



**EASTERN UNIVERSITY, SRILANKA**

**THIRD EXAMINATION IN SCIENCE-2005/2006**

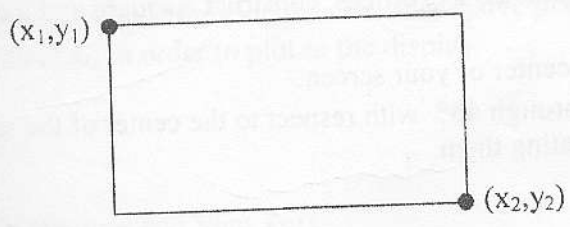
**THIRD YEAR Second SEMESTER ( March/April, 2008)**

**CS351 – Practical work on Computer Graphics (CS301)**

**Answer all questions** **Time: 2Hours**

Q1)  
1. Write a C++ function called `DDA(int x1, int y1, int x2, int y2)` to Implement the *Digital Differential Analyzer (DDA)* line drawing algorithm. Where  $(x_1, y_1)$  and  $(x_2, y_2)$  are endpoints of the line. [Marks 50]

2. Using the above line drawing function, write another function called `MyRect(int x1, int y1, int x2, int y2)` to plot a rectangle with  $(x_1, y_1)$  as top left corner and  $(x_2, y_2)$  as bottom right corner.



[Marks 30]

3. Write a main function/program to check the above functions with the following values.  
`DDA(100, 100, 400, 400);`  
`MyRect(100, 100, 400, 400);` [Marks 20]

Note: 1) Write comments where necessary in your program.  
2) Save your program as `CS351_Q1.CPP` in A:./.

Q2)

1. Create a class called Point to represent a pixel position in display screen with some attributes. Implement the methods given below to perform the following tasks.

Private attributes

int x,y; // To store the x, y coordinates.

Public Methods

Point (int ax, int ay); // A class constructor to initialize the x, y value of this Point.

Point (); // A default constructor to initialize the x, y to default values.

void setx( int ax); // A class method to store the value ax in to x.

void sety( int ay); // A class method to store the value ay in to y.

int getx(); // A class method to return the value of x

int gety(); // A class method to return the value of y

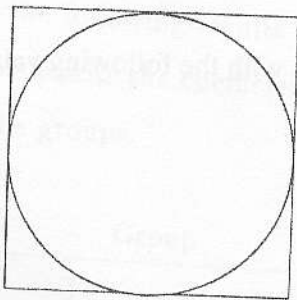
void plot(int clr); // A class method to plot a pixel position in display in clr color.

void rotate(float theta, Point p); // A class method to rotate this Point through theta degree to respect

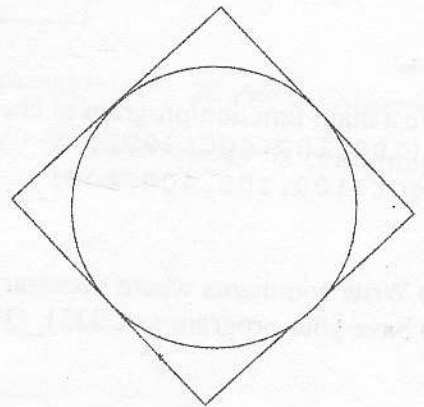
Test your class by creating two Points, Plot them and rotate one Point with respect to another through some angle.

2.

- I. Using the above Point class as vertices, construct a square and a circle inside the square as given below.
- II. Display them in the center of your screen.
- III. Rotate your figure through  $45^\circ$  with respect to the center of the square. Display them again on your screen after rotating them.



Before rotating



After rotating

Note: 1) Write comments where necessary in your program.  
2) Save your program as CS351\_Q2.CPP in A:/.

[Marks 3x2