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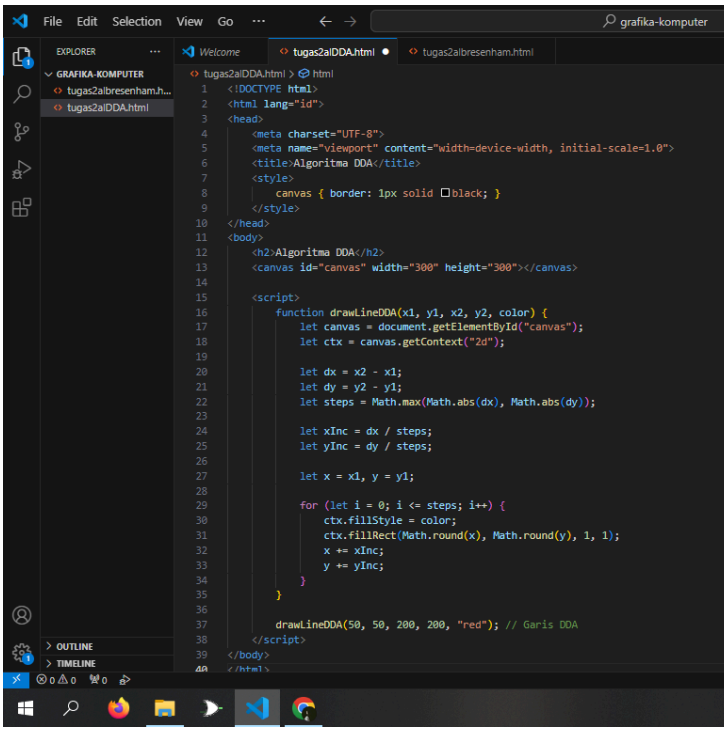
Kelas : D

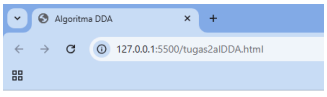
Grafika Komputer (Tugas 2 - Algoritma Pembentukan Garis Menggunakan Algoritma DDA dan Bresenham)

1. Menggunakan Algoritma DDA
    a. Code

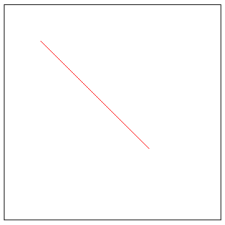



```html
<!DOCTYPE html>
<html lang="id">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Algoritma DDA</title>
    <style>
        canvas { border: 1px solid black; }
    </style>
</head>
<body>
    <h2>Algoritma DDA</h2>
    <canvas id="canvas" width="300" height="300"></canvas>

    <script>
        function drawLineDDA(x1, y1, x2, y2, color) {
            let canvas = document.getElementById("canvas");
            let ctx = canvas.getContext("2d");

            let dx = x2 - x1;
            let dy = y2 - y1;
            let steps = Math.max(Math.abs(dx), Math.abs(dy));

            let xInc = dx / steps;
            let yInc = dy / steps;

            let x = x1, y = y1;

            for (let i = 0; i <= steps; i++) {
                ctx.fillStyle = color;
                ctx.fillRect(Math.round(x), Math.round(y), 1, 1);
                x += xInc;
                y += yInc;
            }
        }

        drawLineDDA(50, 50, 200, 200, "red"); // Garis DDA
    </script>
</body>
</html>
```

    b. Output

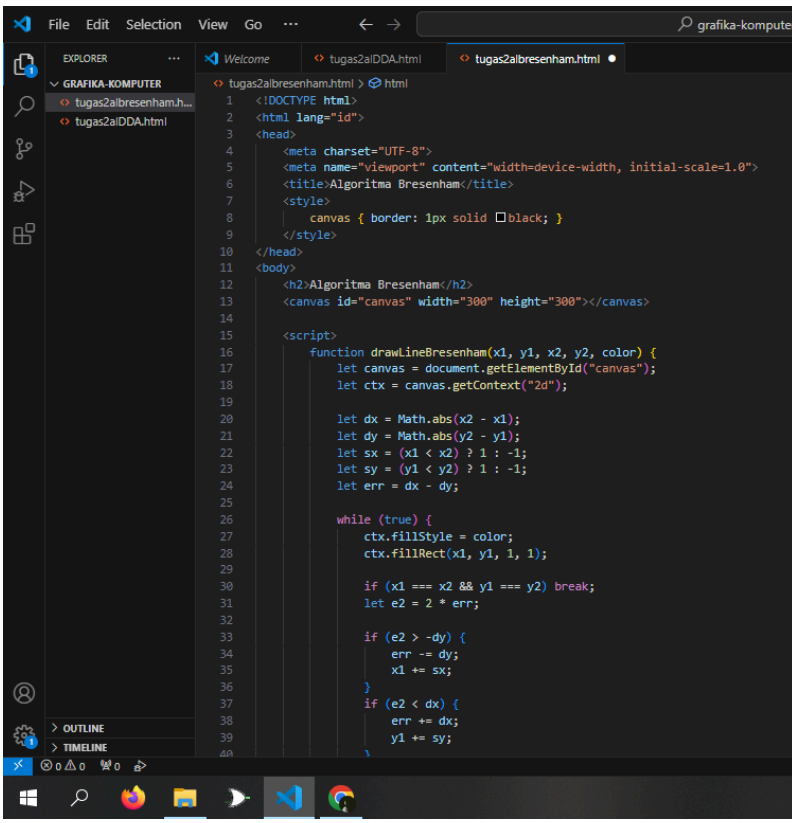


Algoritma DDA

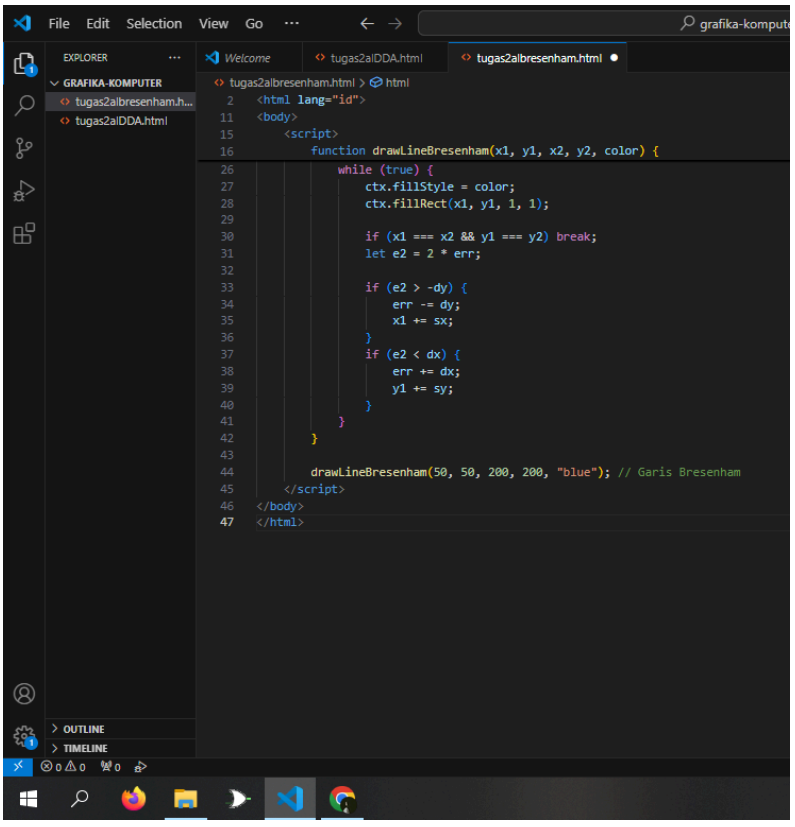


2. Menggunakan Algoritma Bresenham

a. Code

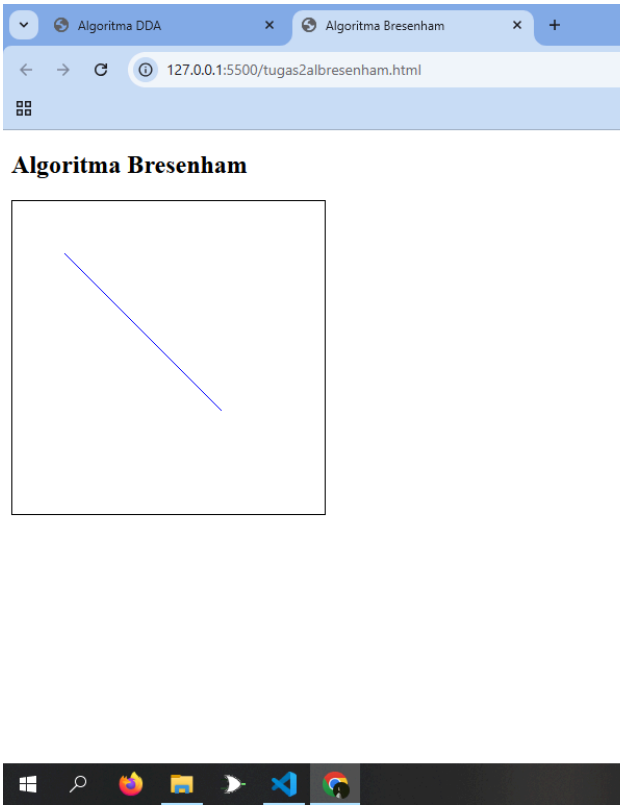


```
<!DOCTYPE html>
<html lang="id">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Algoritma Bresenham</title>
    <style>
        canvas { border: 1px solid black; }
    </style>
</head>
<body>
    <h2>Algoritma Bresenham</h2>
    <canvas id="canvas" width="300" height="300"></canvas>

    <script>
        function drawLineBresenham(x1, y1, x2, y2, color) {
            let canvas = document.getElementById("canvas");
            let ctx = canvas.getContext("2d");

            let dx = Math.abs(x2 - x1);
            let dy = Math.abs(y2 - y1);
            let sx = (x1 < x2) ? 1 : -1;
            let sy = (y1 < y2) ? 1 : -1;
            let err = dx - dy;

            while (true) {
                ctx.fillStyle = color;
                ctx.fillRect(x1, y1, 1, 1);

                if (x1 === x2 && y1 === y2) break;
                let e2 = 2 * err;

                if (e2 > -dy) {
                    err -= dy;
                    x1 += sx;
                }
                if (e2 < dx) {
                    err += dx;
                    y1 += sy;
                }
```



```
<html lang="id">
<body>
    <script>
        function drawLineBresenham(x1, y1, x2, y2, color) {
            while (true) {
                ctx.fillStyle = color;
                ctx.fillRect(x1, y1, 1, 1);

                if (x1 === x2 && y1 === y2) break;
                let e2 = 2 * err;

                if (e2 > -dy) {
                    err -= dy;
                    x1 += sx;
                }
                if (e2 < dx) {
                    err += dx;
                    y1 += sy;
                }
            }
        }

        drawLineBresenham(50, 50, 200, 200, "blue"); // Garis Bresenham
    </script>
</body>
</html>
```

b. Output


Algoritma DDA
Algoritma Bresenham
127.0.0.1:5500/tugas2albresenham.html
Algoritma Bresenham