Godavari Foundation's

Godavari College of Engineering, Jalgaon

Department of Computer

Continuous Assessment I/II

Introduction to Data Science with R

Date:-_____

Name of Student:- _____

Class:-_____ **PRN No:-_____**

Title: -

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Aim: -

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Software Requirement: _____

Hardware Requirement:- _____

Theory:-

What is R List

R List is the object which Contains elements of different types – like strings, numbers, vectors and another list inside it. R list can also contain a matrix or a function as its elements. The List is been created using list() Function in R.

For Example:

The variable x is containing copies of three vectors n, s, b and a numeric value 3.

1. n = c(2, 3, 5)

2. s = c(“aa”, “bb”, “cc”, “dd”, “ee”)
3. b = c(TRUE, FALSE, TRUE, FALSE, FALSE)
4. x = list(n, s, b, 3) # x contains copies of n, s, b

Create Lists in R Programming

Create a list containing string, numbers, vectors and logical values.

For Example**:**

1. List_data <- list("Green", "Yellow", c(5,6,7), TRUE, 51.2)
2. print(list_data)

Executing the above code, it produces the following result

1. [[1]]
2. [1] “Green”
3. [[2]]
4. [1] “Yellow”
5. [[3]]
6. [1] 5, 6, 7
7. [[4]]
8. [1] TRUE
9. [[5]]
10. [1] 51.2

Name List Elements in R Language

Create a list containing a vector, a matrix, and a list.

For Example**:**

```
list_data <- list(c("Feb","Mar","Apr"), matrix(c(3,9,5,1,-2,8), nrow = 2), list("green",12.3))

Give names to the elements in the list.
names(list_data) <- c("1st Quarter", "A_Matrix", "A Inner list")

Show the list.
print(list_data)
```

Execute the above code, it produces the following
Result

1. $1st Quarter’[1] “Feb”, “Mar”, “Apr”
2. $A_Matrix
3. [,1] [,2] [,3]

4. [1,] 3 5 -2
5. [2,] 9 1 8
6. $A_Inner_list
7. $A_Inner_list [[1]]
8. [1] “Green”
9. $A_Inner_list [[2]]
10. [1] “12.3”

Access R List Elements

list(c(“Feb”,”Mar”,”Apr)) list(“white”,13.4)), matrix(c(3,9,5,1,-2,8), nrow = 2)

For Example:

Give names to the elements in the list.
Names(list_data) <- c(“1stQuarter”, “A Matrix”, “A Inner list”)

Access the first element of the list.
print(list_data[1])

Access the third element. All its elements will be printed.
Print(list_data[3])

By using the name of the element access the list elements.
Print(list_data$A_Matrix)

Manipulate List elements in R Programming

Create a list containing a vector, a matrix and a list.
list_data <- list(c(“Feb”,”Mar”,”Apr”), matrix(c(3,9,5,1,-2,8), nrow = 2),list(“green”,12.3))

For Example:
Give names to the elements in the list.
names(list_data) <- c("1st Quarter", "A_Matrix", "A Inner list")

Add an element at the end of the list.
list_data[4] <- "New element"print(list_data[4])

Remove the last element.
list_data[4] <- NULL # Print the 4th Element.print(list_data[4])

Update the 3rd Element.

list_data[3] <- "updated element"print(list_data[3])

Execute the above code, it produces the following result.

1. [[1]]
2.
3. [1] "New element"
4.
5. $NULL
6.
7. $`A Inner list`
8.
9. [1] "updated element"

Source Code:-

```
## Create Lists in R Programming
list_data <- list("Green", "Yellow", c(5,6,7), TRUE, 51.2)

## Print list_data
print(list_data)

## Name List Elements in R Language
list_data <- list(c("Feb","Mar","Apr"), matrix(c(3,9,5,1,-2,8), nrow = 2), list("green",12.3))

## Give names to the elements in the list
names(list_data) <- c("1st Quarter", "A_Matrix", "A Inner list")

## Show the list
print(list_data)

## Access R List Elements
##Access the first element of the list
print(list_data[1])

## Access the third element
print(list_data[3])

## By using the name of the element access the list elements
print(list_data$A_Matrix)

## Manipulate List elements in R Programming
## Add an element at the end of the list.
list_data[4] <- "New element"
```

```
# Show New element
print(list_data[4])

## Remove the last element
list_data[4] <- NULL

# Print the 4th Element
print(list_data[4])

## Update the 3rd Element
list_data[3] <- "updated element"

# Show updated element
print(list_data[3])
```

Output:-

```
> ## Create Lists in R Programming
> list_data <- list("Green", "Yellow", c(5,6,7), TRUE, 51.2)
>
> ## Print list_data
> print(list_data)
[[1]]
[1] "Green"

[[2]]
[1] "Yellow"

[[3]]
[1] 5 6 7

[[4]]
[1] TRUE

[[5]]
[1] 51.2

>
> ## Name List Elements in R Language
> list_data <- list(c("Feb","Mar","Apr"), matrix(c(3,9,5,1,-2,8), nrow = 2),
list("green",12.3))
>
> ## Give names to the elements in the list
> names(list_data) <- c("1st Quarter", "A_Matrix", "A Inner list")
>
> ## Show the list
```

```
> print(list_data)
$`1st Quarter`
[1] "Feb" "Mar" "Apr"

$A_Matrix
     [,1] [,2] [,3]
[1,]    3    5   -2
[2,]    9    1    8

$`A Inner list`
$`A Inner list`[[1]]
[1] "green"

$`A Inner list`[[2]]
[1] 12.3


>
> ## Access R List Elements
> ##Access the first element of the list
> print(list_data[1])
$`1st Quarter`
[1] "Feb" "Mar" "Apr"

>
> ## Access the third element
> print(list_data[3])
$`A Inner list`
$`A Inner list`[[1]]
[1] "green"

$`A Inner list`[[2]]
[1] 12.3


>
> ## By using the name of the element access the list elements
> print(list_data$A_Matrix)
     [,1] [,2] [,3]
[1,]    3    5   -2
[2,]    9    1    8
>
> ## Manipulate List elements in R Programming
> ## Add an element at the end of the list.
> list_data[4] <- "New element"
>
```

```
> # Show New element
> print(list_data[4])
[[1]]
[1] "New element"

>
> ## Remove the last element
> list_data[4] <- NULL
>
> # Print the 4th Element
> print(list_data[4])
$<NA>
NULL

>
> ## Update the 3rd Element
> list_data[3] <- "updated element"
>
> # Show updated element
> print(list_data[3])
$`A Inner list`
[1] "updated element"
```

Conclusion:-

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