
AP Computer Science
School Year 2013-2014

Course Description:
Java is receiving a great deal of attention as a highly portable programming language suitable for developing Internet applications and is one of the computer programming languages recommended by the College Board Commission. This course teaches students to use the standard Java library classes from the AP® Java subset delineated in Appendices A and B of the AP Computer Science Course Description. Concepts such as classes, objects, inheritance, polymorphism, and code reusability are studied. Hands-on laboratory work helps solidify each concept.
Java can also be used as a general-purpose object-oriented language. This course covers specifics of writing programs in Java including attention to console output, arrays, constructors, inheritance, graphical user interface, events, and applets.

Course Content:
Introduction to Computer, the Internet and the Web
Create student accounts, and open an IDE:
What is a computer?
Computer Organization
Operating systems
Client/Server computing
History of Java
Java Class Libraries
The Internet and the World Wide Web
Source, bytecode, compilers, interpreters, JVM, platform Independence
Binary, Decimal, Hexadecimal, Octal number systems

Introduction to Java Applications
Printing a line of text
Displaying text in a Dialog Box
Memory Concepts
Arithmetic
Equality and relation operators

Introduction to Java Applets
Simple Java Applet
Adding floating – point numbers
Applet drawing a string
String class

Control Statements
Algorithms
Top-down stepwise refinement

Pseudocode
Control Structures
if statement
if/ else statements
While repetition statement
For loops
Switch
Logical Operators
Compound Assignment Operators
Increment and decrement operators
Primitive types
Correct the code errors

Methods
Object is the superclass of all supercalsses
Program Modules in java
Math class methods
Java.lang.Math static methods (abs, pow, sqrt, random)
Method declarations
Method Argument
Method parameters
API Packages
Random number generation
Scope of declarations
Methods of Japplet
Method overloading
Recursion
Interfaces

Required Textbooks and/or Other Reading/Research Materials

Cay Horstmann Big Java 3rd Edition 2008

Course Requirements:
At the start of the year, we will review the concepts covered in Introduction to Computer Science 1. In will introduce students to the IDE of choice. As we review the basics of computer science, I will use Japplets to gain student interest and motivation. Interfaces are introduced by extending ActionListener and defining actionPerformed() in the craps game. Applets will allow students the ability to see Object Oriented concepts in use from the start of the course. Copyright and licenses are the topic of discussion in this unit. Students enjoy installing free operating systems on their home computer and experimenting with the new environment. In this unit we discuss the pro's and con's between two different operating systems. This unit students will create their own programming language and complier using the Java programming language. Students will write programs in their own language and test the programs with test data.
Students will use Array Lists to create a simple list and understand the size of the ArrayLists. Since arrays were already introduced and students are familiar with traversing, sorting and searching arrays, these concepts will be brief in their explanation.

Students are searching and sorting in their daily lives often-using email and other applications. I use this as motivation to reintroduce sorting and create an algorithm to efficiently sort large arrays. Students will use lab time to test the sorting algorithms and determine which is most efficient under given conditions.

Grade Components/Assessments:
In class key with me 20%
In class labs 40%
In class tests 40%

Each marking period is worth 20% of a student's overall grade. The midterm and final exam are each worth 10% of a student's overall average:

Quarter 1	20%
Quarter 2	20%
Midterm	**10%**
Quarter 3	20%
Quarter 4	20%
Final	**10%**

Required Summer Reading/Assignments:

Prerequisite Concepts in C++:
- Data types
- Declaring variables
- Arithmetic operators
- Selection structures
- Repletion structures
- Functions
- Arrays
  - Defining
  - Initializing
  - Printing
  - Sorting
  - Searching

Summer Work
1. Download and install the software from my teacher page.
   - Java Virtual Machine
   - Eclipse Europa
   - Be sure to install the virtual machine before Eclispe.

2. Read Chapter 1 through Chapter 6 from the textbook.
a. Type in each program in each chapter using eclipse or notepad. Save to disk

Labe due day 1 of next year.

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