Class 4 - Statistics part II

Activity 5.1

- a.1) Complete the function "sum_eval()", that takes a numeric (integer) vector of any length, sums all the elements and prints "Sum is even" or "Sum is odd".

```
sum_eval <- function(arg){
   sum.res <- sum(arg)
   if ( sum.res %% 2 ==0 ) { print("Sum is even") }  else { "Sum is odd" }
}

#option with return()
sum_eval2 <- function(arg){
   sum.res <- sum(arg)
   if ( sum.res %% 2 ==0 ) { res <- "Sum is even" }  else { res <- "Sum is odd" }
   return(res)
}

#### test the function

vector_a <- c( 34, 56, 25,64,51, 55, 89)
vector_b <- c( 78, 43, 90, 64, 3, 34, 89)

sum_eval(vector_a)
```

```
## [1] "Sum is even"
```

```
sum_eval2(vector_b)
```

```
## [1] "Sum is odd"
```

- a.2) Complete the function "itqb_search()", that takes a vector of words, of any length, and prints "itqb is present" if "itqb" is one of the words present, or "no hit" if not present. *hint:function tolower converts all character srings to lower case*

```
itqb_search <- function( arg ){
  if ( "itqb" %in% tolower( arg ) ) {
     decision <- "itqb is present"
   } else { decision <-"no hit"}
return(decision)
}

# test the function
vector_c <- c("Champalimaud", "IGC", "IMM", "IBMC", "CIBIO")
vector_d <- c("ITQB", "open", "day")
itqb_search(vector_c)
```

```
## [1] "no hit"
```

```
itqb_search(vector_d)
```

```
## [1] "itqb is present"
```

- a.3) Write a function that takes two arguments, a numeric p-value and a significance value, and evaluates if H0 should be rejected, using alpha of 0.05.

```
my_significance <- function(pval, alpha) {
  if (pval < alpha) {
    decision <- ("we reject the null hypothesis")
  } else { decision <- "we can't reject the null hypothesis"
  }
  return(decision)
}

my_significance(0.000323, 0.001)
```

```
## [1] "we reject the null hypothesis"
```

```
my_significance(0.323, 0.05)
```

```
## [1] "we can't reject the null hypothesis"
```

- a.4) complete the following function that takes a numeric vector a counts the number of even numbers inside.

```
myEven <- function( v ) {
  count = 0
  for (number in v ) {
    if ( number %%2 == 0 ) { count = count +1 }
    }
  return(count)
}

vector_a <- c(2,3,6,5,4,56,67,86)
myEven(vector_a)
```

```
## [1] 5
```

a.5) write a function that takes a vector of numbers higher and lower than 0 and returns another vector only with positive values.

hint: you need to create an empty vector before starting the loop hint: to include 34 in a vector: vector <- c(vector, 34)

```
myPositive <- function(v){
  positive <- c()
  for (element in v) {
    if (element > 0){
      positive <- c(positive, element)
    }
  }
return(positive)
}

test_vector <- c(-1,2, -3, 5, 6, -15, 56)
myPositive(test_vector)
```

```
## [1]  2  5  6 56
```