MATH 3070 Lab Project 2

Prachi Aswani

September 5, 2024

Contents

Remember: I expect to see commentary either in the text, in the code with comments created using **#**, *or (preferably) both!* ***Failing to do so may result in lost points!***

Problem 1 (Verzani problem 1.7)

The `rivers` *(**UsingR**) or any other data set is available after loading the package **UsingR**. Load the package, and inspect the data set. Scan the values to find the largest one.*

```
# Load the UsingR package
library(UsingR)
```

```
## Warning: package 'UsingR' was built under R version 4.3.3
```

```
## Loading required package: MASS
```

```
## Loading required package: HistData
```

```
## Warning: package 'HistData' was built under R version 4.3.3
```

```
## Loading required package: Hmisc
```

```
##
## Attaching package: 'Hmisc'
```

```
## The following objects are masked from 'package:base':
##
##     format.pval, units
```

```
# Inspect the rivers dataset
data(rivers)
rivers
```

```
##   [1]  735  320  325  392  524  450 1459  135  465  600  330  336  280  315  870
##  [16]  906  202  329  290 1000  600  505 1450  840 1243  890  350  407  286  280
##  [31]  525  720  390  250  327  230  265  850  210  630  260  230  360  730  600
##  [46]  306  390  420  291  710  340  217  281  352  259  250  470  680  570  350
##  [61]  300  560  900  625  332 2348 1171 3710 2315 2533  780  280  410  460  260
##  [76]  255  431  350  760  618  338  981 1306  500  696  605  250  411 1054  735
##  [91]  233  435  490  310  460  383  375 1270  545  445 1885  380  300  380  377
## [106]  425  276  210  800  420  350  360  538 1100 1205  314  237  610  360  540
## [121] 1038  424  310  300  444  301  268  620  215  652  900  525  246  360  529
## [136]  500  720  270  430  671 1770
```

```
# Find the largest value
largest_value <- max(rivers)
largest_value
```

```
## [1] 3710
```

Problem 2 (Verzani problem 2.4)

Create the following sequences, using `:`, `seq()`, *or* `rep()` *as appropriate:*

1. `"a" "a" "a" "a" "a" "a"`

```
# Create a sequence of "a" repeated 6 times
sequence_1 <- rep("a", 6)
sequence_1
```

```
## [1] "a" "a" "a" "a" "a" "a"
```

2. `1 3 ... 99` *(the odd numbers)*

```
# Create a sequence of odd numbers from 1 to 99
sequence_2 <- seq(1, 99, by = 2)
sequence_2
```

```
##  [1]  1  3  5  7  9 11 13 15 17 19 21 23 25 27 29 31 33 35 37 39 41 43 45 47 49
## [26] 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91 93 95 97 99
```

3. `1 1 1 2 2 2 3 3 3`

```
# Create a sequence of 1s, 2s, and 3s
sequence_3 <- rep(1:3, each = 3)
sequence_3
```

```
## [1] 1 1 1 2 2 2 3 3 3
```

Problem 3 (Verzani problem 2.3)

Let our small data set be `2 5 4 10 8`.

1. *Enter this data into a data vector* **x**.

```r
# Create a data vector x
x <- c(2, 5, 4, 10, 8)
x
```

```
## [1]  2  5  4 10  8
```

2. *Find the square of each number.*

```r
# Find the square of each number in x
squares <- x^2
squares
```

```
## [1]   4  25  16 100  64
```

3. *Subtract 6 from each number.*

```r
# Subtract 6 from each number in x
subtract_6 <- x - 6
subtract_6
```

```
## [1] -4 -1 -2  4  2
```

4. *Subtract 9 from each number and then square the answer.*

```r
# Subtract 9 from each number and then square the result
subtract_9_and_square <- (x - 9)^2
subtract_9_and_square
```

```
## [1] 49 16 25  1  1
```