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Course Title : Computer Graphics Lab

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1. Flood Fill algorithm & 2.Boundary Fill

```
#include <graphics.h>
#include <stdio.h>
using namespace std;
void flood(int x, int y, int new_col, int old_col)
{
   if (getpixel(x, y) == old_col)
   {
      putpixel(x, y, new_col);
      flood(x + 1, y, new_col, old_col);
      flood(x - 1, y, new_col, old_col);
      flood(x, y + 1, new_col, old_col);
      flood(x, y - 1, new_col, old_col);
   }
}
void flood_algo()
{
   int gd, gm = DETECT;
   initgraph(&gd, &gm, "");
   int top, left, bottom, right;
   top = left = 50;
   bottom = right = 100;
```

```
   rectangle(left, top, right, bottom);
   int x = 51;
   int y = 51;
   int newcolor = 14;
   int oldcolor = 0;
   flood(x, y, newcolor, oldcolor);
   getch();
}
void boundaryFill4(int x, int y, int fill_color,int boundary_color)
{
   if(getpixel(x, y) != boundary_color &&
         getpixel(x, y) != fill_color)
   {
      putpixel(x, y, fill_color);
      boundaryFill4(x + 1, y, fill_color, boundary_color);
      boundaryFill4(x, y + 1, fill_color, boundary_color);
      boundaryFill4(x - 1, y, fill_color, boundary_color);
      boundaryFill4(x, y - 1, fill_color, boundary_color);
   }
}
void boundary_algo()
{
```

```
    int gd = DETECT, gm;
    initgraph(&gd, &gm, "");
    int x = 250, y = 200, radius = 50;
    circle(x, y, radius);
    boundaryFill4(x, y, 6, 15);
    delay(10000);
    getch();
    closegraph();
}
int main()
{
    //flood_algo();
    //boundary_algo();
    return 0;
}
```

2. Bitmap font

```
#include <graphics.h>

int bitmap_B[12][12] = {
    {0, 1, 1, 1, 1, 1, 0, 0,0, 0,0,0},
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
```

```
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
    {0, 1, 1, 1, 1, 1, 0, 0,0, 0,0,0},
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
    {0, 1, 0, 0, 0, 1, 0, 0,0, 0,0,0},
    {0, 1, 1, 1, 1, 1, 0, 0,0, 0,0,0},
};
void draw_char_B( int x, int y, int color) {

    for (int i = 0; i < 12; i++) {
        for (int j = 0; j < 12; j++) {
            if (bitmap_B[i][j] == 1) {
                putpixel(x + j, y + i, color);
            }
        }
    }
}

int main() {
```

```
    int gd = DETECT, gm;
    initgraph(&gd, &gm, "");

    draw_char_B( 200, 200, WHITE);

    getch();
    closegraph();
    return 0;
}
```

3. Outline font

```
#include <graphics.h>
// Define a bitmap font for the letter 'A'
int bitmap_A[17][12] =
{
 {1, 1,1, 1, 1, 1, 1, 1,1,1,1, 0},
 {1, 0,0, 0, 0, 0, 0, 0,0,0,0, 1},
 {1, 0,0, 0, 0, 0, 0, 0,0,0,0, 1},
 {1, 0,0, 0, 0, 0, 0, 0,0,0,0, 1},
 {1, 0,0, 0, 0, 0, 0, 0,0,0,0, 1},
 {1, 0,0, 0, 0, 0, 0, 0,0,0,0, 1},
 {1, 0, 1, 1, 1, 1, 1, 1,1,1,1, 0},
```

```
 {1, 0, 1, 0, 0, 0, 0, 0,0,0,0, 0},
 {1, 0,1, 0, 0, 0, 0, 0,0,0,0, 0},
 {1, 0,1, 0, 0, 0, 0, 0,0,0,0, 0},
 {1, 0,1, 0, 0, 0, 0, 0,0,0,0, 0},
 {1, 0,1, 0, 0, 0, 0, 0,0,0,0, 0},
 {1, 0,1, 0, 0, 0, 0, 0,0,0,0, 0},
 {1, 0,1, 0, 0, 0, 0, 0,0,0,0, 0},
 {1, 0,1, 0, 0, 0, 0, 0,0,0,0, 0},
 {1, 1,1, 0, 0, 0, 0, 0,0,0,0, 0}
};
void draw_char_A( int x, int y, int color)
{
 for (int i = 0; i < 17; i++)
 {
 for (int j = 0; j < 12; j++)
 {
 if (bitmap_A[i][j] == 1)
 {
 putpixel(x + j, y + i, color);
 }
 }
```

```
 }
}
int main()
{
 int gd = DETECT, gm;
 initgraph(&gd, &gm, "");
 // Draw the letter 'A' at (100, 100) in red
 draw_char_A( 100, 100, WHITE);
 getch();
 closegraph();
 return 0;
}
```