MATH 3070 Lab Project 2

Aini Liang

September 1, 2016

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 `exec.pay` *(**UsingR**) 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.*

```
#install.packages("UsingR")
library(UsingR)
```

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

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

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

```
## Loading required package: lattice
```

```
## Loading required package: survival
```

```
## Loading required package: Formula
```

```
## Loading required package: ggplot2
```

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

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

```
##
## Attaching package: 'UsingR'
```

```
## The following object is masked from 'package:survival':
##
##      cancer
```

```
exec.pay
```

```
##   [1]  136   74    8   38   46   43    9    9   12   11   20    9   95   34
## [15]    7   14   39   12   29   21   60   35   17   36   29  162   88   31
## [29]    6  135   13   20    9   14   28   42   10   35    2   16   28   42
## [43]  142   33  134   23   34   16   13  167    9   22   39   28   30   22
## [57]   14    9   25  106   32   30   89   89   47   17   26 1231    6  103
## [71]   48   24   11   19   13   29   20   45    3   33   41    7   11   10
## [85]   22   36    7   19   41   40   10   15   93   67   29   25   91   38
## [99] 2510    5   32   65    0   13   27   16   21    6    0   28    8   13
## [113]   71   36   11  106   37   41   13  900   38   24   15   27   12   12
## [127]   22   40   49   22  118   48   10    1   36  155    9   34   29   12
## [141]    0   28   21   32   18   52   29   13  199   40   11   51   45   43
## [155]   31    5   18   15   25    9   18   13   58   22   40   34   16   31
## [169]   27   15   23   49   60   28   74   42   24   17    9   61   20   23
## [183]   26   31  167   19   14   13  146  283   12   53   26   16   29   51
## [197]   15   22   27
```

```
head(exec.pay)
```

```
## [1] 136  74   8  38  46  43
```

```
# the largest one is 2510
```

Problem 2 (Verzani problem 2.4)

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

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

```
rep("a",times = 6)
```

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

```
#use rep(), the output is "a" "a" "a" "a" "a" "a"
```

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

```
seq(1, 99, by = 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
## [24] 47 49 51 53 55 57 59 61 63 65 67 69 71 73 75 77 79 81 83 85 87 89 91
## [47] 93 95 97 99
```

```
# 1,3,5,.........99
```

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

```
rep(c(1,2,3), each = 3)
```

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

```
# the output is 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`.

```
x <- c(2,5,4,10,8)
#
```

2. Find the square of each number.

```r
x^2
```

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

```r
# (each number) ^2:4  25  16 100  64
```

3. *Subtract 6 from each number.*

```r
x-6
```

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

```r
# the output is :-4 -1 -2  4  2
```

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

```r
(x-9)^2
```

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

```r
# the output is :49 16 25  1  1
```