ASSIGNMENTS

Problem Solving and Program Design Using C

(CSE 3942)

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Minor Assignment

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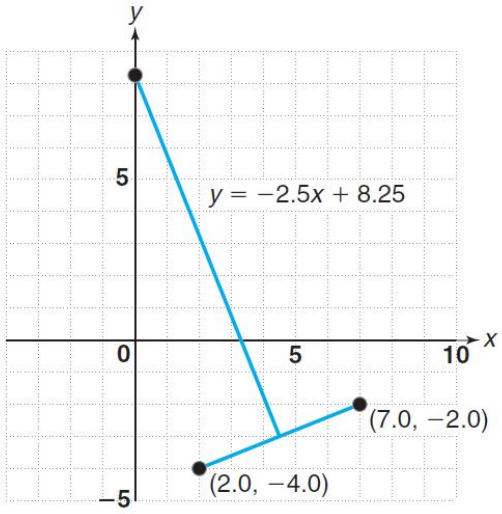
1. Write a program that outputs the equation of the perpendicular bisector of the line segment between two points. Your program should



   - prompt for and input the coordinates of the two points [for example, try the points (2.0, -4.0) and (7.0, -2.0)];
   - compute the slope of the line between those two points;
   - compute the coordinates of the midpoint of the line segment between the two points by averaging the two x coordinates and the two y coordinates;
   - compute the slope of the perpendicular bisector by taking the negative reciprocal of the slope of the line segment;
   - compute the y intercept of the perpendicular bisector (you now have the slope m of the bisector and a point (x_{mid} , y_{mid}) on the bisector, so the y intercept is y_{mid} - m x_{mid}); and
   - output with labels the original two points, and output in y = mx + b format the equation of the perpendicular bisector. The below mentioned Figure illustrates the sample line segment mentioned above and its perpendicular bisector.

2. Chatflow Wireless offers customers 600 weekday minutes for a flat rate of 39.99. Night (8 P.M. to 7 A.M.) and weekend minutes are free, but additional weekday minutes cost 0.40 each. There are taxes of 5.25% on all charges. Write a program that prompts the user to enter the number of weekday minutes, night minutes, and weekend minutes used, and calculates the monthly bill and average cost of a minute before taxes. The program should display with labels all the input data, the pretax bill and average minute cost, the taxes, and the total bill.