Nama :	**M. Abdul Adhim**	**Kelas :**	**C**
NPM :	**2217051030**	**MatKul :**	**Grafikom – Tugas Algoritma Lingkaran**

Algoritma Pembentukan Garis Bersenham dan Digital Differenial Analyzer

A. Kode Html

```html
<!DOCTYPE html>
<html lang="id">
<head>
    <meta charset="UTF-8">
    <meta name="viewport" content="width=device-width, initial-scale=1.0">
    <title>Algoritma Lingkaran Bresenham dan MidPoint</title>
</head>
<body>
    <script src="script.js"></script>
</body>
</html>
```

B. Kode JavaScript

```javascript
window.onload = function() {
    let container = document.createElement("div");
    container.style.display = "flex";
    container.style.gap = "20px";
    document.body.appendChild(container);

    function createCanvas(title) {
        let canvasWrapper = document.createElement("div");
        let titleLabel = document.createElement("h4");
        titleLabel.innerText = title;
        let canvas = document.createElement("canvas");
        canvas.width = 250;
        canvas.height = 250;
        canvas.style.background = "#d3d3d3";
        canvasWrapper.appendChild(titleLabel);
        canvasWrapper.appendChild(canvas);
        container.appendChild(canvasWrapper);
        return canvas.getContext("2d");
    }

    // Ket. Nama + NPM
    let info = document.createElement("div");
    info.innerHTML = "<p>Nama: M. Abdul Adhim  |  NPM: 2217051030</p>";
    document.body.appendChild(info);

    // Ket. Algoritma Bresenham
    let ctxBresenham = createCanvas("Algoritma Bresenham");
    drawCircleBresenham(125, 125, 50, ctxBresenham, "red", "blue");

    // Ket. Algoritma MidPoint
    let ctxMidpoint = createCanvas("Algoritma MidPoint");
    drawCircleMidpoint(125, 125, 50, ctxMidpoint, "green", "purple");
};

function drawPixel(ctx, x, y, color) {
    ctx.fillStyle = color;
    ctx.fillRect(x, y, 1, 1);
}
```

```
// Algoritma Bresenham Lingkaran
function drawCircleBresenham(x0, y0, r, ctx, color1, color2) {
    let x = 0;
    let y = r;
    let d = 3 - 2 * r;
    plotCirclePoints(x0, y0, x, y, ctx, color1, color2);

    while (y >= x) {
        x++;
        if (d > 0) {
            y--;
            d += 4 * (x - y) + 10;
        } else {
            d += 4 * x + 6;
        }
        plotCirclePoints(x0, y0, x, y, ctx, color1, color2);
    }
}

// Algoritma MidPoint Lingkaran
function drawCircleMidpoint(x0, y0, r, ctx, color1, color2) {
    let x = 0;
    let y = r;
    let p = 1 - r;
    plotCirclePoints(x0, y0, x, y, ctx, color1, color2);

    while (x < y) {
        x++;
        if (p < 0) {
            p += 2 * x + 1;
        } else {
            y--;
            p += 2 * (x - y) + 1;
        }
        plotCirclePoints(x0, y0, x, y, ctx, color1, color2);
    }
}

function plotCirclePoints(x0, y0, x, y, ctx, color1, color2) {
    drawPixel(ctx, x0 + x, y0 + y, color1);
    drawPixel(ctx, x0 - x, y0 + y, color1);
    drawPixel(ctx, x0 + x, y0 - y, color1);
    drawPixel(ctx, x0 - x, y0 - y, color1);
    drawPixel(ctx, x0 + y, y0 + x, color2);
    drawPixel(ctx, x0 - y, y0 + x, color2);
    drawPixel(ctx, x0 + y, y0 - x, color2);
    drawPixel(ctx, x0 - y, y0 - x, color2);
}
```

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C. Hasil Running Kode Html dan JavaScript