

Data Structures & Programmatic Thinking

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Plan for today

Mutability

Iteration

Mutability

Mutability is a feature of variables in most programming languages. It means that variables can be updated to newer values.

```
x = 1  
x = x * 3  
  
print(x)
```

Mutability

Iteration

Iteration is the act of repeating a process. In Python we express iteration with the **while** statement

While

1. Evaluate the condition
2. If the condition is False, exit while and go to next statement
3. If condition is true, execute body. Then go to step 1.

While

Stopping a loop

You can always stop a loop using the `break` keyword

```
while True:
    if im_bored_of_iterating:
        break
    else:
        print("i'm iterating!")
```

Infinite loops

Infinite loops are loops whose condition never evaluates to False. This means that they'll run forever (unless we break them)

- + Create a function that prints the numbers 1 to 50 (using iteration)
- + Create a program that prints multiplication tables from 1 to 10
- + Create a function `~pyramid~` that receives an integer `~n~` as parameter and prints `~n~` lines of the following pattern:

```
*  
**  
***  
****  
*****
```