

Contemporary Data Processing Technology (CCOD)

Lab 1 (September 09, 2016)

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Control two metro cars using Speed, Distance, and Brake

In our practice work we made a model of 2 trains on plain loop with length of 1000 points. Every train at the beginning have the speed of 10 points and move in clockwise stream. At every iteration randomly the speed may change by -1, 0, +1.

The movement breaks, when the distance between these trains equals 0.

Writing code on JavaScript, our iterations depends on setInterval() Method, which make an iteration every N milliseconds, in my case, 50ms.

If the speed becomes less than zero, its value is set to zero.

On .gif animated picture you can see the result of running the code. Here are shown the loop with trains.

The program can be run in every browser (it's an .html page)

Here is the source code:

Script.js

```
function DrawTrainPosition(angle_1, angle_2) {  
    var point_1 = {};  
    point_1.x = Math.round(250 + 200 * Math.cos(angle_1));  
    point_1.y = Math.round(250 + 200 * Math.sin(angle_1));  
    var point_2 = {};  
    point_2.x = Math.round(250 + 200 * Math.cos(angle_2));  
    point_2.y = Math.round(250 + 200 * Math.sin(angle_2));  
  
    var canvas = document.getElementById("myCanvas");  
    var ctx = canvas.getContext("2d");  
  
    ctx.clearRect(0, 0, 500, 500);  
  
    ctx.beginPath();  
    ctx.fillStyle = "black";  
    ctx.arc(250, 250, 200, 0, 2 * Math.PI);  
    ctx.stroke();  
  
    ctx.beginPath();
```

```

    ctx.fillStyle = "#16a085";
    ctx.arc(point_1.x, point_1.y, 15, 0, 2 * Math.PI);
    ctx.fill();

    ctx.beginPath();
    ctx.fillStyle = "#34495e";
    ctx.arc(point_2.x, point_2.y, 15, 0, 2 * Math.PI);
    ctx.fill();

}

var angle_1 = 0;
var angle_2 = Math.PI;

var train_1 = {
    speed: 10,
    stop: 0,
    distance: 500
};

var train_2 = {
    speed: 10,
    stop: 0,
    distance: 500
};

var isStop = false;

function ChangeValue() {
    DrawTrainPosition(angle_1, angle_2);

    if (train_1.distance <= 0 || train_2.distance <= 0) {
        DrawTrainPosition(angle_1, angle_1);
        isStop = true;
    }

    train_1.speed += Math.floor(3 * Math.random()) - 1;
    if (train_1.speed < 0) {
        train_1.speed = 0;
    }
}

```

```

    }
    train_1.distance -= train_1.speed;
    train_2.distance += train_1.speed;

    train_2.speed += Math.floor(3 * Math.random()) - 1;
    if (train_2.speed < 0) {
        train_2.speed = 0;
    }
    train_2.distance -= train_2.speed;
    train_1.distance += train_2.speed;

    angle_1 += train_1.speed * Math.PI / 500;
    angle_2 += train_2.speed * Math.PI / 500;
}

setInterval(() => {
    if (isStop) {
        return;
    }
    ChangeValue();
}, 50);

```

Index.html

```

<!DOCTYPE html>
<html lang="en">

<head>
    <meta charset="UTF-8">
    <title>Lab1</title>
</head>

<body>
    <canvas id="myCanvas" width="500" height="500" style="border:3px solid #95a5a6;
background: #ecf0f1;">
    </canvas>
    <script src="./script.js"></script>
</body></html>

```