

There are a few essential functions for generating errors, warnings, and messages in R. The `stop()` function will generate an error. Let's generate an error:

```
1 stop("Something erroneous has occurred!")
```

```
1 Error: Something erroneous has occurred!
2
```

If an error occurs inside of a function then the name of that function will appear in the error message:

```
1 name_of_function <- function(){
2   stop("Something bad happened.")
3 }
4
5 name_of_function()
6 Error in name_of_function(): Something bad happened.
```

The `stopifnot()` function takes a series of logical expressions as arguments and if any of them are false an error is generated specifying which expression is false. Let's take a look at an example:

```
1 error_if_n_is_greater_than_zero <- function(n){
2   stopifnot(n <= 0)
3   n
4 }
5
6 error_if_n_is_greater_than_zero(5)
7 Error: n <= 0 is not TRUE
```

The `warning()` function creates a warning, and the function itself is very similar to the `stop()` function. Remember that a warning does not stop the execution of a program (unlike an error.)

```
1 warning("Consider yourself warned!")
2 Warning: Consider yourself warned!
```

Just like errors, a warning generated inside of a function will include the name of the function it was generated in:

```
1 make_NA <- function(x){
2   warning("Generating an NA.")
3   NA
4 }
5
6 make_NA("Sodium")
7 Warning in make_NA("Sodium"): Generating an NA.
8 [1] NA
```

Messages are simpler than errors or warnings, they just print strings to the R console. You can issue a message with the `message()` function:

```
1 message("In a bottle.")
2 In a bottle.
```