

CSCI 145 LAB OUTLINE

JAVA LANGUAGE AND OBJECT ORIENTED PROGRAMMING

TEXT: Online Lab for Computing Concept with Java Essentials 4th Edition Horstmann

Approved:

Effective: FALL 2007

| MATERIAL TO BE COVERED | SECTIONS FROM TEXT | TIME LINE |
|---|------------------------|------------|
| Computer System: basic computer architecture, software, hardware and networks, history of computing and programming, a Java program, compilation, types of errors. | 1.1 - 1.8 | 1.25 Hours |
| Objects and Classes: introduction to objects, string literals, defining and testing a class, creating objects, instance fields, constructors, methods, designing the public interface of a class, commenting, variable types, the "this" reference. | 2.1 - 2.10 & 3.1 - 3.8 | 3.75 Hours |
| Fundamental Data Types: number types, assignment, arithmetic and mathematical functions, calling static methods, type conversion, strings, reading, input and characters. | 4.1 - 4.10 | 2.5 Hours |
| Graphics: short introduction to HTML, a frame window, graphical shapes, color, fonts, reading text input. OPTIONAL: a simple applet. | 5.1 - 5.7 | 2.5 Hours |
| Decision and Iterations: if statement, comparing values, multiple alternatives, repetition (while, for), nested loops, processing input, random numbers and simulation. | 6.1 - 6.4 & 7.1 - 7.5 | 3.75 Hours |
| Array Lists and Arrays: storing numbers in array lists, declaring and accessing arrays, copying arrays, two dimensional arrays. | 8.1 - 8.7 | 2.5 Hours |
| Designing Classes: instance data, encapsulation, parameters, constructors, scope, object relationships, overloading, accessor and mutator methods, static variables and methods, packages. | 9.1 - 9.9 | 3.75 Hours |
| Testing and Debugging: unit tests, test case evaluation, regression testing and test coverage, program traces, logging and assertions, the debugger. | 10.1 - 10.7 | 1.25 Hours |
| Interfaces and Polymorphism: developing reusable software, converting between types, polymorphism, using a strategy interface for improving reusability, processing timer events. | 11.1 - 11.7 | 2.5 Hours |
| Event Handling: events, event listeners and event sources, processing mouse input, processing text input, multiples buttons, fram windows, text components. | 12.1 - 12.4 | 2.5 Hours |
| Inheritance: inheritance hierarchies, inheriting instance fields and methods, subclass construction, converting from subclasses to superclasses, access control, the top "Object." | 13.1 - 13.8 | 2.5 Hours |
| Graphical User Interfaces: Java GUI overview, containers, GUI components, layout management, using interfaces to customize frames, GUI design choices, menus, exploring the swing documentation. | 14.1 - 14.6 | 2.5 Hours |

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| Exceptions and I/O Streams: error handling techniques, basics of Java exception handling (try, throw, catch and finally), exception propagation, the Exception class hierarchy, streams readers and writers (character streams, byte streams, data stream and processing streams), standard I/O, file I/O, random access, threads.* | 15.1 - 15.6 & 16.1 - 16.5 | 5 Hours |
| Software Engineering: software development models, software life cycle, relationships between classes, examples. | 17.1 - 17.5 | 1.25 Hours |
| Ecursion, Sorting and Searching: recursive thinking, recursive helper methods, efficiency of recursion vs. iteration, selection sort, binary search, permutations. | 18.1 - 18.5 & 19.1 - 19.7 | 1.25 Hours |
| Data Structures: linked lists, stacks, queues. | 20.1 - 20.22 | 1.25 Hours |

*** 1 Hours = 1 hour of face time. ****This outline allows for 3 hours for project presentation and testing.

16 Week Term: 1 week = 2.8333 hours (face time) 6 Week Term: 1 week = 7.5 hours (face time)

Submitted by: Pop