CptS 121 - Program Design and Development

Lab 4: Wonderful World of "if" Statements in C

Assigned: Week of February 10, 2014
Due: At the end of the lab session

I. Learner Objectives:

At the conclusion of this programming assignment, participants should be able to:

- Compose decision statements ("if" conditional statements)
- Implement "switch" statements
- Create and utilize compound conditions

II. Prerequisites:

Before starting this programming assignment, participants should be able to:

- Open and close files
- Read, write to, and update files
- Manipulate file handles
- Apply standard library functions: fopen (), fclose (), fscanf (), and fprintf ()
- Implement and apply predicate functions
- Discover and distinguish between characters and how they are represented
- Handle the 3 file format including: 1 header file, and 2 source files
- Distinguish between formal parameters and actual arguments
- Apply appropriate actual arguments to function calls as test inputs

III. Overview & Requirements:

This lab, along with your TA, will help you navigate through applying selection statements in C. Once again we will take a modular approach to designing soluti need to decide which C selection structure is best suited for a particular problem. You will use "if" and/or "switch" statements.

Labs are held in a “closed” environment such that you may ask your TA questions. Please use your TAs knowledge to your advantage. You are required to move students in need when you are finished with a task. You may work in pairs if you wish. However, I encourage you to compose your own solution to each problem education in CptS 121 so work diligently.

Tasks:

1. Write a Calorie Calculator program to determine what a person's caloric intake should be for a 24 hour span. The program must make a decision about ca on gender, age, weight, and height, and activity level. The Program must first compute the Basal Metabolic Rate (BMR). The BMR formula is the followin

   Women: BMR = 655 + (4.35 * weight in pounds) + (4.7 * height in inches) - (4.7 * age in years)
   Men: BMR = 66 + (6.23 * weight in pounds) + (12.7 * height in inches) - (6.8 * age in years)

   To determine total daily calorie needs, your program must apply the following guidelines:
   1. Sedentary (little to no exercise): Calories = BMR * 1.2
   2. Low activity: Calories = BMR * 1.375
   3. Moderate activity: Calories = BMR * 1.55
   4. High activity: Calories = BMR * 1.725
   5. Extra activity: Calories = BMR * 1.9

   Define functions where appropriate! Also, read age, gender, weight, and height values from a file.

2. Write a program to determine a professional baseball player's bonus at the end of a season. The bonus is calculated as follows:
   1. All-Star Game appearance = $25,000
   2. Regular season MVP = $75,000
   3. World Series MVP = $100,000
   4. Gold Glove award = $50,000
   5. Silver Slugger award = $35,000
   6. Home run champ = $25,000
   7. Batting average champ = $25,000

   Prompt the user with a question related to each of the above categories. If the response is 'y' for yes, add the bonus to the total, otherwise if the response where appropriate.

3. Write a program which reads five numbers from a file and performs one of the following operations on those numbers:
   1. Average
   2. High value
   3. Low value

   Your program must display a menu with the above options. Use a switch statement for the options. Display to the result to the screen.

IV. Submitting Labs:

- You are not required to submit your lab solutions. However, you should keep them in a folder that you may continue to access throughout the semester. on the Sloan 353 machines. These files are erased on a daily basis.

V. Grading Guidelines:

- This lab is worth 10 points. Your lab grade is assigned based on completeness and effort. To receive full credit for the lab you must show up on time and dismissed you.