

5 Problem Statement

1) Please mention true or false for the below statements:

a) Prescriptive Analytics is used to predict the future outcomes

Ans) FALSE

b) Base R packages are installed automatically

Ans) True

2) What is recycling of elements in a vector?

Ans) when applying an operation to two vectors that requires them to be the same length, R automatically *recycles*, or repeats, the shorter one, until it is long enough to match the longer one.

Here is an example:

```
> a<- c(1,2,3)
> b<-c(4,5,7,8,9,10)
> a+b
[1] 5 7 10 9 11 13
> |
```

Warning message: longer object length is not a multiple of shorter object length in

: a(1, 2, 3) + b(4,5,7,8,9,10)

The shorter vector was recycled, so the operation was taken to be as follows:

```
a<- c(1,2,3)
b<-c(4,5,7)
a+b
[1] 5 7 10
```

3) Give an example of recycling of an elements.

Ans) Here we have two vectors “a” and “b”, where length of “a” is smaller than the length of “b”

```
1 getwd()
2 a<-c(0,1,0,1)
3 b<-c(1,1,1,1,1,1)
4 c<-a+b
5
```

When we add this two vectors (a+b) , the shorter vector “a” will recycle the elements until it matches the other vector “b”

```
> a<-c(0,1,0,1)
> b<-c(1,1,1,1,1,1)
> c<-a+b
warning message:
In a + b : longer object length is not a multiple of shorter object length
> |
```

As we can see above its showing a message that the vectors are not of same length , so the smaller vector will recycle the elements to match the length of other vector.

Here we can see that the vector “a” has been recycled matching the length of vector “b” giving the sum of those vectors as shown below in the image

a<- (0,1,0,1) after recycling >>a(0,1,0,1,0,1)

values		
a	num	[1:4] 0 1 0 1
b	num	[1:6] 1 1 1 1 1 1
c	num	[1:6] 1 2 1 2 1 2