

Week 2 Quiz

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The **due date** for this quiz is **Sun 15 Nov 2015 10:30 PM BRST**.

- ☐ In accordance with the Coursera Honor Code, I (Marcelo Benedet Tournier) certify that the answers here are my own work.

Question 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?

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

Question 2

The following code will produce a warning in R.

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

Why?

- ☐ The syntax of this R expression is incorrect.
- ☐ 'x' is a vector of length 10 and 'if' can only test a single logical statement.

- ☐ You cannot set 'x' to be 0 because 'x' is a vector and 0 is a scalar.
- ☐ The expression uses curly braces.
- ☐ There are no elements in 'x' that are greater than 5

Question 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?

- ☐ 4
- ☐ 16
- ☐ 10
- ☐ 7

Question 4

Consider the following expression:

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

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

- ☐ 10

- ☐ 5
- ☐ NA
- ☐ 3

Question 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?

- ☐ f
- ☐ z
- ☐ d
- ☐ L
- ☐ g

Question 6

What is an environment in R?

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

Question 7

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

- ☐ dynamic scoping
- ☐ global scoping
- ☐ compilation scoping
- ☐ lexical scoping

Question 8

How are free variables in R functions resolved?

- ☐ 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
- ☐ 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

Question 9

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

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

Question 10

In R, what is the parent frame?

- ☐ It is the environment in which a function was defined

- ☐ It is the package search list
- ☐ It is always the global environment
- ☐ It is the environment in which a function was called

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