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Subject :CGAVR
Assignment No : 01
DDA Algorithm

```
#include <stdio.h>
#include <math.h>
#include <GL/glut.h>

double X1, Y1, X2, Y2;

// Function to round float values
float round_value(float v) {
return floor(v + 0.5);
}

// DDA Line Drawing Algorithm
void LineDDA(void) {
double dx = (X2 - X1);
double dy = (Y2 - Y1);
double steps;
float xInc, yInc, x = X1, y = Y1;

// Determine the number of steps needed
steps = (abs(dx) > abs(dy)) ? abs(dx) : abs(dy);
// Calculate increments for x and y
xInc = dx / (float)steps;
yInc = dy / (float)steps;

// Clear buffers to preset values
glClear(GL_COLOR_BUFFER_BIT);

// Plot the points
glBegin(GL_POINTS);
glVertex2d(x, y); // Plot the first point

for (int k = 0; k < steps; k++) {
x += xInc;
y += yInc;
glVertex2d(round_value(x), round_value(y)); // Plot each intermediate point
}
glEnd();
glFlush(); // Render now
}

// Initialization function
void Init() {
glClearColor(1.0, 1.0, 1.0, 0); // Set clear color to white
```

```
glColor3f(0.0, 0.0, 0.0); // Set fill color to black
gluOrtho2D(0, 640, 0, 480); // Set the coordinate system
}

int main(int argc, char** argv) {
printf("Enter two end points of the line to be drawn:\n");
printf("Enter Point1 (X1 Y1): ");
scanf("%lf %lf", &X1, &Y1);
printf("Enter Point2 (X2 Y2): ");
scanf("%lf %lf", &X2, &Y2);

glutInit(&argc, argv); // Initialize GLUT
glutInitDisplayMode(GLUT_SINGLE | GLUT_RGB); // Set display mode
glutInitWindowPosition(100, 100); // Set window position
glutInitWindowSize(640, 480); // Set window size
glutCreateWindow("DDA Line Drawing"); // Create window with title

Init(); // Call initialization function
glutDisplayFunc(LineDDA); // Register display function

glutMainLoop(); // Enter the GLUT event loop
return 0;
}
```