

BIL 102 – Computer Programming
HW 02
Last Submission Date: Apr. 09, 2012 – 09:00

Your 3rd homework is on your text book. Implement programming project 6.4.

A copy of the corresponding part of the book is given below.

General:

1. Obey honor code principles.
2. Obey coding convention.
3. Your submission should include the following file:

HW03_<student number>.c

4. Deliver the printout of your code until 3 days later then the last submission date.

(Hint: Use a sentinel-controlled loop. Call `get_problem` once before the loop to initialize the problem number and once again at the end of the loop body to update it.)

3. Write a program to dispense change. The user enters the amount paid and the amount due. The program determines how many dollars, quarters, dimes, nickels, and pennies should be given as change. Write a function with four output parameters that determines the quantity of each kind of coin.
4. The table below summarizes three commonly used mathematical models of nonvertical straight lines.

Mode	Equation	Given
Two-point form	$m = \frac{y_2 - y_1}{x_2 - x_1}$	$(x_1, y_1), (x_2, y_2)$
Point-slope form	$y - y_1 = m(x - x_1)$	$m, (x_1, y_1)$
Slope-intercept form	$y = mx + b$	m, b

Design and implement a program that permits the user to convert either two-point form or point-slope form into slope-intercept form. Your program should interact with the user as follows:

```

Select the form that you would like to convert to slope-
intercept form:
1) Two-point form (you know two points on the line)
2) Point-slope form (you know the line's slope and one point)
=> 2

Enter the slope=> 4.2
Enter the x-y coordinates of the point separated by a space=> 1 1

Point-slope form
y - 1.00 = 4.20(x - 1.00)

Slope-intercept form
y = 4.20x - 3.20

Do another conversion (Y or N)=> Y
    
```

```

Select the form that you would like to convert to slope-
intercept form:
1) Two-point form (you know two points on the line)
2) Point-slope form (you know the line's slope and one point)
=> 1

Enter the x-y coordinates of the first point separated by a
space=> 4 3
Enter the x-y coordinates of the second point separated by a
space=> -2 1

Two-point form
      (1.00 - 3.00)
m = -----
      (-2.00 - 4.00)

Slope-intercept form
y = 0.33x + 1.66

Do another conversion (Y or N)=> N

```

Implement the following functions:

get_problem—Displays the user menu, then inputs and returns as the function value the problem number selected.

get2_pt—Prompts the user for the x-y coordinates of both points, inputs the four coordinates, and returns them to the calling function through output parameters.

get_pt_slope—Prompts the user for the slope and x-y coordinates of the point, inputs the three values and returns them to the calling function through output parameters.

slope_intcpt_from2_pt—Takes four input parameters, the x-y coordinates of two points, and returns through output parameters the slope (m) and y-intercept (b).

intcpt_from_pt_slope—Takes three input parameters, the x-y coordinates of one point and the slope, and returns as the function value the y-intercept.

display2_pt—Takes four input parameters, the x-y coordinates of two points, and displays the two-point line equation with a heading.

display_pt_slope—Takes three input parameters, the x-y coordinates of one point and the slope, and displays the point-slope line equation with a heading.

display_slope_intcpt—Takes two input parameters, the slope and y-intercept, and displays the slope-intercept line equation with a heading.