Ex No 10

Visualize Data using Any plotting Framework

AIM:

To Visualize Data using Any plotting Frame work using R programming.

PROCEDURE:

- Install Plotly using pip install plotly if it's not already installed.
- Import the necessary libraries: import plotly.express as px and import pandas as pd.
- Load your dataset into a DataFrame using pd.read_csv() or other data loading methods.
- Explore the dataset to understand its structure, variables, and potential visualizations.
- Choose the appropriate Plotly function (e.g., px.scatter, px.bar,px.line) based on the type of data and the desired plot.
- Define the x and y axes by specifying the columns from the DataFrame.
- Customize the plot by adding titles, labels, color coding, and other plot-specific attributes.
- Add interactive elements like hover data, tooltips, or facet plots for deeper insights.
- Render the plot using fig.show() to display it in a web browser or inline in a notebook.
- Save the plot to an HTML file or as a static image using fig.write_html() or fig.write_image().

CODE:

Scatter Plot.R:

```
# Install ggplot2 (if not already installed)
install.packages("ggplot2") # Load the
ggplot2 package
library(ggplot2)
# Scatter plot of Sepal.Length vs Sepal.Width, colored by Species
ggplot(data = iris, aes(x = Sepal.Length, y = Sepal.Width, color = Species))
+
  geom_point(size = 3) + # Adds points labs(title =
  "Scatter Plot of Sepal Dimensions", x = "Sepal Length
  (cm)", y = "Sepal Width (cm)") + # Adds axis labels and
  title theme_minimal() # Applies a minimal theme
```

Bar Chart.R:

```
# Install ggplot2 (if not already installed)
install.packages("ggplot2") # Load the
ggplot2 package
library(ggplot2)
# Bar plot of Species counts
ggplot(data = iris, aes(x = Species)) +
  geom_bar(fill = "steelblue") + # Adds bars filled with steel blue color
  labs(title = "Count of Different Species in Iris Dataset", x =
  "Species", y = "Count") +
 theme_minimal()
```

Histogram.R:

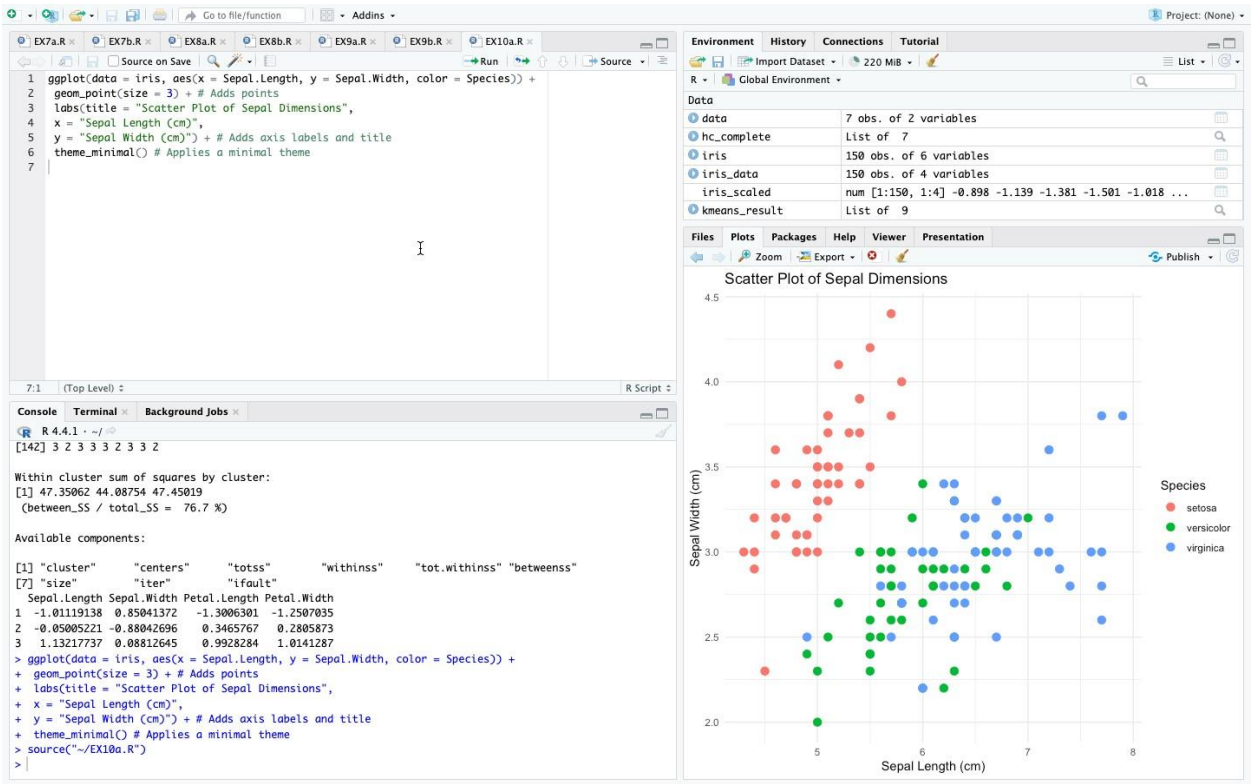
```
# Install ggplot2 (if not already installed)
install.packages("ggplot2") # Load the
ggplot2 package
library(ggplot2)
# Histogram of Sepal Length ggplot(data = iris, aes(x = Sepal.Length)) +
geom_histogram(binwidth = 0.3, fill = "orange", color = "black") + # Adds histogram bars
labs(title = "Histogram of Sepal Length", x = "Sepal Length (cm)", y = "Frequency") +
  theme_minimal()
```

Box Plot.R:

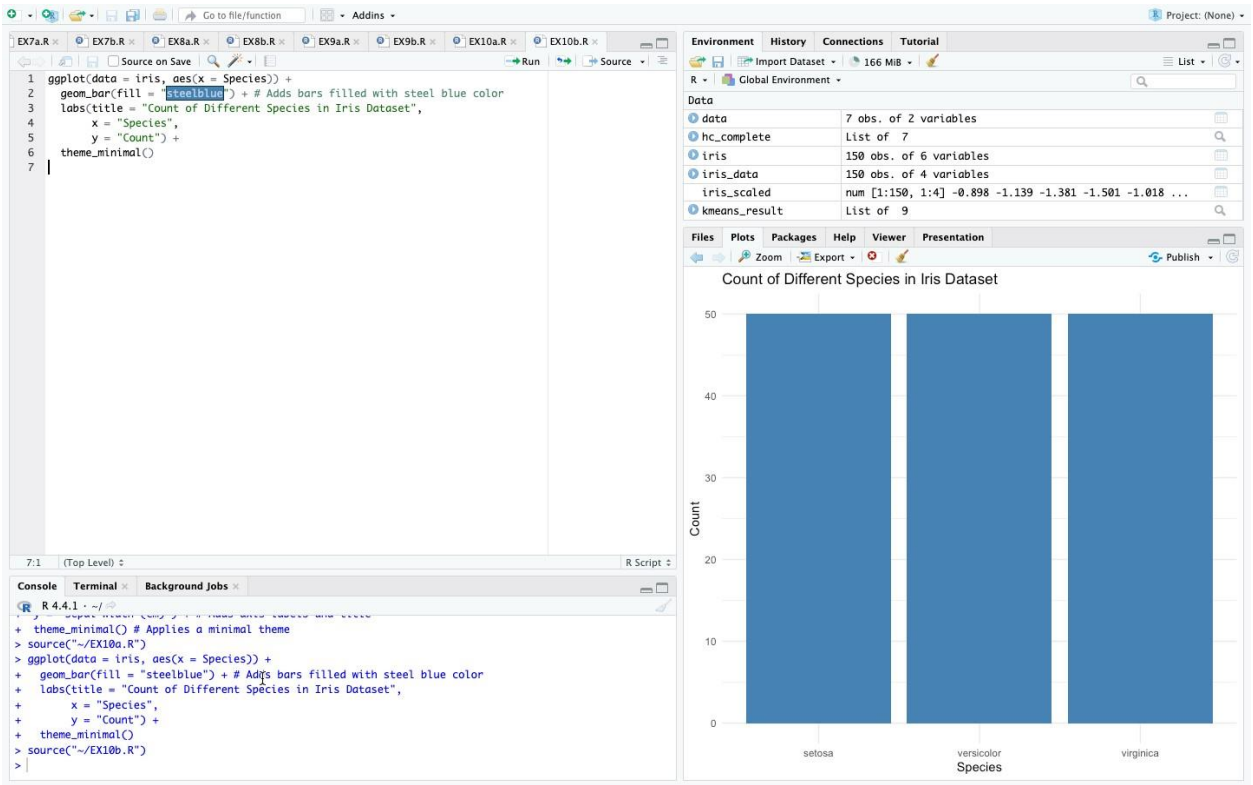
```
# Install ggplot2 (if not already installed)
install.packages("ggplot2")
library(ggplot2)
# Box plot of Sepal Length for each Species ggplot(data = iris, aes(x =
Species, y = Sepal.Length, fill = Species)) +
  geom_boxplot() + # Adds box plot labs(title =
  "Box Plot of Sepal Length by Species", x =
  "Species", y = "Sepal Length (cm)") +
  theme_minimal()
```

OUTPUT:

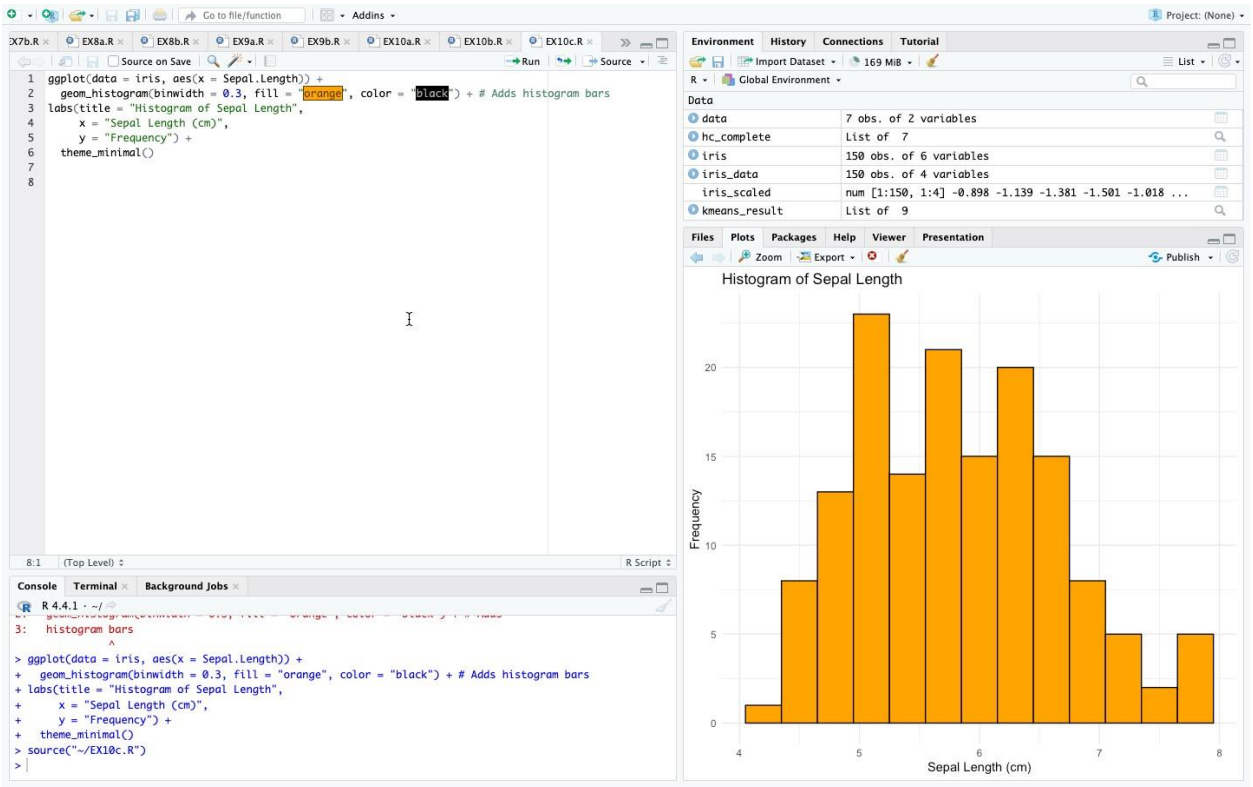
Scatter Plot:


EX7a.R
EX7b.R
EX8a.R
EX8b.R
EX9a.R
EX9b.R
EX10a.R
ggplot(data = iris, aes(x = Sepal.Length, y = Sepal.Width, color = Species)) +
geom_point(size = 3) + # Adds points
labs(title = "Scatter Plot of Sepal Dimensions",
x = "Sepal Length (cm)",
y = "Sepal Width (cm)") + # Adds axis labels and title
theme_minimal() # Applies a minimal theme
Environment
History
Connections
Tutorial
Data
data 7 obs. of 2 variables
hc_complete List of 7
iris 150 obs. of 6 variables
iris_data 150 obs. of 4 variables
iris_scaled num [1:150, 1:4] -0.898 -1.139 -1.381 -1.501 -1.018 ...
kmeans_result List of 9
Files
Plots
Packages
Help
Viewer
Presentation
Scatter Plot of Sepal Dimensions
Sepal Width (cm)
Sepal Length (cm)
Species
setosa
versicolor
virginica
Console
Terminal
Background Jobs
[142] 3 2 3 3 3 2 3 3 2
Within cluster sum of squares by cluster:
[1] 47.35062 44.08754 47.45019
(between_SS / total_SS = 76.7 %)
Available components:
[1] "cluster" "centers" "totss" "withinss" "tot.withinss" "betweenss"
[7] "size" "iter" "ifault"
Sepal.Length Sepal.Width Petal.Length Petal.Width
1 -1.01119138 0.85041372 -1.3006301 -1.2507035
2 -0.05005221 -0.88042696 0.3465767 0.2805873
3 1.13217737 0.08812645 0.9928284 1.0141287
> ggplot(data = iris, aes(x = Sepal.Length, y = Sepal.Width, color = Species)) +
+ geom_point(size = 3) + # Adds points
+ labs(title = "Scatter Plot of Sepal Dimensions",
+ x = "Sepal Length (cm)",
+ y = "Sepal Width (cm)") + # Adds axis labels and title
+ theme_minimal() # Applies a minimal theme
> source("~/EX10a.R")

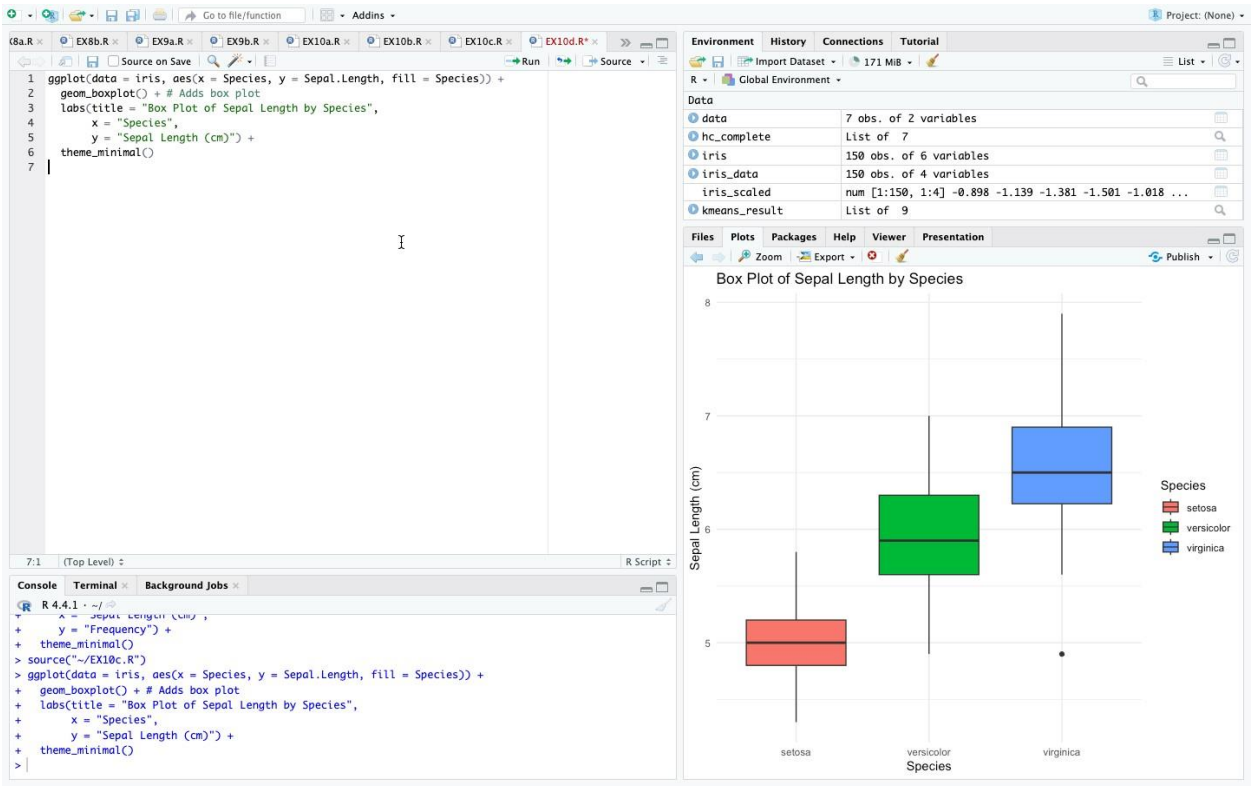
Bar Chart:


EX7a.R
EX7b.R
EX8a.R
EX8b.R
EX9a.R
EX9b.R
EX10a.R
EX10b.R
ggplot(data = iris, aes(x = Species)) +
geom_bar(fill = "steelblue") + # Adds bars filled with steel blue color
labs(title = "Count of Different Species in Iris Dataset",
x = "Species",
y = "Count") +
theme_minimal()
Environment
History
Connections
Tutorial
Data
data 7 obs. of 2 variables
hc_complete List of 7
iris 150 obs. of 6 variables
iris_data 150 obs. of 4 variables
iris_scaled num [1:150, 1:4] -0.898 -1.139 -1.381 -1.501 -1.018 ...
kmeans_result List of 9
Files
Plots
Packages
Help
Viewer
Presentation
Count of Different Species in Iris Dataset
Count
Species
setosa
versicolor
virginica
Console
Terminal
Background Jobs
+ theme_minimal() # Applies a minimal theme
> source("~/EX10a.R")
> ggplot(data = iris, aes(x = Species)) +
+ geom_bar(fill = "steelblue") + # Adds bars filled with steel blue color
+ labs(title = "Count of Different Species in Iris Dataset",
+ x = "Species",
+ y = "Count") +
+ theme_minimal()
> source("~/EX10b.R")

Histogram:



Box Plot:



RESULT:

Thus, Visualizing Data using any plotting framework using R programming has been successfully executed.