# Assignment (2.3) 10- Dec 2017

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.

**Sol : -**   
 m <- replicate(10, rnorm(10), simplify = "matrix")# **matrix 10 x 10 with random normal numbers**

m

m <- as.data.frame(m) **# transforming into data frame**

View(m)

library(rbenchmark)

benchmark(

  vect = as.vector(m),

  conc = (n <- as.vector(

    for (i in seq(nrow(m))) {

    for (j in seq(ncol(m))) {

      print(2\*sin(m[i, j]))

    }

  }))

)