

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)`

What does this display?
`#result`

@ n
4

x
1 2 3 4

1:n
1 2 3 4

Answer

screen
1 4 9 16 \n

Answer

4 4

```
f = function(h) {  
  return(h * 2)  
}
```

> f(3) + 100

[1] 106

> x = f(3)

> x

[1] 6

```
f = function(h) {  
  cat(h * 2)  
}
```

> f(3) + 100

6

Error: can't add 100 to NULL

> x = f(3)

6

> x
NULL

Topics: for loops, nested loops

What is displayed by the following code?

```
f = function(n){  
  for (x in 1:n){  
    cat("**** starting outer for loop again****\n")  
    for (y in x:n){  
      cat("x is ", x, "      ")  
      cat("y is ", y, "\n")  
    }  
  }  
  return( c(x,y) )  
}
```

```
#result = f(4)
```

```
#result
```

Answer

4 4

n
4

x
x 2 3 4

1:n
1 2 3 4

y
x 2 3 4
2 3 4
3 4
4

x:n
4 2 3 4
2 3 4
3 4
4

**** starting outer for loop again****

x is 1

y is 1

x is 1

y is 2

x is 1

y is 3

x is 1

y is 4

**** starting outer for loop again****

x is 2

y is 2

x is 2

y is 3

x is 2

y is 4

**** starting outer for loop again****

x is 3

y is 3

x is 3

y is 4

**** starting outer for loop again****

x is 4

y is 4

Answer

Screen

**** starting outer for loop again****

x is 1

y is 1

x is 1

y is 2

x is 1

y is 3

x is 1

y is 4

**** starting outer for loop again****

x is 2

y is 2

x is 2

y is 3

x is 2

y is 4

**** starting outer for loop again****

x is 3

y is 3

x is 3

y is 4

**** starting outer for loop again****

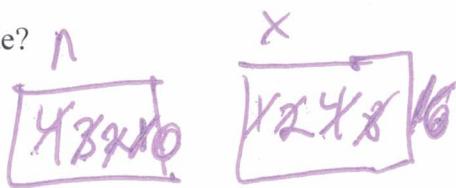
x is 4

y is 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)
```



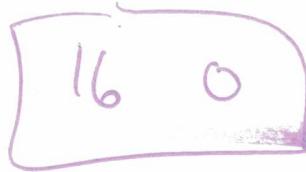
Answer →

Screen
1_2_4_8_

cat

What does this display?
#x

Answer →



Topics: for loops, nested loops, if

What is displayed by the following code?

size
3

```
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.

drawSomething(-3) → ERROR: size must be ---
drawSomething("apple")
drawSomething(3.2)

X . . . X
. O . O .
. . X . .
. O . O .
X . . . X

This is
the answer
for the
next
question (on
the next page)

row
X 2 3
1 : size (row)

Col
X 2 3
1 : size (col)
+ 2 3
4 2 3
1 2 3

Screen
@ @ @ \\n
@ @ @ \\n
@ @ @ \\n
Hope you like the pic.

@ . . . @
. @ . @ .
. . @ . .
. @ . @ .
@ . . . @

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  
        if (row %% 2 == 0) # THIS CHANGED  
          cat("0") # THIS CHANGED  
        else # THIS CHANGED  
          cat("X") # THIS CHANGED  
      } else { # THIS CHANGED  
        cat(".") # THIS CHANGED  
      }  
    }  
    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)
```

Size
5

