# R Language Study Notes
# Importing and Exporting Data

## Introduction

R language mein real-world data aksar R ke bahar files mein hota hai jaise Excel, CSV, ya text files. Data analysis shuru karne se pehle data ko R mein import karna aur kaam complete hone ke baad data ko export karna bohat zaroori hota hai.

## Importing Excel Files

Excel files import karne ke liye R mein external packages use hotay hain kyun ke base R Excel files ko directly read nahi karta.

### Method 1: Using gdata Package

```
library(gdata)
mydata <- read.xls("mydata.xls")
```

**Explanation:**

- `library(gdata)` gdata package ko load karta hai.

- `read.xls()` Excel file ko read karta hai.

- `"mydata.xls"` Excel file ka naam hai.

- Imported data aksar data frame ki form mein store hota hai.

### Method 2: Using XLConnect Package

```
library(XLConnect)
wk <- loadWorkbook("mydata.xls")
df <- readWorksheet(wk, sheet="Sheet1")
```

**Explanation:**

- `library(XLConnect)` XLConnect package load karta hai.

- `loadWorkbook()` Excel file ko open karta hai.

- `readWorksheet()` specified sheet ka data read karta hai.

- `df` mein final imported data store hota hai.

# Importing CSV Files

CSV ka matlab Comma Separated Values hota hai. Ye R ka sab se common aur easy data format hai.

```
data1 <- read.csv("data.csv")
data2 <- read.csv("data.csv", header=TRUE)
data3 <- read.csv("data.csv", stringsAsFactors=FALSE)
```

**Explanation:**

- `read.csv()` CSV file ko read karta hai.

- `header=TRUE` batata hai ke pehli row column names hain.

- `stringsAsFactors=FALSE` text data ko factors banne se rokta hai.

- CSV import ke liye kisi extra package ki zarurat nahi hoti.

# Importing Text / Table Files

Text files aksar .txt extension ke sath hoti hain aur surveys ya logs mein use hoti hain.

```
t1 <- read.table("data.txt")
t2 <- read.table("data.txt", header=TRUE)
t3 <- read.table("data.txt", sep="\t")
```

**Explanation:**

- `read.table()` text file ko read karta hai.

- `header=TRUE` ka matlab first row column names hain.

- `sep="\t"` tab separated files ke liye hota hai.

# Importing Minitab Files

Minitab aik statistical software hai jiske data files R mein import ki ja sakti hain.

```
library(foreign)
mtbdata <- read.mtp("file.mtp")
```

**Explanation:**

- `library(foreign)` statistical file formats ke liye use hota hai.

- `read.mtp()` Minitab file ko read karta hai.

- Imported data data frame ki form mein hota hai.

# Exporting Data in R

Exporting ka matlab hota hai R ke data ko kisi bahar ki file mein save karna.

### Exporting CSV Files

```
write.csv(df, "output.csv")
write.csv(df, "output.csv", row.names=FALSE)
```

**Explanation:**

- `write.csv()` data ko CSV file mein save karta hai.

- `row.names=FALSE` row numbers ko file mein likhne se rokta hai.

- CSV export sab se zyada common method hai.

### Exporting Excel Files

```
library(xlsx)
write.xlsx(df, "output.xlsx")
```

**Explanation:**

- `library(xlsx)` Excel export ke liye package load karta hai.

- `write.xlsx()` data ko Excel file mein save karta hai.

### Exporting Text Files

```
write.table(df, "data.txt")
write.table(df, "data.txt", sep="\t")
```

**Explanation:**

- `write.table()` data ko text file mein export karta hai.

- `sep="\t"` tab separated file banata hai.

# Conclusion

R language mein importing aur exporting data aik bunyadi aur bohat aham skill hai. Excel, CSV, text aur Minitab files ko sahi tareeqay se import aur export karna effective data analysis ke liye zaroori hota hai.