

# Working With Control Structures: Takeaways



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## Syntax

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### SELECTION CONTROL STRUCTURES

- If statement:

```
if (a > b) {  
  print("a is greater than b")  
}
```

- If else statement:

```
if (a > b) {  
  print("a is greater than b")  
} else {  
  print("b is greater than a")  
}
```

- Nested else if statements:

```
if (a > b) {  
  print("a is greater than b")  
} else if (a < b) {  
  print("b is greater than a")  
} else if (a == b) {  
  print("a and b are the same")  
}
```

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### FOR-LOOPS

- Print elements of a sequence:

```
numbers <- c(1,3,5,7,10)  
for (number in numbers) {  
  print(number)  
}
```

- Loop over rows of a data frame:

```
for (i in 1:nrow(data_frame)) {  
  print(data_frame$variable_1[i] + data_frame$variable_2[i])  
}
```

- Store for-loop output in a vector:

```
output_vec <- c()  
for (i in 1:nrow(data_frame)) {
```

```
output_vec <- c(output_vec, data_frame$variable_1[i] + data_frame$variable_2[i])
}
```

- For-loop with selection control structures:

```
for i in 1:nrow(data_frame){
  if (a > b) {
    print("a is greater than b")
  } else {
    print("b is greater than a")
  }
}
```

- For-loop with more than two cases:

```
for i in 1:nrow(data_frame){
  if (a > b) {
    print("a is greater than b")
  } else if (a < b) {
    print("b is greater than a")
  } else if (a == b) {
    print("a and b are the same")
  }
}
```

## Concepts

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### THREE TYPES OF CONTROL STRUCTURES:

- Sequence Operations: Perform operations one after the other in the order they are specified
- Selection Operations: Enable you to write code that tests whether a specified condition returns TRUE or FALSE and executes different actions depending on the test outcome
- Repetition Operations: Allows you to repeat blocks of code a number of times depending on specified conditions

## Resources

- [Wikipedia article on control structures](#)
- [Wikipedia article on for-loops](#)
- [Wikipedia article on while-loops](#)
- [R-bloggers introduction to for-loops](#)