

Contents

Lecture 1.2 – Programming Basics.....	2
Lecture 2.1 – Variables and Expressions.....	2
Lecture 2.2 – Expressions, Command-line arguments, Conventions, and Pseudocode.....	Error!
Bookmark not defined.	
Lecture 3.1 – Control flow with if statements	
Lecture 3.2 – Control flow with while.....	
Lecture 4.1 – More loops and building software.....	
Lecture 4.2 – Arrays	
Lecture 5.1 – Methods.....	
5.2 – More about methods and methods with objects.....	
6.1 – Exceptions	
6.2 – File Input and Output.....	
Lecture 7.1 – Introduction to Classes and Objects	
Lecture 7.2 – More Classes and Objects.....	
8.1 – Classes and methods.....	
Lecture 8.2 – Testing.....	
Lecture 9.1 – 9.2	
Lecture 10.1 - Inheritance.....	
Lecture 10.2 – Programming idioms.....	
Lecture 11.1 – Collections.....	
Lecture 11.2 – Recursion	
Lecture 12.1 – More inheritance abstractions	
Lecture 12.2 – Multidimensional arrays	

Lecture 1.2 – Programming Basics

- A program is a set of instructions for a computer such that it can understand and execute it
- Programs have to be written in a special format that obeys the syntax of the programming language you are using.
 - Once the text file is written, a compiler is used to turn the file into something a computer can read and run.
- Some major languages include C, C++, C#, VisualBasic, Java, Python, Pascal
- Java syntax includes:
 - Reserved words such as: public, static, float, void
 - Cannot use these for variables
 - Variable names can't begin with numbers
 - Blocks of code are delineated with braces { }
 - Expressions are delineated with parentheses ()
 - Array items are accessed with brackets []
 - Statements end with semi-colons ;
 - Strings are limited by double quotes " "

Lecture 2.1 – Variables and Expressions

- Everything is stored as bytes
 - Each byte is eight bits
- Hexadecimal is a more compact way to store numbers in a range that's a power of two
 - $2^4 = 16$, ranges from 0-F
 - To indicate a number is interpreted this way, we put 0x in front: 0x00 – 0xFF
- Variables are pieces of information that's stored in memory that is accessible via a given name
 - Primitive types are the simplest types of variables (int), which use a fixed amount of memory. They can be changed through the use of math operations
 - Includes boolean, byte, short, int, long, float, double, char
 - Boolean = true/false (default false)
 - Char = single character (represented with ' ')
 - Java uses 16 bits per character to accommodate characters from other languages.
 - Byte, int, short, long = store integer values
 - Float, double = store decimal places
 - Double is more accurate, uses twice as many bits
 - Objects are customised type of variables (string).
 - Includes string