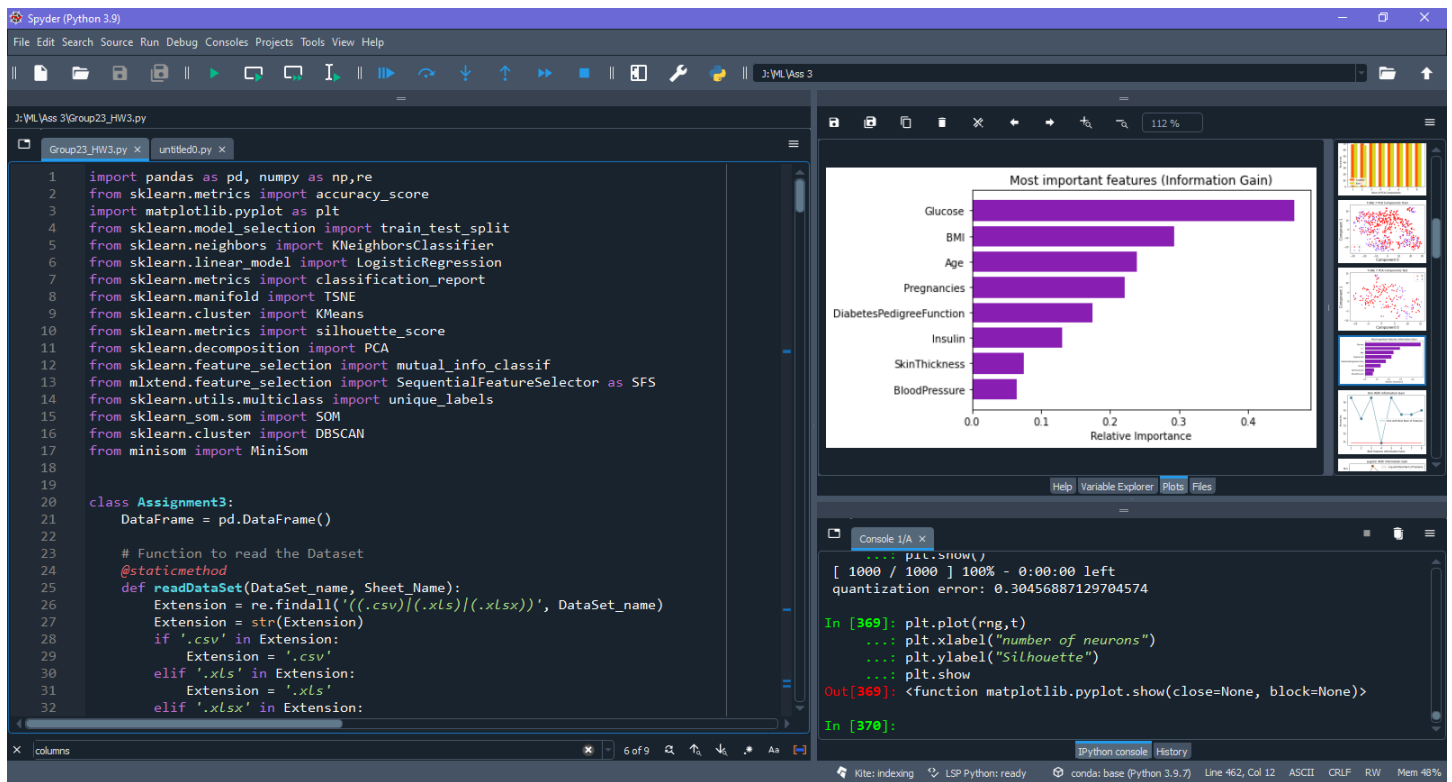
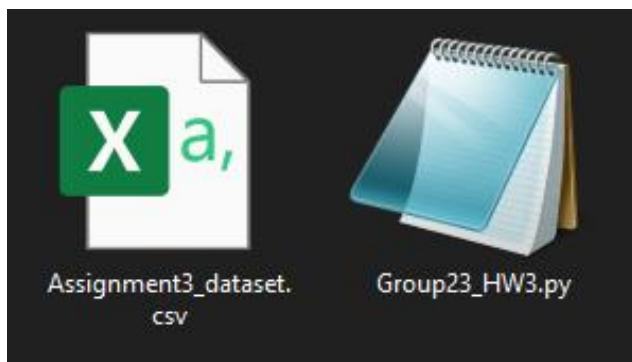


For best experience please consider to run **Group23_HW3.py** on Spyder to see all created variables on variables explorer tab and see all plots on plots tab.



Please make sure that the dataset and the python file is on the same directory.



Please make sure that you have installed these libraries before importing it ->

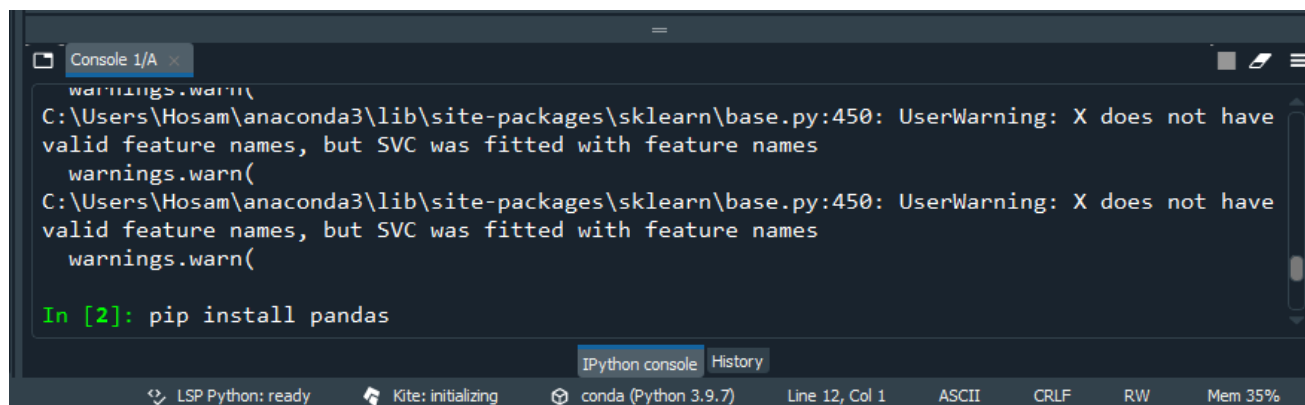
```
import pandas as pd, numpy as np, re
from sklearn.metrics import accuracy_score
import matplotlib.pyplot as plt
from sklearn.model_selection import train_test_split
```

```
from sklearn.neighbors import KNeighborsClassifier  
from sklearn.linear_model import LogisticRegression  
from sklearn.metrics import classification_report  
from sklearn.manifold import TSNE  
from sklearn.cluster import KMeans  
from sklearn.metrics import silhouette_score  
from sklearn.decomposition import PCA  
from sklearn.feature_selection import mutual_info_classif  
from mlxtend.feature_selection import SequentialFeatureSelector as SFS  
from sklearn.utils.multiclass import unique_labels  
from sklearn_som.som import SOM  
from sklearn.cluster import DBSCAN  
from minisom import MiniSom
```

To install the missing libraries, you have to write something like this ->

```
>>> pip install pandas
```

In Spyder console.

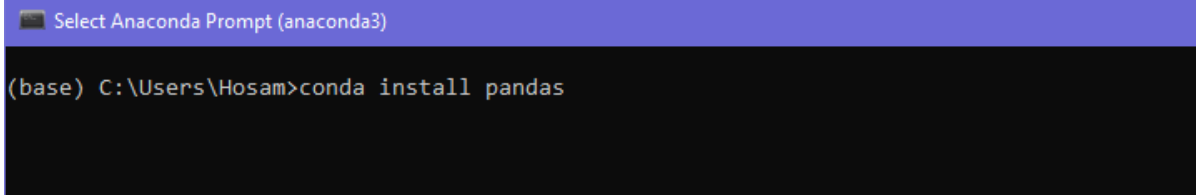


```
Console 1/A x  
warnings.warn(  
C:\Users\Hosam\anaconda3\lib\site-packages\sklearn\base.py:450: UserWarning: X does not have  
valid feature names, but SVC was fitted with feature names  
warnings.warn(  
C:\Users\Hosam\anaconda3\lib\site-packages\sklearn\base.py:450: UserWarning: X does not have  
valid feature names, but SVC was fitted with feature names  
warnings.warn(  
  
In [2]: pip install pandas  
  
IPython console History  
LSP Python: ready Kite: initializing conda (Python 3.9.7) Line 12, Col 1 ASCII CRLF RW Mem 35%
```

or

>>> conda install pandas

In Anaconda prompt.



The screenshot shows a terminal window titled "Select Anaconda Prompt (anaconda3)". The prompt is "(base) C:\Users\Hosam>" and the command "conda install pandas" has been entered.