ECE 175: Computer Programming for Engineering Applications

Homework Assignment 2

Due Date: September 9, 2010 11:59 PM

Conventions: Name your C programs as *problemx.c* where x corresponds to the problem number. As an example the C program for problem 1 should be named as *problem1.c*.

Write comments to your programs. Programs with no comments will receive PARTIAL credit. At each program you turn in at least the following info should be included

- Author:
- Date created:
- Brief (two-line) description of the program:

Problem 1: Your Boss has asked you to create a nice welcome screen for the customers that login into the UNIX shell system. To do so, you are required to write a C program that, when executed, prints out the following message:

```
*****************************************
*                                       *
*                                       *
*          Welcome to the U-server      *
*                                       *
*                                       *
*****************************************
```

Problem 2: You need to create a quick tool for computing the area and the circumference of a circle. Write a C program that

(a) Prompts the user to enter the radius of the circle. A real number is expected.

(b) Prints on the screen the circumference of the circle in the following format: "The circumference of a circle with radius x ft is equal to $x.xx$ ft."

(c) Prints on the screen the area of the circle in the following format: "The area of a circle with radius x ft is equal to $x.xx$ sq. ft."

The results should be printed to a precision of 2 decimal digits.

Problem 3: Write a C program that:

(a) asks the user to input two numbers, one integer x_int and one real y_int.

(b) computes the following values:

- sum: sum of x_int and y_real
- product: product of x_int and y_real
- quotient: quotient obtained when x_int is divided by y_real
- remainder: remainder when x_int is divided by 7
- expression: (x_int * 2) + (y_real / 7) * 8

(c) the program outputs the following:

```
-------------------------------
x value     : <x_int>
y value     : <y_real>
sum         : <sum>
product     : <product>
quotient    : <quotient>
remainder   : <remainder>
expression  : <expression>
-------------------------------
```

where <variable> indicates the value of variable to be printed in its place.

Identify the data type required for each result (sum, product, quotient, remainder, and expression).

Declare all the variables in the initial part of function main.

Problem 4: Implement a multiple choice menu. Write a program that prompts the user with one question and four possible answers. The user must select one of the possible answers. The letter corresponding to the selected answer is then printed on the screen.

Sample program execution.

How many bits in 1 MB?

(a) 1,000 bits

(b) 1,024 bits

(c) 8,192 bits

(d) 100 bits

Please select an answer from (a) to (d):
You selected answer (x).