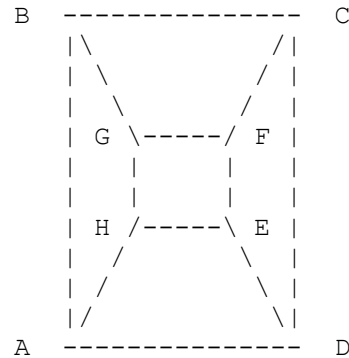


PROBLEM 5.

Let's consider a plane graph with n vertices, each of which is of degree 3.

Example:



Let the vertices X, Y and Z be adjacent to the vertex T . We say Y is the left-hand and Z the right-hand neighbour of T with respect to X , if the oriented angle XTZ is smaller than the angle XTY (positive being the counter-clockwise direction).

For example, E is the right-hand and G the left-hand neighbour of H in respect of A because the oriented angle AHE is smaller than the angle AHG .

Write a program that:

1. Inputs the coordinates of the graph vertices and the edges and draws it on the computer display using appropriate scale. (Edges should be displayed as straight lines.)
2. Given a pair of vertices X_0 and X_1 and a sequence of the letters L and R , it should find a path $X_0X_1X_2\dots X_n$ on the graph, such that:
 - X_0 and X_1 are the first two vertices;
 - X_{i+1} is the left-hand or the right-hand neighbour of X_i with respect to X_{i-1} , depending on the $(i-2)$ -th letter in the control sequence being L and R .

Example:

The path generated for the graph from the former example, using A and H as starting vertices and the sequence $LRLLR$ is $AHGFEDCB$.

3. Draws the path found in subproblem 2 on the screen.
4. Uses a starting and an ending vertex, builds a path that goes through the least possible number of vertices, draws it on the screen and outputs the two starting vertices and the control

sequence that would generate the same path as defined in subproblem 2.