Week 2 Quiz

1. Suppose I define the following function in R

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

What is the result of running

```
cube(3)
```

in R after defining this function?

1 / 1 point

- The users is prompted to specify the value of 'n'.
- An error is returned because 'n' is not specified in the call to 'cube'
- A warning is given with no value returned.
- The number 27 is returned

Correct

Because 'n' is not evaluated, it is not needed even though it is a formal argument.

2. The following code will produce a warning in R.

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

Why?

1 / 1 point

- 'x' is a vector of length 10 and 'if' can only test a single logical statement.
- The expression uses curly braces.
- There are no elements in 'x' that are greater than 5
- The syntax of this R expression is incorrect.
- You cannot set 'x' to be 0 because 'x' is a vector and 0 is a scalar.

Correct

3. Consider the following function

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

```
    z <- 4
    x + g(x)
}
```

If I then run in R

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

What value is returned?

1 / 1 point

- 16
- 10
- 4
- 7

Correct

4. Consider the following expression:

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

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

1 / 1 point

- 10
- 3
- 5
- NA

Correct

5. Consider the following R function

```
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
}
```

Which symbol in the above function is a free variable?

1 / 1 point

- (•) f
- ( ) z
- ( ) d
- ( ) L
- ( ) g

Correct

6. What is an environment in R?

1 / 1 point

- ( ) an R package that only contains data
- (•) a collection of symbol/value pairs
- ( ) a special type of function
- ( ) a list whose elements are all functions

Correct

7. The R language uses what type of scoping rule for resolving free variables?

1 / 1 point

- ( ) global scoping
- ( ) compilation scoping
- ( ) dynamic scoping
- (•) lexical scoping

Correct

8. How are free variables in R functions resolved?

1 / 1 point

- ( ) The values of free variables are searched for in the environment in which the function was called
- ( ) The values of free variables are searched for in the global environment

- [x] The values of free variables are searched for in the environment in which the function was defined
- [ ] The values of free variables are searched for in the working directory

Correct

9. What is one of the consequences of the scoping rules used in R?

1 / 1 point

- [ ] R objects cannot be larger than 100 MB
- [x] All objects must be stored in memory
- [ ] All objects can be stored on the disk
- [ ] Functions cannot be nested

Correct

10. In R, what is the parent frame?

1 / 1 point

- [x] It is the environment in which a function was called
- [ ] It is always the global environment
- [ ] It is the package search list
- [ ] It is the environment in which a function was defined

Correct