**Assignment 2.3**

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.

readinteger <- function()

{n <- readline(prompt="Please, enter an integer: ")

# return(as.integer(n))

}

nr<-as.integer(readinteger())

mymat = matrix(0,nr,nr) # create a n x n matrix with zeroes (n rows and n columns)

for(i in 1:dim(mymat)[1]) # for each row

{

for(j in 1:dim(mymat)[2]) # for each column

{

mymat[i,j] = i\*j # assign values based on position: product of two indexes

}

}

if (nr>10)

{mymat[1:10,1:10] # for space reasons, we just show the first 10x10 chunk

} else mymat[1:nr,1:nr] # ...or the first nr x nr chunk