

Foundations of Programming (CMPS)

Week 1: User I/O, Conditionals, Using & Writing Methods

Day	Session	Skill and Knowledge Goal	Resources & Plans to Meet Goals
Mon	9 - noon	Honor Code & Computer Use Pre Evaluation Test Compiling & Executing in Java (Error checking & create .bat file) (DOS command line compiling)	<ul style="list-style-type: none"> • Discuss Honor Code / Expectations • Pre Evaluation Test / Computer Prog. Word Search • MSW Logo: Draw name & put accumulated code into a method. • Java Program: HelloWorld, pg 16; Demo: HelloJava4
	1 – 3 pm	Variables, Comments, & Errors Analyzing, Experimenting & Modifying	<ul style="list-style-type: none"> • Exercises: HTTLACS^A, pg 10 – 11 • Java Program: VariableDemo, pg 43 [use Cmd line prog]
	7 - 9 pm	Using Arithmetic Operations	<ul style="list-style-type: none"> • Java Program: TipAdder, pg 47 • Java Program: AgeInSeconds (you create) [use C.L.P]
Tues	9 - noon	Using an IDE Obtaining User Input, Formatting Output	<ul style="list-style-type: none"> • Java Program: TipAdderFormatted [use JCreator] • Java Program: HelloUser, pg 54 • Add user input to AgeInSeconds program, use <i>printf</i>
	1 - 3 pm	Objects & Methods	<ul style="list-style-type: none"> • Java Program: Pyramid (handout) using Blue J • Create a class to handle user inputs & update AgeInSeconds to form a <i>UserInput</i> object
	7- 9 pm	String Methods Program Design & Flow Charts	<ul style="list-style-type: none"> • Demonstrate String methods on an <i>Input</i> object • Java Program: Design a class to reverse the order of your first & last name; table 2.7, pg 65
Wed	9 - noon	Instances & Methods	<ul style="list-style-type: none"> • Handout: Circle enter/compile & complete exercises. • Create Java class Arithmetic with <i>add</i>, <i>sub</i>, & <i>mult</i> methods. Access them within this class & in other. • DebugFour1, DebugFour3
	1 - 3 pm	Using Constructor Methods & Parameters	<ul style="list-style-type: none"> • Java Program: Triangle (handout) • Demo Conditionals: IfThenDemo • Create java program: AdventureGame
	7 - 9 pm	Using Conditional Statements (if-then-else)	<ul style="list-style-type: none"> • Continue Java Program: AdventureGame, • Java Program: Savings [Java Overview]
Thurs	9 - noon	Using Conditional Statements, Interpreting a Flow Chart, & Designing a Program	<ul style="list-style-type: none"> • Demo While Loops: WhileDemo • Create java program: ATM • Exercise: Sharpen Your Pencil, HFJ, pg 13
	1- 3 pm	Using Objects, Methods, & Conditionals with Blue J	<ul style="list-style-type: none"> • Java Program: DiceRoller, pg 102 • Java Program: NumberGuess • Create Java Program: AlternatingCase you design convert input to AITeRnAtInG case (Flowchart ->Pseudocode-> Code)
	7 - 9 pm	Troubleshooting & Analyzing Code	<ul style="list-style-type: none"> • Exercises: Code Magnets & Be the Compiler, handout pg 20-23 HFJ • DebugFive2 [Java Programming, Chap 5]
Friday	9 - noon	Using Math Methods & Random Integers	<ul style="list-style-type: none"> • Table, pg 81 Jave Program: MathMethods, pg 82 • Java Program: RandomNumbers • Java Program: Boxer compare random #s, if greater, fighter is <i>hit</i> & loses <i>strenght</i> (# value decreases) when # value = 0, KO
	1- 3 pm	Using the Switch Statement	<ul style="list-style-type: none"> • Java Program: Use <i>Switch</i> based on user input date of birth to find Horoscope • Java Program: Firework (modify/experiment)
Sunday	7 - 9 pm	Troubleshooting & Designing Code	<ul style="list-style-type: none"> • Finish Horoscope • Exercises: Be the Compiler, Code Magnets, and Pool Puzzle, HFJ, pg 42-44; DebugThree3, [Java Programming, Chap 3]

Week 2: Arrays, Loops, Classes, Polymorphism

Day	Session	Skill and Knowledge Goal	Resources & Plans to Meet Goals
Mon	9 - noon	Storing Variables in Arrays Intro to Netbeans IDE	<ul style="list-style-type: none"> • Java Program: <u>ArrayUse</u>, pg 109 [Write using NetBeans, run animation Using Jeliot] • Analyze: <u>ArrayOOB</u> and <u>Array_whatstido</u> • Java Program: MadLibs (use string arrays to create wacky sentences) [see <u>Phrase.java</u>]
	1 - 3 pm	Using the While Loop & Arrays	<ul style="list-style-type: none"> • Java Program: <u>Racer</u>, pg 120-1; <u>MultiplicationTable</u>, pg 135-6 [use Jeliot] • Exercise: <i>Challenge #2-3</i>, pg 159
	7 - 9 pm	Troubleshoot & Analyze Code	<ul style="list-style-type: none"> • Exercises: <i>Code Magnets, Pool Puzzle, etc.</i> HFJ, pg 63-66
Tues	9 - noon	Incrementing & Using For Loops	<ul style="list-style-type: none"> • Java Program: <u>CompoundIntervals</u>, pg 129 • Java Program: Design classes to compute the n^{th} Fibonacci number and n Factorial • Java Program: Design a program to display user input backwards
	1 - 3 pm	Using the Enhanced For Loop	<ul style="list-style-type: none"> • Finish HFJ, pg 63-66 • Java Programs: <u>Combinations</u> & <u>ArraySum</u>
	7- 9 pm	Using Loops, String Methods, & Arrays	<ul style="list-style-type: none"> • Java Program: <u>Scramble</u> (scramble user input strings)
Wed	9 - noon	Using Arrays & Loops Sorting	<ul style="list-style-type: none"> • Design a program to do <u>Rot13</u> conversion of user input • Java Program: <u>Sorting</u>
	1 - 3 pm	Creating Variable Length Arrays	<ul style="list-style-type: none"> • Handout “ArrayLists” HFJ, pg 131-3,137 • Java Program: Design a program to input grades into ArrayList & find total, max value/index, & average [Grades.java]
	7 - 9 pm	TroubleShoot & Analyze Code using the Java API ^C	<ul style="list-style-type: none"> • Sorting using an ArrayList • <i>DebugEight2, DebugSix1,2</i> [Java Programming, Chap 6, 8]
Thurs	9 - noon	Nested Arrays & For Loops	<ul style="list-style-type: none"> • Java Program: <u>MultiplicationTable</u>, pg 135 • Handout: <u>MagicSquare</u> [Java Overview] • Java Program: Create a program to find Pythagorean Triples using nested for loops (Intro to Prog: <u>Pythag</u>)
	1 - 3 pm	Recursion	<ul style="list-style-type: none"> • <u>Factorial, Fibonacci</u> pg 55 - 58 HTTLACS [Use Jeliot] • MSW Logo: <u>Koch & Sierpinski</u> • Exercise: Exercise 5.8, pg 62 HTTLACS
	7 - 9 pm	Troubleshoot & Analyze Code	<ul style="list-style-type: none"> • Exercises: <i>Code Magnets & Mixed Messages</i>, HFJ, pg 119 & 121 • <i>DebugSix3</i> [Java Programming, Chap 6]
Friday	9 - noon	Inheritance, Polymorphism, Method Overloading	<ul style="list-style-type: none"> • Examine Blue J <u>Cards</u> project • Java Program: <u>Adding</u> (demo method O/L) • Rename BlackJack to BlackJackMoney, and modify to include winnings & improve output view
	1 - 3 pm	Inheritance & Polymorphism	<ul style="list-style-type: none"> • Examine Blue J <u>Animals</u> project • Create new Subclasses: <i>Fish</i> and its subclasses <i>Shark</i>, and <i>Dolphin</i>
Sunday	7 - 9 pm	Troubleshoot & Analyze Code	<ul style="list-style-type: none"> • Exercises: <i>Mixed Messages & Pool Puzzle</i>, HFJ, pg 161-164

Week 3: GUI Java Programs & Applets

Day	Session	Skill and Knowledge Goal	Resources & Plans to Meet Goals
Mon	9 - noon	GUI: Putting a Button on a Frame & Listening for Events Using Java API	<ul style="list-style-type: none"> Java Program: SimpleGui1, SimpleGui1b, & SimpleGui3C pg 355, 360, 371 HFJ Modify SimpleGui3C to randomly place oval/use other shapes (see Java online API^B)
	1 - 3 pm	GUI: Using Inner Classes	<ul style="list-style-type: none"> Java Program: TwoButtons, Create Graphics <i>Catapult</i> program to work with data from EGR class
	7 - 9 pm	Troubleshoot & Analyze Code	<ul style="list-style-type: none"> Modify SimpleAnimation to use random colors
Tues	9 - noon	GUI: Using a Graphics Editor	<ul style="list-style-type: none"> Using Matisse GUI builder: Make Graphics frame for (previously designed) Adventure Game & Rot13 progs
	1 - 3 pm	Using Action Listeners Creating *.jar files	<ul style="list-style-type: none"> Continue using GUI Builder Create Jar file your GUI designs
	7 - 9 pm	Explore Qbasic programs	<ul style="list-style-type: none"> Qbasic: Write simple programs using for loops, if /then, comments, print Play Qbasic games, then modify code & play
Wed	9 - noon	Creating & Modifying Applets	<ul style="list-style-type: none"> Java Program (1st edition): Say What Applet & FrameTestApplet [use BlueJ] QuizShowApplet, pg 307 (1st edition); modify & create a Java Quiz
	1 - 3 pm	Using an Applet	<ul style="list-style-type: none"> CheckBoxDemo (see CheckBoxDemo2) & ChoiceDemo [GUI examples] Modify classes to include more shapes/options
	7 - 9 pm	Post Evaluation Test	<ul style="list-style-type: none"> Post Evaluation Written Test & Finish Programs Begin BeatBox
Thurs	9 - noon	Student Evaluations Advanced Capabilities	<ul style="list-style-type: none"> Java Program: Beatbox HFJ pg 420-424 , 463 RobotExample, LJ, pg 583
	1 - 3 pm	Open House Demo	<ul style="list-style-type: none"> Select programs to demonstrate to visitors, create Jar files
	7 - 9 pm	No class	Dance
Friday	9 - 11	Wrap up Activities / Games	Give students resources / tips; Watch Tron and play “Tron Bingo”

^A How to Think Like a Computer Scientist: <http://greenteapress.com/thinkapjava/thinkapjava.pdf>

^B Application Programming Interface: <http://java.sun.com/javase/6/docs/api/>