Julian Burgoff

9/26/2022

Analysis of Environmental Data

Lab 2

1. n = 12345
   vec_1 = sample(12, n, replace = TRUE)
   head(vec_1)
   vec_2= vec_1==3
   vec_1[vec_2]

2. Visually inspecting all the elements of vec_1 would be extremely time inefficient, and you would likely make many errors.

3. The vector contains randomly generated integers between 1 and 12, so each time you run the code the vector contains a different set of random integers within that range and thus the integer 3 will be included in the vector 0 to 12 times (although it's unlikely that it ever gets selected more than 3 or 4 times). I ran the code 4 times and the integer 3 was included 0, 2 and 3 times.

4. Using a logical test is a safe way to subset the data because it doesn't rely on the position of the integer within the vector. Since the vector of integers is randomly selected, the location of 3's have the potential to change within the vector each time you run the code. The logical test extracts the entries of the vector that have a value of 3 regardless of what order they are arranged in.

5. Subsetting data by hand introduces much more opportunity for human error. If you are doing calculations or visual selections of data by hand then you are going to introduce a certain amount of error into your data selection, which will only be magnified as the size of the data set increases. Another reason is that if you want to apply the analysis you perform to another dataset with an identical structure, this might not be possible if you make selections by hand, whereas if you use a programming language to make selections you can easily repeat the subsetting and analysis procedures on analogous datasets.

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

7.
```
n= 5
for (i in 1:n)
{
  print(i)
}
```

8.
```
n=17
  vec_1= sample(x = 1:10, size = n, replace = TRUE)
for(i in vec_1)
 {
 print(paste0("The element of vec_1 at index number ", i, "is ", i))
```

9.
```
create_and_print_vec= function(n, min = 1, max = 10)
 my_random_vec = sample(x=min:max, size= n, replace=TRUE)
for(i in my_random_vec)
{
 print(paste0("The element at index ", i, "is ",i))
}
```

}