Experiment 3
Q1

February 26, 2025

[8]:
```
library(tidyverse)
```

[9]:
```
setwd("/home/asus/content/Notes/Semester 4/FDN Lab/Experiments/Experiment 3")
```

[10]:
```
df <- data.frame(
  ID = c(1, 2, 3, 4, 5, 6, 7, 8, 9, 10),
  Name = c("Alice", "Bob", NA, "David", "Emma", "Frank", NA, "Hannah", "Ian",␣
 ↪"Jack"),
  Age = c(25, NA, 30, 29, NA, 35, 40, NA, 50, 27),
  Salary = c(50000, 60000, 55000, NA, 70000, 75000, 80000, 65000, NA, 72000),
  Score = c(80, 90, NA, 85, 88, 92, NA, 77, 95, Inf)
)
```

[11]:
```
################################
# Exploring Inbuilt Functions
################################
```

[12]:
```
is.na(df)
```

A matrix: 10 × 5 of type lgl

ID	Name	Age	Salary	Score
FALSE	FALSE	FALSE	FALSE	FALSE
FALSE	FALSE	TRUE	FALSE	FALSE
FALSE	TRUE	FALSE	FALSE	TRUE
FALSE	FALSE	FALSE	TRUE	FALSE
FALSE	FALSE	TRUE	FALSE	FALSE
FALSE	FALSE	FALSE	FALSE	FALSE
FALSE	TRUE	FALSE	FALSE	TRUE
FALSE	FALSE	TRUE	FALSE	FALSE
FALSE	FALSE	FALSE	TRUE	FALSE
FALSE	FALSE	FALSE	FALSE	FALSE

[13]:
```
complete.cases(df)
```

1. TRUE 2. FALSE 3. FALSE 4. FALSE 5. FALSE 6. TRUE 7. FALSE 8. FALSE 9. FALSE 10. TRUE

[14]:
```
df[complete.cases(df), ]
```

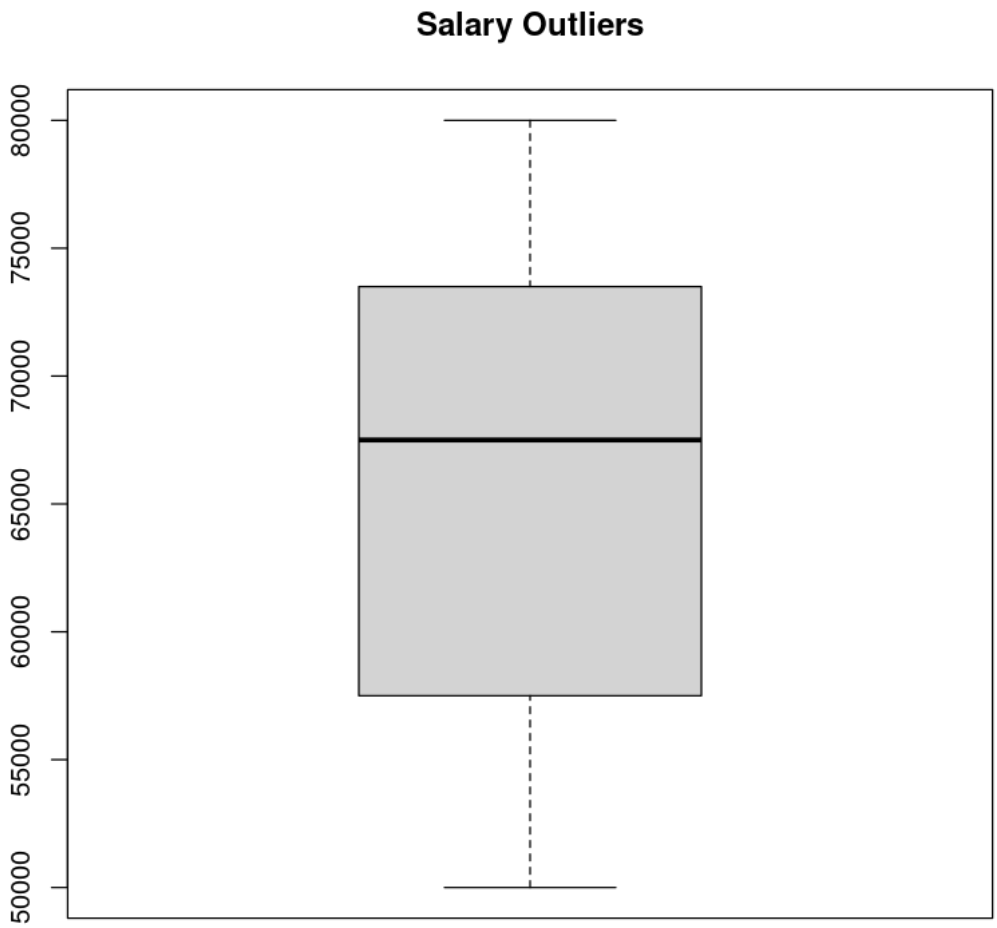
A data.frame: 3 × 5

	ID <dbl>	Name <chr>	Age <dbl>	Salary <dbl>	Score <dbl>
1	1	Alice	25	50000	80
6	6	Frank	35	75000	92
10	10	Jack	27	72000	Inf

[15]:
```
summary(df)
```

```
       ID            Name                Age            Salary     
 Min.   : 1.00   Length:10          Min.   :25.00   Min.   :50000  
 1st Qu.: 3.25   Class :character   1st Qu.:28.00   1st Qu.:58750  
 Median : 5.50   Mode  :character   Median :30.00   Median :67500  
 Mean   : 5.50                      Mean   :33.71   Mean   :65875  
 3rd Qu.: 7.75                      3rd Qu.:37.50   3rd Qu.:72750  
 Max.   :10.00                      Max.   :50.00   Max.   :80000  
                                    NA's   :3       NA's   :2      
     Score      
 Min.   :77.00  
 1st Qu.:83.75  
 Median :89.00  
 Mean   :  Inf  
 3rd Qu.:92.75  
 Max.   :  Inf  
 NA's   :2      
```

[16]:
```
# Boxplot to detect outliers
boxplot(df$Salary, main = "Salary Outliers", horizontal = FALSE)
```



[17]:
```r
# Identify outliers using IQR
Q1 <- quantile(df$Salary, 0.25, na.rm = TRUE)
Q3 <- quantile(df$Salary, 0.75, na.rm = TRUE)
IQR <- Q3 - Q1
lower_bound <- Q1 - 1.5 * IQR
upper_bound <- Q3 + 1.5 * IQR
outliers <- df$Salary[df$Salary < lower_bound | df$Salary > upper_bound]
print(outliers)
```

```
[1] NA NA
```

[18]:
```r
iqr_value <- IQR(df$Salary, na.rm=TRUE)
print(iqr_value)
```

```
[1] 14000
```

[19]:
```r
df_clean <- na.omit(df)
print(df_clean)
```

```
   ID  Name Age Salary Score
1   1 Alice  25  50000    80
6   6 Frank  35  75000    92
10 10  Jack  27  72000   Inf
```

[20]:
```r
df$Age[is.na(df$Age)] <- mean(df$Age, na.rm = TRUE)
df$Salary[is.na(df$Salary)] <- mean(df$Salary, na.rm = TRUE)
df$Score[is.na(df$Score)] <- mean(df$Score, na.rm = TRUE)
print(df)
```

```
   ID   Name      Age Salary Score
1   1  Alice 25.00000  50000    80
2   2    Bob 33.71429  60000    90
3   3   <NA> 30.00000  55000   Inf
4   4  David 29.00000  65875    85
5   5   Emma 33.71429  70000    88
6   6  Frank 35.00000  75000    92
7   7   <NA> 40.00000  80000   Inf
8   8 Hannah 33.71429  65000    77
9   9    Ian 50.00000  65875    95
10 10   Jack 27.00000  72000   Inf
```