quiz 2

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1.

Suppose I define the following function in R

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

What is the result of running cube(3) the following in R after defining this function?

```
cube(3)
```

```
Answer: [1] 27
```

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
```

Answer: X is vector and "if" can only test a single logical statement.

3.

Consider the following function.

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

```
        x + g(x)
}
```

If i then run in R the following, what value is returned.

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

```
Answer: [1] 10
```

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

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

y
```

```
Answer: [1] 10
```

5. Which symbol in the function is a free variable?

```
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
}
```

Answer: f

6.

What is an environment in R?
Answer: a collection of symbol/value pairs

7.

The R language used what type of scoping rule for resolving free variables?
Answer: Lexical Scoping

8.

How are free variables in R functions resolved?
Answer: The values of free variables are searched for in the environment in which the function was defined.

9.

What is one of the consequences of the scoping rules used in R?
Answer: All objects must be stored in memory

10.

In R, what is the parent frame? Answer: It is the environment in which a function was called