TEB2164 Introduction to Data Science
Lab 5a- Selection statement, repetition statement

Learning Outcomes

At the end of the session, you will be able to:

- Write, run, and explain different selection statement and repetition statement.

Activity

1. Selection statement
   1.1. If-statement
   - Write and run the following in R. Make your conclusion about the code:

```
if(boolean_expression) {
// statement(s) will execute if the boolean expression is true.
}

x <- 30L
if(is.integer(x)) {
print("X is an Integer")
}
```

   1.2. If-else statement
   - Write and run the following in R. Make your conclusion about the code:

```
if(boolean_expression) {
// statement(s) will execute if the boolean expression is true.
} else {
// statement(s) will execute if the boolean expression is false.
}

x <- c("what","is","truth")
if("Truth" %in% x) {
print("Truth is found")
} else {
print("Truth is not found")
}
```

   1.3. If-else-if-else statement
   - Write and run the following in R. Make your conclusion about the code:

```
if(boolean_expression 1) {
// Executes when the boolean expression 1 is true.
} else if( boolean_expression 2) {
// Executes when the boolean expression 2 is true.
} else if( boolean_expression 3) {
// Executes when the boolean expression 3 is true.
} else {
// executes when none of the above condition is true.
}

x <- c("what","is","truth")
if("Truth" %in% x) {
print("Truth is found the first time")
} else if ("truth" %in% x) {
print("truth is found the second time")
} else {
print("No truth found")
}
```

1.4. Switch case statement

- Write and run the following in R. Make your conclusion about the code:

```
switch(expression, case1, case2, case3....)

x <- switch(
3,
"first",
"second",
"third",
"fourth"
)
print(x)
```

2. Repetition statement

2.1. Repeat Loop

- Write and run the following in R. Make your conclusion about the code:

```
repeat {
commands
if(condition) {
break
}
}

v <- c("Hello","loop")
cnt <- 2
repeat {
print(v)
cnt <- cnt+1
if(cnt > 5) {
break
}
}
```

2.2. While Loop

- Write and run the following in R. Make your conclusion about the code:

```
while (test_expression) {
statement
}

v <- c("Hello","while loop")
cnt <- 2
while (cnt < 7) {
print(v)
cnt = cnt + 1
}
```

2.3. For Loop

- Write and run the following in R. Make your conclusion about the code:

```
for (value in vector) {
statements
}
```

```
v <- LETTERS[1:4]
for ( i in v) {
print(i)
}

for (x in 1:10) {
  print(x)
}

fruits <- list("apple", "banana", "cherry")
for (x in fruits) {
  print(x)
}
for (x in fruits) {
  if (x == "cherry") {
    break
  }
  print(x)
}
for (x in fruits) {
  if (x == "banana") {
    next
  }
  print(x)
}

dice <- 1:6
for(x in dice) {
  if (x == 6) {
    print(paste("The dice number is", x, "Yahtzee!"))
  } else {
    print(paste("The dice number is", x, "Not Yahtzee"))
  }
}

adj <- list("red", "big", "tasty")
fruits <- list("apple", "banana", "cherry")
  for (x in adj) {
    for (y in fruits) {
      print(paste(x, y))
  }
}
```