

# boolean\_type

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Boolean Types in R  
Paul Stey, Ph.D.  
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## 1 1. Boolean Type

```
In [ ]: a <- TRUE                                # Note: all uppercase
In [ ]: print(a)
In [ ]: b <- FALSE
In [ ]: print(b)
```

### 1.1 1.1 Boolean Algebra

- AND: conjunction
- OR: disjunction
- NOT: negation

We frequently want to check if a condition (or multiple conditions are satisfied), boolean logic in R lets us do this easily and efficiently.

#### 1.1.1 1.1.1 Logical AND

The logical AND operation takes two arguments, and returns TRUE if (and only if) *both arguments* are TRUE.

```
In [ ]: a <- TRUE
        b <- FALSE

        nope <- a && b                                # The `&&` operator is the logical AND
        print(nope)                                   # Should be FALSE, because `a` and `b` are not both TRUE
```

### 1.1.2 1.1.2 Logical OR

The logical OR operation takes two arguments, and returns TRUE if *either arguments* are TRUE.

```
In [ ]: yep <- a || b          # The `||` symbol is the logical OR

      print(yep)              # should be true because AT LEAST ONE of `a` and `b` is TRUE
```

### 1.1.3 1.1.3 Logical Negation

The logical negation operation takes a single argument and returns the opposite of that argument.

```
In [ ]: k <- TRUE

      not_k <- !k             # The `!` operator performs logical negation

In [ ]: print(k)              # `k` is TRUE
      print(not_k)            # So `not_k` is FALSE
```

## 2 2. Comparison Operators

- Equality
- Greater-than
- Less-than
- Greater-than-or-equal
- Less-than-or-equal
- Not equal

### 2.1 2.1 Examples of Comparison Operations

All the example below return TRUE

```
In [ ]: 4 == 4                # 4 is equal to 4
      5 > 4                    # 5 is greater than 4
      2 < 4                    # 2 is less than 4
      4 >= 4                   # 4 is greater-than-or-equal-to 4
      3 <= 4                   # 3 is less-than-or-equal-to 4
      5 != 999                 # 5 not equal to 999
      7 != "potato"           # 7 is not equal to the string "potato"
```