## Topics: for loops

What is displayed by the following code?

f = function(n){  
   
 for (x in 1:n){  
 cat(x \* x, " ")  
 }  
   
 cat("\n")  
   
 return(c(x, n))  
  
}  
  
# What does this display?  
result = f(4)

1 4 9 16

# What does this display?  
result

[1] 4 4

## Topics: while loops, cat vs return

What is displayed by the following code?

f = function(n){  
   
 x = 1  
 while (n >= 1){  
 cat(x, " ")  
 x = x \* 2  
 n = n - 1  
 }  
   
 cat("\n")  
   
 return(c(x, n))  
  
}  
  
# What does this display?  
  
#x = f(4)  
  
  
  
# What does this display?  
  
#x

## Topics: for loops, nested loops, if

What is displayed by the following code?

drawSomething = function(size){  
   
 if (!is.numeric(size) || trunc(size) != size || size < 0){  
 stop("size must be a non-negative whole number")  
 }  
   
 for (row in 1:size){  
   
 for (col in 1:size){  
   
 if (col == row || col == size - row + 1){  
 cat("@")  
 } else {  
 cat(".")  
 }  
   
 }  
   
 cat("\n")  
 }  
   
 cat("\nHope you like the picture! :)\n")  
   
  
}  
  
# What do these display?  
#drawSomething(3)  
#drawSomething(5)  
#drawSomething(1)  
#drawSomething(0) # be careful! This is tricky. Probably not what you'd expect.

## Topics: for loops, nested loops, if

The only thing that changed are the lines that are highlighted in the code with “# THIS CHANGED”.  
What will be displayed now?

drawSomething = function(size){  
   
 if (!is.numeric(size) || trunc(size) != size || size < 0){  
 stop("size must be a non-negative whole number")  
 }  
   
 for (row in 1:size){  
   
 for (col in 1:size){  
   
 if (col == row || col == size - row + 1){ # THIS CHANGED  
 # THIS CHANGED  
 if ( row %% 2 == 0) # THIS CHANGED  
 cat("0") # THIS CHANGED  
 else # THIS CHANGED  
 cat("X") # THIS CHANGED  
 # THIS CHANGED  
 } else {  
 cat(".")  
   
 }  
   
 }  
   
 cat("\n")  
 }  
   
 cat("\nHope you like the picture! :)\n")  
   
  
}  
  
# What does this display?  
#drawSomething(5)

## Topics: for loops, nested loops, if

What is displayed by the following code?

drawSomething = function(size){  
   
 if (!is.numeric(size) || trunc(size) != size || size < 0){  
 stop("size must be a non-negative whole number")  
 }  
   
 for(row in 1:size){  
  
 if( row == 1 || row == size ){  
 for (x in 1:size){  
 cat("-")  
 }  
 cat("\n")  
   
 } else {  
 for (col in 1:size) {  
 if( row == 1 || row == size ){  
 for (x in 1:size){  
 cat("-")  
 }  
 cat("\n")  
   
 } else {  
 if (col == 1){  
 cat("|")  
 } else if (col == size){  
 cat("|\n")  
 } else if (row == col) {  
 cat("x")  
 } else {  
 cat(".")  
 }  
 }  
 }  
 }  
  
 }  
}  
  
# What does this display?  
#drawSomething(5)