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Subject : Computer Graphics and Animations.

SET B

(1) Implementation of 8-connected floodfill Algorithm

P1>

```
#include<stdio.h>
#include<graphics.h>
#include<dos.h>
#include<conio.h>

void floodfill (int x, int y, int old, int newcol)
{ int current;
  current = getpixel(x,y);
    if (current == old)
      {
        delay(5)
        putpixel(x, y, newcol);
        floodfill (x+1, y, old, newcol);
        floodfill (x-1, y, old, newcol);
        floodfill (x, y+1, old, newcol);
        floodfill (x, y-1, old, newcol);
        floodfill (x+1, y+1, old, newcol);
        floodfill (x-1, y+1, old, newcol);
        floodfill (x+1, y-1, old, newcol);
        floodfill (x-1, y-1, old, newcol);
      }
}
```

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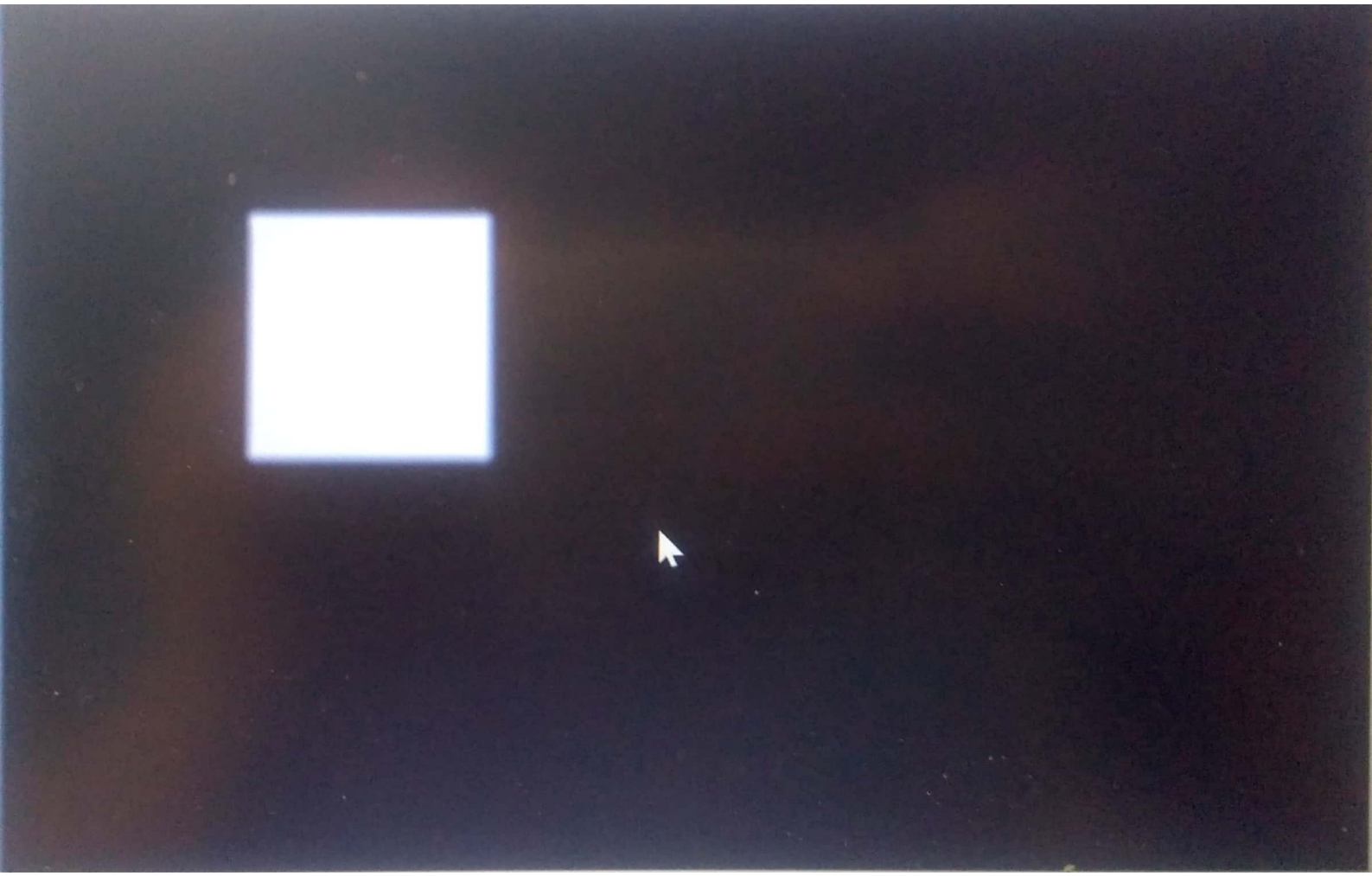
```
int main()
{
    int gd=DETECT, gm;
    initgraph(&gd, &gm, " ");
    rectangle (50,50,150,150);
    floodfill (70,70,0,15);
      getch();
    closegraph();
    return 0;
}
```



Algorithm for floodfill Algorithm for 8 connected

Step 1) Start

Step 2) Draw rectangle by passing 50, 50, 150, 150 coordinate, such that these coordinates will acts as boundary for flood filling.

Step 3) Pass the interior coordinates of rectangle in function floodfill() for 8 pixel points

Step 4) i) floodfill() function recieves four argument of integer type x, y, ~~fill-color~~ old, and new

ii) Declare current variable of integer type and assign it with getpixel (x, y)

if current == old
then repeat the process recursively
putpixel(x, y, newcol).
floodfill(x+1, y, old, newcol);
floodfill (x-1, y, old, newcol);
floodfill (x, y-1, old, newcol);
floodfill (x, y+1, old, newcol);
floodfill (x+1, y+1, old, newcol);
floodfill (x-1, y+1, old, newcol);
floodfill (x+1, y-1, old, newcol);
floodfill (x-1, y-1, old, newcol).

iii) Repeat the above process

Step 5) Stop.

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Couse BCA 6th B

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P3.

```
#include<stdio.h>
#include<graphics.h>
#include<conio.h>
#include<math.h>

    Void EightWaySymmetriPlot(intxc, intyc, intx, inty)
    {
     putpixel(x+xc, y+yc, RED);
     putpixel(x+xc, -y+yc, YELLOW);
     putpixel(-x+xc, -y+yc, GREEN);
     putpixel(-x+xc, y+yc, YELLOW);
     putpixel(y+xc, x+yc, 12);
     putpixel(y+xc, -x+yc, 14);
     putpixel(-y+xc, -x+yc, 15);
     putpixel(-y+xc, x+yc, 6);
    }
```

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```
Void BresenhomCircle (int xc, int yc, int r)
{ int x=0, y=r, d= 3-(2*r);
  EightWaySymmetricPlot(xc,yc,x,y);
  while (x<=y)
    { if (d<=0)
      { d= d+(4*x)+6;
      }
      else
      { d= d+(4*x)-(4*y)+10;
        y = y-1;
      }
      x= x+1;
      EightWaySymmetricPlot (xc, yc, x, y);
    }
}

int ~~void~~ main()
{ int xc, yc, r;
  int gd = DETECT, gmode, errorcode;
  initgraph(&gd, &gmode, " ");
  errorcode = graphresult();
  if (errorcode != grOK)
    { printf(" Graphic error : %s\n", grapherrormsg
                                      (errorcode));
      printf(" Enter any key to halt");
      getch();
      exit(1);
    }
```

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```
printf("Enter the value of xc and yc : ");
  scanf("%d %d", &xc, &yc);
 printf("Enter the value of Radius");
  scanf("%d", &r);
 BresenhamCircle(xc, yc, r);
 getch();
 closegraph();
  return 0;
}
```

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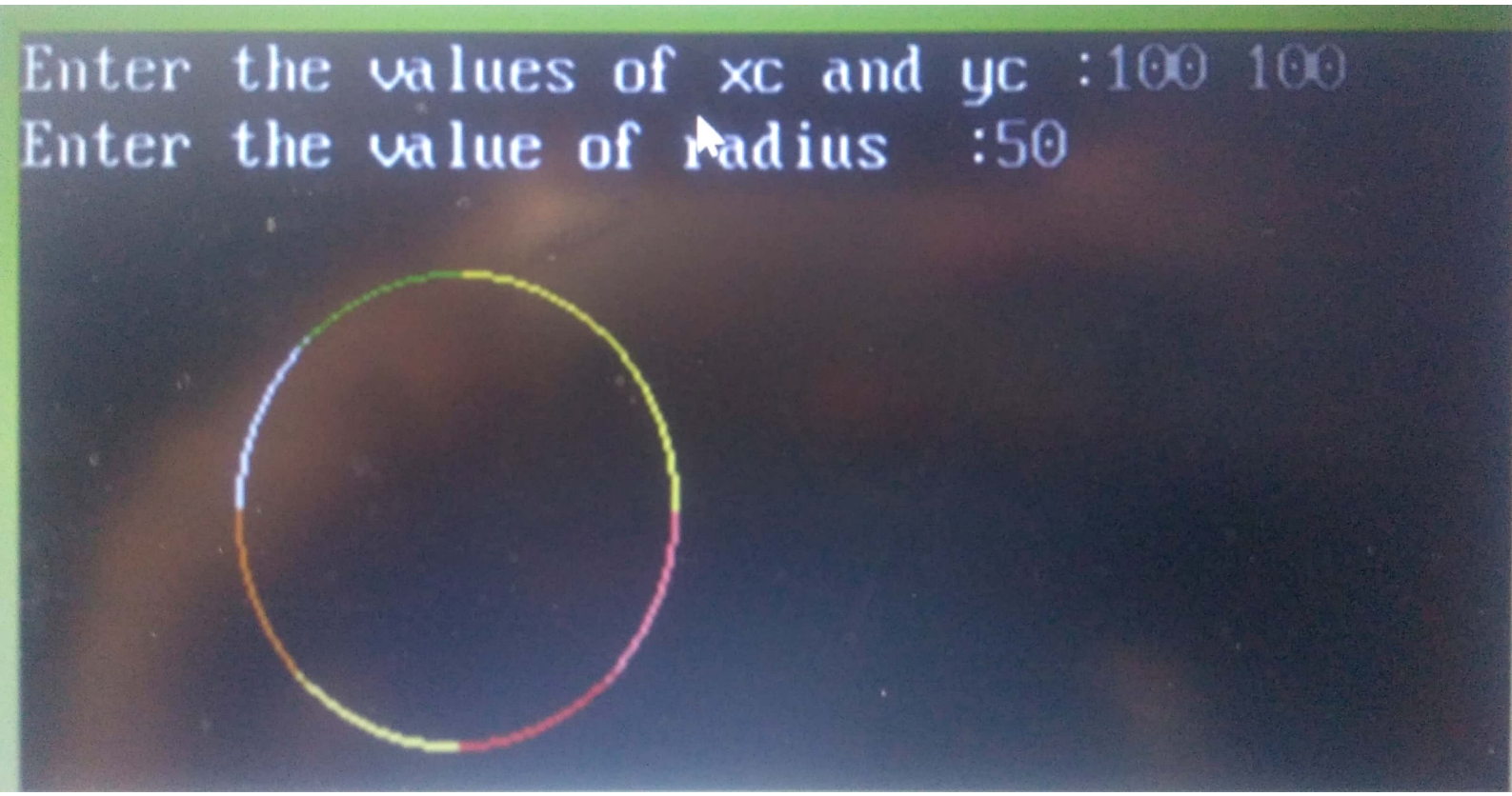

Algorithm for Bresenham's Circle

Step1) Start

Step2) Declare p, q, x, y, r, d variables, where p, q are the coordinates of the Centre of the circle, r is the radius of the circle.

Step3) Enter the / Read the value of r from the user

Step4) Calculate the value of d by d = 3-(2*r)

Step5) Initialize x=0,

Step6) Check if the whole circle is Scan covered

if x>=y

stop

Step7) Plot eight points by using the concepts of eight way Symmetry. The Centre is at p and q (p,q)

current active pixel is (x,y)

putpixel (x+p, y+q)

putpixel (y+p, x+q)

putpixel (-y+p, x+q

putpixel (-x+p, y+q)

putpixel (-x+p, -y+q)

putpixel (-y+p, -x+q)

putpixel (y+p, -x+q)

putpixel (x+p, -y-q)

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Step8) find location of the next pixel to be scanned

if $d < 0$

then $d = d + 4x + 6$

Increament $x = x + 1$

if $d \geq 0$

then $d = d + 4(x-y) + 10$

Increament $x = x + 1$

~~Incre~~ decrement $y = y - 1$

Step 9) Goto Step 6

Step 10) Stop.

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