Problem 2 of lab 10:

#include <stdio.h>

#include <math.h>

// Define the structure for a point in 2D space

struct Point {

int x;

int y;

};

// Function to calculate the distance between two points

double calculateDistance(struct Point p1, struct Point p2) {

// Using the Euclidean distance formula

return sqrt(pow(p2.x - p1.x, 2) + pow(p2.y - p1.y, 2));

}

// Function to check if a point is inside a rectangular boundary

int isPointInRectangle(struct Point p, struct Point bottomLeft, struct Point topRight) {

return (p.x >= bottomLeft.x && p.x <= topRight.x) && (p.y >= bottomLeft.y && p.y <= topRight.y);

}

int main() {

struct Point p1, p2, bottomLeft, topRight;

// Input points

printf("Enter coordinates for point 1 (x y): ");

scanf("%d %d", &p1.x, &p1.y);

printf("Enter coordinates for point 2 (x y): ");

scanf("%d %d", &p2.x, &p2.y);

printf("Enter the bottom-left corner of the rectangle (x y): ");

scanf("%d %d", &bottomLeft.x, &bottomLeft.y);

printf("Enter the top-right corner of the rectangle (x y): ");

scanf("%d %d", &topRight.x, &topRight.y);

// Calculate and print the distance between the two points

double distance = calculateDistance(p1, p2);

printf("Distance between point 1 and point 2: %.2f\n", distance);

// Check if the point lies within the rectangle

if (isPointInRectangle(p1, bottomLeft, topRight)) {

printf("Point 1 is inside the rectangle.\n");

} else {

printf("Point 1 is outside the rectangle.\n");

}

return 0;

}

