

R - Notebook [LAB EXPERIMENTS DEMONSTRATION] -----Prepared by - Asst. Prof. Ashwini Mathur(CSSP)- Jain University

Following Tasks to Perform:

1. Create some complex data structure variables such as list and data frames using list() and data.frame commands.
2. Create data using data.frames, lists, and tables.
3. Implement basic R operations (data input, missing values, Importing data into R using different formats : xlsx, CSV, Text files).
4. Explore data type conversions from one data structure to another with commands such as as.data.frame(), as.vector(), is.data.frame(), is.vector; and find the data type with class() command.
5. Explore function programming in R.
6. Explore loops in R programming such as if-else-ifelse, for, while, repeat-break, ect.

Question 1. Create some complex data structure variables such as list and data frames using list() and data.frame commands.

In [1]: *#List Creation*

```
x <- list(name="Mike", gender="M", company="Data-Science")  
  
x #print the list stored in object x
```

```
$name  
'Mike'  
$gender  
'M'  
$company  
'Data-Science'
```

In [2]: *#Data-Frame Creation*

```

name <- c("Mike", "Lucy", "John")

age <- c(20, 25, 30)

student <- c(TRUE, FALSE, TRUE)

df = data.frame(name, age, student) #creation of dataframe using dat.frame

df #Print the dataframe

```

A data.frame: 3 × 3

name	age	student
<fct>	<dbl>	<lgl>
Mike	20	TRUE
Lucy	25	FALSE
John	30	TRUE

Question 2. Create data using data.frames, lists, and tables.

In [4]:

```

#create matrix
smoke <- matrix(c(51,43,22,92,28,21,68,22,9),ncol=3,byrow=TRUE)

#Assigning column variables name
colnames(smoke) <- c("High","Low","Middle")

#Assigning row variables name
rownames(smoke) <- c("current","former","never")

#create a table by converting matrix into table by using command as.table
smoke <- as.table(smoke)

smoke #output

```

	High	Low	Middle
current	51	43	22
former	92	28	21
never	68	22	9

Question 3. Implement basic R operations (data input, missing values, Importing data into R using different formats : xlsx, CSV, Text files).

```
In [ ]: #Following arguments passing into read.table() function
#dataset variable
dataset <- matrix(c(51,43,22,92,28,21,68,22,9),ncol=3,byrow=TRUE)
dataset

mydata <- read.table("C:\Users\ashwinmathur\Desktop\R FILE\Jupyter-R LAB", heade
```

Question 4. Explore data type conversions from one data structure to another with commands such as as.data.frame(), as.vector(), is.data.frame(), is.vector; and find the data type with class() command.

```
In [5]: india.player.runs <- c(75, 83, 101, 56, 80)
india.player.names <- c("Kohli", "Tendulkar", "Dravid", "Yuvraj", "Dhoni")

as.integer(india.player.runs)
```

75 · 83 · 101 · 56 · 80

```
In [6]: as.numeric(india.player.names)
as.character(india.player.names)
```

Warning message in eval(expr, envir, enclos):
"NAs introduced by coercion"

<NA> · <NA> · <NA> · <NA> · <NA>

'Kohli' · 'Tendulkar' · 'Dravid' · 'Yuvraj' · 'Dhoni'

```
In [7]: class(india.player.names)
class(india.player.runs)
```

'character'

'numeric'

Question 5. Explore function programming in R.

In [8]: *#Create a function to print squares of numbers in sequence.*

```
new.function <- function(a) {  
  for(i in 1:a) {  
    b <- i^2  
    print(b)  
  }  
}  
  
# Call the function new.function supplying 6 as an argument.  
new.function(6)
```

```
[1] 1  
[1] 4  
[1] 9  
[1] 16  
[1] 25  
[1] 36
```

Question 6. Explore loops in R programming such as if-else-ifelse, for, while, repeat-break.

In [9]: *#For Loop*

```
x <- c(2,5,3,9,8,11,6)  
count <- 0  
for (val in x) {  
  if(val %% 2 == 0) count = count+1  
}  
  
print(count)  
  
#If else
```

```
[1] 3
```

In [10]:

```
x <- -5  
if(x > 0){  
  print("Non-negative number")  
} else {  
  print("Negative number")  
}
```

```
[1] "Negative number"
```

```
In [11]: #While loop
i <- 1
while (i < 6) {
  print(i)
  i = i+1
}
```

```
[1] 1
[1] 2
[1] 3
[1] 4
[1] 5
```