August 28, 2016

Launchpad

Lecture - 5

Programming
Fundamentals - 4

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Any doubts?

Bubble Sort Optimisation ?

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Other Language Constructs

I. do while

II. switch case

III. Tertiary operator (? :)

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Time to talk about functions?

What is a function?

I.   A function groups a number of program instructions into one unit and gives it a name. This can then be invoked from other parts of the program.

II. It adds conceptual organization and increases reusability of the code.

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Lets move some programs to functions!

I.   Write function to print a table of Fahrenheit to Celsius table from 0 to 300.

II. Lets convert the above to take limits from the user.

III. Write a function to check if a number is prime or not.

IV. Use above in another function to generate all prime numbers from 2 to N, where N is given by user.

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So a function looks like :

type name (parameter1, parameter2, …) {
      statements
}

I. **type** is the type of the value returned by the function.

II. **name** is the identifier by which the function can be called.

III. **parameters** (as many as needed): Each parameter consists of a type followed by an identifier, with each parameter being separated from the next by a comma. Each parameter looks very much like a regular variable declaration (for example: int x), and in fact acts within the function as a regular variable which is local to the function. The purpose of parameters is to allow passing arguments to the function from the location where it is called from.

IV. **statements** is the function's body. It is a block of statements surrounded by braces { } that specify what the function actually does.

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Time to try?

I. Write a function to return factorial of a number?

II. Write a function which uses above to calculate NCR

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Call Stack?

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Scope of Variables?

Call by value?

More about functions

I.   A function generally has three parts
  I.   Declaration
  II.   Definition
  III.   Invoking

II.   Declaration is optional if function is defined above main()

III.   A function needs to be defined or declared before it can be called i.e. if you are calling a function A() in function B() then A should be declared or defined above B.

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Passing Arrays into a function!

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Lets do some more problems?

I.   Write a function which takes an array and its length as argument and returns sum of its elements.

II. Write a function which takes an array as argument and sorts them using selection Sort.

III. There are two sorted arrays. First one is of size m+n containing only m elements. Another one is of size n and contains n elements. Write a function to merge these two arrays into the first array of size m+n.
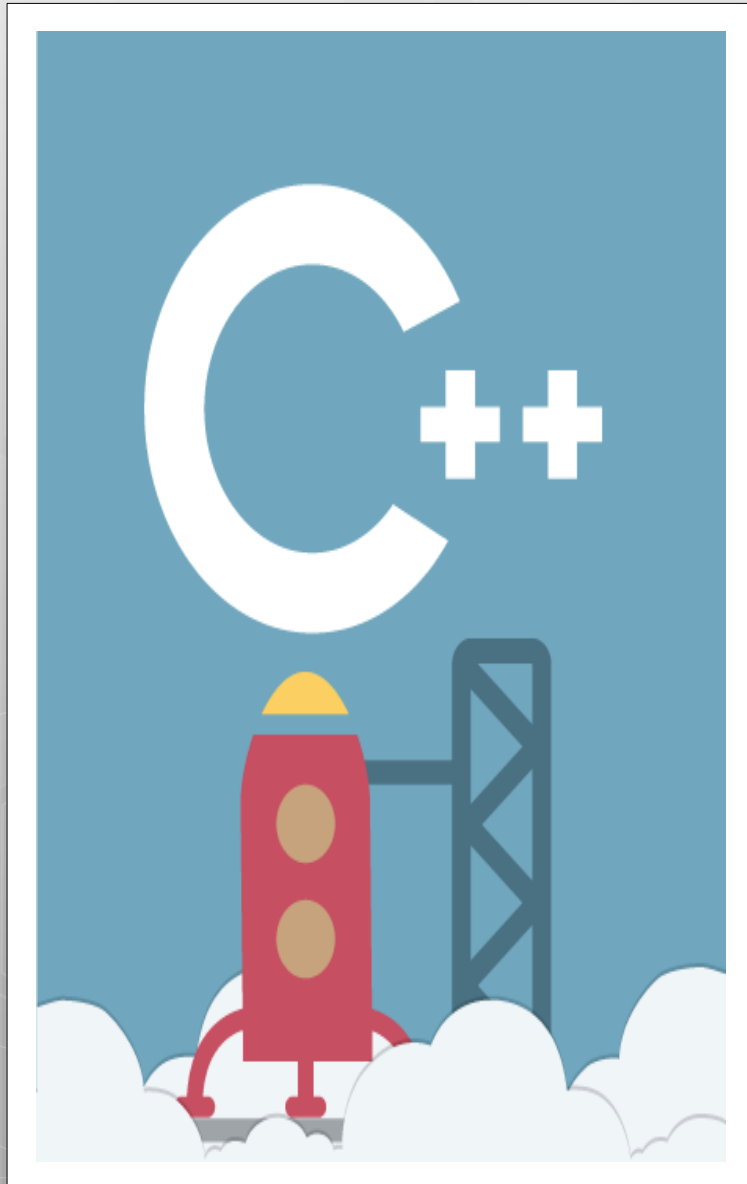
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Insertion Sort?

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Binary Search?

Time to try?

I.   Binary Search

II.   Write a function which takes a number X and a array and prints all prints all pairs which sum to X.

III.   Write a function which takes two sorted arrays, and their lengths as arguments and returns combined median of them without using the third array.

IV.   Implement Insertion Sort.

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What is next class about?

I.   Arrays contd…

Thank You!

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