

Control Flow in R

```
# Logical expressions-1: relational operators
x = 5 # Assignment
x == 4 # Comparison

## [1] FALSE

# Logical expressions-2: logical operators
l1 = c(TRUE, FALSE, FALSE, TRUE)
l2 = c(TRUE, TRUE, FALSE, FALSE)

# Logical And (short form)
l1 & l2

## [1] TRUE FALSE FALSE FALSE

# Logical Or (short form)
l1 | l2

## [1] TRUE TRUE FALSE TRUE

# Logical Not
!(TRUE)

## [1] FALSE

!(FALSE)

## [1] TRUE

# Logical expressions-3: value matching
names = c('Ajith', 'Priya', 'Gabriel')
'Ajith' %in% names

## [1] TRUE

'Ajit' %in% names

## [1] FALSE

# Not operator
!'Ajith' %in% names

## [1] FALSE

!'Ajit' %in% names

## [1] TRUE

# Special functions all(), any(), isTRUE(), isFALSE()
all(l1) # Check if all elements of l1 is TRUE

## [1] FALSE

any(l1) # Check if any element of l1 is TRUE
```

```
## [1] TRUE
x = c(1, 2, NA)
x > 0 # Checks all elements of x

## [1] TRUE TRUE NA
any(x > 0) # Checks if any element is greater than 0

## [1] TRUE
all(x > 0) # This returns NA which is not desired. This happens because x has NA.

## [1] NA
isTRUE(all(x > 0))

## [1] FALSE
x = c(1:4)
y = (x^(1/2))^2
print(x)

## [1] 1 2 3 4
print(y)

## [1] 1 2 3 4
all.equal(x, y) # Check if two quantities are ALMOST close to each other

## [1] TRUE
# If-statement
x = -2
if (x %% 2 != 0) {
  print('odd')
} else {
  print('even')
}

## [1] "even"
if (x > 0){
  print('positive')
} else if (x < 0){
  print('negative')
} else {
  print('zero')
}

## [1] "negative"
# Vectorized if-statement
x = c(1:10)
print(x)

## [1] 1 2 3 4 5 6 7 8 9 10
ifelse(x %% 2 == 0, 'even', 'odd')

## [1] "odd" "even" "odd" "even" "odd" "even" "odd" "even" "odd" "even"
```

```
# For-statement
x = c(1:10)
for (val in x) {
  print(val)
}
```

```
## [1] 1
## [1] 2
## [1] 3
## [1] 4
## [1] 5
## [1] 6
## [1] 7
## [1] 8
## [1] 9
## [1] 10
```

```
x = c(1:10)
for (val in x) {
  y = val^2
  print(y)
}
```

```
## [1] 1
## [1] 4
## [1] 9
## [1] 16
## [1] 25
## [1] 36
## [1] 49
## [1] 64
## [1] 81
## [1] 100
```

```
names = c('Ajith', 'Priya', 'Gabriel')
print(names)
```

```
## [1] "Ajith" "Priya" "Gabriel"
```

```
for (n in names) {
  print(n)
}
```

```
## [1] "Ajith"
## [1] "Priya"
## [1] "Gabriel"
```

```
# While-statement
x = 1
while (x > 0.3) {
  x = runif(1)
  print(x)
}
```

```
## [1] 0.003524465
```