Nama : Meita Ayu Sabna Damayanti

NPM : 2257051014

Kelas : CD

Tugas 4 Grafika Komputer Algoritma Pembentuk Kurva

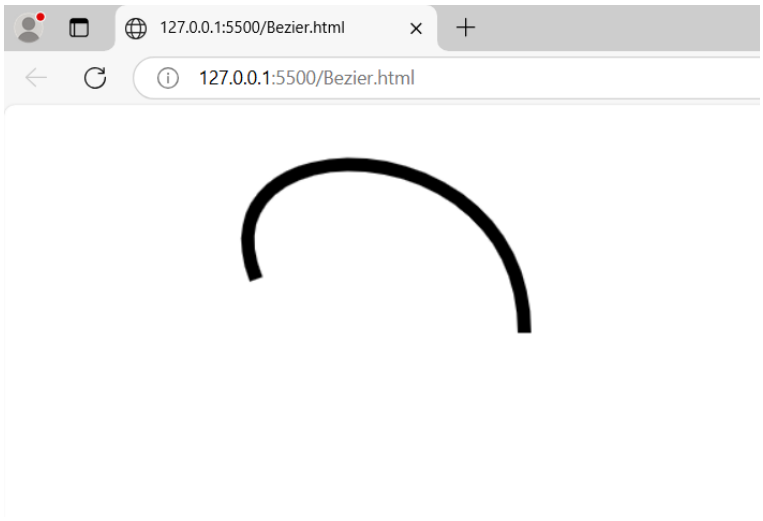
1. Pembentukan Kurva Bezier

```html
<!DOCTYPE HTML>
<html>
<head>
    <style>
        body {
            margin: 0px;
            padding: 0px;
        }
    </style>
</head>
<body>
    <canvas id="myCanvas" width="578" height="200"></canvas>
    <script>
        var canvas = document.getElementById('myCanvas');
        var context = canvas.getContext('2d');

        context.beginPath();
        context.moveTo(188, 130);
        context.bezierCurveTo(140, 10, 388, 10, 388, 170);
        context.lineWidth = 10;

        context.strokeStyle = 'black';
        context.stroke();
    </script>
</body>
</html>
```

Hasil :



- **Pengerjaan Contoh Studi Kasus (Video)**

  Tugas ini melibatkan perhitungan kurva Bézier kuadratik berdasarkan tiga titik kontrol yang diberikan:

  Diketahui:

  - Titik kontrol:
    - C1(1,2)C_1(1,2)C1(1,2)
    - C2(7,10)C_2(7,10)C2(7,10)
    - C3(15,4)C_3(15,4)C3(15,4)
  - Nilai kenaikan t=0.02t = 0.02t=0.02

  Pertanyaan 1: Berapa titik yang digunakan untuk membangun kurva Bézier?

  Kurva Bézier dihitung untuk nilai ttt dari 0 hingga 1 dengan kenaikan 0.02.
  Rumus jumlah titik:

  N=1−00.02+1N = \frac{1 - 0}{0.02} + 1N=0.021−0+1 N=10.02+1N = \frac{1}{0.02} + 1N=0.021+1 N=50+1=51N = 50 + 1 = 51N=50+1=51

  Jadi, ada **51 titik** yang digunakan untuk membangun kurva Bézier.

2. Berapa nilai titik pada kurva saat t=0.8t = 0.8t=0.8?

Rumus Bézier kuadratik:

B(t)=(1−t)2·C1+2(1−t)t·C2+t2·C3B(t) = (1 - t)^2 \cdot C_1 + 2(1 - t)t \cdot C_2 + t^2 \cdot C_3B(t)=(1−t)2·C1+2(1−t)t·C2+t2·C3

Menghitung koordinat xxx:
Bx(0.8)=(1−0.8)2(1)+2(1−0.8)(0.8)(7)+(0.8)2(15)B_x(0.8) = (1 - 0.8)^2 (1) + 2(1 - 0.8)(0.8)(7) + (0.8)^2(15)Bx(0.8)=(1−0.8)2(1)+2(1−0.8)(0.8)(7)+(0.8)2(15) =(0.2)2(1)+2(0.2)(0.8)(7)+(0.8)2(15)= (0.2)^2 (1) + 2(0.2)(0.8)(7) + (0.8)^2(15)=(0.2)2(1)+2(0.2)(0.8)(7)+(0.8)2(15) =(0.04)(1)+(0.4)(0.8)(7)+(0.64)(15)= (0.04)(1) + (0.4)(0.8)(7) + (0.64)(15)=(0.04)(1)+(0.4)(0.8)(7)+(0.64)(15) =0.04+2.24+9.6= 0.04 + 2.24 + 9.6=0.04+2.24+9.6 Bx(0.8)=11.88B_x(0.8) = 11.88Bx(0.8)=11.88

Menghitung koordinat yyy:
By(0.8)=(1−0.8)2(2)+2(1−0.8)(0.8)(10)+(0.8)2(4)B_y(0.8) = (1 - 0.8)^2 (2) + 2(1 - 0.8)(0.8)(10) + (0.8)^2(4)By(0.8)=(1−0.8)2(2)+2(1−0.8)(0.8)(10)+(0.8)2(4) =(0.2)2(2)+2(0.2)(0.8)(10)+(0.8)2(4)= (0.2)^2 (2) + 2(0.2)(0.8)(10) + (0.8)^2(4)=(0.2)2(2)+2(0.2)(0.8)(10)+(0.8)2(4) =(0.04)(2)+(0.4)(0.8)(10)+(0.64)(4)= (0.04)(2) + (0.4)(0.8)(10) + (0.64)(4)=(0.04)(2)+(0.4)(0.8)(10)+(0.64)(4) =0.08+3.2+2.56= 0.08 + 3.2 + 2.56=0.08+3.2+2.56 By(0.8)=5.84B_y(0.8) = 5.84By(0.8)=5.84

Jadi, pada saat t=0.8t = 0.8t=0.8, titik pada kurva Bézier adalah **(11.88, 5.84)** atau dibulatkan menjadi **(12,6)**.