

Writing Functions and Loops

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Functions

1. Here's a function:

```
f1 <- function(x) { y <- x + 1  
  return(y) }
```

If we replace `return(y)` by just `y` does this function do the same thing?

```
f2 <- function(x) { y <- x + 1  
  y }
```

Pass a few values to `f1()` and `f2()` and check the results

2. Write a function that takes the relative difference between two arguments, `x` and `y`:

$$f(x, y) = \left| \frac{x - y}{y} \right| \quad (1)$$

3. What happens when you pass `x = 1` and `y = 0` to the previous function? What about when you pass `x = 0` and `y = 0`?

4. Rewrite your function so that it has a default value of 1 for `y`.

5. Add an if statment to your function so it prints an error message if $y = 0$.

6. Create a for loop that finds the square root of every element in the following vector:

```
x <- c(2, 4, 6, 8, 10)
```

7. Add an else statement to the following code in the case that Team B wins

```
team_a <- 3 # Number of goals scored by Team A
team_b <- 1 # Number of goals scored by Team B
if (team_a > team_b){
  print ("Team A wins")
}

## [1] "Team A wins"
```

8. team_a and team_b play in a best of 7 series. The scores are given in the following vectors:

```
team_a <- c(4, 1, 2, 3, 1, 0, 2)
team_b <- c(0, 2, 3, 2, 0, 2, 1)
```

Write a for loop to print the name of the team that won each game.