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Tugas ke 2 Grafika Komputer Algoritma Pembentukan Garis

1. Garis dengan algoritma Brensenham
   Kode:

```
<!DOCTYPE html>
<html lang="id">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <title>Algoritma Bresenham - Garis</title>
    <style>
        canvas {
            border: 1px solid black;
        }
    </style>
</head>
<body>
    <h2>Algoritma Garis Bresenham</h2>
    <canvas id="myCanvas" width="500" height="500"></canvas>

    <script>
        var canvas = document.getElementById("myCanvas");
        var context = canvas.getContext("2d");

        function Titik(x, y) {
            context.fillStyle = 'black';
            context.fillRect(x, y, 2, 2); // Menggambar titik
        }

        function GarisBresenham(x1, y1, x2, y2) {
            var dx = Math.abs(x2 - x1);
            var dy = Math.abs(y2 - y1);
            var sx = (x1 < x2) ? 1 : -1;
            var sy = (y1 < y2) ? 1 : -1;
            var err = dx - dy;

            while (true) {
```

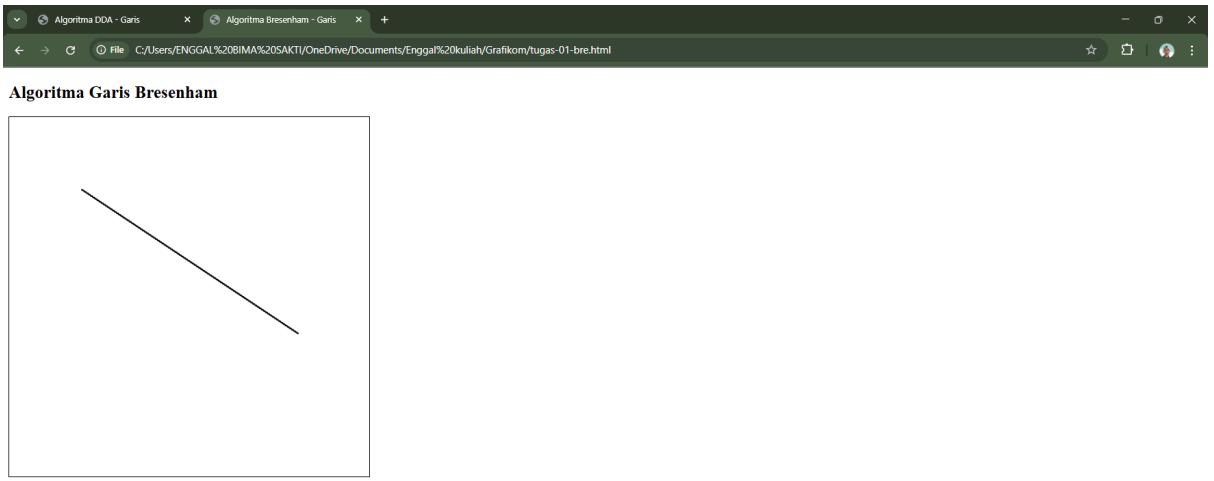
```
                Titik(x1, y1); // Menggambar titik pada posisi
(x1, y1)

                if (x1 === x2 && y1 === y2) break; // Jika sudah
sampai ke titik akhir
                var e2 = 2 * err;

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

        // Contoh menggambar garis dari (100,100) ke (400,300)
        GarisBresenham(100, 100, 400, 300);
    </script>
</body>
</html>
```

Hasil:



2. Garis dengan algoritma DDA (Digital Differential Analyzer)
   Kode:

```
<!DOCTYPE html>
<html lang="id">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width,
initial-scale=1.0">
    <title>Algoritma DDA - Garis</title>
    <style>
        canvas {
            border: 1px solid black;
        }
    </style>
</head>
<body>
    <h2>Algoritma Garis DDA (Digital Differential Analyzer)</h2>
    <canvas id="canvas" width="500" height="500"></canvas>

    <script>
        function drawLineDDA(x0, y0, x1, y1) {
            const canvas = document.getElementById("canvas");
            const ctx = canvas.getContext("2d");

            let dx = x1 - x0;
            let dy = y1 - y0;

            let steps = Math.abs(dx) > Math.abs(dy) ?
Math.abs(dx) : Math.abs(dy);

            let Xinc = dx / steps;
            let Yinc = dy / steps;

            let X = x0, Y = y0;

            for (let i = 0; i <= steps; i++) {
                ctx.fillRect(Math.round(X), Math.round(Y), 2, 2);
// Plot pixel
                X += Xinc;
                Y += Yinc;
            }
        }
```

```
        // Contoh menggambar garis dari (100,100) ke (400,300)
        drawLineDDA(100, 100, 400, 300);
    </script>
</body>
</html>
```

Hasil: