(02) Introduction to R

Contents

Practical 02

Preamble

```r
## (01) Clean up the Iris Data

# Preamble
## Install Pacman
load.pac <- function() {

  if(require("pacman")){
    library(pacman)
  }else{
    install.packages("pacman")
    library(pacman)
  }

  pacman::p_load(xts, sp, gstat, ggplot2, rmarkdown, reshape2, ggmap,
               parallel, dplyr, plotly, tidyverse, reticulate, UsingR, Rmpfr,
               swirl, corrplot, gridExtra, mise, latex2exp, tree, rpart, MASS,
                   rtweet)

}

load.pac()
```

```
## Loading required package: pacman
```

```r
 mise()
```

2.10 Decompose the Following Script

```
main <- function() {
    f = findFactors(1012)
    print(f)
}

findFactors <- function(x) {
    factors = c()
    for (a in 1:x) {
        if ((x%%a) == 0) {
            factors = c(factors, a)
        }
    }
    return(factors)
}

main()
```

```
##  [1]    1    2    4   11   22   23   44   46   92  253  506 1012
```

if a is less than x and x is divisible by a then a must be a factor of x

if x is divisible by a for some real natural numbers $x < a$ then that value is a factor, this is logically equivalant to saying:

$$x \mod a = 0, \;\; \forall x \in \{n : \;\; 1 \leq a\}$$

The function `findfactors()` tests every natural number less than x and then adds it to a vector if it's a factor as determined by the modulus operator `%%`.

The function `main()` calls `findfactors()` which generates the list of factors and then following that prints it could be improved to:

- Return factors of a specified number thusly:
- Not Return 1
  - 1 is the multiplicative identity, it is neither a prime nor a composite number, hence it should not be considered a factor.
  - A number is not a factor of itself generally because it would need to be multiplied by 1.

```

    f = findFactors(natural)
    print(f)
}

findFactors <- function(x) {
    factors = c()
    for (a in 1:x) {
        if ((x%%a) == 0 & a != x & a != x ) {
            factors = c(factors, a)
        }
    }
    return(factors)
}

print_factors(357)
```

```
## Error: <text>:4:1: unexpected '}'
## 3:    print(f)
## 4: }
##    ^
```

Using R Tweet

You may need your private keys and tokens etc; I have saved theme here

```
followers.id <- rtweet::get_followers("Tesla")
followers.id %>% head()
```

```
## # A tibble: 6 x 1
##   user_id
##   <chr>
## 1 381867603
## 2 2801924232
## 3 1240842150620860423
## 4 1240831512272146432
## 5 1240841648529014785
## 6 715206894357360640
```