

## **Unit 8: Repetitive Processing I**

### ***Objectives***

1. Create computer programs that can do repetitive processing.
  1. Use pseudocode to represent repetition structures.
  2. Use flowcharts as a tool to represent repetition structures.
  3. Create the While, Do-While, and Do-Until conditional loops.
  4. Describe the implications of an infinite loop.

### ***Readings***

*Starting Out with Programming Logic & Design*

- Chapter 5, pp. 163-183 and pp. 196-201

### ***Key Concepts That Must Be Covered in Class***

The following key concepts must be covered in class in order to achieve the course objectives.

1. Flowcharting and pseudocode to represent loops
2. While, Do-While, and Do-Until loops
3. Infinite loop implications

### ***In-Class Assessment***

- Unit Exam 2  
Administer Unit Exam 2. Refer to Appendix A for the exam questions and answers.

## ***Homework***

The following homework is designed to cover the course objectives for this unit.

### **Assignment 8.1:**

Answer the following questions from Chapter 5 of your textbook *Starting Out with Programming Logic & Design*:

- Multiple Choice Review Questions 1-5 and 7 starting on page 211
- Algorithm Workbench Review Questions 1, 2, 7, and 8 starting on page 213

Submit your written answers in a Microsoft Word document using 12-pt. Times New Roman font to your instructor at the beginning of the next class session.

## ***Labs***

### **Lab 8.1: Repetition Structures**

#### **What is the purpose?**

In this lab, you will practice designing condition-controlled loop structures, including While and Do-While loops. You will design condition-controlled loop structures using pseudocode and flowcharts, and then implement them in a programming language.

#### **What are the steps?**

- **Task 1: Lab 5.1—Repetition Structures Pseudocode: Condition-Controlled Loops**

#### **Procedure**

1. Complete Lab 5.1—Repetition Structures Pseudocode: Condition-Controlled Loops on pages 79-81 of the *Lab Manual to Accompany Starting Out with Programming Logic & Design*.
  2. Submit your pseudocode to your instructor for grading.
- **Task 2: Lab 5.2—Repetition Structures Pseudocode: Counter-Controlled Loops**

#### **Procedure**

1. Complete Lab 5.2—Repetition Structures Pseudocode: Counter-Controlled Loops on pages 83-86 of the *Lab Manual to Accompany Starting Out with Programming Logic & Design*.
  2. Submit your pseudocode to your instructor for grading.
- **Task 3: Lab 5.3—Flowcharts**

#### **Procedure**

1. Complete Lab 5.3—Flowcharts on pages 87-91 of the *Lab Manual to Accompany Starting Out with Programming Logic & Design*.
  2. Submit your completed flowchart to your instructor for grading.
- **Task 4: Lab 5.4—Coding**

#### **Procedure**

1. Complete Lab 5.4—Python Code on pages 93-96 of the *Lab Manual to Accompany Starting Out with Programming Logic & Design*.
2. Submit your completed code to your instructor for grading.

#### **Did it work?**

- Were you able to create the pseudocode in Lab 5.1?
- Were you able to create the pseudocode in Lab 5.2?
- Were you able to create the flowchart using Raptor in Lab 5.3?
- Were you able to create the code in Lab 5.4?
- Did you submit your work to your instructor for grading?

## ***Summary and Reminders***

### **Summary**

- This unit introduced repetition structures and focused primarily on condition-controlled loop structures.
- While, Do-While, and Do-Until loops were covered in this unit, as well as modularization of loop block code and the dangers of infinite loops.

### **Reminders**

- Students should prepare for the next unit by reading Chapter 5, pages 183-211, of their textbook prior to coming to class.
- Assignment 8.1 will be due in the next class period.
- The content covered in Unit 8 will be assessed in Unit Exam 3, which will be administered in Unit 11.
- Although students will not begin their Comprehensive Lab Practicum until Unit 10, it is suggested that you set up the student teams and explain the assessment in Unit 9. Make enough copies of the Comprehensive Lab Practicum (Appendix H of this courseware) to hand out to students.