



EASTERN UNIVERSITY, SRILANKA

DEPARTMENT OF MATHEMATICS

SPECIAL REPEAT EXAMINATION IN SCIENCE –2007/2008

THIRD YEAR, FIRST AND SECOND SEMESTER (Feb, 2010)

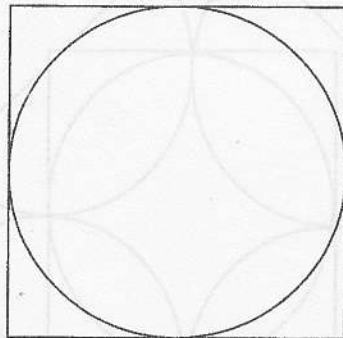
CS 351 – PRACTICAL WORK ON CS301

Answer all questions

Time allowed: 02 hours

Q1.

- (i) Write a C++ function called **lineDDA** (int x0,int y0,int x1,int y1) to implement the *Digital differential analyzer (DDA)* line drawing algorithm, where (x0,y0) and (x1,y1) are end points of the line.
- (ii) Write a C++ function called **midCIR** (int xc, int yc, int r) to implement the *bresenham* midpoint circle drawing algorithm, where (xc, yc) are center points of the circle and r is radius of the circle.
- (iii) Create the picture as given below Using the above line drawing and circle drawing function,



- (iv) Fill the picture with any background color.

Q2

- (i) Create a class called *pixel* to represent x y pixel position in display screen with some attributes and implement the method given below to perform the following task.

**Public attributes:**

Int x,y;

// To store the x,y coordinates,

**Public methods:**

Pixel();

//A default constructor to initialize the x,y to default values.

Pixel (int x1,int y1);

// A user define constructor to initialize the x,y to values.

Setx()

//set the x coordinate.

Sety()

//set the y coordinate.

Getx()

//return the x coordinate.

Gety()

//return the y coordinate.

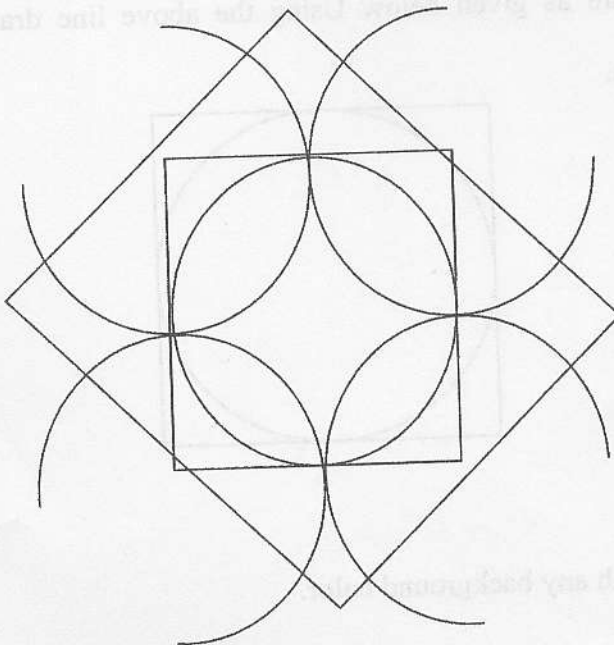
Void plot (int cl);

//plot the xy coordinates.

Void rotate (float theta, pixel pivot);

//rotate this pixel through theta degree to respect to pivot

- (ii) Using midpoint circle algorithm and DDA line algorithm construct a *mypicture* class and create the picture as given below.



(iii) Display them in the center of your screen.

(iv) Rotate only Inner Square through  $45^\circ$  degree and outer square through  $125^\circ$  degree.

(v) Enlarge and tiny of the given squares from the origin using scaling algorithm.