Solution Review: for Loops

In this review, we provide a detailed analysis of the solution to this problem.

Solution #1: Using `for` Loop

```r
testVariable <- c(3, 5, 15)
for (element in testVariable) {
  if(element %% 3 == 0 && element %% 5 == 0)
  {
    cat(element, "foo bar\n")
  } else
  {
    if(element %% 3 == 0)
    {
      cat(element, "foo\n")
    }
    if(element %% 5 == 0)
    {
      cat(element, "bar\n")
    }
  }
}
```

Explanation

The previous exercise is modified here. Now we have a vector `testVariable` that contains all the numbers.

We initiate a `for` loop for all the elements in the vector **(line number 2)** and check whether that element is a multiple of 3, 5 or both.

Solution #2: Using `while` Loop

```
testVariable <- c(3, 5, 15)
index <- 1 # variable to iterate over the whole vector
n <- length(testVariable) # length of the vector

while (index <= n) {
  if(testVariable[index] %% 3 == 0 && testVariable[index]  %% 5 == 0)
  {
    cat(testVariable[index], "foo bar\n")
  } else
  {
    if(testVariable[index]  %% 3 == 0)
    {
      cat(testVariable[index], "foo\n")
    }
    if(testVariable[index]  %% 5 == 0)
    {
      cat(testVariable[index], "bar\n")
    }
  }
  index = index + 1 # increment the index
}
```

Explanation

Here, we are using a `while` loop to solve this problem.

> Remember we could fetch an element in a vector using square brackets `[]` .

We have fetched all elements of the vector using their indexes, for example, `testVariable[1]` , `testVariable[2]` … `testVariable[n]` . Here, `n` is the last element (placed at `length(testVariable)`). We iterate over all these indexes starting from 1 to n using the `while` loop.

There is another method to make loops using `repeat` . We will be moving onto it in the next lesson.