Algorithms

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December 11, 2021

Contents

Part I

Fundamentals

Chapter 1

Summary of topics

- You can run algorithms to study their properties
- You can put them to good use immediately in applications
- Programming constructs(building blocks), software libraries(programmming concepts), and operating systems used to impemet programs make up our peogramming model
- To understand this model let us frist talk about statements
- Here are the different types of statements:
  - Declarations: reate specific type of variables and name w identifiers
  - Assignments: associate data type with variable
  - Conditionals: provide change in execution flow
  - Loops: more profound change in execution flow, repeat block mutiple times
  - Call and returns relate static methods
- arrays store a sequence of values
  - to initalize an array declare array name and type,create the array

  initalxe the values
  - Defalt values are set to zero, you initalze them through a for loop

- Static methods: can bel declared without the name of the method, declare class name
  - Here's an example static method:

    ```
    public static squrt(double c)
    ```
- properties of methods
  - Methods can be overloaded
  - methods have a single return value but can have mulitple return statements
  - A method can have side effects
- Recursion: method will call intself
- External Libraries: imported statements (ex: `java.lang.*`)

1.1 Subheading

Chapter 2

Data Abstraction

- hello
- this
- $e = mc^2$
- This is displalystyle:

$$e = mc^2$$

Chapter 3

Bags, Queues, and Stacks

Chapter 4

Analysis of Algorithms

Chapter 5

Case Study: Union-Find

Part II

Sorting

Chapter 6

Elementary Sorts

Chapter 7

Merge Sort