quiz_week2

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Question 1

Suppose I define the following function in R

```
cube <- function(x, n) {
        x^3
}
```

What is the result of running

```
cube(3)
```

```
## [1] 27
```

Functions are assessed lazily so the n will be ignored until it is needed.

Question 2

The following code will produce a warning in R. Why?

```
x <- 1:10
if(x > 5) {
        x <- 0
}
```

```
## Warning in if (x > 5) {: the condition has length > 1 and only the first element
## will be used
```

If can only test a single logical value. If the goal is to set all values in the list x that are above 5 to 0, the If statement must be looped for each value in the x vector. This can be acheived with a for loop.

```
x <- 1:10
for(i in x) {
        if(i > 5) {
                x[i] <- 0
        }
}

x
```

```
##  [1] 1 2 3 4 5 0 0 0 0 0
```

Question 3

Consider the following function

```r
f <- function(x) {
        g <- function(y) {
                y + z
        }
        z <- 4
        x + g(x)
}
```

If I then run in R what value is returned?

```r
z <- 10
f(3)
```

```
## [1] 10
```

g is defined within function f. Therefore, z will be called from the f fuction environment and set at 4. $(x + g(x)) = (3 + g(3)) = (3 + (3+4)) = 10$

Question 4

Consider the following expression. What is the value of 'y' after evaluating this expression?

```r
x <- 5
y <- if(x < 3) {
        NA
} else {
        10
}
```

$5 > 3$, therefore y will be 10.

```r
y
```

```
## [1] 10
```

Question 5

Consider the following R Function

```r
h <- function(x, y = NULL, d = 3L) {
        z <- cbind(x, d)
        if(!is.null(y))
                z <- z + y
        else
                z <- z + f
        g <- x + y / z
        if(d == 3L)
                return(g)
        g <- g + 10
        g
}
```

f is not defined by any function arguments and so is a free variable.