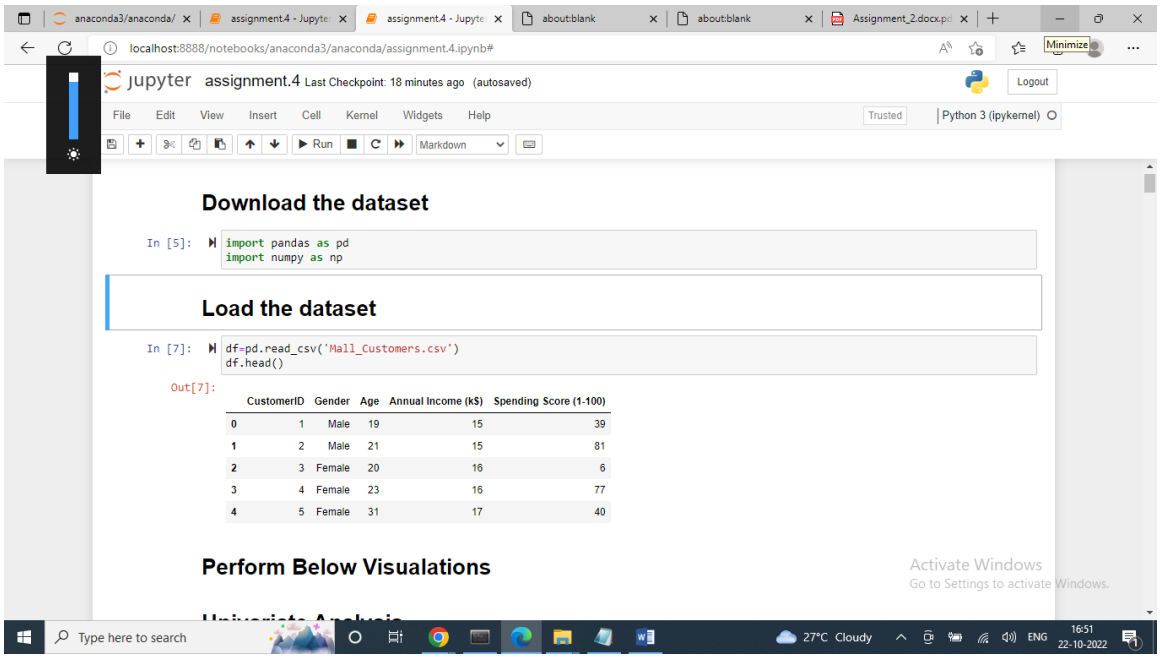
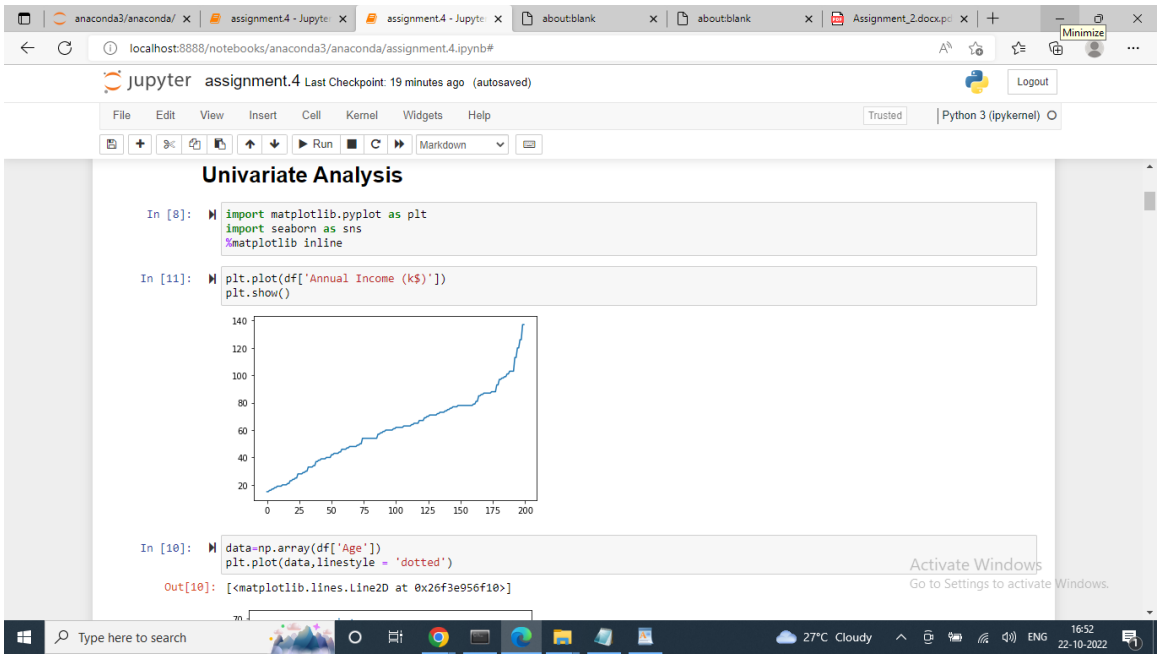
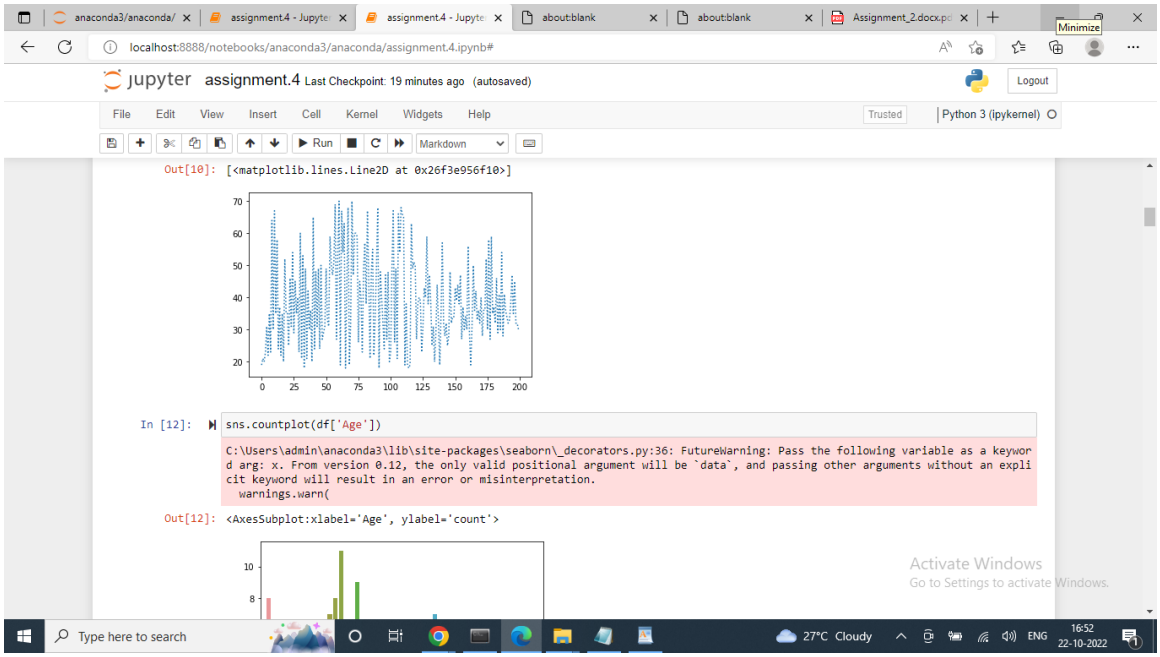
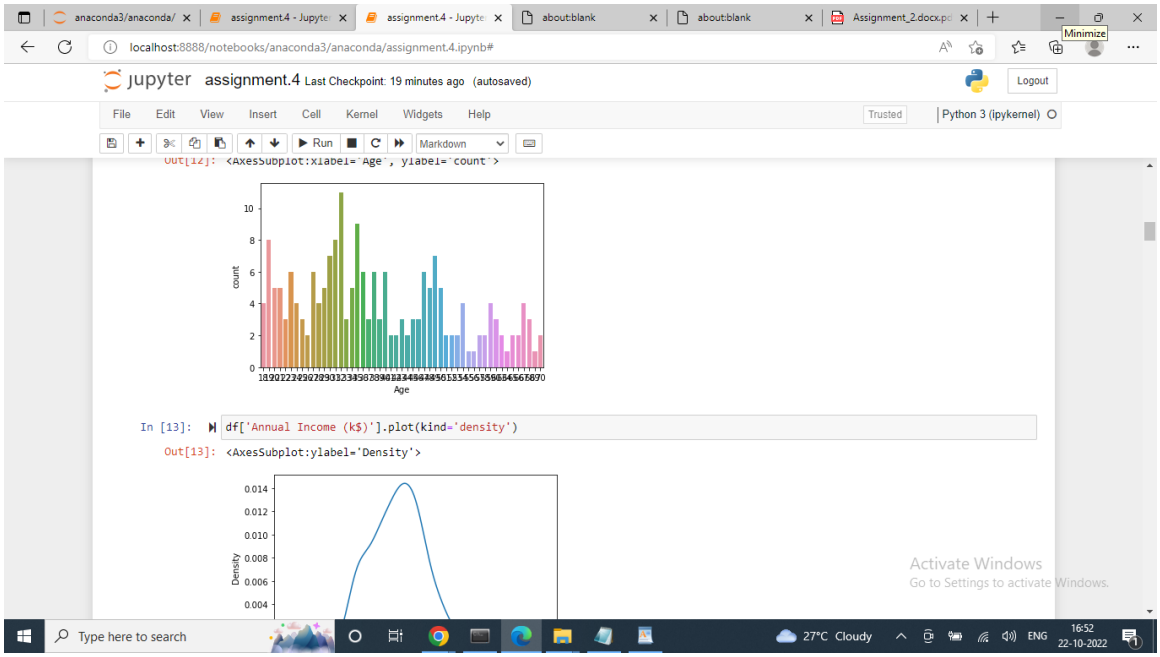
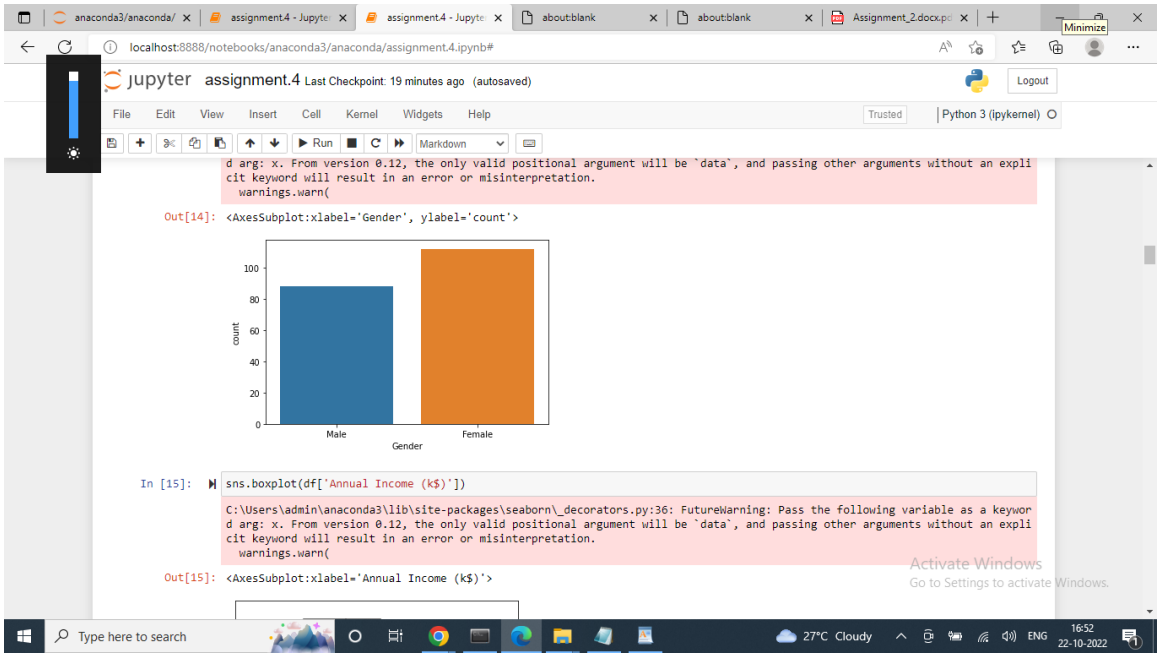
Assignment Date	21 October 2022
Student Name	Ms. Subavarshini
Student Roll Number	721719104081
Maximum Marks	2 Marks

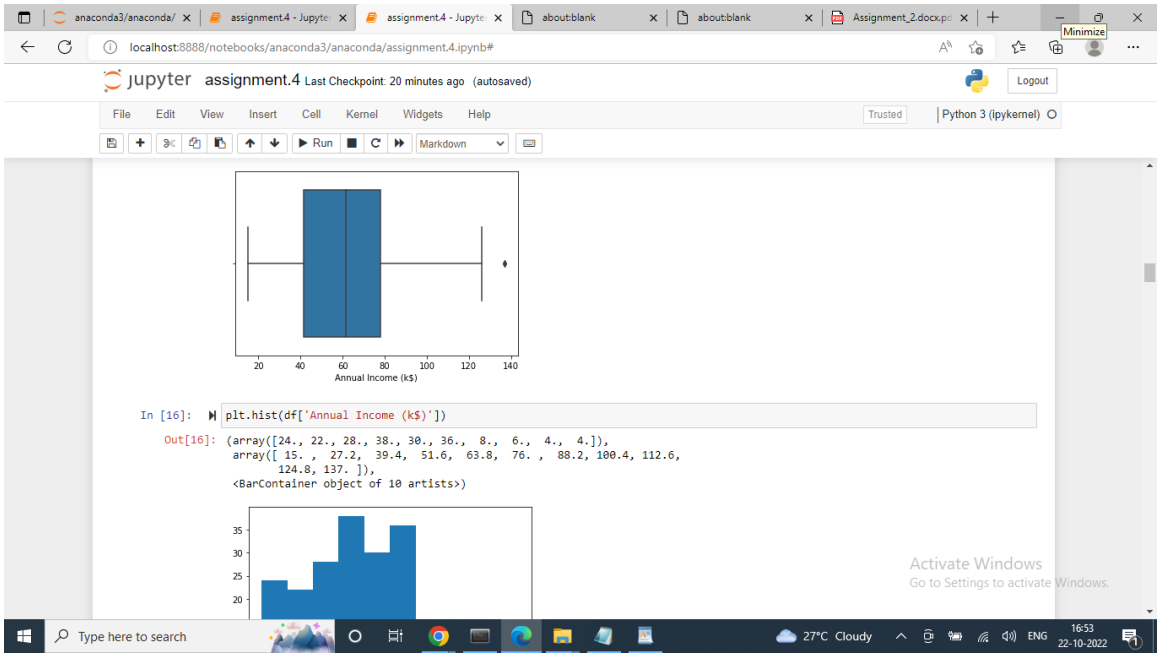


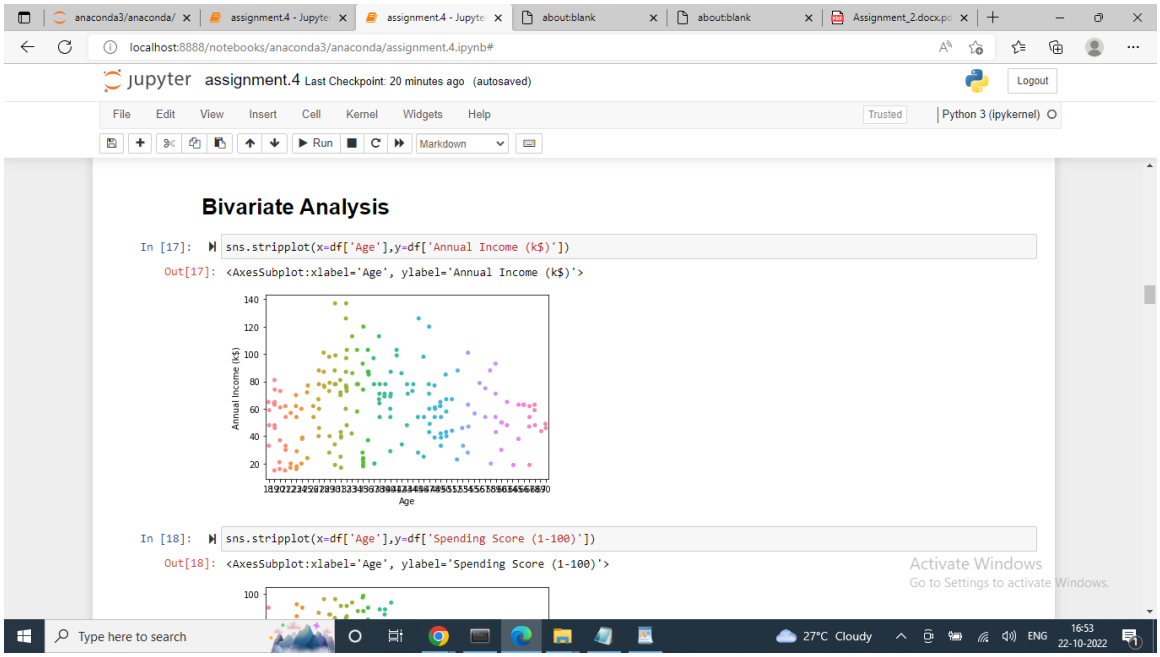


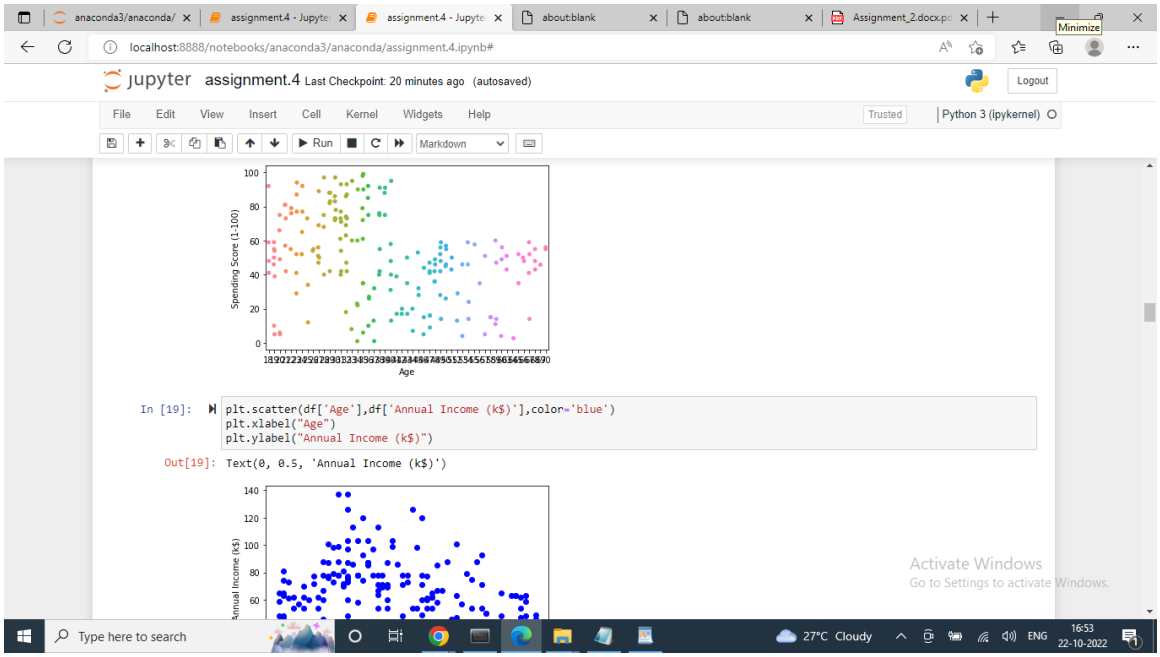

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 19 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Out[10]: [<matplotlib.lines.Line2D at 0x26f3e956f10>]
In [12]: sns.countplot(df['Age'])
C:\Users\admin\anaconda3\lib\site-packages\seaborn_decorators.py:36: FutureWarning: Pass the following variable as a keyword arg: x. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
warnings.warn(
Out[12]: <AxesSubplot:xlabel='Age', ylabel='count'>
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:52
22-10-2022

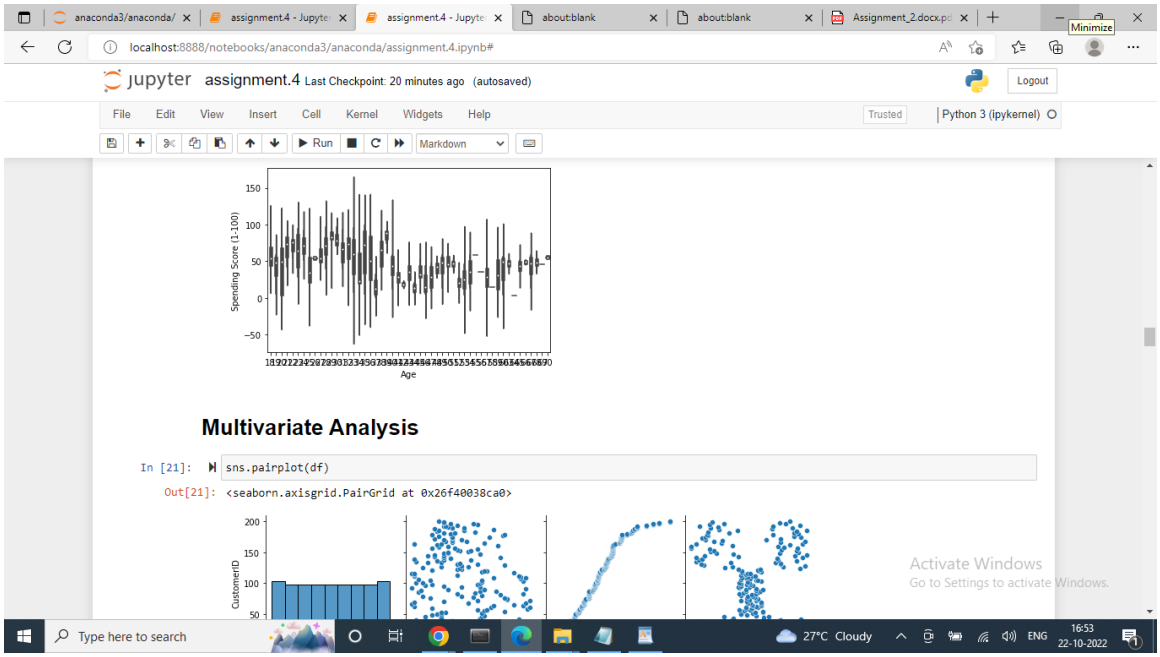

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 19 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Out[12]: <AxesSubplot:xlabel='Age', ylabel='count'>
count
Age
In [13]: df['Annual Income (k$)'].plot(kind='density')
Out[13]: <AxesSubplot:ylabel='Density'>
Density
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:52
22-10-2022

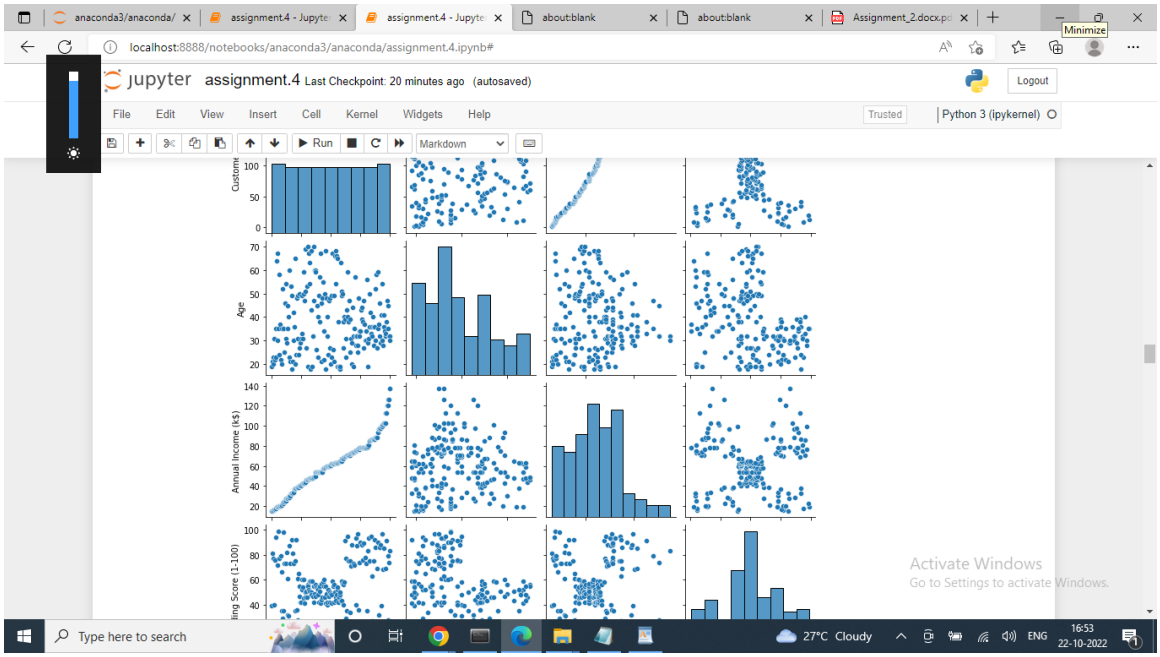

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 19 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
d arg: x. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an expli
cit keyword will result in an error or misinterpretation.
warnings.warn(
Out[14]: <AxesSubplot:xlabel='Gender', ylabel='count'>
count
Male
Female
Gender
In [15]: sns.boxplot(df['Annual Income (k$)'])
C:\Users\admin\anaconda3\lib\site-packages\seaborn_decorators.py:36: FutureWarning: Pass the following variable as a keywor
d arg: x. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an expli
cit keyword will result in an error or misinterpretation.
warnings.warn(
Out[15]: <AxesSubplot:xlabel='Annual Income (k$)'>
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:52
22-10-2022

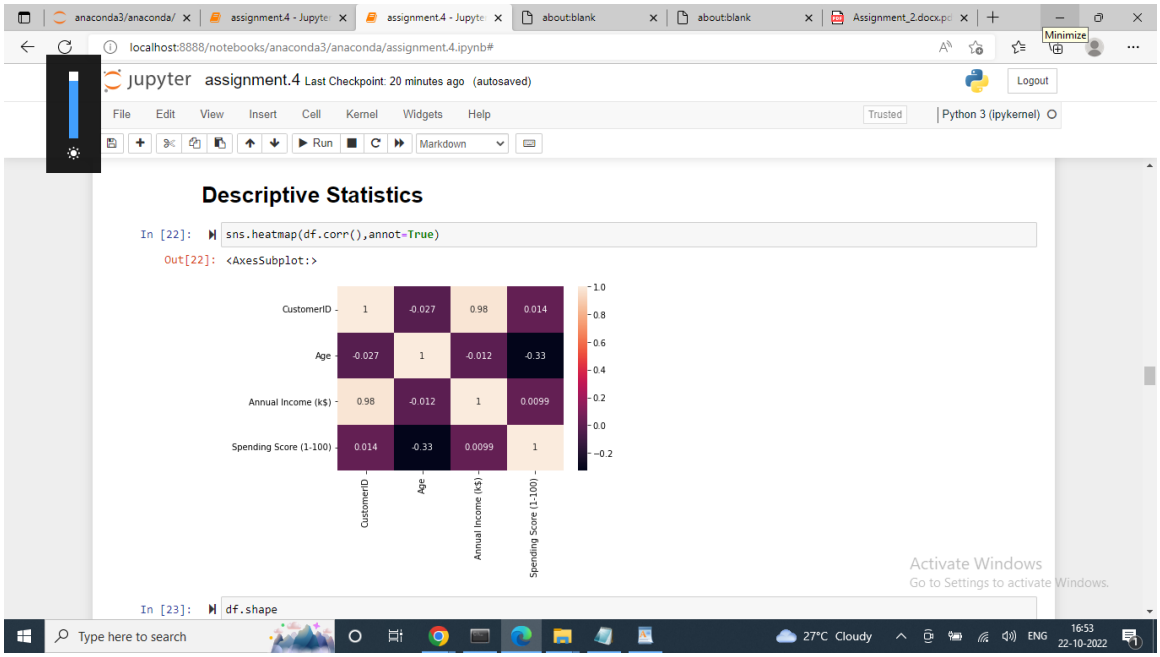

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 20 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Annual Income (k$)
In [16]: plt.hist(df['Annual Income (k$)'])
Out[16]: (array([24., 22., 28., 38., 30., 36., 8., 6., 4., 4.]),
array([15. , 27.2, 39.4, 51.6, 63.8, 76. , 88.2, 100.4, 112.6,
124.8, 137.]),
<BarContainer object of 10 artists>)
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:53
22-10-2022

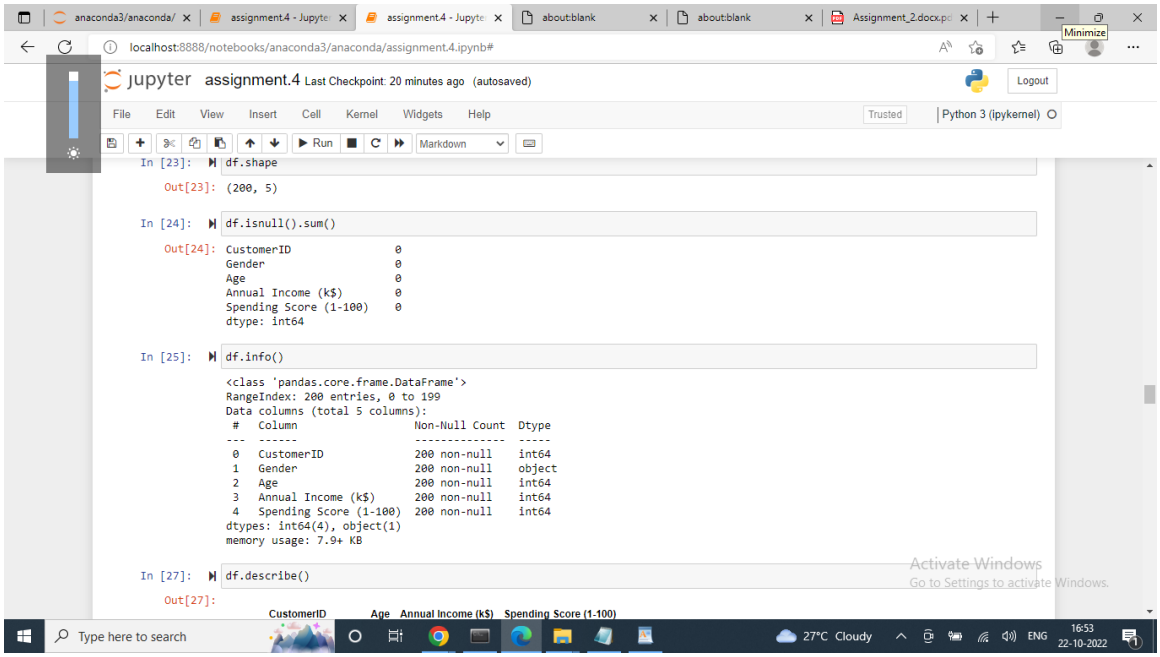

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 20 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Bivariate Analysis
In [17]:
sns.stripplot(x=df['Age'],y=df['Annual Income (k$)'])
Out[17]:
<AxesSubplot:xlabel='Age', ylabel='Annual Income (k$)'>
Annual Income (k$)
Age
In [18]:
sns.stripplot(x=df['Age'],y=df['Spending Score (1-100)'])
Out[18]:
<AxesSubplot:xlabel='Age', ylabel='Spending Score (1-100)'>
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:53
22-10-2022

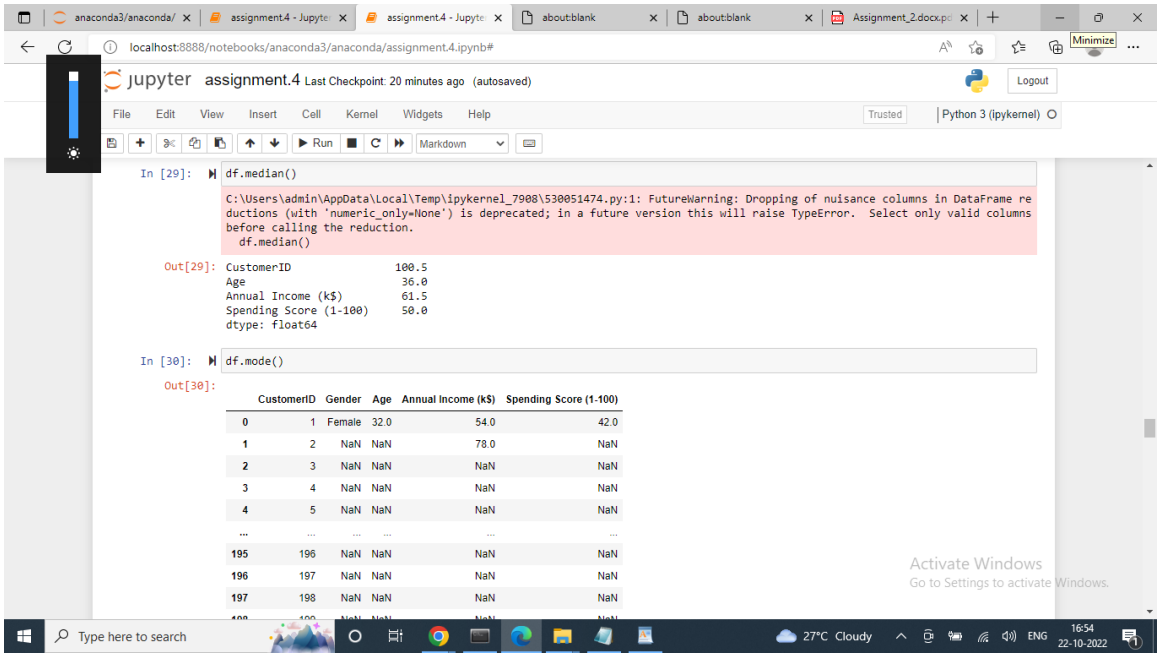

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 20 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Spending Score (1-100)
Age
In [19]:
plt.scatter(df['Age'],df['Annual Income (k$)'],color='blue')
plt.xlabel("Age")
plt.ylabel("Annual Income (k$)")
Out[19]:
Text(0, 0.5, 'Annual Income (k$)')
Annual Income (k$)
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:53
22-10-2022

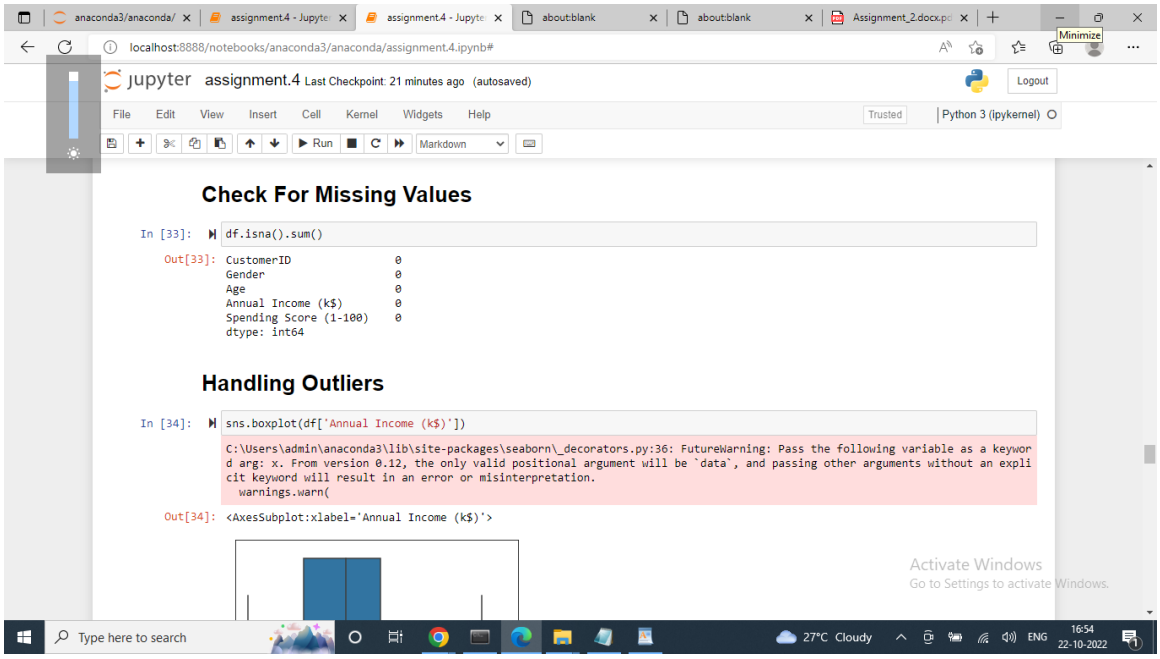

anaconda3/anaconda/
assignment.4 - Jupyte
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 20 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Spending Score (1-100)
Age
Multivariate Analysis
In [21]:
sns.pairplot(df)
Out[21]: <seaborn.axisgrid.PairGrid at 0x26f40038ca0>
CustomerID
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:53
22-10-2022

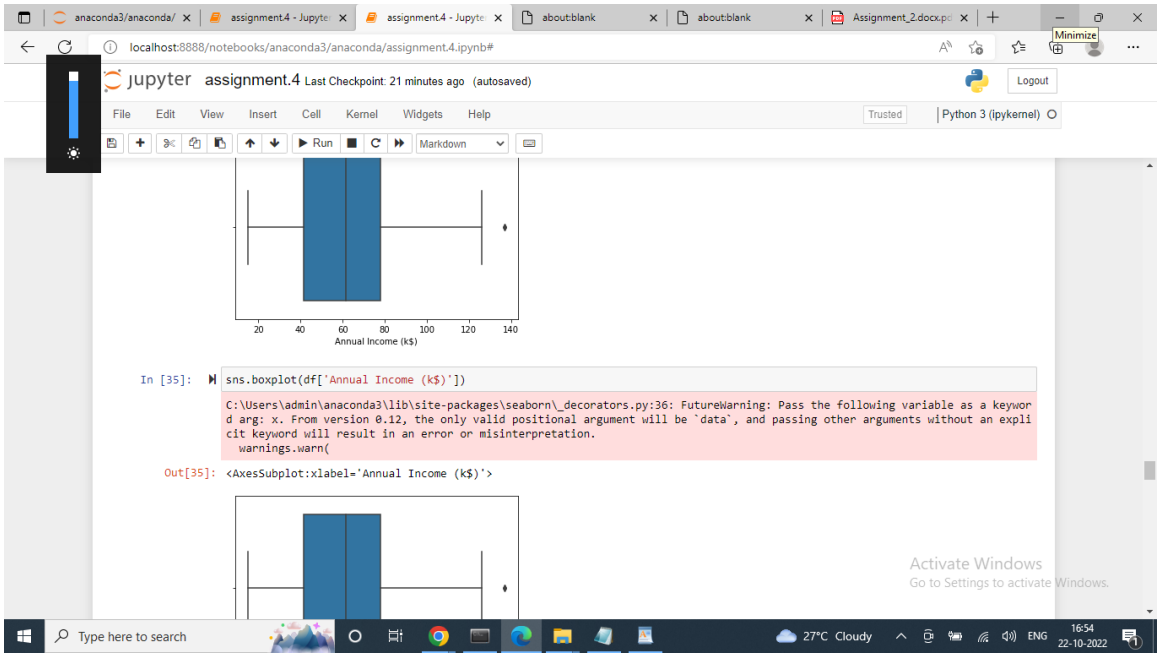

anaconda3/anaconda/
assignment.4 - Jupyte
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 20 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Age
Annual Income (k$)
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:53
22-10-2022

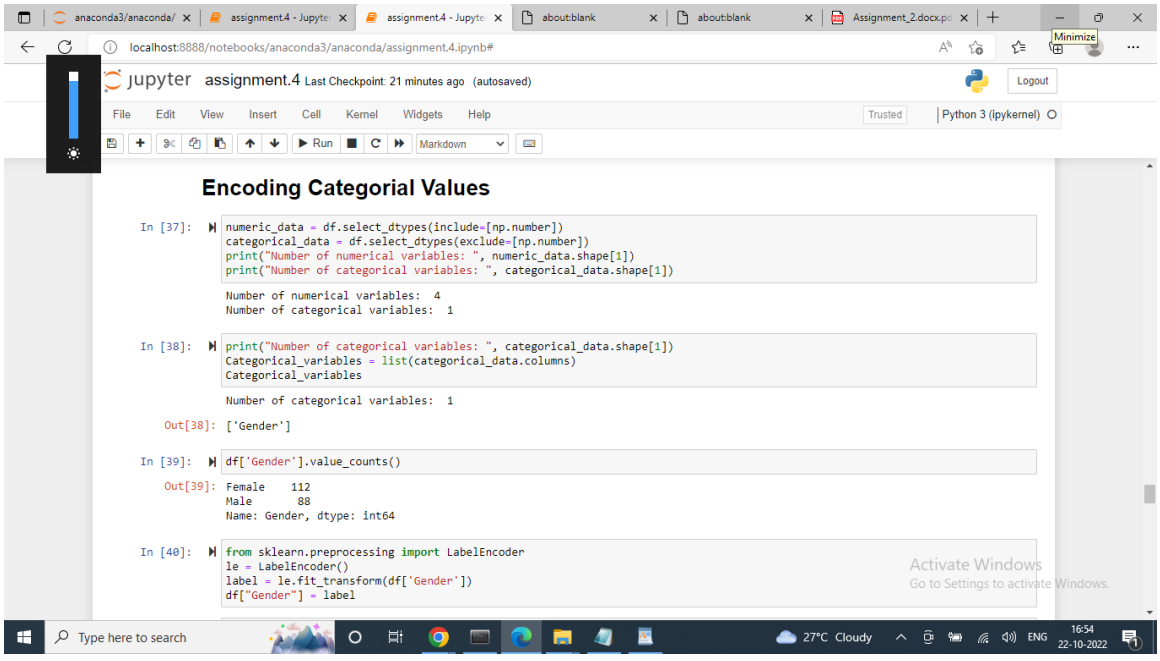

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 20 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Descriptive Statistics
In [22]:
sns.heatmap(df.corr(),annot=True)
Out[22]:
<AxesSubplot:>
CustomerID
Age
Annual Income (k$)
Spending Score (1-100)
1
-0.027
0.98
0.014
-0.027
1
-0.012
-0.33
0.98
-0.012
1
0.0099
0.014
-0.33
0.0099
1
1.0
0.8
0.6
0.4
0.2
0.0
−0.2
Activate Windows
Go to Settings to activate Windows.
In [23]:
df.shape
Type here to search
27°C Cloudy
ENG
16:53
22-10-2022

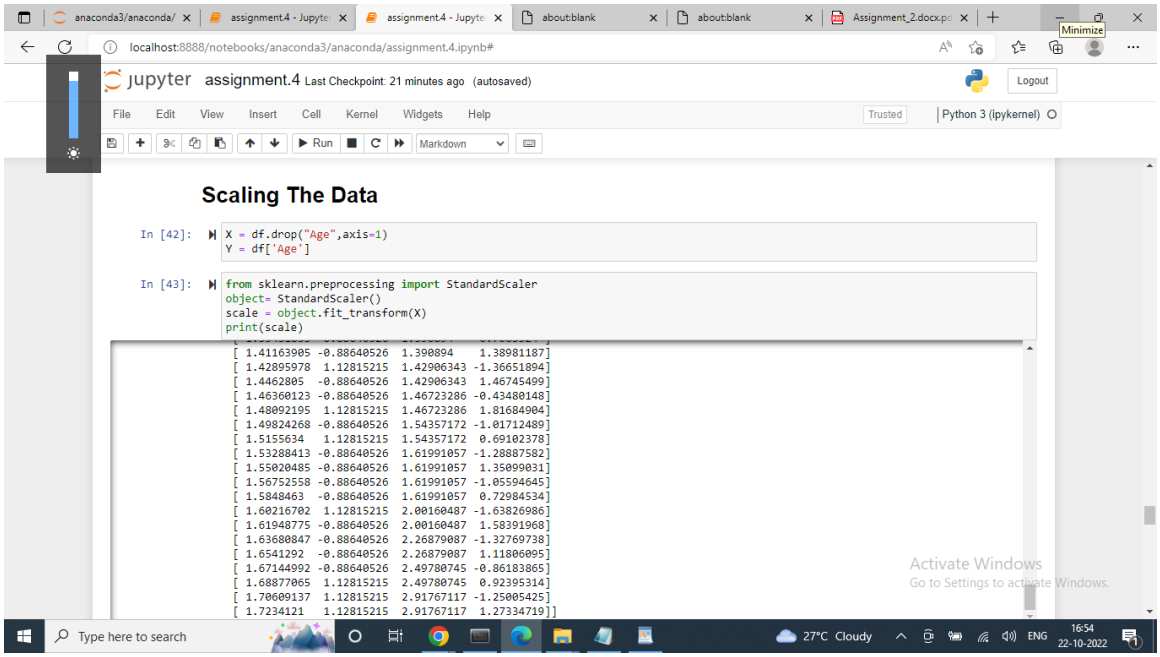

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 20 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
In [23]:
df.shape
Out[23]:
(200, 5)
In [24]:
df.isnull().sum()
Out[24]:
CustomerID 0
Gender 0
Age 0
Annual Income (k$) 0
Spending Score (1-100) 0
dtype: int64
In [25]:
df.info()
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 200 entries, 0 to 199
Data columns (total 5 columns):
Column Non-Null Count Dtype
0 CustomerID 200 non-null int64
1 Gender 200 non-null object
2 Age 200 non-null int64
3 Annual Income (k$) 200 non-null int64
4 Spending Score (1-100) 200 non-null int64
dtypes: int64(4), object(1)
memory usage: 7.9+ KB
In [27]:
df.describe()
Out[27]:
CustomerID Age Annual Income (k$) Spending Score (1-100)
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:53
22-10-2022

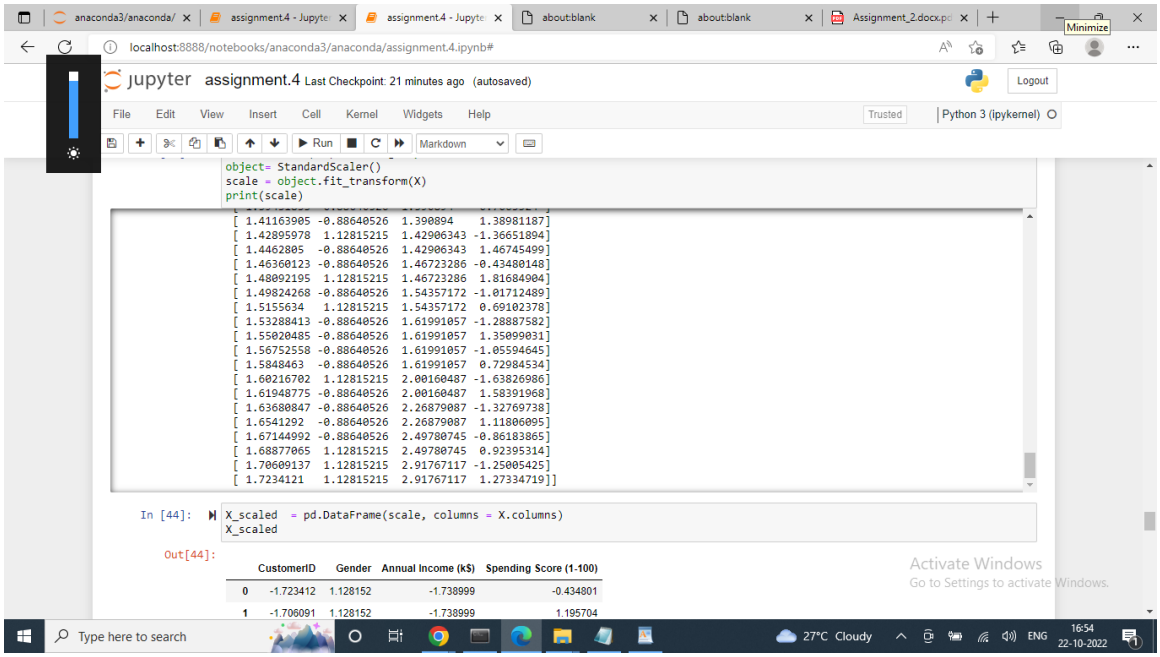

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
Minimize
jupyter assignment.4 Last Checkpoint: 20 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
In [29]:
df.median()
C:\Users\admin\AppData\Local\Temp\ipykernel_7908\530051474.py:1: FutureWarning: Dropping of nuisance columns in DataFrame reductions (with 'numeric_only=None') is deprecated; in a future version this will raise TypeError. Select only valid columns before calling the reduction.
df.median()
Out[29]:
CustomerID 100.5
Age 36.0
Annual Income (k$) 61.5
Spending Score (1-100) 50.0
dtype: float64
In [30]:
df.mode()
Out[30]:
CustomerID Gender Age Annual Income (k$) Spending Score (1-100)
0 1 Female 32.0 54.0 42.0
1 2 NaN NaN 78.0 NaN
2 3 NaN NaN NaN NaN
3 4 NaN NaN NaN NaN
4 5 NaN NaN NaN NaN
195 196 NaN NaN NaN NaN
196 197 NaN NaN NaN NaN
197 198 NaN NaN NaN NaN
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022

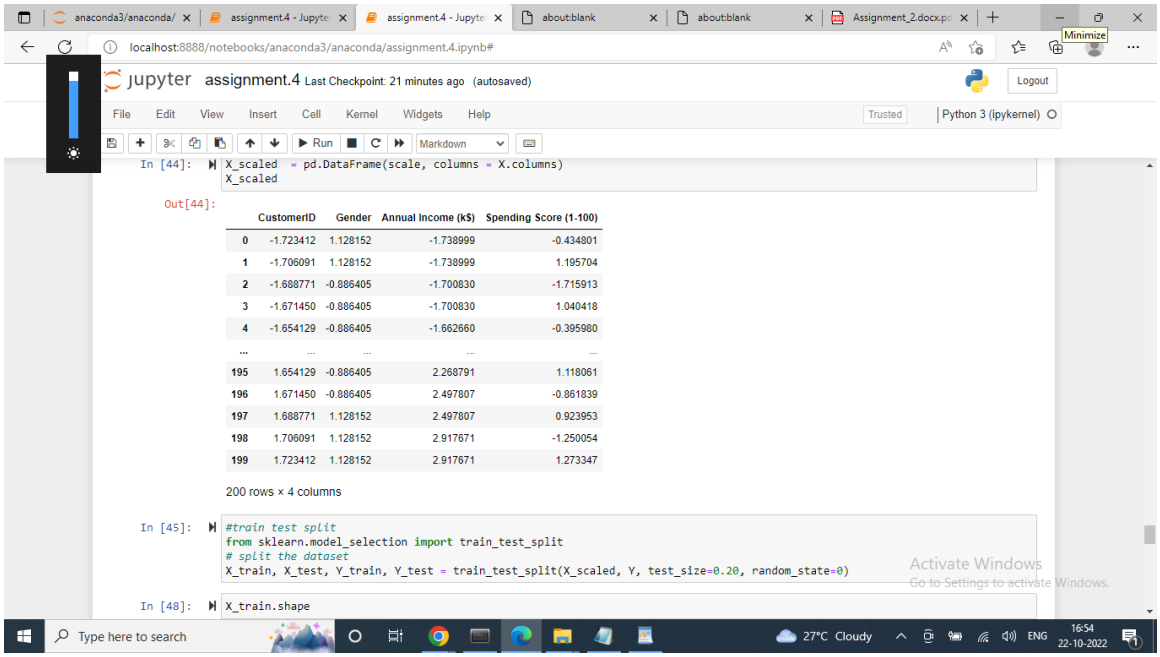

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
Minimize
jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Check For Missing Values
In [33]:
df.isna().sum()
Out[33]:
CustomerID 0
Gender 0
Age 0
Annual Income (k$) 0
Spending Score (1-100) 0
dtype: int64
Handling Outliers
In [34]:
sns.boxplot(df['Annual Income (k$)'])
C:\Users\admin\anaconda3\lib\site-packages\seaborn_decorators.py:36: FutureWarning: Pass the following variable as a keyword arg: x. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
warnings.warn(
Out[34]:
<AxesSubplot:xlabel='Annual Income (k$)'>
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022

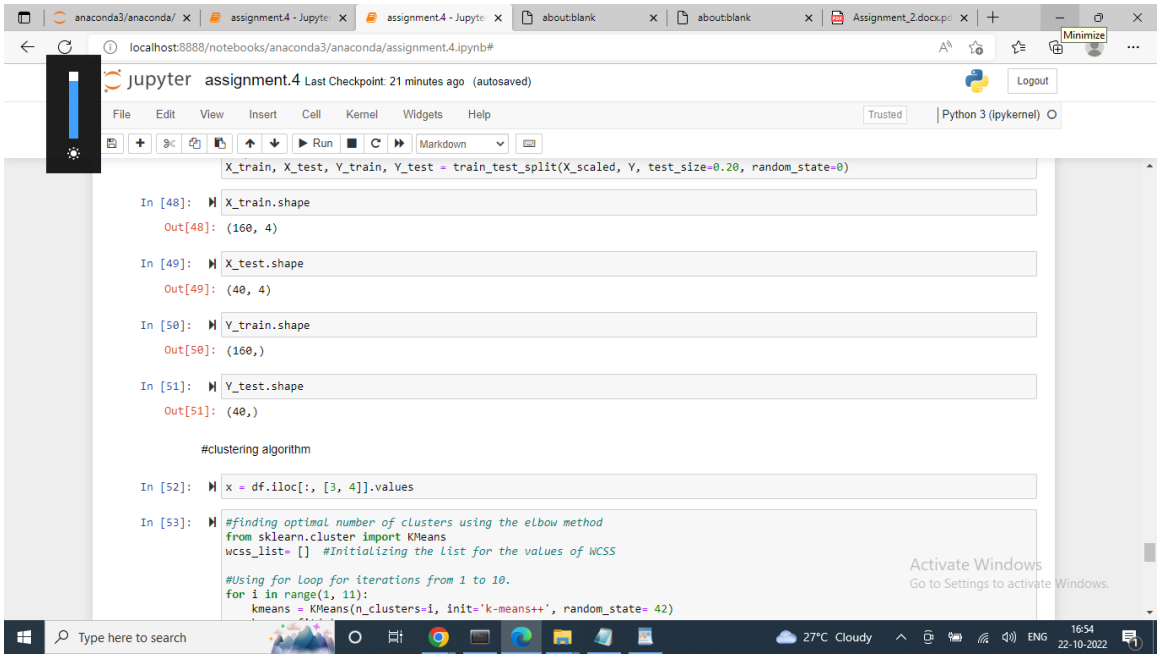

jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
20 40 60 80 100 120 140
Annual Income (k$)
In [35]:
sns.boxplot(df['Annual Income (k$)'])
C:\Users\admin\anaconda3\lib\site-packages\seaborn_decorators.py:36: FutureWarning: Pass the following variable as a keyword arg: x. From version 0.12, the only valid positional argument will be `data`, and passing other arguments without an explicit keyword will result in an error or misinterpretation.
warnings.warn(
Out[35]:
<AxesSubplot:xlabel='Annual Income (k$)'>
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022

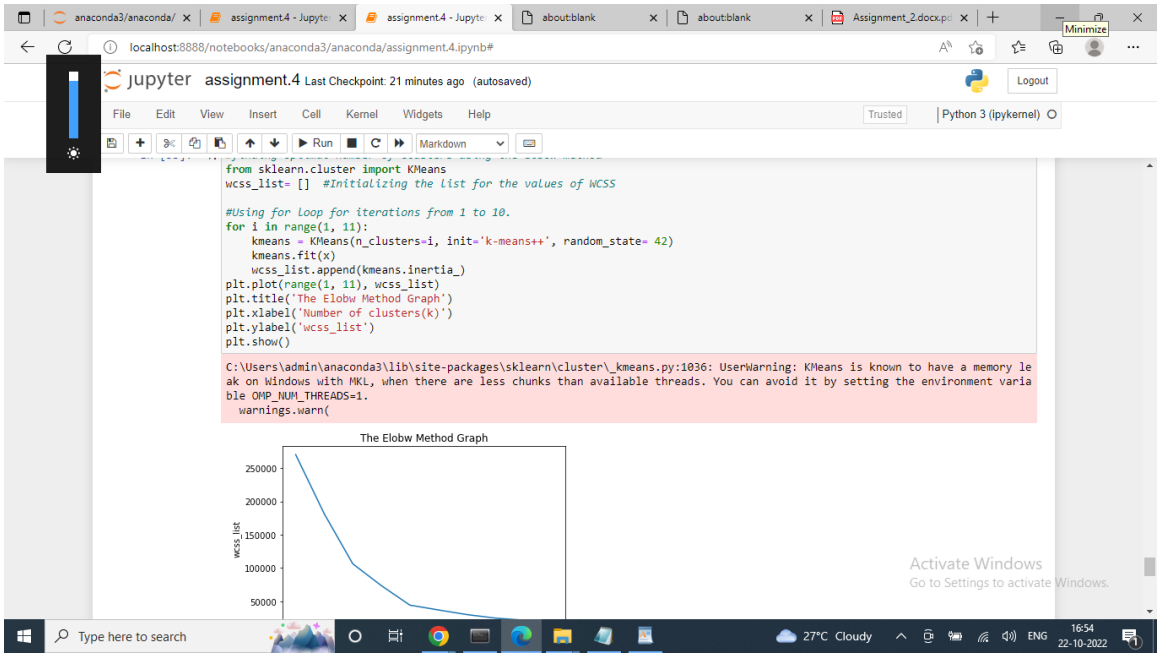

jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Encoding Categorial Values
In [37]:
numeric_data = df.select_dtypes(include=[np.number])
categorical_data = df.select_dtypes(exclude=[np.number])
print("Number of numerical variables: ", numeric_data.shape[1])
print("Number of categorical variables: ", categorical_data.shape[1])
Number of numerical variables: 4
Number of categorical variables: 1
In [38]:
print("Number of categorical variables: ", categorical_data.shape[1])
Categorical_variables = list(categorical_data.columns)
Categorical_variables
Number of categorical variables: 1
Out[38]:
['Gender']
In [39]:
df['Gender'].value_counts()
Out[39]:
Female 112
Male 88
Name: Gender, dtype: int64
In [40]:
from sklearn.preprocessing import LabelEncoder
le = LabelEncoder()
label = le.fit_transform(df['Gender'])
df["Gender"] = label
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022

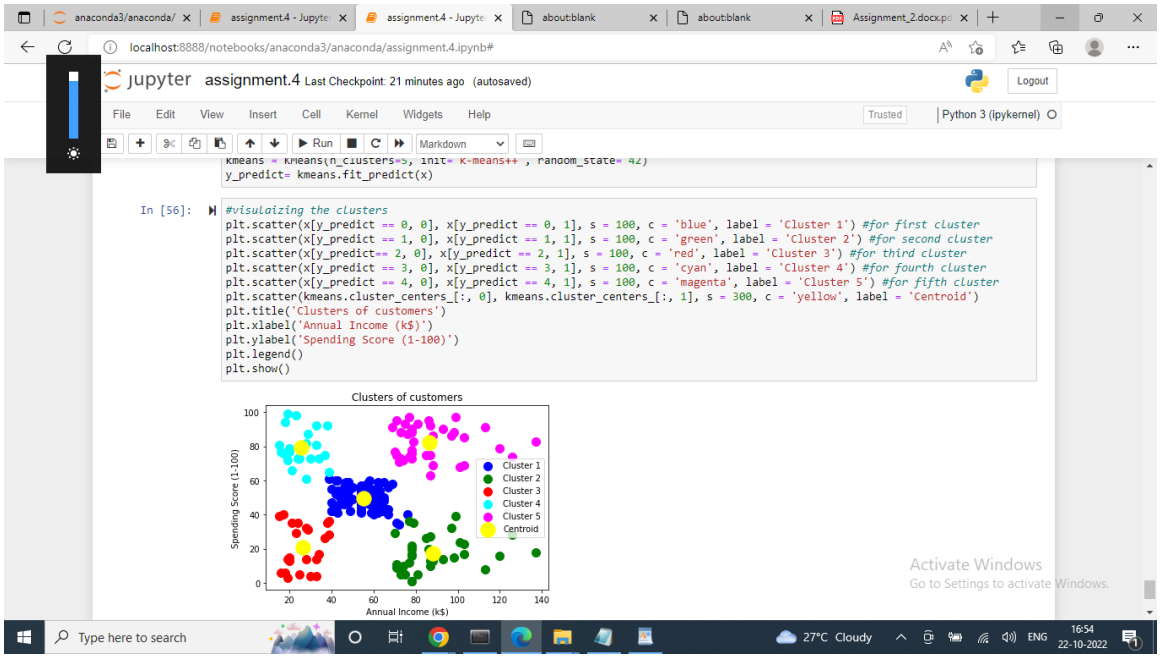

anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
Scaling The Data
In [42]:
X = df.drop("Age",axis=1)
Y = df['Age']
In [43]:
from sklearn.preprocessing import StandardScaler
object= StandardScaler()
scale = object.fit_transform(X)
print(scale)
[1.41163905 -0.88640526 1.390894 1.38981187]
[1.42895978 1.12815215 1.42906343 -1.36651894]
[1.4462805 -0.88640526 1.42906343 1.46745499]
[1.46360123 -0.88640526 1.46723286 -0.43480148]
[1.48092195 1.12815215 1.46723286 1.81684904]
[1.49824268 -0.88640526 1.54357172 -1.01712489]
[1.5155634 1.12815215 1.54357172 0.69102378]
[1.53288413 -0.88640526 1.61991057 -1.28887582]
[1.55020485 -0.88640526 1.61991057 1.35099031]
[1.56752558 -0.88640526 1.61991057 -1.05594645]
[1.5848463 -0.88640526 1.61991057 0.72984534]
[1.60216702 1.12815215 2.00160487 -1.63826986]
[1.61948775 -0.88640526 2.00160487 1.58391968]
[1.63680847 -0.88640526 2.26879087 -1.32769738]
[1.6541292 -0.88640526 2.26879087 1.11806095]
[1.67144992 -0.88640526 2.49780745 -0.86183865]
[1.68877065 1.12815215 2.49780745 0.92395314]
[1.70609137 1.12815215 2.91767117 -1.25005425]
[1.7234121 1.12815215 2.91767117 1.27334719]]
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022


anaconda3/anaconda/
assignment.4 - Jupyte
assignment.4 - Jupyte
about:blank
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
object= StandardScaler()
scale = object.fit_transform(X)
print(scale)
[1.41163905 -0.88640526 1.390894 1.38981187]
[1.42895978 1.12815215 1.42906343 -1.36651894]
[1.4462805 -0.88640526 1.42906343 1.46745499]
[1.46360123 -0.88640526 1.46723286 -0.43480148]
[1.48092195 1.12815215 1.46723286 1.81684904]
[1.49824268 -0.88640526 1.54357172 -1.01712489]
[1.5155634 1.12815215 1.54357172 0.69102378]
[1.53288413 -0.88640526 1.61991057 -1.28887582]
[1.55020485 -0.88640526 1.61991057 1.35099031]
[1.56752558 -0.88640526 1.61991057 -1.05594645]
[1.5848463 -0.88640526 1.61991057 0.72984534]
[1.60216702 1.12815215 2.00160487 -1.63826986]
[1.61948775 -0.88640526 2.00160487 1.58391968]
[1.63680847 -0.88640526 2.26879087 -1.32769738]
[1.6541292 -0.88640526 2.26879087 1.11806095]
[1.67144992 -0.88640526 2.49780745 -0.86183865]
[1.68877065 1.12815215 2.49780745 0.92395314]
[1.70609137 1.12815215 2.91767117 -1.25005425]
[1.7234121 1.12815215 2.91767117 1.27334719]]
In [44]:
X_scaled = pd.DataFrame(scale, columns = X.columns)
X_scaled
Out[44]:
CustomerID Gender Annual Income (k$) Spending Score (1-100)
0 -1.723412 1.128152 -1.738999 -0.434801
1 -1.706091 1.128152 -1.738999 1.195704
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022


anaconda3/anaconda/
assignment.4 - Jupyte
about:blank
Assignment_2.docx.pd
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
Minimize
jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
In [44]:
X_scaled = pd.DataFrame(scale, columns = X.columns)
X_scaled
Out[44]:
CustomerID Gender Annual Income (k$) Spending Score (1-100)
0 -1.723412 1.128152 -1.738999 -0.434801
1 -1.706091 1.128152 -1.738999 1.195704
2 -1.688771 -0.886405 -1.700830 -1.715913
3 -1.671450 -0.886405 -1.700830 1.040418
4 -1.654129 -0.886405 -1.662660 -0.395980
... ...
195 1.654129 -0.886405 2.268791 1.118061
196 1.671450 -0.886405 2.497807 -0.861839
197 1.688771 1.128152 2.497807 0.923953
198 1.706091 1.128152 2.917671 -1.250054
199 1.723412 1.128152 2.917671 1.273347
200 rows × 4 columns
In [45]:
#train test split
from sklearn.model_selection import train_test_split
# split the dataset
X_train, X_test, Y_train, Y_test = train_test_split(X_scaled, Y, test_size=0.20, random_state=0)
Activate Windows
Go to Settings to activate Windows.
In [48]:
X_train.shape
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022


anaconda3/anaconda/
assignment.4 - Jupyte
about:blank
Assignment_2.docx.pd
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
Minimize
jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
X_train, X_test, Y_train, Y_test = train_test_split(X_scaled, Y, test_size=0.20, random_state=0)
In [48]:
X_train.shape
Out[48]: (160, 4)
In [49]:
X_test.shape
Out[49]: (40, 4)
In [50]:
Y_train.shape
Out[50]: (160,)
In [51]:
Y_test.shape
Out[51]: (40,)
#clustering algorithm
In [52]:
x = df.iloc[:, [3, 4]].values
In [53]:
#finding optimal number of clusters using the elbow method
from sklearn.cluster import KMeans
wcss_list= [] #Initializing the list for the values of WCSS
#Using for loop for iterations from 1 to 10.
for i in range(1, 11):
kmeans = KMeans(n_clusters=i, init='k-means++', random_state= 42)
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022


anaconda3/anaconda/
assignment.4 - Jupyte
about:blank
Assignment_2.docx.pd
Minimize
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
from sklearn.cluster import KMeans
wcss_list= [] #Initializing the list for the values of WCSS
#Using for loop for iterations from 1 to 10.
for i in range(1, 11):
kmeans = KMeans(n_clusters=i, init='k-means++', random_state= 42)
kmeans.fit(x)
wcss_list.append(kmeans.inertia_)
plt.plot(range(1, 11), wcss_list)
plt.title('The Elobw Method Graph')
plt.xlabel('Number of clusters(k)')
plt.ylabel('wcss_list')
plt.show()
C:\Users\admin\anaconda3\lib\site-packages\sklearn\cluster_kmeans.py:1036: UserWarning: KMeans is known to have a memory le
ak on Windows with MKL, when there are less chunks than available threads. You can avoid it by setting the environment varia
ble OMP_NUM_THREADS=1.
warnings.warn(
The Elobw Method Graph
wcss_list
250000
200000
150000
100000
50000
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022


anaconda3/anaconda/
assignment.4 - Jupyte
about:blank
Assignment_2.docx.pd
localhost:8888/notebooks/anaconda3/anaconda/assignment.4.ipynb#
jupyter assignment.4 Last Checkpoint: 21 minutes ago (autosaved)
Logout
File Edit View Insert Cell Kernel Widgets Help
Trusted
Python 3 (ipykernel)
Run
Markdown
y_predict= kmeans.fit_predict(x)
In [56]:
#visulaizing the clusters
plt.scatter(x[y_predict == 0, 0], x[y_predict == 0, 1], s = 100, c = 'blue', label = 'Cluster 1') #for first cluster
plt.scatter(x[y_predict == 1, 0], x[y_predict == 1, 1], s = 100, c = 'green', label = 'Cluster 2') #for second cluster
plt.scatter(x[y_predict== 2, 0], x[y_predict == 2, 1], s = 100, c = 'red', label = 'Cluster 3') #for third cluster
plt.scatter(x[y_predict == 3, 0], x[y_predict == 3, 1], s = 100, c = 'cyan', label = 'Cluster 4') #for fourth cluster
plt.scatter(x[y_predict == 4, 0], x[y_predict == 4, 1], s = 100, c = 'magenta', label = 'Cluster 5') #for fifth cluster
plt.scatter(kmeans.cluster_centers_[:, 0], kmeans.cluster_centers_[:, 1], s = 300, c = 'yellow', label = 'Centroid')
plt.title('Clusters of customers')
plt.xlabel('Annual Income (k$)')
plt.ylabel('Spending Score (1-100)')
plt.legend()
plt.show()
Clusters of customers
Spending Score (1-100)
Annual Income (k$)
Cluster 1
Cluster 2
Cluster 3
Cluster 4
Cluster 5
Centroid
Activate Windows
Go to Settings to activate Windows.
Type here to search
27°C Cloudy
ENG
16:54
22-10-2022