Course Description

The purpose of this course is to prepare students for the AP Computer Science A test administered by CollegeBoard.

Students will take a practice AP Test at the beginning of the course. The results of the test will

be evaluated to determine what specific areas to target.

All topics covered in the AP Computer Science A curriculum will be covered. This includes constructors, primitive and reference types, constants and variables. We will investigate Strings as objects as well as the relevant portions of the Java API. Control flow will be covered as will the use and implementation of Lists and ArrayLists. A review of both one and two dimensional Arrays is included as well. Object Orientation will be empathized with attention given to encapsulation, instance variables, getters setters, constructors, this, static methods as well as private vs public methods. Interfaces and abstract classes will be discussed reviewed using the is a vs has a paradigm. Polymorphism will be addressed as well.

Searching and Sorting methods are discussed specifically insertion sort and sequential search and binary search as they are pertinent to the test. Recursion will be reviewed while implementing mergesort. The review of search and sort will include a brief review of Big-O notation as a means of determining which method to implement.

This class will include multiple practice Free Response Questions implemented by the student on a Google Doc as preparation for the test. These results of these responses will be used to fine tune the test plan for the student.

A final practice test will be given to evaluate student progress at the end of the course. These results will be presented to the student.

Syllabus

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| Student given AP Computer Science A practice test | Results evaluated, target study plan created | Session 1 - results returned session 2 |
| Review types, variables, constants, constructors, parameters, return values | Level of review determined by test results | Session 1 |
| Templates, inheritance, instantiate, class creation | Level of review determined by test results | Session 1 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan updated | Session 2 |
| Strings as object, Java API | Level of review determined by test results | Session 2 |
| IF/Then logic, while/for loops | Level of review determined by test results | Session 3 |
| ArrayLists, Lists, use and implementation | Level of review determined by test results | Session 3 |
| One and two dimensional Arrays Review | Level of review determined by test results | Session 4 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 4 |
| Abstraction and Object Orientation | Level of review determined by test results | Session 5 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 5 |
| Encapsulation, getters, setters, this, static methods, fields, private vs public methods | Level of review determined by test results | Session 6 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 6 |
| Interfaces and abstract classes | Level of review determined by test results | Session 7 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 7 |
| Polymorphism | Level of review determined by test results | Session 8 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 8 |
| Searching - sequential and binary search | Level of review determined by test results | Session 9 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 9 |
| Sorting - insertion sort, selection sort | Level of review determined by test results | Session 10 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 10 |
| Recursion - merge sort | Level of review determined by test results | Session 11 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 11 |
| Big O notation overview | Level of review determined by test results | Session 12 |
| Student give Free Response Question on Google Doc | Results evaluated and study plan update | Session 12 |
| Overall Review  Including Free Response Questions | Revisit any subject that is weak | Session 13 |
| Student takes practice AP Computer Science A Test | Results evaluated and compared to those from initial test | Session 14 |