Cmpe 150 Lab 10: Recursion

So Far

- We learned a lot of stuff.

- Today, we will talk about an exciting way to solve some problems. Probably one of the most advanced concepts we covered in the course.

Recursion

- A function can call another function. We all know that.

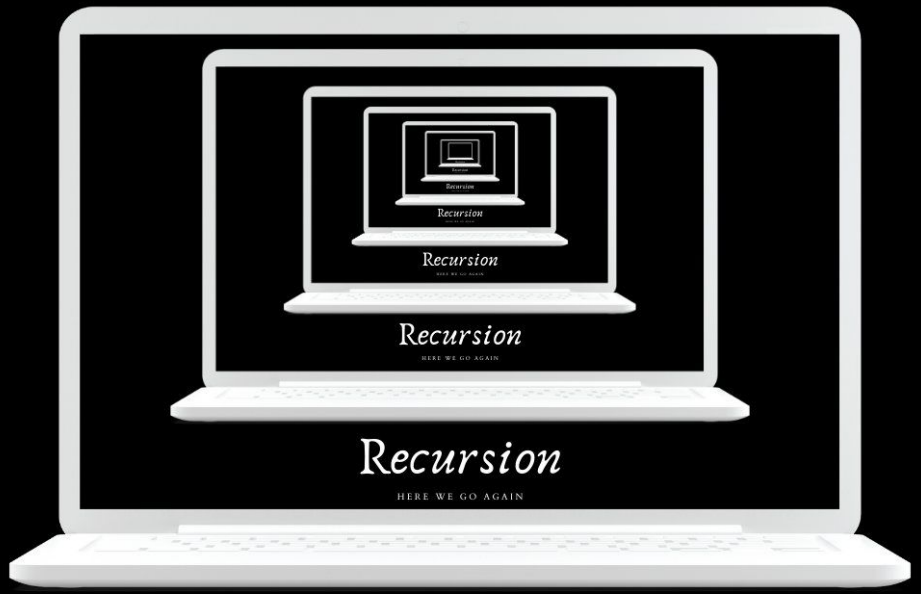
- What if a function calls itself?

Factorial Example

```
def factorial(N):
    return N * factorial(N-1)
```

- Would it work?

Stuff



Recursion

HERE WE GO AGAIN

DAILYCODINGHABIT

daily coding habit

General Schema for Recursion

- We want to refer to the call to the same function with different parameters, but

- We need a base case that stops calling itself and does something like returning.

General Schema for Recursion (Cont.)

```
def recursive_function(parameter):
    if <base_condition>:          # parameter == 0 for the factorial example
        return base_value         # 1              for the factorial example
    return <recursive_call>       # Guess          for the factorial example
```

Applicable to Several Problems

- Fibonacci numbers

- Also, others we will see in the examples.

Caution

- It is possible to solve most of the problems by using a loop like for or while, but sometimes it is easier to express our solution using recursion.

- It might also take too long, as we will see in the Fibonacci case.

Learning New Languages

- We learned the basics of programming with Python. To learn a new language, what we need to do is to learn the syntax of that language.

- For instance, in Java, the syntax for if is

```
if (condition) {
        // Code
}
```

Warning

- Your abilities are more important than the number of languages you know.

- For instance, your capabilities in Web Programming or AI.

Adding another programming language to my resume after learning how to write Hello World in it.

Thanks

Any questions?

References

1. https://www.programiz.com/python-programming/recursion
2. https://twitter.com/Dailycodinghab1/status/1351642591889076224
3. https://www.reddit.com/r/ProgrammerHumor/comments/gt8bzl/hello_world/