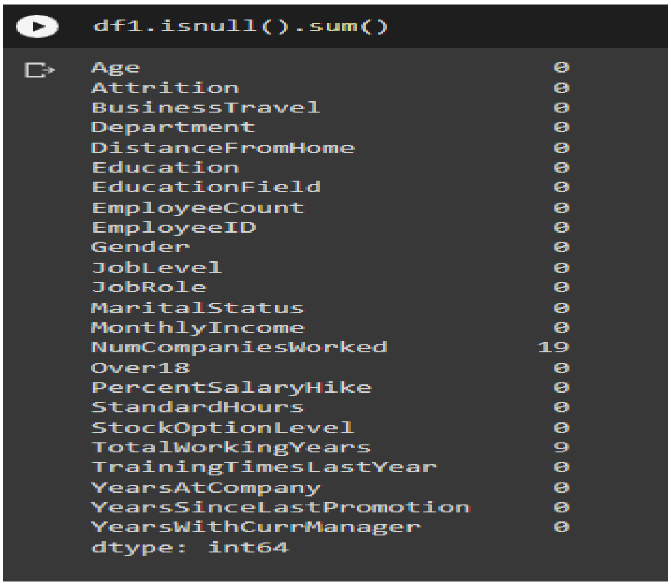
- To describe the information of the dataset that is fetched.



```
df1.describe()
```

```
               Age  DistanceFromHome    Education  EmployeeCount   EmployeeID     JobLevel  MonthlyIncome  NumCompaniesWorked  PercentSalaryHike  StandardHours  Sto
count  4410.000000       4410.000000  4410.000000         4410.0  4410.000000  4410.000000    4410.000000         4391.000000        4410.000000         4410.0
mean     36.923810          9.192517     2.912925            1.0  2205.500000     2.063946   65029.312925            2.694830          15.209524            8.0
std       9.133301          8.105026     1.023933            0.0  1273.201673     1.106689   47068.888559            2.498887           3.659108            0.0
min      18.000000          1.000000     1.000000            1.0     1.000000     1.000000   10090.000000            0.000000          11.000000            8.0
25%      30.000000          2.000000     2.000000            1.0  1103.250000     1.000000   29110.000000            1.000000          12.000000            8.0
50%      36.000000          7.000000     3.000000            1.0  2205.500000     2.000000   49190.000000            2.000000          14.000000            8.0
75%      43.000000         14.000000     4.000000            1.0  3307.750000     3.000000   83800.000000            4.000000          18.000000            8.0
max      60.000000         29.000000     5.000000            1.0  4410.000000     5.000000  199990.000000            9.000000          25.000000            8.0
```

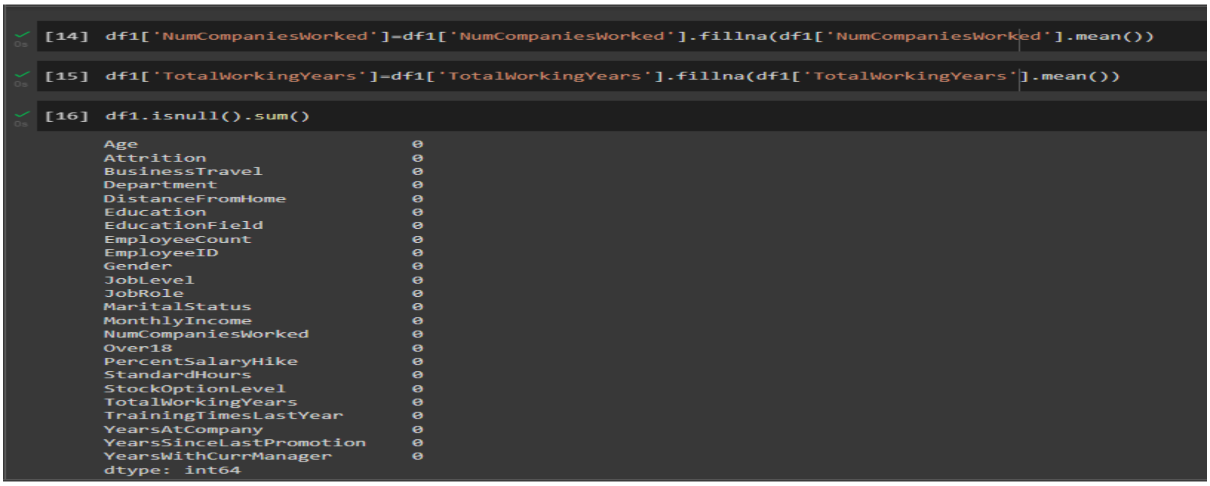
- To check the null values if present:



```
df1.isnull().sum()
```

```
Age                         0
Attrition                   0
BusinessTravel              0
Department                  0
DistanceFromHome            0
Education                   0
EducationField              0
EmployeeCount               0
EmployeeID                  0
Gender                      0
JobLevel                    0
JobRole                     0
MaritalStatus               0
MonthlyIncome               0
NumCompaniesWorked         19
Over18                      0
PercentSalaryHike           0
StandardHours               0
StockOptionLevel            0
TotalWorkingYears           9
TrainingTimesLastYear       0
YearsAtCompany              0
YearsSinceLastPromotion     0
YearsWithCurrManager        0
dtype: int64
```

Here there are some null values in the number of Companies worked that are cleaned and the data after cleaning is referred as;



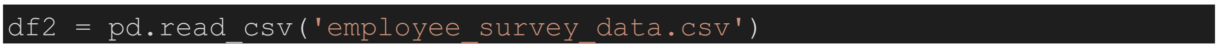
```
[14] df1['NumCompaniesWorked']=df1['NumCompaniesWorked'].fillna(df1['NumCompaniesWorked'].mean())

[15] df1['TotalWorkingYears']=df1['TotalWorkingYears'].fillna(df1['TotalWorkingYears'].mean())

[16] df1.isnull().sum()
```

```
Age                        0
Attrition                  0
BusinessTravel             0
Department                 0
DistanceFromHome           0
Education                  0
EducationField             0
EmployeeCount              0
EmployeeID                 0
Gender                     0
JobLevel                   0
JobRole                    0
MaritalStatus              0
MonthlyIncome              0
NumCompaniesWorked         0
Over18                     0
PercentSalaryHike          0
StandardHours              0
StockOptionLevel           0
TotalWorkingYears          0
TrainingTimesLastYear      0
YearsAtCompany             0
YearsSinceLastPromotion    0
YearsWithCurrManager       0
dtype: int64
```

After the correction there is no null values left and the data is cleaned.

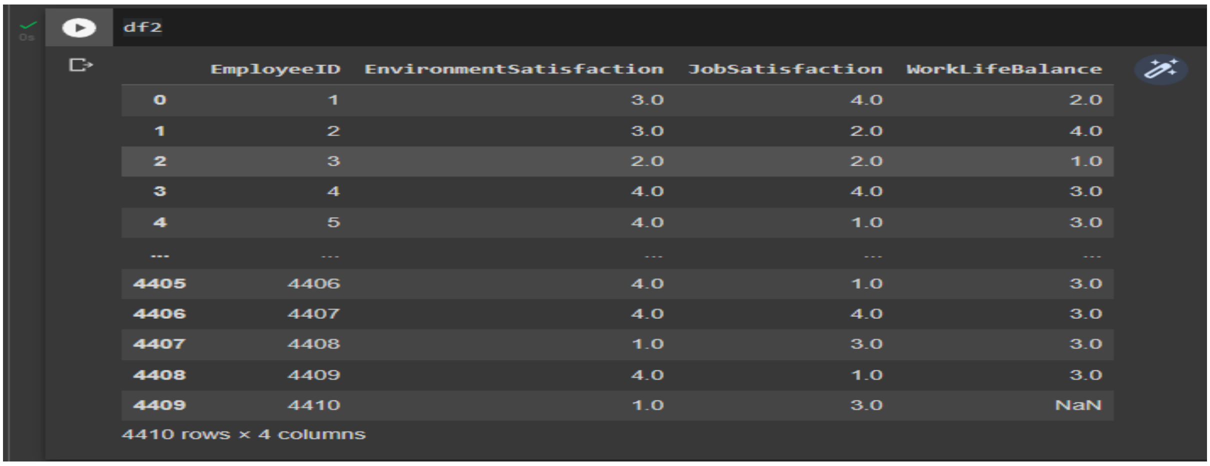
2. Employee Survey Data CSV file:

- To fetch the dataset,



```
df2 = pd.read_csv('employee_survey_data.csv')
```

- To view the data by
  df2



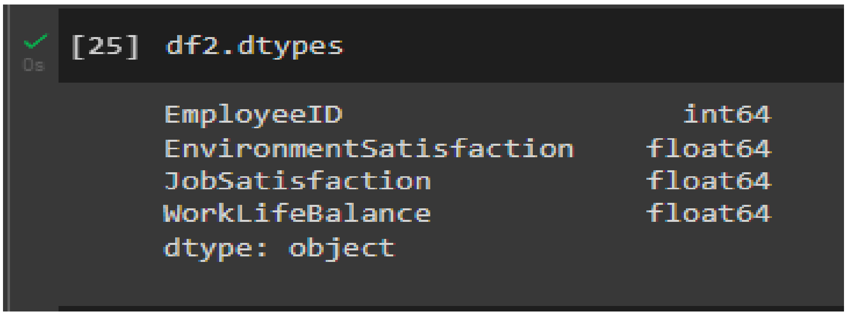
```
df2
```

	EmployeeID	EnvironmentSatisfaction	JobSatisfaction	WorkLifeBalance
0	1	3.0	4.0	2.0
1	2	3.0	2.0	4.0
2	3	2.0	2.0	1.0
3	4	4.0	4.0	3.0
4	5	4.0	1.0	3.0
...	...	...	...	...
4405	4406	4.0	1.0	3.0
4406	4407	4.0	4.0	3.0
4407	4408	1.0	3.0	3.0
4408	4409	4.0	1.0	3.0
4409	4410	1.0	3.0	NaN

4410 rows × 4 columns

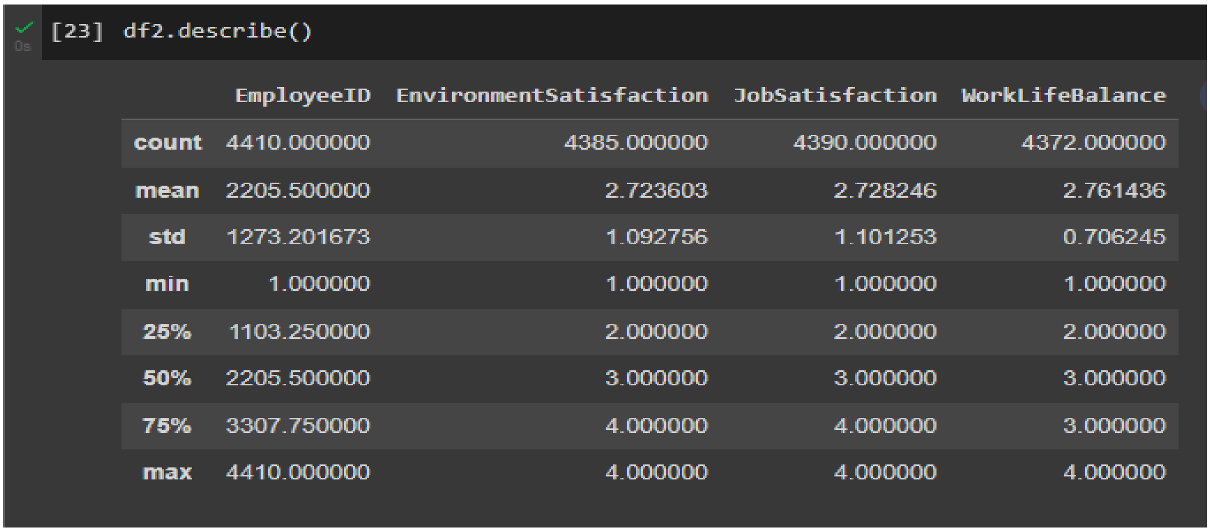
- To view the various datatypes of the respected columns given in the dataset

that is been loaded to the df1.



```
[25] df2.dtypes

     EmployeeID                   int64
     EnvironmentSatisfaction    float64
     JobSatisfaction            float64
     WorkLifeBalance            float64
     dtype: object
```

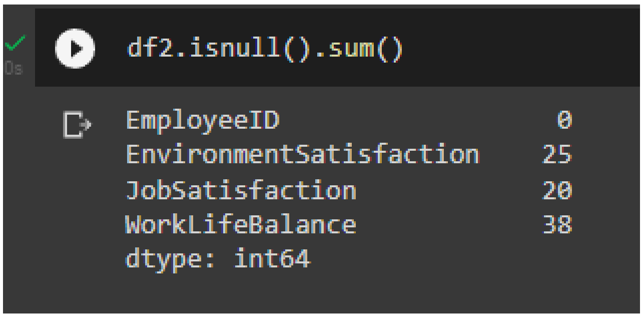
- To describe the information of the dataset that is fetched.



```
[23] df2.describe()
```

	EmployeeID	EnvironmentSatisfaction	JobSatisfaction	WorkLifeBalance
count	4410.000000	4385.000000	4390.000000	4372.000000
mean	2205.500000	2.723603	2.728246	2.761436
std	1273.201673	1.092756	1.101253	0.706245
min	1.000000	1.000000	1.000000	1.000000
25%	1103.250000	2.000000	2.000000	2.000000
50%	2205.500000	3.000000	3.000000	3.000000
75%	3307.750000	4.000000	4.000000	3.000000
max	4410.000000	4.000000	4.000000	4.000000

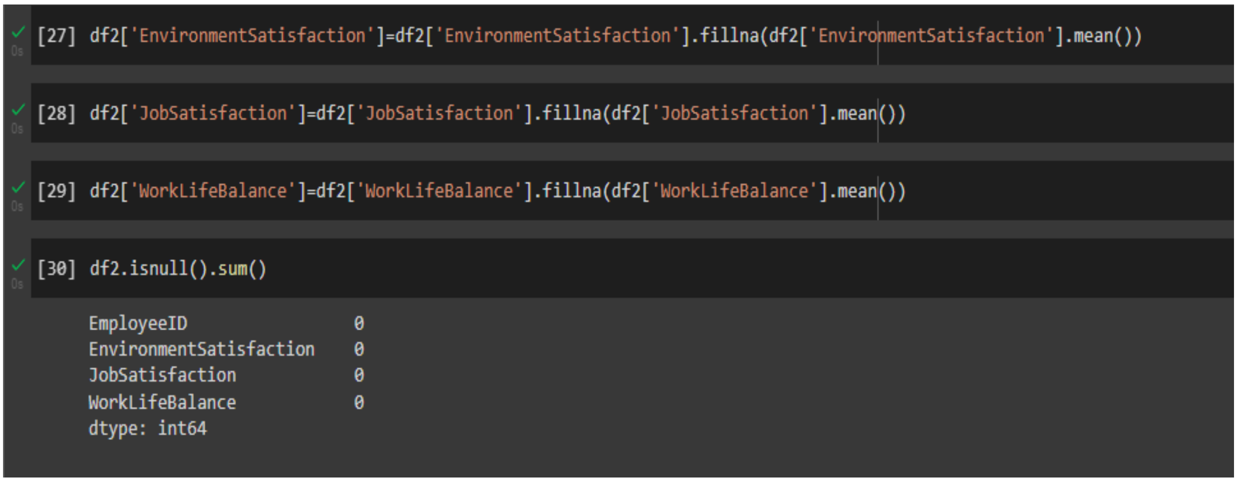
- To check the null values if present:



```
df2.isnull().sum()
```

```
EmployeeID                  0
EnvironmentSatisfaction    25
JobSatisfaction            20
WorkLifeBalance            38
dtype: int64
```

Here there are some null values in the number of Companies worked that are cleaned and the data after cleaning is referred as;



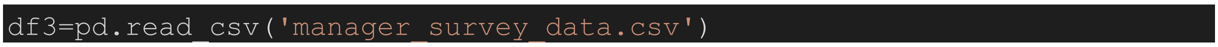
```
[27] df2['EnvironmentSatisfaction']=df2['EnvironmentSatisfaction'].fillna(df2['EnvironmentSatisfaction'].mean())

[28] df2['JobSatisfaction']=df2['JobSatisfaction'].fillna(df2['JobSatisfaction'].mean())

[29] df2['WorkLifeBalance']=df2['WorkLifeBalance'].fillna(df2['WorkLifeBalance'].mean())

[30] df2.isnull().sum()
```

```
EmployeeID                 0
EnvironmentSatisfaction    0
JobSatisfaction            0
WorkLifeBalance            0
dtype: int64
```

After the correction there is no null values left and the data is cleaned.

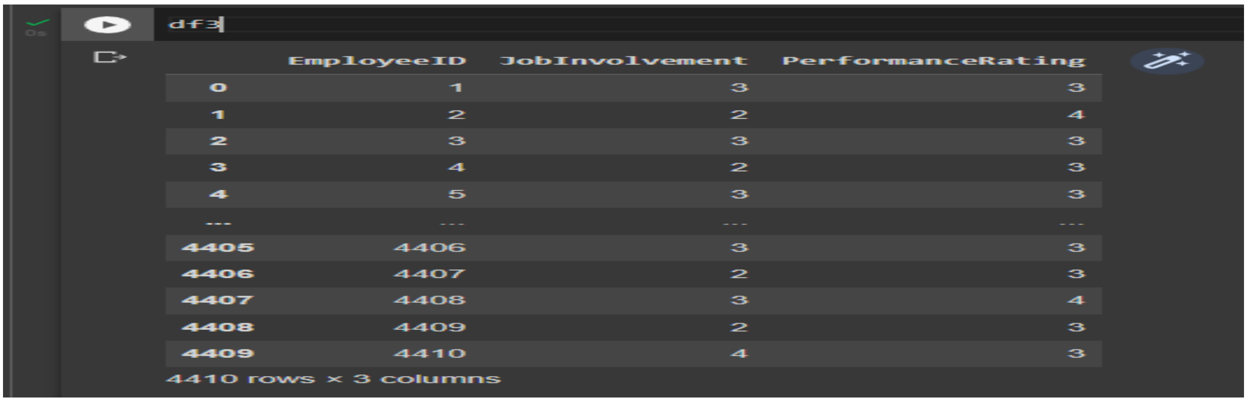
3. Manager Survey Data CSV file:

- To fetch the dataset,



```
df3=pd.read_csv('manager_survey_data.csv')
```

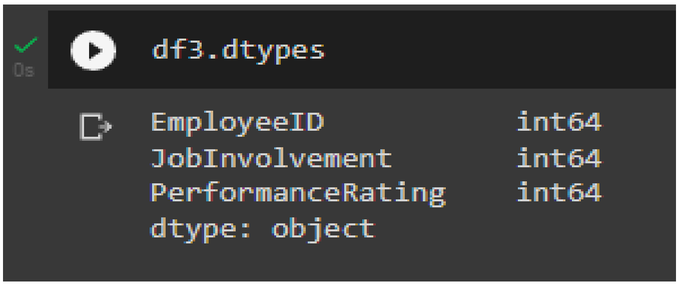
- To view the data by
  df2



```
df3
```

```
      EmployeeID  JobInvolvement  PerformanceRating
0              1               3                  3
1              2               2                  4
2              3               3                  3
3              4               2                  3
4              5               3                  3
...          ...             ...                ...
4405        4406               3                  3
4406        4407               2                  3
4407        4408               3                  4
4408        4409               2                  3
4409        4410               4                  3
4410 rows × 3 columns
```

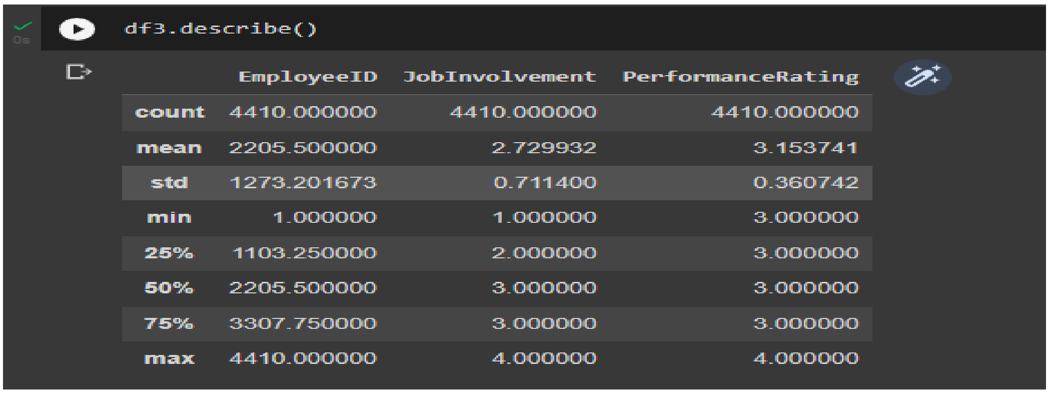
- To view the various datatypes of the respected columns given in the dataset that is been loaded to the df1.



```
df3.dtypes
```

```
EmployeeID           int64
JobInvolvement       int64
PerformanceRating    int64
dtype: object
```

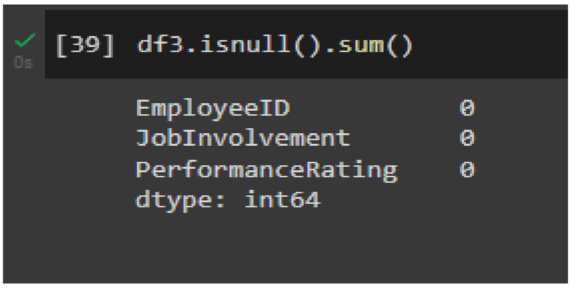
- To describe the information of the dataset that is fetched.



```
df3.describe()
```

```
        EmployeeID  JobInvolvement  PerformanceRating
count  4410.000000     4410.000000        4410.000000
mean   2205.500000        2.729932           3.153741
std    1273.201673        0.711400           0.360742
min       1.000000        1.000000           3.000000
25%    1103.250000        2.000000           3.000000
50%    2205.500000        3.000000           3.000000
75%    3307.750000        3.000000           3.000000
max    4410.000000        4.000000           4.000000
```

- To check the null values if present:



```
[39] df3.isnull().sum()
```

```
EmployeeID           0
JobInvolvement       0
PerformanceRating    0
dtype: int64
```

As there is no null values in the columns of the dataset the data fetched is already cleaned.