**BIL105E**

Introduction to Scientific and Engineering Computing

2010 Spring

**Report of HW1**

Date of Submission : 11.03. 2010

Student Name :

Student Number :

Instructor :

CRN :

**1-Introduction**

The purpose of this homework is to develop a C program to determine the arrangement status of two lines. The program should read coefficients of x,y such as A1,B1,A2,B2 and constants(C1,C2) of two lines.

d 1 : A1x + B1y + C1 = 0

d 2 : A2x + B2y + C2 = 0

**2-Development and Operating Environments**

***MS Windows***

The C-Free 5 environment has been used to write the source code, compile and run

the program.

***Unix***

The source code has been also copied to Unix, then compiled and tested with the

**GNU C Compiler**. The following is the commands used:

To compile : **gcc homework.c –o homework.exe -lm**

To run : **homework.exe**

**3-Data Structures and Variables**

No data structures were used in this program. The followings are the variables and

their initial values:

float A1,A2; //coefficients of x

float B1,B2; //coefficients of y

float C1,C2; //constant values of lines

float d; //distance between two lines

float f; //square root of (A1\*A1+B1\*B1)

float slope; //that show us tan(angle)

float angle; //intersection angle of lines

float x0,y0; //intersection points of two lines

**4-Program Flow**

**start**

Get A1,B1,C1 and A2,B2,C2 coefficients from user

A1/A2 == B1/B2

A1/A2==B1/B2&&A1/A2==C1/C2

A1\*A2+B1\*B2==0

slope=(A1\*B2-A2\*B1)/(A1\*A2+B1\*B2)

angle=(atan(slope)\*180)/3.1416;

x0=(B1\*C2-B2\*C1)/(A1\*B2-A2\*B1)

y0=(C1\*A2-C2\*A1)/(A1\*B2-A2\*B1)

f\*f=(A1\*A1)+(B1\*B1)

d=|C1-C2|/f

Display they are coincide

x0=(B1\*C2-B2\*C1)/(A1\*B2-A2\*B1)

y0=(C1\*A2-C2\*A1)/(A1\*B2-A2\*B1)

Display d value and they are parallel

Display intersection point: (x0,y0) and the two lines are perpendicular

Display intersection point: (x0,y0) and

Display they intersect with an angle

**End**

**5-Conclusion**

In this homework, I have learned the followings:

• In this homework, I have learned how to draw a Flowchart with Microsoft Word (MS Word document).

• I’ve learned to use the C conditional commands( like if , else if )

• I’ve learned how to edit and run the C program both in Windows and Unix environments.