

Lab 02: R fundamentals 2

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Q1 (2 pts.): Show the R code you used to create `vec_2`.

```
vec_2 = vec_1 == 3
```

Q2 (2 pts.): Give two reasons why determining which elements in `vec_1` have value 3 by visual inspection is a bad idea.

If the data set is very big it will return too many numbers to have a good overview and you can easily overlook values. Furthermore, you cannot clearly see the position of the element and if you rerun the code, numbers could be different due to random selection.

Q3 (1 pt.): Why didn't you always get the same count of 3 entries each time?

The sample function randomly generates numbers every time we run the code

Q4 (3 pts.): Considering the different vectors generated each time, explain why using a logical test is a safe way to select entries with a value of 3.

Because it is an easy binary code that filters out all values with 3 and “discards” all values that are not 3 by returning FALSE. Since 3 is set equal to TRUE (==) it is safe that all elements that are considered TRUE (exactly 3) are returned.

Q5 (5 pts.): Explain why performing logical ‘by hand’ subsetting is very very bad practice. You may want consider re-usability of code, working with different sized data sets, and sharing code with collaborators. Your answer should cite at least *two* reasons why ‘by hand’ subsetting is bad.

Since the code always selects random numbers, different results are returned. This is also complicated when you want to share codes and results or even findings with collaborators but due to the randomness, they cannot retrace them or results cannot be compared. The codes are universal but the results differ.

Q6 (3 pts.): Provide the code for your modified loop.

```
126 for (i in 1:10)
127 {
128   print(
129     paste0("This is loop iteration: ", i))
130 }
```

Q7 (2 pts.): Provide the code for the modified loop that executes n times. It needs to be a self contained example. I should be able to set the value of n and then run your loop on my computer.

```
127 n = 3
128
129 for (i in 1:n)
130 {
131   print(
132     paste0("This is loop iteration: ", i))
133 }
```

Q8 (4 pts.): Provide the code you used to create the n, vec_1, and the loop. As always, it should run as a stand-alone example in a fresh R session on my computer.

```
#vec1 with length of n and random number
n = 17

vec_1 = sample(10, n, replace = TRUE)
vec_1

for (i in 1:n)
{
  print(
    paste0(
      " The element of vec_1 at index ", i, " is: ", vec_1[[i]]))
}
```

Q9 (10 pts.): Provide the code you used to build your function.

```
n = 11
min=1
max=10

vector = sample(min:max, n, replace = TRUE)
create_and_print_vec = function(n, min = 1, max = 10)
{
  vector = sample(min:max, n, replace = TRUE)
  for (i in 1:n)
  {
    print(paste0(" The element of vec_1 at index ", i, " is: ", vector[[i]]))
  }
}

create_and_print_vec(10, min = 100, max = 2000)
```