210121.R

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#Vector is simply a list of items of same type  
#vector of strings  
students<-c("Asbishek","Alan","Darwin")  
students

## [1] "Asbishek" "Alan" "Darwin"

#vector of numerical values  
n<-c(1,2,3)  
n

## [1] 1 2 3

length(n)

## [1] 3

#To create a vector with numerical values in a sequence, use the : operator  
a<-1:10  
a

## [1] 1 2 3 4 5 6 7 8 9 10

b<-c(4,7,2,1,90)  
b

## [1] 4 7 2 1 90

sort(b)

## [1] 1 2 4 7 90

sort(students)

## [1] "Alan" "Asbishek" "Darwin"

#Accessing the vector items by referring to its index number []  
USPresidents<- c("Bill Clinton" ,"Ronald Regan","George Bush","Obama","Joe Biden")  
  
# Access the first and third elements  
USPresidents[c(1, 3)]

## [1] "Bill Clinton" "George Bush"

#You can also use negative index numbers to access all items except theones  
USPresidents[c(-1)]

## [1] "Ronald Regan" "George Bush" "Obama" "Joe Biden"

#change the item  
USPresidents[1]<-"Abraham Lincoln"  
USPresidents

## [1] "Abraham Lincoln" "Ronald Regan" "George Bush" "Obama"   
## [5] "Joe Biden"

#Repeat the vectors  
#use rep function  
ABC<-rep(c(1,2,3),each=2)  
ABC

## [1] 1 1 2 2 3 3

#repeat the seuence of the vector  
ABCD<-rep(c(1,2,3),times=3)  
ABCD

## [1] 1 2 3 1 2 3 1 2 3

#repeating each independently  
ABCDE<-rep(c(3,4,5),times=c(5,2,1))  
ABCDE

## [1] 3 3 3 3 3 4 4 5

#Generating a sequenced vector  
  
Seqvec<-seq(from=50, to=100, by=5)  
Seqvec

## [1] 50 55 60 65 70 75 80 85 90 95 100

#DataFrames  
#Data Frames are data displayed in a format as a table.  
#Data Frames can have different types of data inside it. While the first column can be character, the second and third can be numeric or logical. However, each column should have the same type of data.  
  
#Use the data.frame() function to create a data frame:  
  
DF<-data.frame(Regno=c(101,102,103,104),Names=c("ABC","CDE","EFG","XYZ"),Marks=c(56,78,90,45))  
DF

## Regno Names Marks  
## 1 101 ABC 56  
## 2 102 CDE 78  
## 3 103 EFG 90  
## 4 104 XYZ 45

summary(DF)

## Regno Names Marks   
## Min. :101.0 Length:4 Min. :45.00   
## 1st Qu.:101.8 Class :character 1st Qu.:53.25   
## Median :102.5 Mode :character Median :67.00   
## Mean :102.5 Mean :67.25   
## 3rd Qu.:103.2 3rd Qu.:81.00   
## Max. :104.0 Max. :90.00

# To access the items We can use single brackets [ ], double brackets [[ ]] or $ to access columns from a data frame:  
DF[1]

## Regno  
## 1 101  
## 2 102  
## 3 103  
## 4 104

DF[["Regno"]]

## [1] 101 102 103 104

DF$Regno

## [1] 101 102 103 104

#Add rows use rbind()  
newDF<-rbind(DF,c(105,"FGH",88))  
newDF

## Regno Names Marks  
## 1 101 ABC 56  
## 2 102 CDE 78  
## 3 103 EFG 90  
## 4 104 XYZ 45  
## 5 105 FGH 88

#Add cols use cbind  
newDF1<-cbind(newDF,gender=c(25,22,23,24,26))  
newDF1

## Regno Names Marks gender  
## 1 101 ABC 56 25  
## 2 102 CDE 78 22  
## 3 103 EFG 90 23  
## 4 104 XYZ 45 24  
## 5 105 FGH 88 26

#finding the dimensions  
dim(newDF1)

## [1] 5 4

#Removing the first row and column  
newDF2<-newDF1[-c(1),-c(1)]  
newDF2

## Names Marks gender  
## 2 CDE 78 22  
## 3 EFG 90 23  
## 4 XYZ 45 24  
## 5 FGH 88 26

ncol(newDF2)

## [1] 3

nrow(newDF2)

## [1] 4

#Dataframe length is to find the number os columns  
length(newDF2)

## [1] 3

#Combining Dataframes using rbind()  
Data\_Frame1<-data.frame(RegNo=c(101,102,103,104),Names=c("ABC","DEF","IJK","XYZ"),Marks=c(90,80,79,88))  
  
Data\_Frame2 <-data.frame(RegNo=c(105,106,107,108),Names=c("ABCD","DDEF","IJJK","XXYZ"),Marks=c(90,80,79,88))  
  
CDataframe<-rbind(Data\_Frame1,Data\_Frame2)   
CDataframe

## RegNo Names Marks  
## 1 101 ABC 90  
## 2 102 DEF 80  
## 3 103 IJK 79  
## 4 104 XYZ 88  
## 5 105 ABCD 90  
## 6 106 DDEF 80  
## 7 107 IJJK 79  
## 8 108 XXYZ 88

#Combining Dataframes using cbind()  
Dataframe3<-data.frame(Gender=c("Male","Female","MAle","Female"))  
  
NDataframe<-cbind(Data\_Frame1,Dataframe3)  
NDataframe

## RegNo Names Marks Gender  
## 1 101 ABC 90 Male  
## 2 102 DEF 80 Female  
## 3 103 IJK 79 MAle  
## 4 104 XYZ 88 Female