**ECO 634 - Lab 2 – R Fundamentals  
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**Logical Subsetting 1**

**Q1 (2 pts.):** Show the R code you used to create vec\_2.

* Your code should be a complete and self-contained example. I should be able to paste your code into a fresh R session on my computer and re-create your vec\_2

n = 12345  
vec\_1 = sample(12, n, replace = TRUE)  
head(vec\_1)

vec\_2 <- vec\_1 == 3  
head(vec\_2)  
vec\_1[vec\_2]

**Q2 (2 pts.):** Give two reasons why determining which elements in vec\_1 have value 3 by visual inspection is a bad idea.

* In a large dataset like this one (n=12345), it would be time-consuming to search through vec\_1 for values of 3 by visual inspection.
* Using only visual inspection instead of creating a new vector means that there is no way to use the elements with values of 3 in future functions/coding in R.

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

* This code is creating a vector with 10 randomly generated integers between 1 and 12. We don’t get the same count of 3 entries each time because vec\_1 was created from a random sample and a new set of random integers is selected each time you 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.

* Using a logical test is a quick and accurate way to select entries with a value of 3 each time a new vector is generated. You can simply re-run the logical test each time you create the vector which contains a randomly generated sample of integers. You could also create a new vector for each logical test you run, therefore saving information about the number of elements with a value of 3 each time you run the logical test (if, for example, you wanted to run the logical test after creating several different vectors).

**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.

* If you perform logical subsetting “by hand”, there is no way to give your code to another person so they can re-create what you did to complete your analysis. This limits the reproducibility of your work.
* It might be doable to perform logical “by hand” subsetting for a small dataset, but once you are working with larger datasets it becomes unreasonable to complete this type of work by hand. Using R code will speed up the process and reduce (or eliminate) the chance of errors.

**Q6 (3 pts.):** Provide the code for your modified loop. It must run as a self-contained example on a fresh R session on my computer.

for (i in 1:10)  
{  
print(paste0("This is loop iteration:", i))  
}

**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.

n=150  
for (i in 1:n)  
{  
print(i)  
}

**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.

n <-17  
vec\_1 <- sample(10, n, replace = TRUE)

for (i in 1:n)  
{  
print(paste("The element of vec\_1 at index", i, "is", vec\_1[i]))  
}

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

* To receive full credit your code must run without error on a new R session and produce output similar to the examples given in the instructions.

create\_and\_print\_vec = function(n, min = 1, max = 10, print=TRUE)  
{  
vec\_3 = sample(x = min:max, size = n, replace = TRUE)  
 for (i in 1:n)  
 {  
print(paste("The element at index", i, "is", vec\_3[i] ))  
}  
}

#Code to check the function:

create\_and\_print\_vec(20, min = 1, max = 10)

create\_and\_print\_vec(10, min = 100, max = 2000)