



SYMBIOSIS INSTITUTE OF TECHNOLOGY, PUNE

Symbiosis International (Deemed University)

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Founder: Prof. Dr. S. B. Mujumdar, M. Sc., Ph. D. (Awarded Padma Bhushan and Padma Shri by President of India)

Assignment No. 01

Subject: Data Science Lab

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Branch

CS

Class

A1

**Academic Year &
Semester**

2023-24 _ 7th semester

Date

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Title of Lab Assignment

R AS CALCULATOR APPLICATION

Theory:

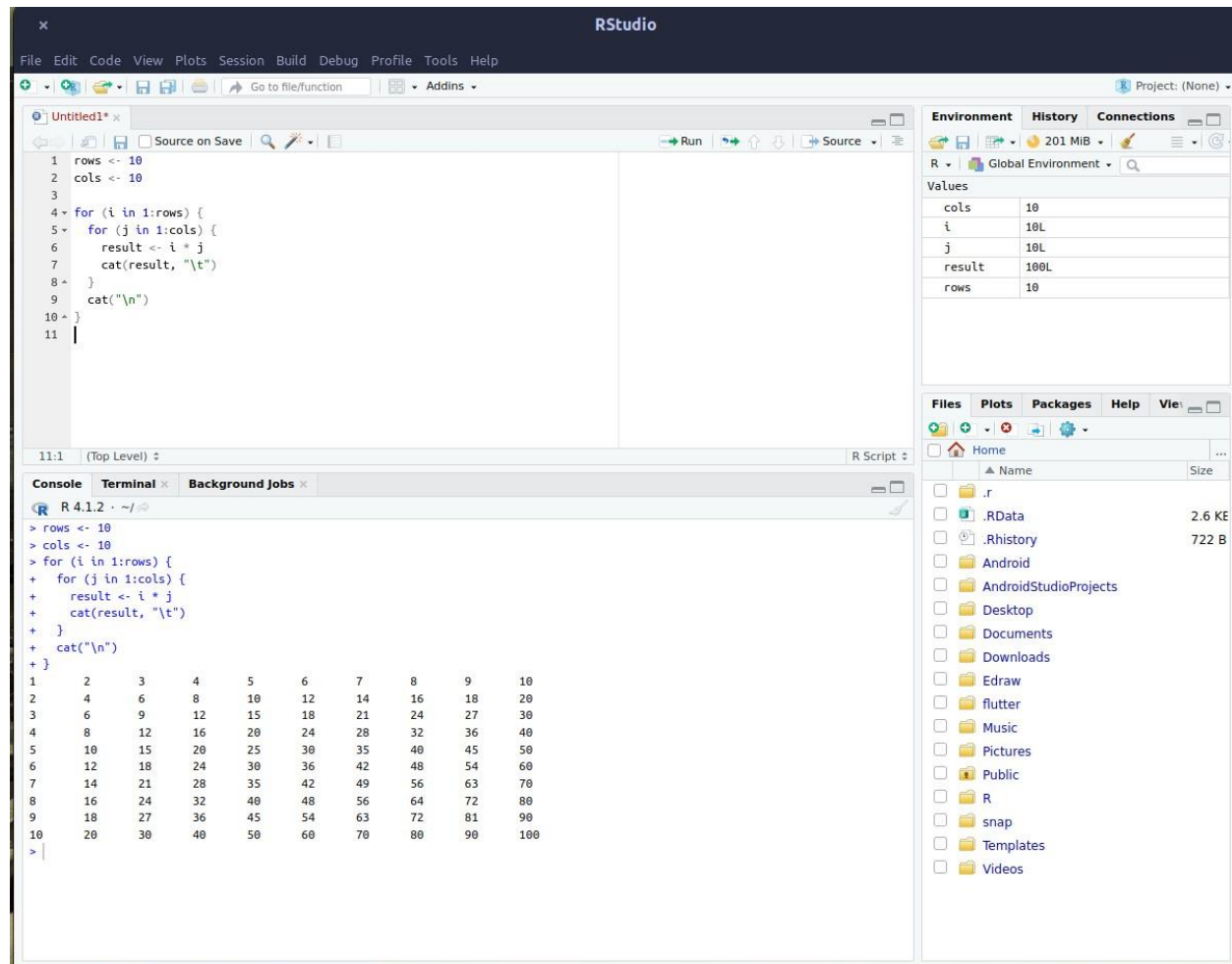
In this lab, we explore the utilization of R as a calculator application. We begin by examining basic arithmetic operations, both with and without the use of R objects, demonstrating the ease of conducting calculations in R. Furthermore, we delve into the application of mathematical functions to perform more complex calculations. The lab concludes with the creation of an R script, showcasing how to define R objects to store calculation results and subsequently save those results to a designated location on the disk. These foundational skills provide an essential understanding of using R for basic computations and lay the groundwork for more advanced data analysis and statistical tasks.

Code:

```
rows <- 10 cols <- 10
```

```
for (i in 1:rows) { for (j in 1:cols) { result <- i * j  
  cat(result, "\t") } cat("\n") }
```

Output:



Program to find factorial of a number

```
factorial <- function(n) {  
  if (n <= 1) { return(1)  
  } else { return(n * factorial(n - 1))  
  }  
}
```

```

num <- as.integer(readline("Enter a number: "))

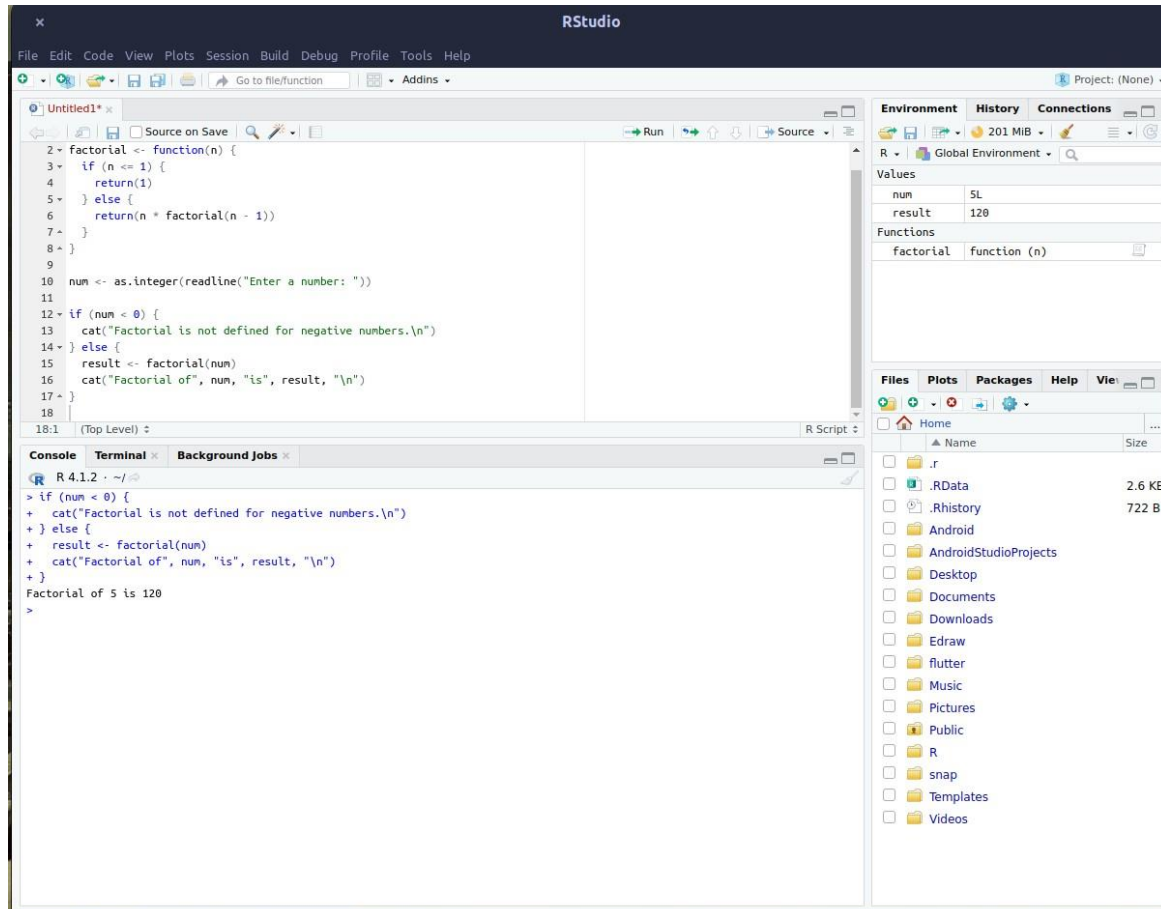
if (num < 0) {

  cat("Factorial is not defined for negative numbers.\n")

} else { result <- factorial(num) cat("Factorial of", num, "is", result, "\n")

}

```



Program to check Armstrong Number

```

num_digits <- function(n) {

  count <- 0 while (n > 0) {

    n <- n %/% 10

    count <- count + 1

  }
}

```

```
    return(count)
}

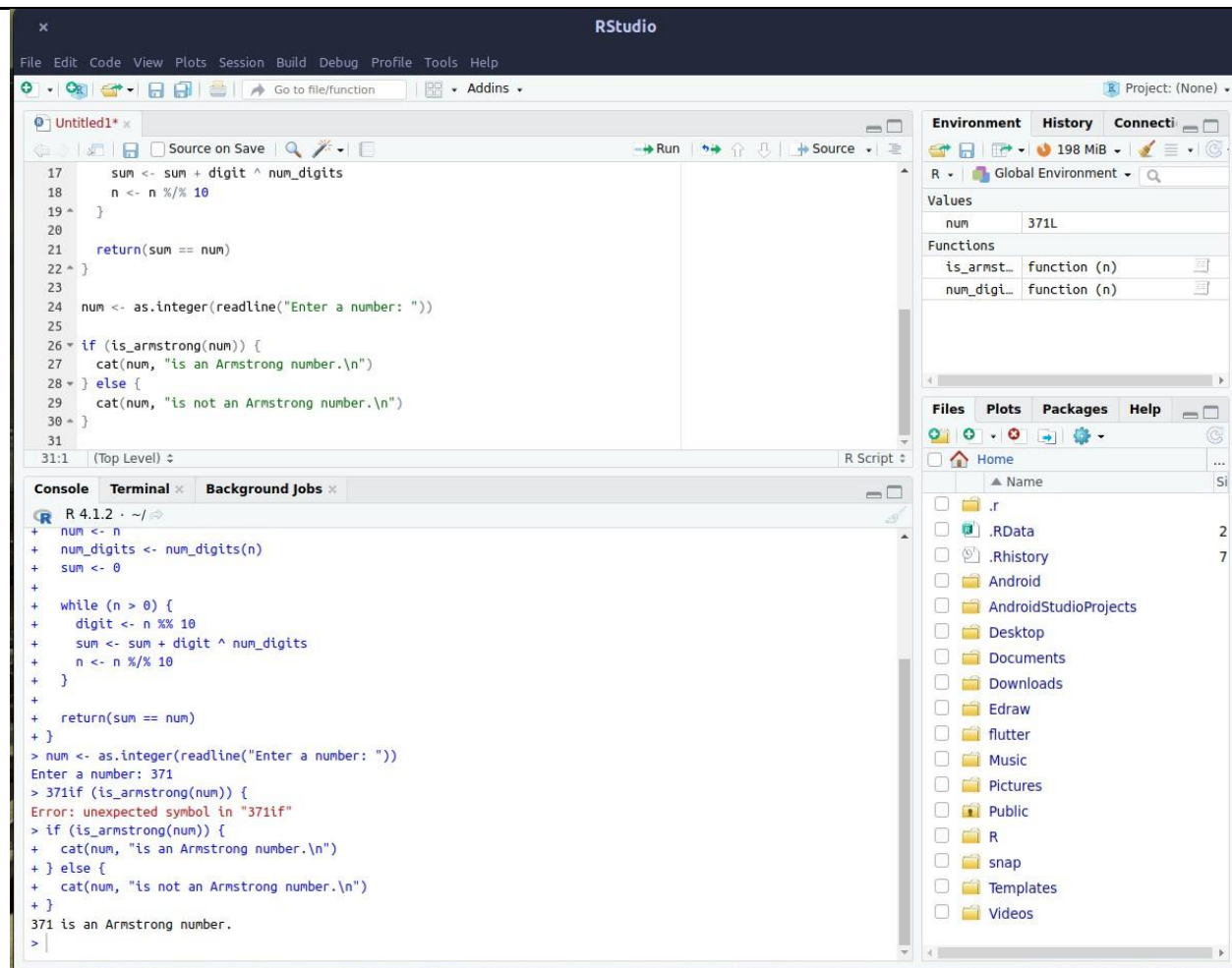
is_armstrong <- function(n) { num <- n
  num_digits <- num_digits(n) sum <- 0

  while (n > 0) {
    digit <- n %% 10 sum <- sum + digit ^ num_digits n <- n %/% 10
  }

  return(sum == num)
}

num <- as.integer(readline("Enter a number: "))

if (is_armstrong(num)) {
  cat(num, "is an Armstrong number.\n")
} else { cat(num, "is not an Armstrong number.\n")
}
```



R Program to check prime number

Program:

```

is_prime <- function(n) {

  if (n <= 1) {

    return(FALSE)
  }

  if (n <= 3) {

    return(TRUE)
  }

  if (n % 2 == 0 || n % 3 == 0) { return(FALSE) }

  i <- 5 while (i * i <= n) { if (n % i == 0 || n % (i + 2) == 0) { return(FALSE) }
}

```

```

    i <- i + 6
  }

  return(TRUE)
}

num <- as.integer(readline("Enter a number: "))

if (is_prime(num)) {
  cat(num, "is a prime number.\n")
} else { cat(num, "is not a prime number.\n")
}

```

The screenshot displays the RStudio interface. The main editor window shows an R script with the following code:

```

18 ~ }
19 ~   i <- i + 6
20 ~ }
21 ~
22 ~   return(TRUE)
23 ~ }
24 ~
25 ~ num <- as.integer(readline("Enter a number: "))
26 ~
27 ~ if (is_prime(num)) {
28 ~   cat(num, "is a prime number.\n")
29 ~ } else {
30 ~   cat(num, "is not a prime number.\n")
31 ~ }
32 ~
32:1 (Top Level) <

```

The console window at the bottom shows the execution of the script, including the prompt "Enter a number: 23" and the output "23 is a prime number." The environment pane on the right shows the current environment with the variable 'num' set to 23L and the function 'is_prime' defined.

Conclusion: The objective of the study was to examine the influence of various financial approaches and operational conditions on the profitability of startup companies. Using linear regression, we assessed the correlation between profits and expenditures in various departments. Descriptive statistics were used to gain an understanding of the overall profit distribution among the startups, while the RMSE served as a measure of the model's performance.

