



SYMBIOSIS INSTITUTE OF TECHNOLOGY (SIT)

Constituent of Symbiosis International (Deemed University), Pune

(Established under Section 3 of the UGC Act of 1956 vide notification number F-9-12/2001-U-3 of the Government of India)

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Assignment No. 01

Name of Student	Antriksh Sharma
PRN No.	20070122021
Title of Lab Assignment	<p>Use R As a Calculator Application</p> <p>a) Using with and without R objects on console b) Using mathematical functions on console c) Write an R script, to create R objects for calculator application and save in a specified location in disk</p>

Code & Output:

A. Using with and without R objects on console

The screenshot shows the RStudio interface with two panes. The left pane is the code editor for a file named 'dsl_01.R'. The right pane is the R console window.

Code Editor (dsl_01.R):

```
1 # 20070122021 - ANTRIKSH SHARMA
2 # DSL 01 - R AS CALCULATOR
3 # 1.1 Without R Objects
4
5 # Arithmetic operations without R objects
6 2 + 3      # Addition
7 5 - 2      # Subtraction
8 3 * 4      # Multiplication
9 6 / 2      # Division
10 10 ^ 2     # Exponentiation
11 sqrt(16)   # Square root|
```

R Console:

```
R 4.1.2 · ~/d
> # 20070122021 - ANTRIKSH SHARMA
> # DSL 01 - R AS CALCULATOR
> # 1.1 Without R Objects
>
> # Arithmetic operations without R objects
> 2 + 3      # Addition
[1] 5
> 5 - 2      # Subtraction
[1] 3
> 3 * 4      # Multiplication
[1] 12
> 6 / 2      # Division
[1] 3
> 10 ^ 2     # Exponentiation
[1] 100
> sqrt(16)   # Square root
[1] 4
> |
```



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B. Using mathematical functions on console

The screenshot shows the RStudio interface with the following components:

- Code Editor:** Shows the R script `dsl_01.R*` containing the following code:

```
14 #1.2 Using R Objects
15 # Arithmetic operations with R objects
16 x <- 2
17 y <- 3
18 sum <- x + y
19 difference <- x - y
20 product <- x * y
21 quotient <- x / y
22 power <- x ^ y
23 root <- sqrt(x)
24
25 # Print the results
26 print(sum)
27 print(difference)
28 print(product)
29 print(quotient)
30 print(power)
31 print(root)
32
```

Line 31:12 | (Top Level) ↴

- Console:** Shows the R session output:

```
R 4.1.2 · ~/🔗
> #1.2 Using R Objects
> # Arithmetic operations with R objects
> x <- 2
> y <- 3
> sum <- x + y
> difference <- x - y
> product <- x * y
> quotient <- x / y
> power <- x ^ y
> root <- sqrt(x)
>
> # Print the results
> print(sum)
[1] 5
> print(difference)
[1] -1
> print(product)
[1] 6
> print(quotient)
[1] 0.6666667
> print(power)
[1] 8
> print(root)
[1] 1.414214
>
```



C. Write an R script, to create R objects for calculator application and save in a specified location in disk

The screenshot shows an RStudio interface with a code editor window titled 'dsl_01.R*'. The code is an R script named 'dsl_01.R' which defines four functions: add, subtract, multiply, and divide. It then saves these objects to a file named 'calculator_objects.RData'. Finally, it loads the saved objects and prints their values.

```
34 #1.3 Save R Objects
35
36 # Function to add two numbers
37 add <- function(x, y) {
38   return(x + y)
39 }
40 # Function to subtract two numbers
41 subtract <- function(x, y) {
42   return(x - y)
43 }
44 # Function to multiply two numbers
45 multiply <- function(x, y) {
46   return(x * y)
47 }
48 # Function to divide two numbers
49 divide <- function(x, y) {
50   if (y != 0) {
51     return(x / y)
52   } else {
53     cat("Error: Cannot divide by zero.\n")
54     return(NA)
55   }
56 }
57 # Save R objects into a file
58 saveRObjects <- function() {
59   x <- 5
60   y <- 3
61   sum <- add(x, y)
62   difference <- subtract(x, y)
63   product <- multiply(x, y)
64   quotient <- divide(x, y)
65
66   # Save the R objects into a file named "calculator_objects.RData"
67   save(sum, difference, product, quotient, file = "calculator_objects.RData")
68
69   cat("R objects saved successfully.\n")
70 }
71
72 # Call the saveRObjects function to create R objects and save them to disk
73 saveRObjects()
74
75 # Load R objects from the saved file
76 load("calculator_objects.RData")
77
78 # Now, you can access the loaded objects
79 print(sum)
80 print(difference)
81 print(product)
82 print(quotient)
83
> saveRObjects()
R objects saved successfully.
>
> # Load R objects from the saved file
> load("calculator_objects.RData")
>
> # Now, you can access the loaded objects
> print(sum)
[1] 8
> print(difference)
[1] 2
> print(product)
[1] 15
> print(quotient)
[1] 1.666667
>
```

Conclusion: We've learnt how to use R As a Calculator Application