

LOOP WEEK!

office hours are linked on the syllabus!

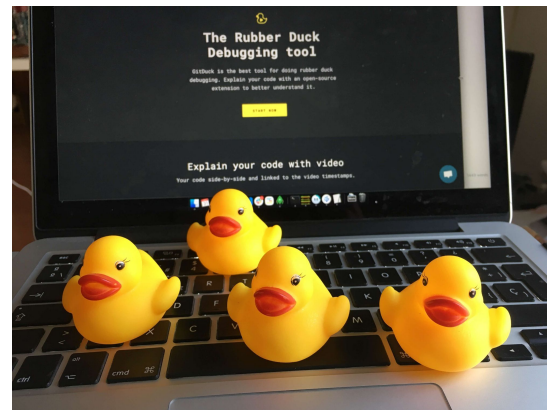


First, a review...

how do we debug code?

How to ask questions for EdStem

- **explain the problem:** what did you want to happen?
what happened instead?
- what line of code is the problem on? (if you aren't sure, add `disp()` statements to figure it out! this may solve your problem)
- is the problem in the function or the command window?
- are you getting an error or just the wrong output?
- **if you have an error:** what do you think is causing it?
(guess if you don't know!)



rubberduckdebugging.com

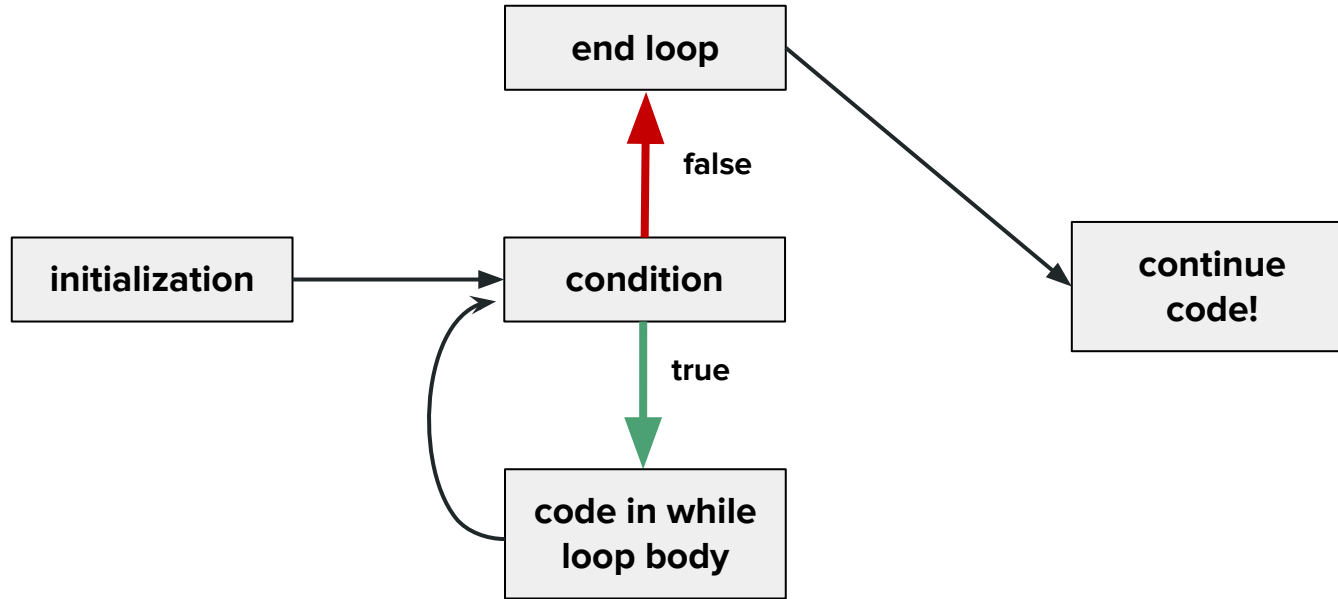
Common things to check for

- spelling errors!
- not passing variables to your functions (remember, they can't see what's going on anywhere else!)
- not returning values from your function (remember, things are lost unless you **return** them!)
- not using [] or () properly when calling a function or defining variables
- doing work in the command window which the problem tells you to do inside the function
- *don't try to write all your code in one line! break it up and make new variables, check that each one of them is what you expect.*
- *test your own code! you won't know why it isn't passing unless you know what you expected it to do*

On to loops

assignments this week let you play with building blocks you have
we'll cover all the basic content you'll need today!

While loops



While Loops

- While Loops must have a conditional expression, and the conditional expression must have at least one variable!
- Conditional variables must be “Initialized” before the loop
- The conditional variable should advance with each pass!

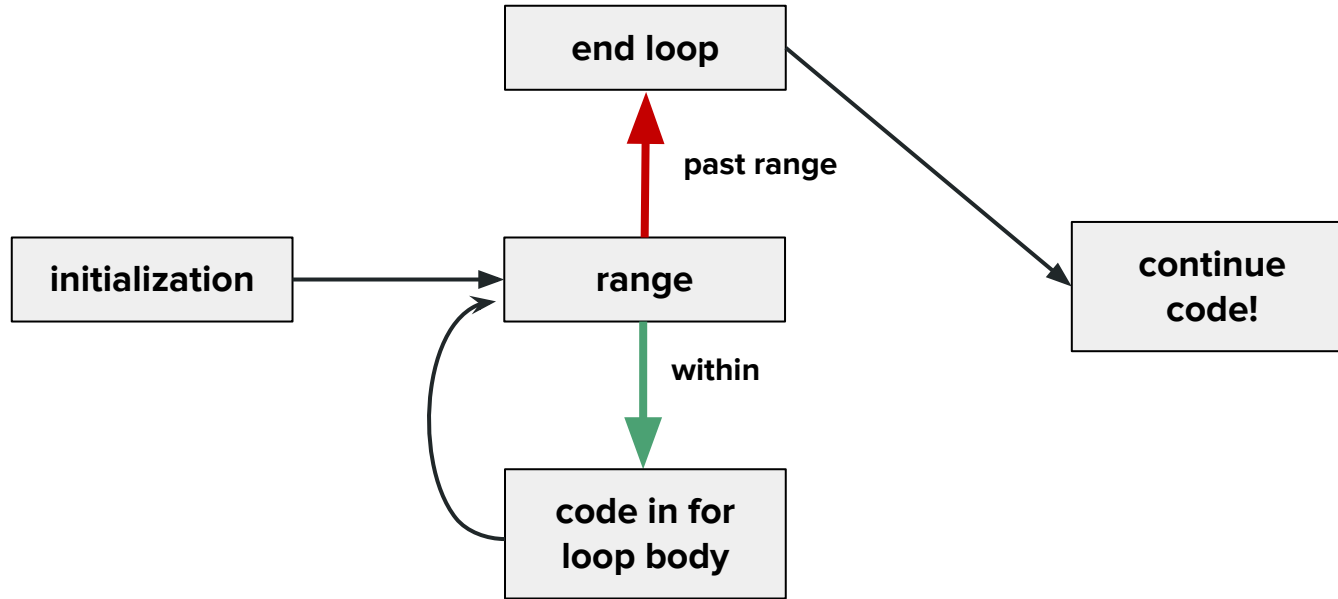
```
a=0  
  
while a<10  
    a=a+1  
    if (a==5)  
        continue  
    end  
    disp(a)  
  
end
```

Common Bugs

you will write a loop which goes forever! everyone does it at least once.

you will also write loops which never start! sometimes you might even want this!
(can you think of a reason?)

FOR loops



when might you use a for loop? while loop?

- example from my research of combining them:

break statements

The screenshot shows the MathWorks Help Center page for the 'break' statement. The page is titled 'break' and describes its function: 'Terminate execution of for or while loop'. It includes sections for Syntax, Description, and Examples. The Examples section contains a code snippet that demonstrates using 'break' to exit a loop when a random number exceeds a specified limit.

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break R2021b

Terminate execution of for or while loop collapse all in page

Syntax

`break`

Description

break terminates the execution of a for or while loop. Statements in the loop after the break statement do not execute. example

In nested loops, break exits only from the loop in which it occurs. Control passes to the statement that follows the end of that loop.

Examples collapse all

Exit Loop Before Expression Is False

Sum a sequence of random numbers until the next random number is greater than an upper limit. Then, exit the loop using a break statement. Open in MATLAB Online Copy Command

```
limit = 0.8;
s = 0;

while 1
    tmp = rand;
    if tmp > limit
        break
    end
    s = s + tmp;
end
```

Tips

```
limit = 0.8;
s = 0;
```

```
while 1
    tmp = rand;
    if tmp > limit
        break
    end
    s = s + tmp;
end
```

Function rem(x,y)

This function checks for a remainder when dividing x by y:

rem(x,y)

Ex: rem(x,3) will check if the value of x is divisible by 3, because if it is the result should be 0.