AP Study Notes

Notes from Learnerator.com: AP Computer Science A

# Object Oriented Program Design

## Program Design

## Class Design

# Program Implementation

## Implementation Techniques

## Programming Constructs – Objects and Declarations

## Programming Constructs – Outputs and Controls

## Java Library Classes

# Program Analysis

## Testing

## Debugging and Error Handling

## Inheritance, Conditions and Assertions

## Analysis of Algorithms

## Numerical Representation and Limits

# Data Structures

## Simple Data Types

## Classes

## Lists

## Arrays

# Standard Algorithms

## Operations and Data Structures

## Searching

## Sorting

* Arrays.sort() uses quicksort most of the time but for Objects it uses the Merge Sort as long there are at least 7 items to sort otherwise it uses the Insertion Sort
* When sorting Strings the sorting is based on the ASCII table. The order is as follows (symbols, numbers, Upper Case, Lower case).
* O(n) is an algorithm with a single loop
* O(n2) is an algorithm with a loop in a loop.
* O(log n) are generally recursive algorithms.
* The merge-sort has best and worst case O(n log n) – the log n are from the two recursive calls and the n is because of the merging.
* Insertion Sort has Best-Case O(n) when it is already sorted since we do not need to shift anything – the inner loop is responsible for the shifting.
* Insertion sort has Worst-Case O(n2) and happens when we need to shift everything on every iteration of the outer loop.

# Computing in Context

## System Reliability, Privacy, Legal Issues, IP