Sri Lanka Institute of Information Technology

Lab Submission
<Lab sheet No 04>

<IT24103407>

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Probability and Statistics - IT2120

B.Sc. (Hons) in Information Technology

1.

```
setwd("C:\\Users\\it24103407\\Desktop\\IT24103407")
branch_data<-read.table("Exercise.txt",header = TRUE)
head(branch_data)
```

```
> head(branch_data)
  Branch Sales_X1 Advertising_X2 Years_X3
1      1      3.4            120        4
2      2      4.1            150        7
3      3      2.8             90        3
4      4      5.0            200       10
5      5      3.7            110        5
6      6      4.5            175        6
```

2.

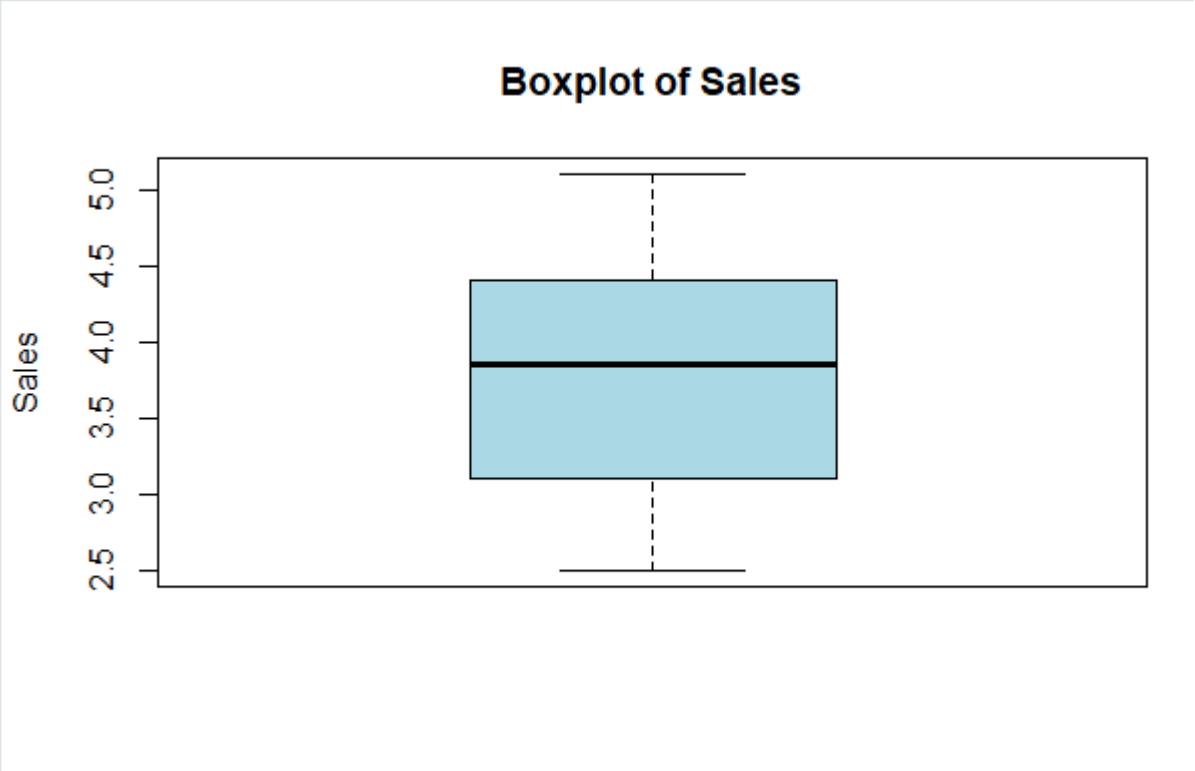
```
str(branch_data)
```

```
> str(branch_data)
'data.frame':   30 obs. of  4 variables:
 $ Branch        : int  1 2 3 4 5 6 7 8 9 10 ...
 $ Sales_X1      : num  3.4 4.1 2.8 5 3.7 4.5 3 4.9 3.2 2.5 ...
 $ Advertising_X2: int  120 150 90 200 110 175 95 185 105 80 ...
 $ Years_X3      : int  4 7 3 10 5 6 2 9 4 1 ...
>
```

3.

```
boxplot(branch_data$Sales,
        main = "Boxplot of Sales",
        ylab = "Sales",
        col = "lightblue",
        border = "black")
```

```
> boxplot(branch_data$Sales,
+         main = "Boxplot of Sales",
+         ylab = "Sales",
+         col = "lightblue",
+         border = "black")
>
```



4.

```
fivenum(branch_data$Advertising)
```

```
+         border = "black")
> fivenum(branch_data$Advertising)
[1]  80.0 100.0 132.5 160.0 210.0
>
```

```
12
13  IQR(branch_data$Advertising)
14
```

```
> IQR(branch_data$Advertising)
[1] 57.5
```

```
15 find_outliers <- function(x) {
16   Q1 <- quantile(x, 0.25)
17   Q3 <- quantile(x, 0.75)
18   IQR_val <- Q3 - Q1
19   outliers <- x[x < (Q1 - 1.5*IQR_val) | x > (Q3 + 1.5*IQR_val)]
20   return(outliers)
21 }
```

```
[1] 57.5
> find_outliers <- function(x) {
+   Q1 <- quantile(x, 0.25)
+   Q3 <- quantile(x, 0.75)
+   IQR_val <- Q3 - Q1
+   outliers <- x[x < (Q1 - 1.5*IQR_val) | x > (Q3 + 1.5*IQR_val)]
+   return(outliers)
+ }
> 
```

```
2
3  find_outliers(branch_data$Years)
4
```

```
> find_outliers(branch_data$Years)
integer(0)
```