

CSE 3505
Foundation of Data Analytics

LAB-01

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Registration Number: **20BPS1022**

1.) DATA TYPES

```
> #Six classes of vectors
> a<- TRUE
> print(class(a))
[1] "logical"
>
> b<- 23.5
> print(class(b))
[1] "numeric"
>
> c<-2L
> print(class(v))
[1] "numeric"
>
> d<- 2+5i
> print(class(d))
[1] "complex"
>
> e<- "TRUE"
> print(class(e))
[1] "character"
>
> f <- charToRaw("Preyash")
> print(class(f))
[1] "raw"
>
```

2.) RAW DATA TYPES

```
> #Raw Datatype
> #convert character to raw
> raw_variable <- charToRaw("20BPS1022")
> print(raw_variable)
[1] 32 30 42 50 53 31 30 32 32
>
> #convert raw to character
> char_variable <-rawToChar(raw_variable)
> print(char_variable)
[1] "20BPS1022"
> print(class(char_variable))
[1] "character"
```

3.) VECTORS

```
> #Vectors
> numbers = 1:10
> numbers<- seq(from =0, to =100, by =20)
> print(numbers)
[1] 0 20 40 60 80 100
>
> apple<-c("red", "green", "yellow")
> print(apple)
[1] "red" "green" "yellow"
> print(class(apple))
[1] "character"
>
> data1= c(3,6,9,12,78, 34, 5, 7,7)
> print(data1)
[1] 3 6 9 12 78 34 5 7 7
>
> data = c("Mon", "tue", "Wed")
> print(data)
[1] "Mon" "tue" "Wed"
> data=c(data, "Thu", "Fri")
> print(data)
[1] "Mon" "tue" "Wed" "Thu" "Fri"
> data2=c(data1, data)
> print(data2)
[1] "3" "6" "9" "12" "78" "34" "5" "7" "7" "Mon" "tue" "Wed" "Thu"
[14] "Fri"
>
```

4.) MATRICES

```
> #Matrices
> M = matrix(c('a','a','b','c','b','a'), nrow=2, ncol=3, byrow= TRUE)
> print(M)
      [,1] [,2] [,3]
[1,] "a"  "a"  "b"
[2,] "c"  "b"  "a"
>
```

5.) ARRAYS

```
> #Arrays
> a<-array(c("green","yellow"), dim=c(3,3,2))
> print(a)
, , 1
      [,1] [,2] [,3]
[1,] "green" "yellow" "green"
[2,] "yellow" "green" "yellow"
[3,] "green" "yellow" "green"

, , 2
      [,1] [,2] [,3]
[1,] "yellow" "green" "yellow"
[2,] "green" "yellow" "green"
[3,] "yellow" "green" "yellow"
```

6.) FACTORS

```
> #Create a factor
> music_genre <- factor(c("Jazz", "Rock","Classic", "Classic", "Pop", "Jazz", "Rock", "Jazz"))
> #print the factor
> music_genre
[1] Jazz    Rock    Classic Classic Pop      Jazz    Rock    Jazz
Levels: Classic Jazz Pop Rock
>
> #length
> length(music_genre)
[1] 8
>
> #index
> music_genre[3]
[1] Classic
Levels: Classic Jazz Pop Rock
>
> #changing item at the specified index
> music_genre[3] <- "Pop"
> music_genre[3]
[1] Pop
Levels: Classic Jazz Pop Rock
>
```

7.) DATA FRAMES

```
> #Create the data frame
> BMI<-data.frame(
+   gender=c("m", "M", "F"),
+   height= c(152, 165, 171.3),
+   weight=c(42, 38, 26)
+ )
> print(BMI)
  gender height weight
1      m  152.0     42
2      M  165.0     38
3      F  171.3     26
>
>
```

8.) PRINT, SPRINTF, CAT

```
> #printing
> a=5
> print(paste(a, "hai"))
[1] "5 hai"
>
> x= "Riya"
> x1=255
> x2= 23.14
>
> #string print
> sprintf("%s is the best", x)
[1] "Riya is the best"
>
> sprintf("%d is integer", x1)
[1] "255 is integer"
> sprintf("%f is float", x2)
[1] "23.140000 is float"
>
>
> a=5
> cat("hai", a)
hai 5>
> sqrt(25)
[1] 5
```

PROBLEM 01

```
> #-----problem 1-----#
> A=275.5
> print(A)
[1] 275.5
> print(class(A))
[1] "numeric"
> print(is.numeric(A))
[1] TRUE
>
>
> B=20L
> print(B)
[1] 20
> print(is.integer(B))
[1] TRUE
> C=A/B
> print(C)
[1] 13.775
>
> print(toString(C))
[1] "13.775"
> first_name="Preyash"
> last_name="Yadav"
> sprintf("%s %s bought %d chocolates", first_name, last_name, B)
[1] "Preyash Yadav bought 20 chocolates"
> |
```

PROBLEM 02

```
> #----- problem 2-----#
> X = 29+1i
> relX = Re(X)
> imgX =Im(X)
> print(relX)
[1] 29
> print(imgX)
[1] 1
>
> if(relX > imgX){
+   print("Real part is greater than the imaginary part!")
+ }else if (relX< imgX){
+   print("Imaginary part is greater than the real part!")
+ }
[1] "Real part is greater than the imaginary part!"
>
> #square root of a negative number
> num = -29
> sqrt(as.complex(num))
[1] 0+5.385165i
```