

C++ LAUNCHPAD



Lecture-8

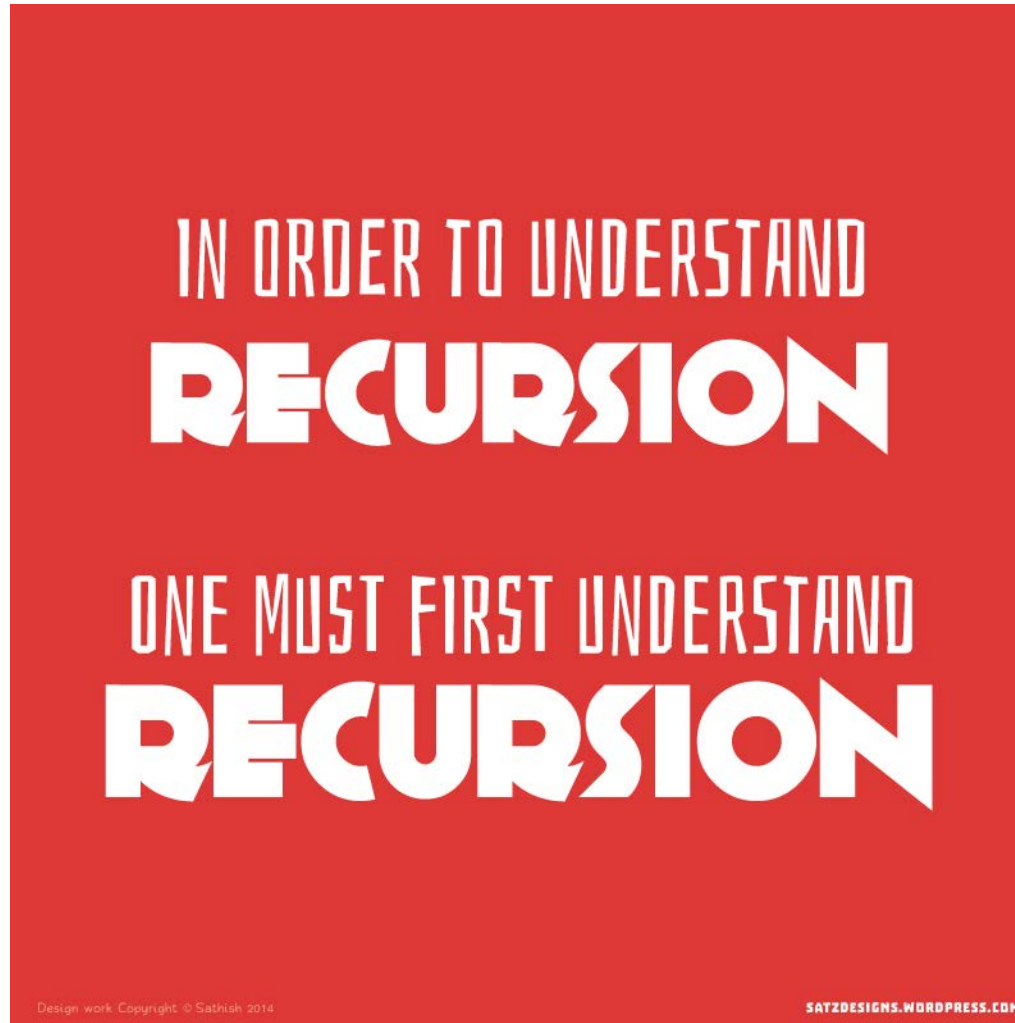
Recursion

- Understanding Recursion
- Problems on Recursion
- Merge Sort

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Call Stack!

How to understand Recursion ?



Time to talk about Recursion!

What is Recursion?

Recursion in computer science is a method where the solution to a problem depends on solutions to smaller instances of the same Problem.

Parts of Recursive Algorithm

- Base Case (i.e., when to stop)
- Work toward Base Case
- Recursive Call (i.e., call ourselves)

The "work toward base case" is where we make the problem simpler. The recursive call, is where we use the same algorithm to solve a simpler version of the problem. The base case is the solution to the "simplest" possible problem

Print Factorial of N

- What is the recursive call?
- What is the base case?

Print Nth Fibonacci Number

- What is the recursive call?
- Base Case?

Behind the scenes!

Check if an array is sorted

- What is the recursive call?
- Base Case?

Lets code some more problems

- Sum of Array
- Selection Sort
- Print Numbers –
 - 1) Increasing Order
 - 2) Decreasing Order

Your Turn

- Write code for a function `power(x,n)` which evaluates x^n .
- Given an integer say –
2048 , print “two zero four eight” using recursion.
- Given an array
 - Check if it contains 7
 - Find first index of 7
 - Find last index of 7
 - Find all indices of 7

Time to try?

- Multiply two numbers using recursion
- Bubble Sort using recursion.
- Binary Search using recursion.
- Convert a String into Integer using recursion.

Merge Sort!

What is next class about?

- More into recursion.

C++ LAUNCHPAD



Thank You!

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