**Two vectors X and Y are defined as follows – A <- c(3,7, 2, 4) and B <- c(1,3,6). What will be output of vector Z that is defined as Z <- X\*Y ?**

Ans<- Z <-c(3,21,12,4)

Description= R language does vectorized operations. ‘A’ and ‘B’ are two vectors with different length. By process, R multiplies the first element of A with 1st element of B, then second element of A with that of B, and so on. But in this case, after the third multiplication R hits the end of vector “B”. In such cases R, starts with the first element of smaller vector till each element of longer vector is exhausted. The vectorized operation always leads to a vector of length equal to that of longer vector.

Que 2 . The following question will not need a particular knowledge of functions in R it is similar to that we learned about global and local variables in C programming.

**y <- 3**

**f<- function(x) {**

**Question 2 : Scoping Rules**

**y<-3**

**y^2 + g(x)**

**}**

**g<-function(x)**

**{**

**x\*y**

**}**

**What is the value of f(6) ?**

**Ans <-** If you answered anything other than **22**, you probably need to refresh the lexical scoping in R. The function f(x) returns a value y^2 + g(x). y in this environment has been defined as 2 and g(x) from inside this function. The value of x is passed of function g as 6. Now comes the catch, what is the value of free variable y here? Unlike dynamic environment where the value is assumed from the parent environment, lexical scoping assumes the value of a variable from the environment where the function is defined. The function g(x) is defined in the global environment here, and hence the value of y is assumed to be 3. Therefore a value of 18 is returned from the function g(x). f(6) is finally returning as **22**.

Que 3: If I have a data.frame df <- data.frame(a = c(1, 2, 7), b = c(3, 5, 9), c=c(‘x’, ’y’ , ’z’))

What will be the output of the following df[[1]][2] and df[[3]][2] ? and try to find out the difference between matrices and dataframe..

(explore the use of double bracket and single bracket in R )

Ans = for first argument df[[1]][2] first double bracket represent selection of first column of the data frame and the second bracket represent the second element of the first column i.e 2 , similarly second argument can be solved where output also shows the level of vector as vector is character vector.

Que 4 :Let’s take a dataframe df<-data.frame(v1=c(1:4),v2=c(20:23),v3=c(6:9)) how will you drop the v2 and v3 column from the data frame?

Ans :df1<-df[-c(2,3)]

**Z score corresponding to IQ of 90 is -0.66 and similarly for IQ of 120 is 1.33 hence the area between z score -0.66 and 1.33 will be 65.7%.**