1305 Instruction Plan

Chapter 1

1.4 How a Program Works

Concept: CPU

CPU

Machine language

Binary

Multi-lined

Programs are stored where?

Programs have to be where to run?

Figure 1-15

Figure 1-16

Compiler (Figure 1-18) vs Interpreter (Figure 1-19)

Source code

Syntax error

Integrated Development Environments (IDE)

Text editor – Notepad++

Chapter 2

Concept: Designing a Program

Input, Processing, and Output (IPO)

IPO table

Executable form

Logic error 5 + 5 = 55

Debugging

Program Development Cycle (Figure 2-1)

Designing a Program – 2 Steps

Algorithm

Pseudocode

Flowcharts

Symbols – ovals, parallelograms, and rectangles

Figure 2-2

Concept: Output, Input, and Variables

Review IPO table

Display (Print, Write)

Quotation mark usage – See strings below

Figure 2-6

Sequence Structures

Strings and String Literals

Variables and Input

Variable – when and how does it get its value?

Input – Statement

Line numbers – what is their value

Figure 2-2 Flowchart

HW - Design a flowchart to go from the classroom to the Clegg building.

Variable Names

String Input

Prompting the User

User-friendly

Variable Assignment - var price = 20 What is the value if no value is declared?

var dollars = 2.75 assigns the value of 2.75 to the variable dollars.

Remember to use var instead of set.

Figure 2-8

Performing Calculations (End of Day, p44.)

Table 2-1

Integer vs Floating Point

Look at “In the Spotlight” page 45

Look at “In the Spotlight” page 47 (Maybe)

The Order of Operations – PEMDAS evaluated left to right.

Table 2-2

Grouping with Parentheses

Table 2-3

Figure 2-12 – Look at the A in the circle

Converting Math Formulas to Programming Statements

Table 2-4

Table 2-5

Modulus

Variable Declarations and Data Types

Real will be Floating Point

Program 2-13

Readability – Blank lines, indentations

Variable Initialization

Can convert from INT to/from Floating Point

What happens if a user enters a letter/work for a number?

Documenting a Program

Why do you think you need to document a program?

Comments

Program 2-14 Look at algorithm, comments and flowchart (Figure 2-16).

Designing Your First Program

Solving a Problem!

IPO review

Pseudocode review

Flowchart review

HW Algorithm Workbench page 74 1-12 even numbers

FA Programming Exercises page 77 1-8 even numbers

Project 1 - IPO Table, Pseudocode and Flowcharting

Chapter 3

Introduction to Modules

Modules – Functions

Benefits of Modules

What do you think is the biggest benefit of modules?

Defining and Calling Modules

Naming a Module

Rules for naming

Hello World – in JS What event causes the words to appear on the screen?

Calling a Module

Program 3-1

<script> </script> in JS for beginning and ending of the function.

Figure 3-2, 3-3 and 3-4

Flowcharting a Program with Modules

Figure 3-5 and 3-6

Hierarchy Charts

Figure 3-7

Program 3-2

Local vs Global Variables

Passing Arguments to Modules

Figure 3-11

Argument and Parameter Compatibility – How might you resolve this issue with numbers?

Passing Multiple Arguments

Figure 3-14

Passing Arguments by Value and by Reference

Go through program 3-8 step-by-step

Global Variables and Global Constants

HW Algorithm Workbench page 115 1-7 even numbers

FA Programming Exercises page 117 1-10 even numbers

Chapter 4

Introduction to Decision Structures

Figure 4-1

Combining Structures

Figure 4-2

Writing a Decision Structure in Pseudocode

Boolean Expressions and Relational Operators

Table 4-1

Dual Alterative Decision Structures

Figure 4-8

Figure 4-9

Comparing Strings

How does it compare strings? ASCII is in Appendix A.

Nested Decision Structures

Figure 4-16

The If-Then-Else If Statement – Look at W3Schools.

The Case Structure – Look at W3Schools

Figure 4-18

Logical Operators – Look at W3Schools

Boolean Variables – Look at W3Schools

HW Algorithm Workbench page 164 1-10 even numbers

FA Programming Exercises page 166 1-11 even numbers

Chapter 5

Repetition Structures

Condition-Controlled Loops: While, Do-While, and Do-Until

The While Loop

Figures 5-1, 5-2 and 5-3

Infinite Loops

The Do-While Loop

Figure 5-7

The Do-Until Loop

Figure 5-10

Count-Controller Loops and the For Statement

Figure 5-12

The For Statement

Using the Counter Variable in the Body of the Loop

Incrementing by Values Other Than 1

Designing a Count-Controlled While Loop

Calculating a Running Total

Sentinels

Nested Loops

HW Algorithm Workbench page 221 1-10 even numbers

FA Programming Exercises page 222 1-12 even numbers