EXP. NO.: 07	Apply and explore various plotting functions on the data set

AIM

To visualize data using different plotting functions in R and to analyze patterns and distributions in the *airquality* dataset.

TOOLS REQUIRED

- RStudio IDE
- R programming language
- ggplot2 library for advanced plots
- Built-in dataset: airquality

ALGORITHM

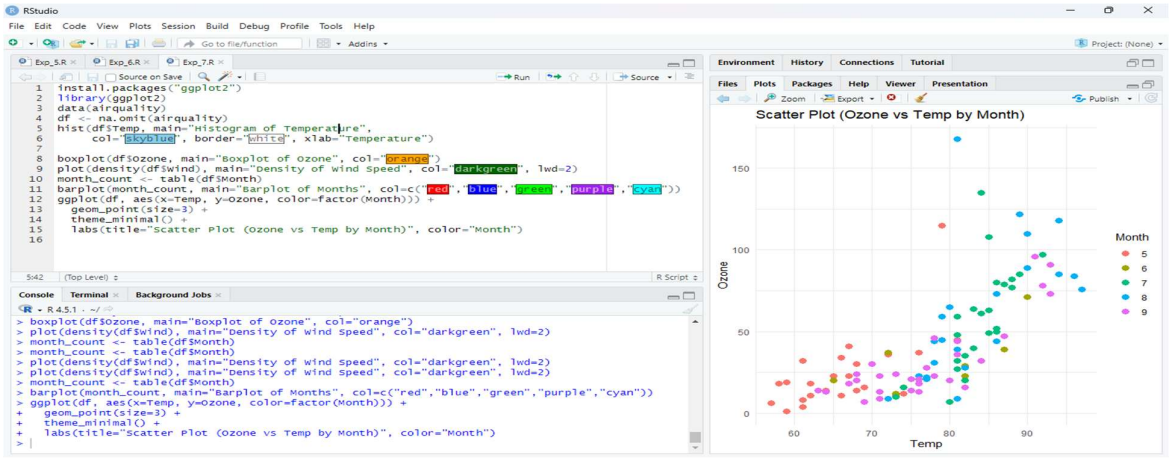
- Install and load necessary packages (ggplot2).
- Load the airquality dataset.
- Handle missing values using na.omit().
- Plot histogram for temperature distribution.
- Draw boxplot for ozone levels.
- Plot density curve for wind speed.
- Plot bar chart for monthly distribution.
- Use ggplot2 for scatter plot visualization of Ozone vs Temperature, colored by Month.

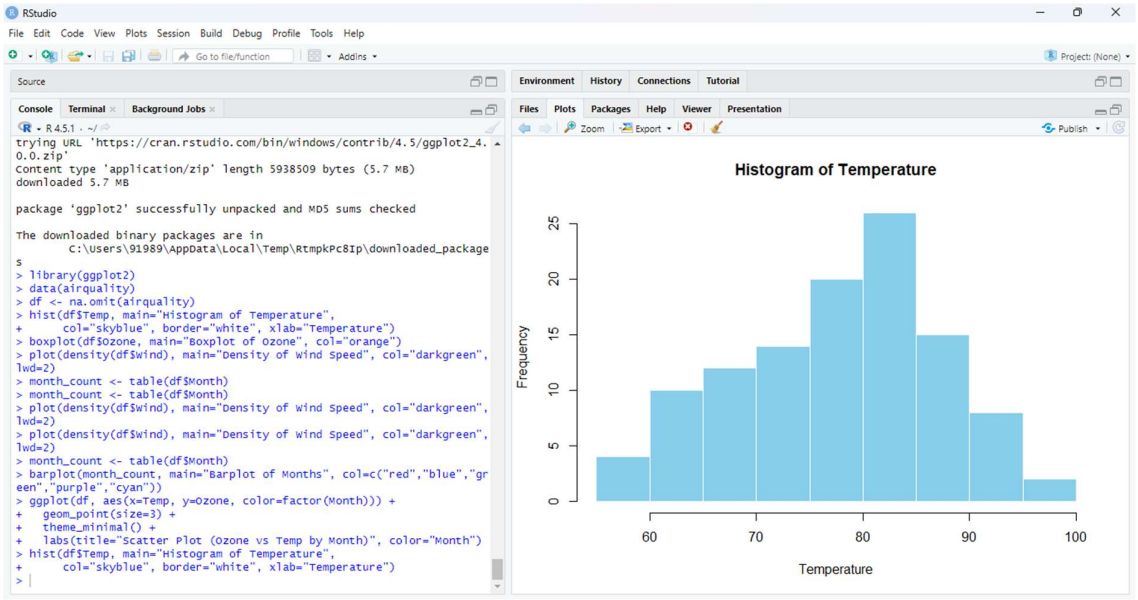
CODING

```
install.packages("ggplot2")

library(ggplot2)

data(airquality)

df <- na.omit(airquality)

hist(df$Temp, main="Histogram of Temperature",

    col="skyblue", border="white", xlab="Temperature")
```

```
boxplot(df$Ozone, main="Boxplot of Ozone", col="orange")

plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen", lwd=2)

month_count <- table(df$Month)

barplot(month_count, main="Barplot of Months",
col=c("red","blue","green","purple","cyan"))

ggplot(df, aes(x=Temp, y=Ozone, color=factor(Month))) +
  geom_point(size=3) +
  theme_minimal() +
  labs(title="Scatter Plot (Ozone vs Temp by Month)", color="Month")
```

OUTPUT




RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Source
Console Terminal Background Jobs
R 4.5.1 · ~/
trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.5/ggplot2_4.0.0.zip'
Content type 'application/zip' length 5938509 bytes (5.7 MB)
downloaded 5.7 MB
package 'ggplot2' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:\Users\91989\AppData\Local\Temp\RtmpkPc8Ip\downloaded_packages
> library(ggplot2)
> data(airquality)
> df <- na.omit(airquality)
> hist(df$Temp, main="Histogram of Temperature",
+ col="skyblue", border="white", xlab="Temperature")
> boxplot(df$Ozone, main="Boxplot of Ozone", col="orange")
> plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen", lwd=2)
> month_count <- table(df$Month)
> month_count <- table(df$Month)
> plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen", lwd=2)
> plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen", lwd=2)
> month_count <- table(df$Month)
> barplot(month_count, main="Barplot of Months", col=c("red","blue","green","purple","cyan"))
> ggplot(df, aes(x=Temp, y=Ozone, color=factor(Month))) +
+ geom_point(size=3) +
+ theme_minimal() +
+ labs(title="Scatter Plot (Ozone vs Temp by Month)", color="Month")
> hist(df$Temp, main="Histogram of Temperature",
+ col="skyblue", border="white", xlab="Temperature")
>
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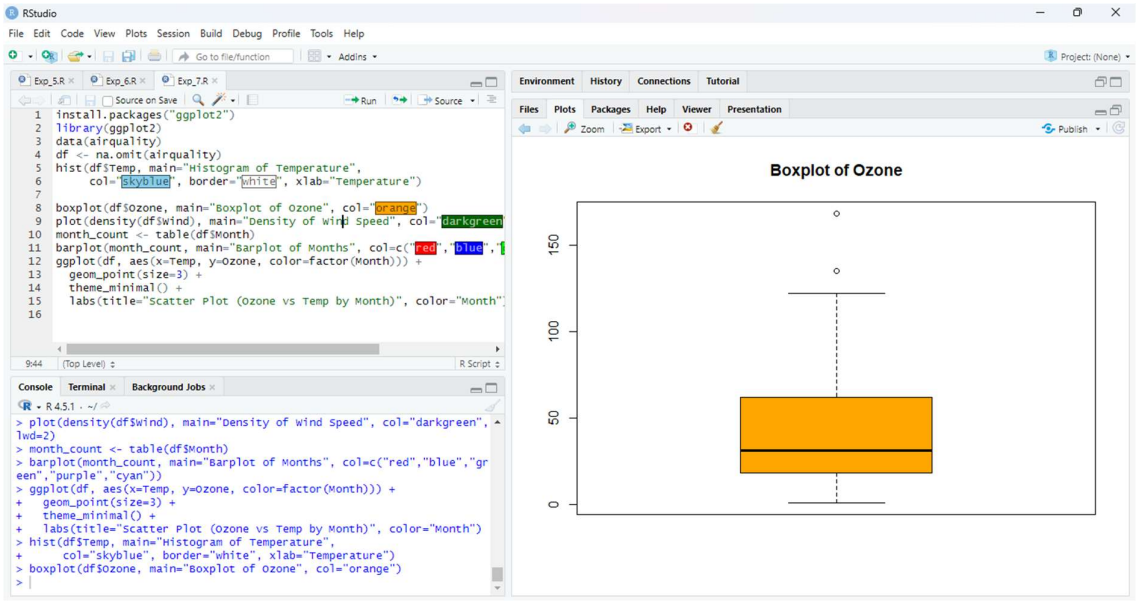
Zoom Export Publish
Histogram of Temperature
Frequency
0 5 10 15 20 25
60 70 80 90 100
Temperature


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Exp_5.R Exp_6.R Exp_7.R
Source on Save Run Source
1 install.packages("ggplot2")
2 library(ggplot2)
3 data(airquality)
4 df <- na.omit(airquality)
5 hist(df$Temp, main="Histogram of Temperature",
6 col="skyblue", border="white", xlab="Temperature")
7
8 boxplot(df$Ozone, main="Boxplot of Ozone", col="orange")
9 plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen
10 month_count <- table(df$Month)
11 barplot(month_count, main="Barplot of Months", col=c("red","blue",
12 ggplot(df, aes(x=Temp, y=Ozone, color=factor(Month))) +
13 geom_point(size=3) +
14 theme_minimal() +
15 labs(title="Scatter Plot (Ozone vs Temp by Month)", color="Month"
16
9:44 (Top Level) R Script
Console Terminal Background Jobs
R 4.5.1 · ~/
> plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen", lwd=2)
> month_count <- table(df$Month)
> barplot(month_count, main="Barplot of Months", col=c("red","blue","green","purple","cyan"))
> ggplot(df, aes(x=Temp, y=Ozone, color=factor(Month))) +
+ geom_point(size=3) +
+ theme_minimal() +
+ labs(title="Scatter Plot (Ozone vs Temp by Month)", color="Month")
> hist(df$Temp, main="Histogram of Temperature",
+ col="skyblue", border="white", xlab="Temperature")
> boxplot(df$Ozone, main="Boxplot of Ozone", col="orange")
>
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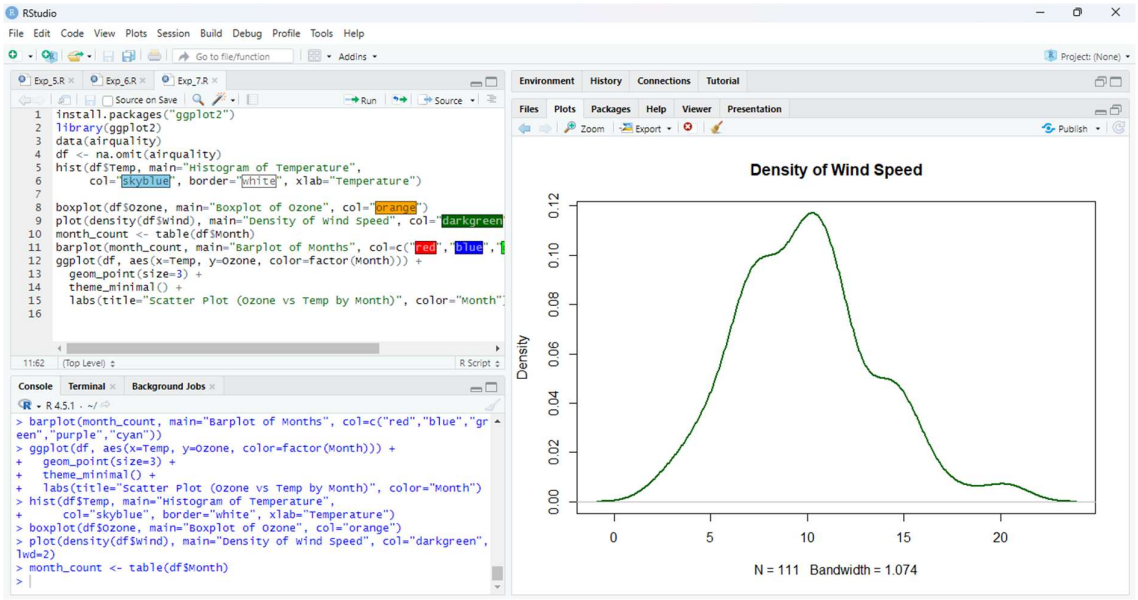
Boxplot of Ozone
0 50 100 150


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Exp_5.R Exp_6.R Exp_7.R
Source on Save Run Source
1 install.packages("ggplot2")
2 library(ggplot2)
3 data(airquality)
4 df <- na.omit(airquality)
5 hist(df$Temp, main="Histogram of Temperature",
6 col="skyblue", border="white", xlab="Temperature")
7
8 boxplot(df$Ozone, main="Boxplot of Ozone", col="orange")
9 plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen
10 month_count <- table(df$Month)
11 barplot(month_count, main="Barplot of Months", col=c("red","blue",
12 ggplot(df, aes(x=Temp, y=Ozone, color=factor(Month))) +
13 geom_point(size=3) +
14 theme_minimal() +
15 labs(title="Scatter Plot (Ozone vs Temp by Month)", color="Month"
16
11:62 (Top Level) R Script
Console Terminal Background Jobs
R 4.5.1 · ~/
> barplot(month_count, main="Barplot of Months", col=c("red","blue","gr
een","purple","cyan"))
> ggplot(df, aes(x=Temp, y=Ozone, color=factor(Month))) +
+ geom_point(size=3) +
+ theme_minimal() +
+ labs(title="Scatter Plot (Ozone vs Temp by Month)", color="Month")
> hist(df$Temp, main="Histogram of Temperature",
+ col="skyblue", border="white", xlab="Temperature")
> boxplot(df$Ozone, main="Boxplot of Ozone", col="orange")
> plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen",
lwd=2)
> month_count <- table(df$Month)
>
Environment History Connections Tutorial
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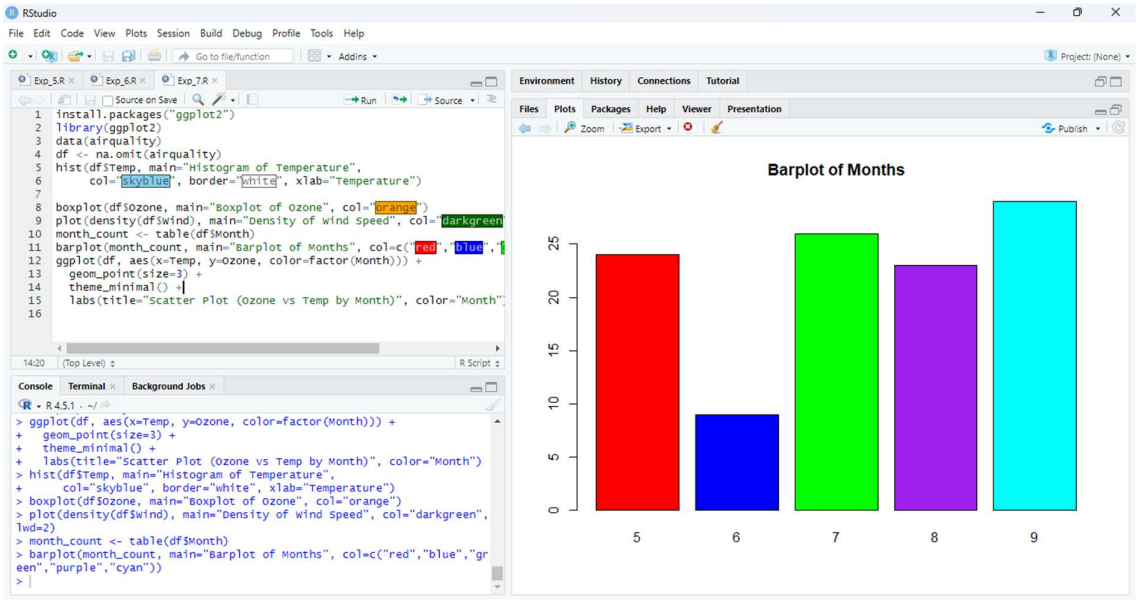
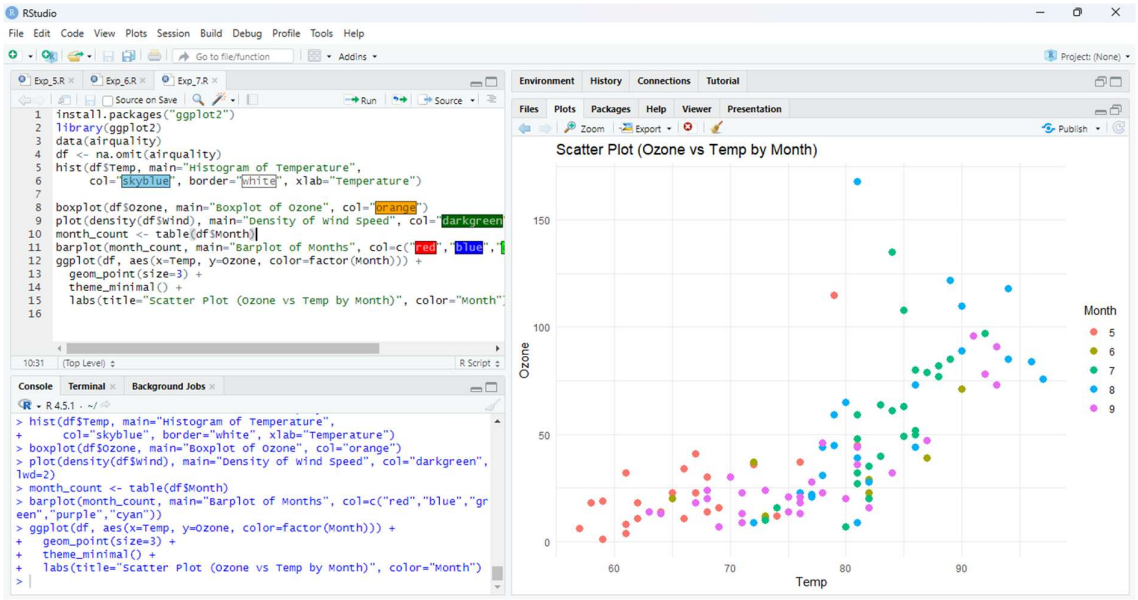
Density of Wind Speed
Density
0.00 0.02 0.04 0.06 0.08 0.10 0.12
0 5 10 15 20
N = 111 Bandwidth = 1.074


RStudio
File Edit Code View Plots Session Build Debug Profile Tools Help
Exp_5.R Exp_6.R Exp_7.R
Source on Save Run Source
1 install.packages("ggplot2")
2 library(ggplot2)
3 data(airquality)
4 df <- na.omit(airquality)
5 hist(df$Temp, main="Histogram of Temperature",
6 col="skyblue", border="white", xlab="Temperature")
7
8 boxplot(df$Ozone, main="Boxplot of Ozone", col="orange")
9 plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen
10 month_count <- table(df$Month)
11 barplot(month_count, main="Barplot of Months", col=c("red","blue",
12 ggplot(df, aes(x=Temp, y=Ozone, color=factor(Month))) +
13 geom_point(size=3) +
14 theme_minimal() +
15 labs(title="Scatter Plot (Ozone vs Temp by Month)", color="Month"
16
14:20 (Top Level) R Script
Console Terminal Background Jobs
R 4.5.1 · ~/
> ggplot(df, aes(x=Temp, y=Ozone, color=factor(Month))) +
+ geom_point(size=3) +
+ theme_minimal() +
+ labs(title="Scatter Plot (Ozone vs Temp by Month)", color="Month")
> hist(df$Temp, main="Histogram of Temperature",
+ col="skyblue", border="white", xlab="Temperature")
> boxplot(df$Ozone, main="Boxplot of Ozone", col="orange")
> plot(density(df$Wind), main="Density of Wind Speed", col="darkgreen",
lwd=2)
> month_count <- table(df$Month)
> barplot(month_count, main="Barplot of Months", col=c("red","blue","gr
een","purple","cyan"))
>
Environment History Connections Tutorial
Files Plots Packages Help Viewer Presentation
Zoom Export Publish
Barplot of Months
0 5 10 15 20 25
5 6 7 8 9



RESULT

Thus successfully completed plotting on the *airquality* dataset using multiple visualization techniques.The plots provided insights into data distribution, relationships, and seasonal variations.