Assignment - 1

“CSE 476”

“Data Mining Lab”

B.Sc. Engineering in Computer Science and Engineering
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Submitted By

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CO1. Apply data preprocessing steps (such as: Viewing your data, Handling duplicates, Column cleanup, DataFrame slicing, selecting, and extracting) in the following dataset - https://www.kaggle.com/datasets/selinraja/irish-data.

1. Importing pandas Library

```
[3]  import pandas as pd
```

0s

2. Uploading the dataset & Viewing the first and last portion of data

```
iris = pd.read_csv("/content/Iris_Data.csv")
iris
```

0s

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

150 rows × 5 columns

✓ 0s completed at 11:35 PM

3. Viewing the top/first 10 rows of the dataset.

```
iris.head(10)
```

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.4	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa
8	4.4	2.9	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa

4. Showing the description of the whole dataset with sepal and petal length and width.

```
iris.describe()
```

	sepal_length	sepal_width	petal_length	petal_width
count	150.000000	150.000000	150.000000	150.000000
mean	5.843333	3.054000	3.758667	1.198667
std	0.828066	0.433594	1.764420	0.763161
min	4.300000	2.000000	1.000000	0.100000
25%	5.100000	2.800000	1.600000	0.300000
50%	5.800000	3.000000	4.350000	1.300000
75%	6.400000	3.300000	5.100000	1.800000
max	7.900000	4.400000	6.900000	2.500000

5. Showing the info of the dataset.

```
iris.info()
```

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 150 entries, 0 to 149
Data columns (total 5 columns):
 #   Column        Non-Null Count  Dtype  
---  ------        --------------  -----  
 0   sepal_length  150 non-null    float64
 1   sepal_width   150 non-null    float64
 2   petal_length  150 non-null    float64
 3   petal_width   150 non-null    float64
 4   species       150 non-null    object 
dtypes: float64(4), object(1)
memory usage: 6.0+ KB
```

6. Dropping the duplicate data

```
display(iris.drop_duplicates())
```

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.1	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
...	...	...	...	...	...
145	6.7	3.0	5.2	2.3	Iris-virginica
146	6.3	2.5	5.0	1.9	Iris-virginica
147	6.5	3.0	5.2	2.0	Iris-virginica
148	6.2	3.4	5.4	2.3	Iris-virginica
149	5.9	3.0	5.1	1.8	Iris-virginica

147 rows × 5 columns

7. Column cleanup

```
[25] for x in iris.index:
       if iris.loc[x, "sepal_length"] > 5:
         iris.loc[x, "sepal_length"] = 5
```

```
iris.head(10)
```

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.0	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.0	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa
8	4.4	2.9	1.4	0.2	Iris-setosa
9	4.9	3.1	1.5	0.1	Iris-setosa

8. Showing the unique data of a specific column.

```
print("Species")
print(iris['species'].unique())
```

```
Species
['Iris-setosa' 'Iris-versicolor' 'Iris-virginica']
```

9. Showing the data frame slicing.

```
iris1=iris.iloc[0:7]
iris1
```

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.0	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.0	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa

10. Showing the data frame selection.

```
iris1=iris.iloc[0:7]
iris1
```

	sepal_length	sepal_width	petal_length	petal_width	species
0	5.0	3.5	1.4	0.2	Iris-setosa
1	4.9	3.0	1.4	0.2	Iris-setosa
2	4.7	3.2	1.3	0.2	Iris-setosa
3	4.6	3.1	1.5	0.2	Iris-setosa
4	5.0	3.6	1.4	0.2	Iris-setosa
5	5.0	3.9	1.7	0.4	Iris-setosa
6	4.6	3.4	1.4	0.3	Iris-setosa

11. Showing the data frame slicing.

```
[14] iris2=iris.loc[:,'sepal_length':'petal_width']
     iris2
```

	sepal_length	sepal_width	petal_length	petal_width
0	5.0	3.5	1.4	0.2
1	4.9	3.0	1.4	0.2
2	4.7	3.2	1.3	0.2
3	4.6	3.1	1.5	0.2
4	5.0	3.6	1.4	0.2
...	...	...	...	...
145	5.0	3.0	5.2	2.3
146	5.0	2.5	5.0	1.9
147	5.0	3.0	5.2	2.0
148	5.0	3.4	5.4	2.3
149	5.0	3.0	5.1	1.8

150 rows × 4 columns

```
copy=iris[['sepal_length','sepal_width','petal_length']]
copy
```

	sepal_length	sepal_width	petal_length
0	5.0	3.5	1.4
1	4.9	3.0	1.4
2	4.7	3.2	1.3
3	4.6	3.1	1.5
4	5.0	3.6	1.4
...	...	...	...
145	5.0	3.0	5.2
146	5.0	2.5	5.0
147	5.0	3.0	5.2
148	5.0	3.4	5.4
149	5.0	3.0	5.1

150 rows × 3 columns

12. Showing the data frame extracting.

```
first = iris.iloc[3]
first
```

```
sepal_length            4.6
sepal_width             3.1
petal_length            1.5
petal_width             0.2
species         Iris-setosa
Name: 3, dtype: object
```

```
row2 = iris.iloc [[3, 5, 7]]
row2
```

	sepal_length	sepal_width	petal_length	petal_width	species
3	4.6	3.1	1.5	0.2	Iris-setosa
5	5.0	3.9	1.7	0.4	Iris-setosa
7	5.0	3.4	1.5	0.2	Iris-setosa