R Programming LAB

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# Data Management

## Working with vectors and Matrices

**Aim:**

To write R program working with vectors and Matrices

**Program:**

# creating a vector and a matrix

vector\_data <- c(101,102,103,104,105)

matrix\_data <- matrix(1:9, nrow = 3)

# accessing elements in a vector and matrix

vector\_element <- vector\_data[3]

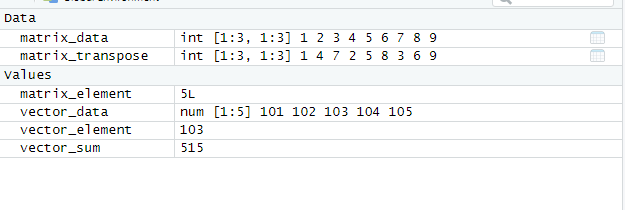
matrix\_element <- matrix\_data[2, 2]

# Performing operations on vectors and matrices

vector\_sum <- sum(vector\_data)

matrix\_transpose <- t(matrix\_data)

**Output:**

****

**Result:**

Thus the required output is obtained.

## Sorting, Merging and Aggregating Data sets

**Aim:**

To write R program Sorting, Merging and Aggregating Data sets

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

# Testing Statistical Hypothesis using R

## Test for Single, difference of mean and paired mean

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

## Test for equality of variance

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

## Applications: Chi-Square test for Goodness of fit and independence of Attributes

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

## Applications: One way ANOVA and two way ANOVA

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

## Applications: Latin Square Design

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

# Numerical Solution of Equations using R

## Newton-Raphson method

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

## Solving system of Linear Equations (Gauss elimination, Gauss Jacobi and Gauss-Seidel)

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

## Power method to approximate dominant Eigen value and Eigen vector

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

# Numerical Interpolations Using R

## Lagrange Interpolation

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

## Newton's forward and Backward Interpolation

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

# Numerical integration using R

## Numerical integration using Trapezoidal and Simpson's 1/3rd and 3/8th rules

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.

# Solution of Ordinary differential equations using R

## Euler's method, Euler's modified method, Runge-Kutta methods

**Aim:**

To write R program

**Program:**

**Output:**

**Result:**

Thus the required output is obtained.