1. Say True or False for the below statements:

• Prescriptive Analytics used to predict the future outcomes? True

• Base R packages installed automatically? False

2. What is Recycling of elements in a vector?

Recycling occurs when vector arithmetic is performed on multiple vectors of different sizes. R takes the shorter vector and repeats them until it becomes long enough to match the longer one.

R

> c(1,2,3,4,5,6) + c(1,3)

[1] 2 4 3 7 6 9

As you can see, the c(1,3) vector repeated itself to form c(1,3,1,3,1,3) so that it could successfully match the previous term.

If the shorter vector is not a vector of the longer one, then a warning message appears, but the operation still takes place.

R

> c(1,2,3,4,5) + c(1,3)

[1] 2 5 4 7 6

Warning message:

In c(1, 2, 3, 4, 5) + c(1, 3) :

longer object length is not a multiple of shorter object length

3. Give an example of recycling of elements.

Example 1:

Suppose we have two Vectors c(1,2,4) , c(6,0,9,10,13), where the first one is shorter with only 3 elements. Now if we sum these two, we will get a warning message as follows.

> c(1,2,4) + c(6,0,9,10,13)

[1] 7 2 13 11 15

Warning message:

In c(1, 2, 4) + c(6, 0, 9, 10, 13) : longer object length is not a multiple of shorter object length

Here R , Sum those Vectors by Recycling or repeating the elements in shorter one, until it is long enough to match the longer one as follows..

> c(1,2,4,1,2) + c(6,0,9,10,13)

[1] 7 2 13 11 15