CMSC 21 Lecture 13 (Structures) Assignment

Implement the following using structures:

Slope:

$$m = \frac{y_1 - y_2}{x_1 - x_2} = \frac{y_2 - y_1}{x_2 - x_1}$$

Midpoint:

$$\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

Slope Intercept Form:

$$y = mx + b$$

Distance between two points:

$$d = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2}$$

You *may* start with the following structure and function declarations. This is just an example; you can have your own version of the code. Just document it properly.

```
1  #include <stdio.h>
2  #include <math.h>
3
4  struct line{
5      struct point{
6          float x;
7          float y;
8      }point1, point2;
9      float *midpoint;
10     float slope;
11     float distance;
12 };
13
14
15 float solveSlope(struct line line1);
16 float *solveMidpoint(struct line line1);
17 float solveDistance(struct line line1);
18 void getSlopeInterceptForm(struct line line1);
```

```
Enter x and y for point1: 1 1
Enter x and y for line2: 0 1
Slope: -1.000000
Midpoint: 0.500000 1.000000
Distance between 2 points: 1.000000
y = -1.000000x + (2.000000)
```

Make sure to include comments in your code. Commit to github and upload the link to LMS.