

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

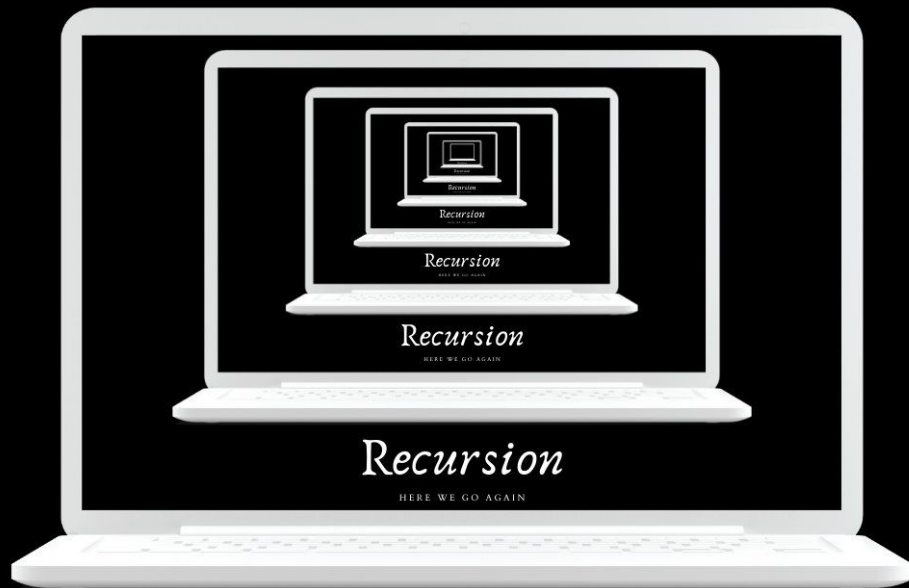
- A function can call another function. We all know that.
- What if a function calls itself?

Factorial Example

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

- Would it work?

Stuff



Recursion

HERE WE GO AGAIN



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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.**



Always Feel Free To Contact Even After The Course Is Over

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/