Date: 24/04/2020

|  |  |
| --- | --- |
| 1. | Rainfall amount for 10 days during 2020 are as follows.  0.1, 0.6, 33.8, 1.9, 9.6, 4.3, 33.7, 0.3, 0.0, 0.1  Read them into a vector and answer the following questions.   1. What was the mean rainfall? 2. Calculate the cumulative rainfall over these ten days |
| 2. | Weights of five people before and after a diet program are given below.   |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | Before | 78 | 72 | 78 | 79 | 105 | | After | 67 | 65 | 79 | 70 | 93 |   Read the before and after values into two different vectors, and use R to evaluate the weight loss for each participant. What is the average amount of weight loss? |
| 3. | Construct the following matrix B  Show that B X B X B is a scalar multiple of the identity matrix and find the scalar |
| 4. | 1. Create a data frame representing database of films. It should contain the fields title, director, year, country and at least three films. 2. Create a second data frame of the same format as above, but containing just one new film. 3. Merge the two data frames using rbind(). 4. Sort the titles in ascending order? |
| 5. | Write a R program to create and print a list containing a vector, a matrix and a list  Vector contains – department name, semester number and name of class representative.  Matrix contains – names of the subjects for the current semester and the faculties handling it. List contains – names of 5 students in the class.  Add two more new names to the list of students and print it. |
| 6. | Write a program to find the factorial of a number. |
| 7. | Write R program to print Fibonacci series. Starting terms 21,31. (10 terms) |
| 8. | Write a function to perform matrix-vector multiplication. It should take a matrix A and a vector b as arguments, and return the vector Ab. Use two loops to do this, rather than %\*% or any vectorization. |
| 9. | Write a program to make a simple calculator using switch |
| 10 | Write R program to print a list of leap years from 1800 to 2020. |