1.

```
n <- as.integer(readline(prompt = "Enter no. of students"))

name <- vector(mode = "character", length = n)
usn <- vector(mode = "character", length = n)
marks <- vector(mode = "numeric", length = n)

print("Enter names")

for(i in 1:n)
  name[i] = as.character(readline())

print("Enter usn")

for(i in 1:n)
  usn[i] = as.character(readline())

print("Enter marks")

for(i in 1:n)
  marks[i] = as.numeric(readline())

student <- data.frame(usn,name,marks)

print(student)

age <- vector(mode = "integer", length = n)

print("Enter ages")

for(i in 1:n)
```

```
  age[i] = as.numeric(readline())

student <- cbind(student, age)

print(student)

for(i in 1:n)
if(student[i,3] > 25)
if(student[i,4] < 20)
print(student[i,])
```

2.

```
n <- as.integer(readline(prompt = "enter no of employees"))

empid <- vector(mode = "character", length = n)
empname <- vector(mode = "character", length = n)
doj <- vector(mode = "character", length = n)
dept <- vector(mode = "character", length = n)
desig <- vector(mode = "character", length = n)

print("enter empid")

for(i in 1:n)
  empid[i] = as.character(readline())

print("enter empname")

for(i in 1:n)
  empname[i] = as.character(readline())

print("enter doj")
```

```
for(i in 1:n)
  doj[i] = as.character(readline())

print("enter dept")

for(i in 1:n)
  dept[i] = as.character(readline())

print("enter desig")

for(i in 1:n)
  desig[i] = as.character(readline())

employee <- data.frame(empid,empname,doj,dept,desig)

print(employee)

write.csv(employee,"emp.csv")

read.csv("emp.csv")

row <- data.frame("031","Zara","21-03-2020","HR","HR")

write.table(row, "emp.csv", append = TRUE, sep = ",", row.names = TRUE, col.names = FALSE, quote =
FALSE)

read.csv("emp.csv")
```

3.

```
data()
mtcars
row <- nrow(mtcars)
col <- ncol(mtcars)
print(row)
print(col)
automatic <- 0
manual <- 0
for(i in 1:row)
  ifelse(mtcars[i,9] == 1, manual <- manual + 1, automatic <- automatic + 1)
ifelse(automatic > manual, "more automatic", "more manual")
x <- data.frame(mtcars)
hp <- x[,4]
weight <- x[,6]
scatter.smooth(hp, weight, span = 2/3, degree = 1, family=c("symmetric","gaussian"))
mpg <- x[,1]
hist(mpg, breaks = 12, col = "lightblue", border = "pink")
newmtcars = mtcars
newmtcars$am = as.integer(mtcars$am)
newmtcars$cyl = as.integer(mtcars$cyl)
newmtcars$vs = as.integer(mtcars$vs)
sapply(newmtcars,class)
mtcars[mtcars$cyl<5,]
```

4.

```
df<-airquality
dim(df)
sapply(df,class)
```

```
print("the missing values are as follows")
Xcolnames<-colnames(df)
x<-colSums(is.na(df))
print(x)
which(is.na(df))
sum(is.na(df))
df
df1<-as.data.frame(df)
for(i in 1:4)
  df1[,i]<-ifelse(is.na(df[,i]),mean(df[,i],na.rm=TRUE),df[,i])
df1
df2<-na.omit(df)
print(df2)
```