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## ASSIGNMENT 1

**Problem Statement: Write a program to implement DDA Line drawing algorithm**

### CODE:

```
#include <graphics.h>
#include <cstdlib>
#include <math.h>

void drawLineDDA(int x1, int y1, int x2, int y2) {
    int dx = x2 - x1;
    int dy = y2 - y1;

    int steps = abs(dx) > abs(dy) ? abs(dx) : abs(dy);

    float xc = (float)dx / steps;
    float yc = (float)dy / steps;

    float x = x1, y = y1;

    for (int i = 0; i <= steps; ++i) {
        putpixel(round(x), round(y), WHITE);
        x += xc;
        y += yc;
    }
}

int main() {
    int gd = DETECT, gm;
    initwindow(1600, 800);
    drawLineDDA(0, 600, 1599, 600);
    setfillstyle(WIDE_DOT_FILL, LIGHTRED);
    floodfill(1400, 700, WHITE);

    //BIG M FOR MARIO
    drawLineDDA(100, 150, 110, 100);
    drawLineDDA(110, 100, 120, 150);
    drawLineDDA(120, 150, 130, 100);
    drawLineDDA(130, 100, 140, 150);

    //LEVEL FINISH FLAG
    drawLineDDA(900, 600, 900, 100);
    drawLineDDA(880, 110, 900, 90); //left
    drawLineDDA(880, 110, 900, 110); //top

    drawLineDDA(900, 90, 900, 110); //Right

    //red flag
    setfillstyle(SOLID_FILL, RED);
```

```

    floodfill(890, 105, WHITE); // Assuming WHITE represents the border
color

    //flag corcle styuling
    setfillstyle(SOLID_FILL, GREEN);
    floodfill(900, 85, WHITE); // Assuming WHITE represents the border
color

//left block
    drawLineDDA(1000, 600, 1000, 400);
    drawLineDDA(1000, 400, 1100, 400);

//middle block
    drawLineDDA(1100, 300, 1300, 300);
    drawLineDDA(1100, 300, 1100, 400);
    drawLineDDA(1300, 300, 1300, 400);

    drawLineDDA(1165, 500, 1165, 600);
    drawLineDDA(1235, 500, 1235, 600);
    drawLineDDA(1165, 598, 1235, 598);

//main door
    setfillstyle(LTSLASH_FILL, BLACK);
    floodfill(1200, 590, WHITE);

    drawLineDDA(1165, 500, 1200, 450);
    drawLineDDA(1235, 500, 1200, 450);

//right side block
    drawLineDDA(1300, 400, 1400, 400);
    drawLineDDA(1400, 400, 1400, 600);

    //castle stlying
    setfillstyle(HATCH_FILL, LIGHTRED);
    floodfill(1050, 500, WHITE);

    //PIPE
    drawLineDDA(350, 600, 350, 500);
    drawLineDDA(400, 600, 400, 500);
    drawLineDDA(340, 500, 410, 500);

    //pipe top
    drawLineDDA(340, 470, 340, 500); // Left side of the pipe
    drawLineDDA(340, 470, 410, 470); // top of pipe
    drawLineDDA(410, 470, 410, 500); //RIGHT SIDE OF THE PIPE
    setfillstyle(SOLID_FILL, GREEN);
    floodfill(375, 550, WHITE);
    setfillstyle(SOLID_FILL, GREEN);
    floodfill(345, 490, WHITE);

    //platform
    drawLineDDA(400, 300, 400, 350); // Left
    drawLineDDA(400, 300, 600, 300); // top
    drawLineDDA(600, 300, 600, 350); // right
    drawLineDDA(400, 350, 600, 350); //bottom

    getch();

    closegraph();

```

```
    return 0;  
}
```

OUTPUT:

