Stat 124: Introduction to Programming
Week 5 Exercises

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First Semester, AY2023-4

1 Task

Create an R script that will contain your answers to the following questions. Submit it in UVLe, deadline on 25 Nov 2023, Saturday 23:59.

2 Instructions

1. Please include the following details at the start of your R script.

```
# Last Name: _____________
# First Name: _____________
# Student Number: _____________
```

2. Please add section dividers to clearly separate answers to the questions, e.g.

```
#### Question number 1 -----
```

3. For questions which require code, simply type in the code in the R script. Questions which require sentences or paragraphs, include them as a comment, e.g.

```
# My favorite number is 2.
```

4. Save the file with the following format: `STAT124_TASK5_SECTION_SURNAME_FIRSTNAME.R`

	0%	25%	50%	75%	100%
Content	No evidence of awareness of the concept	Minimal evidence of awareness of the concept	No apparent point but with evidence of awareness of the concept	Apparent point made with sufficient awareness of the concept	Sharp answer to the question with evident awareness of the concept

3 Questions

1. What is the difference between `"1"`, `1`, `1L`, and `1+ 0i`? (4 pts)
2. If we were to create an atomic vector using the command `c("1", 1, 1L, 1+0i)`, how will this vector be saved in the environment? Character? Numeric? Integer? Logical? And why? (5 pts)
3. What does the command `10:0` generate? What about `seq_len(20)`? And finally, what about `seq_along(10:0)`? (3 pts)
4. Below, what does `[41]` mean?

```
seq(5,15,by=0.231)
```

```
##  [1]  5.000  5.231  5.462  5.693  5.924  6.155  6.386  6.617  6.848  7.079
## [11]  7.310  7.541  7.772  8.003  8.234  8.465  8.696  8.927  9.158  9.389
## [21]  9.620  9.851 10.082 10.313 10.544 10.775 11.006 11.237 11.468 11.699
## [31] 11.930 12.161 12.392 12.623 12.854 13.085 13.316 13.547 13.778 14.009
## [41] 14.240 14.471 14.702 14.933
```

5. Create a matrix whose elements are as shown, and name this matrix `My_Mat` (5 pts)

```
##       [,1]  [,2]  [,3]  [,4]  [,5]
## [1,] 1.000 1.275 1.550 1.825 2.100
## [2,] 1.055 1.330 1.605 1.880 2.155
## [3,] 1.110 1.385 1.660 1.935 2.210
## [4,] 1.165 1.440 1.715 1.990 2.265
## [5,] 1.220 1.495 1.770 2.045 2.320
```

6. Using the matrix created in item (5), what command do we issue to change the `[1,]`, `[2,]`, ..., `[5,]` (row labels) to `"Row 1"`, `"Row 2"`, ..., `"Row 5"`? In addition, what command do we use to change the column labels to `"Column 1"`, `"Column 2"`, ..., `"Column 5"`? (3 pts)
7. Create a dataframe that has the following variables: `Name`, `Age`, `Birthday`, `Height` (in cm), `Weight` (in kg) using yourself as the only observation. Name this data frame `My_Df`. (5 pts) For example,

```
##                    Name Age   Birthday Height Weight
## 1 Jose Mariecon Pajaron  26 16-11-1997    160     80
```

8. Insert your calculated BMI in `My_Df` using the command
`My_Df[1,"BMI"] <- My_Df[1,"Weight"]/(My_Df[1,"Height"]/100)^2`
What happens in this command? (3 pts)

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