

Session 2 – Foundational R Programming

Assignment - 3



Contents

[Introduction](#page3) [2](#page3)



[Objective](#page3) [2](#page3)



[Prerequisites](#page3) [2](#page3)



[Associated Data Files](#page3) [2](#page3)



[Problem Statement](#page3) [2](#page3)



[Expected Output](#page3) [2](#page3)



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**Introduction**



This assignment will help you to understand the key concepts learnt in this session.

**Objective**



This assignment will test your skills on Data Structures in R.

**Prerequisites**



Not Applicable

**Associated Data Files**



Not Applicable

**Problem Statement**



1. Create an m x n matrix with replicate(m, rnorm(n)) with m=10 column vectors of n=10 elements each, constructed with rnorm(n), which creates random normal numbers.

Then we transform it into a dataframe (thus 10 observations of 10 variables) and perform an algebraic operation on each element using a nested for loop: at each iteration, every element referred by the two indexes is incremented by a sinusoidal function, compare the vectorized and non-vectorized form of creating the solution and report the system time differences.

**Ans:**

**#create matrix**

**mat\_1<- replicate(10,rnorm(10))**

**#transform into data frame**

**df\_1= data.frame(mat\_1)**

**for(i in 1:10){**

**for(j in 1:10){**

**df\_1[i,j]<- df\_1[i,j] + 10\*sin(0.75\*pi)**

**print(df\_1)**

**}**

**}**

**#time difference**

**system.time(**

**df\_1[i,j]<- df\_1[i,j] + 10\*sin(0.75\*pi)**

**)**

**system.time(**

**for(i in 1:10){**

**for(j in 1:10){**

**df\_1[i,j]<- df\_1[i,j] + 10\*sin(0.75\*pi)**

**}**

**}**

**)**

**Expected Output**



Not Applicable

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