Contemporary Data Processing Technology (CCOD)
Lab 1 (September 0, 2016)
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Controll two metro cars using Speed, Distance, and Brake

In this practice 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. On each iteration we change speed adding -1, 0, +1 at random. Speed should be higher 0 and lower 20. When the distance between trains is 0 we stop the movement.

Index.html

```
<!DOCTYPE html>
<html lang="en">
<head>
  <meta charset="UTF-8">
  <title></title>
  <link rel="stylesheet" href="css/style.css">
</head>
<body>

  <div class="subway_loop">
  <img class="train blacktrain" src="img/5.png" width="20px" height="10px">
  <img class="train redtrain" src="img/6.png" width="20px" height="10px">
    <img src="">
  </div>


  <div class="speed redtrainSpeed">1st <br>speed: <span
class="redtrainSpeedValue"></span> </div>
  <div class="speed blacktrainSpeed">2nd <br>speed: <span
class="blacktrainSpeedValue"></span></div>

  <div class="distance redtrainDistance">red to black distance: <span
class="redtrainDistanceValue"></span></div>
  <div class="distance blacktrainDistance">green to red distance: <span
class="blacktrainDistanceValue"></span></div>

  <script src="js/script.js"></script>
</body>
</html>
```

Script.js

```
var blacktrain = document.querySelector(".blacktrain");
var redtrain = document.querySelector(".redtrain");
var redtrainSpeedValue = document.querySelector(".redtrainSpeedValue");
var redtrainDistanceValue = document.querySelector(".redtrainDistanceValue");
var blacktrainSpeedValue = document.querySelector(".blacktrainSpeedValue");
var greentrainDistanceValue =
document.querySelector(".blacktrainDistanceValue");
var startSpeed = 0.001;
var x0 = 77;
var y0 = 74;
var r = 79;
var i = -1.5;
var j = 1.5;
var start = Date.now();
```

```
var redSpeed = 0.001,
  blackSpeed = 0.001;
var rand;
var redway = 0,
  blackway = 0;


var rightRed = redtrain.style.left + 20;
var leftRed = redtrain.style.left;

var rightBlack = blacktrain.style.left + 20;
var leftBlack = blacktrain.style.left;


var topRed = redtrain.style.top;
var bottomRed = redtrain.style.top - 10;

var topBlack = blacktrain.style.top - 10;
var bottomBlack = blacktrain.style.top;

var timer = setInterval(function () {
  var timePassed = Date.now() - start;
  redtrain.style.left = x0 + r * Math.cos(i) - 35 + 'px';
  redtrain.style.top = y0 + r * Math.sin(i) - 5 + 'px';

  blacktrain.style.left = x0 + r * Math.cos(j) - 10 + 'px';
  blacktrain.style.top = y0 + r * Math.sin(j) - 5 + 'px';

  i = i + redSpeed;
  j = j + blackSpeed;


  rand = randomValue(-1, 1) / 10000;
  if (redSpeed > 0 || rand > 0) {
    redSpeed += rand;
  }
  if (redSpeed > 0.05) redSpeed = 0.05;
  redway += redSpeed;

  redtrainSpeedValue.innerHTML = Math.round(redSpeed * 10000);

  redtrainDistanceValue.innerHTML =500 + Math.round(Math.abs(redway -
greenway) / 6.0414 * 1000);

  rand = randomValue(-1, 1) / 10000;
  if (blackSpeed > 0 || rand > 0) {
    blackSpeed += rand;
  }
  if (blackSpeed > 0.05) blackSpeed = 0.05;
  blackway += blackSpeed;

  blacktrainSpeedValue.innerHTML = Math.round(blackSpeed * 10000);
  redtrainDistanceValue.innerHTML = 1000 - (500 + Math.round(Math.abs(redway
- greenway) / 6.0414 * 1000));

  if (Math.abs(redway - greenway) > 3.02) {
    clearInterval(timer);
  }
}, 2);

function randomValue(min, max) {
  return Math.round(min - 0.5 + Math.random() * (max - min + 1));
}
```

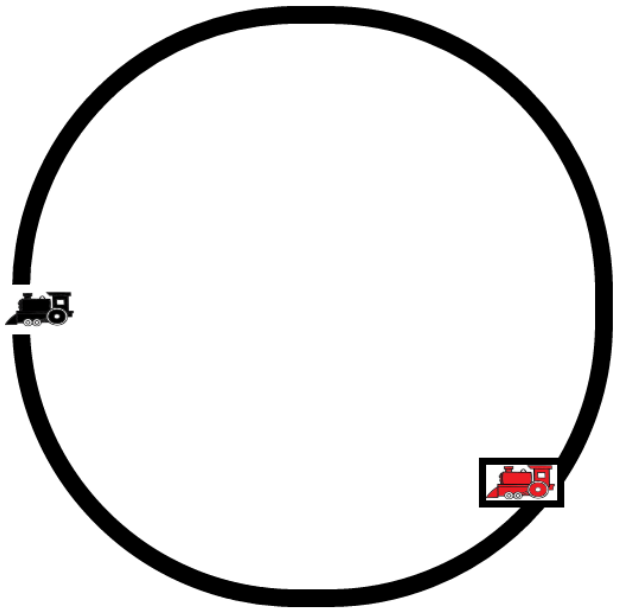
RESULTS:

1st
speed: 13

red to black distance: 650
green to red distance: 350

2nd
speed: 0

VERY SLOW 0
SLOW 0
MEDIUM 0.25
FAST 0.75
VERY FAST 0



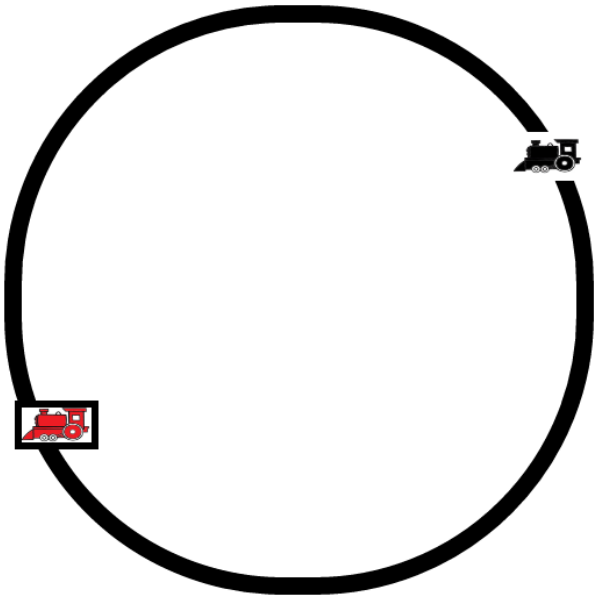
VERY SLOW 1
SLOW 0
MEDIUM 0
FAST 0
VERY FAST 0

1st
speed: 11

red to black distance: 522
green to red distance: 477

2nd
speed: 19

VERY SLOW 0
SLOW 0
MEDIUM 0.75
FAST 0.25
VERY FAST 0



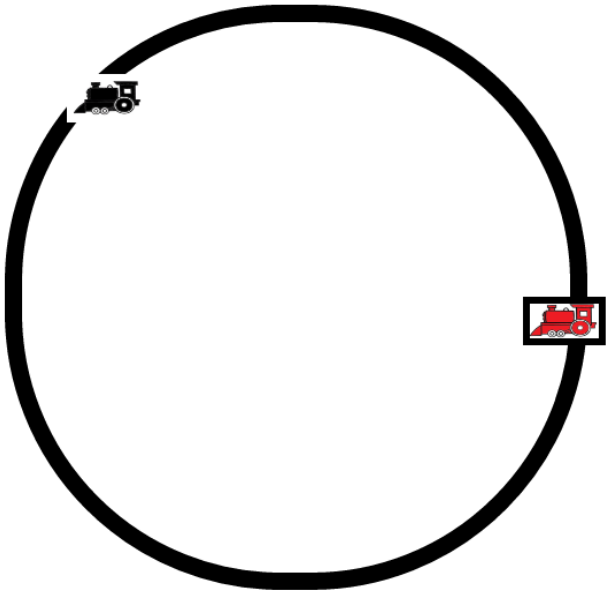
VERY SLOW 0
SLOW 0
MEDIUM 0
FAST 0
VERY FAST 1

1st
speed: 13

red to black distance: 583
green to red distance: 417

2nd
speed: 12

VERY SLOW 0
SLOW 0
MEDIUM 0.25
FAST 0.75
VERY FAST 0



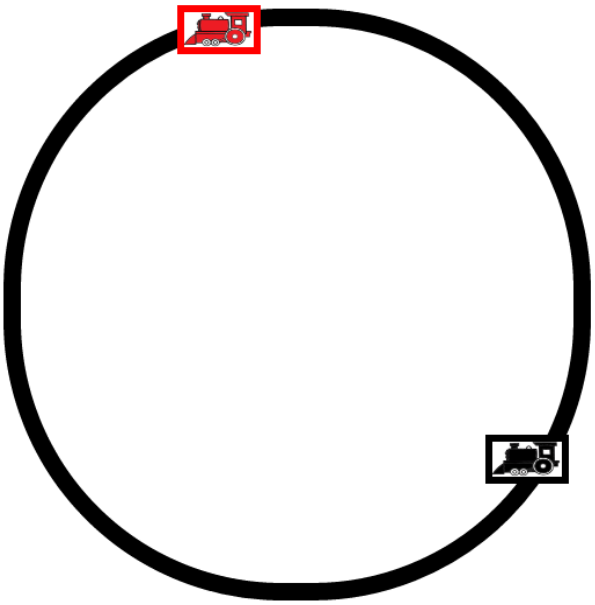
VERY SLOW 0
SLOW 0
MEDIUM 0.5
FAST 0.5
VERY FAST 0

1st
speed: 10

red to black distance: 631
green to red distance: 368

2nd
speed: 20

VERY SLOW 0
SLOW 0
MEDIUM 1
FAST 0
VERY FAST 0



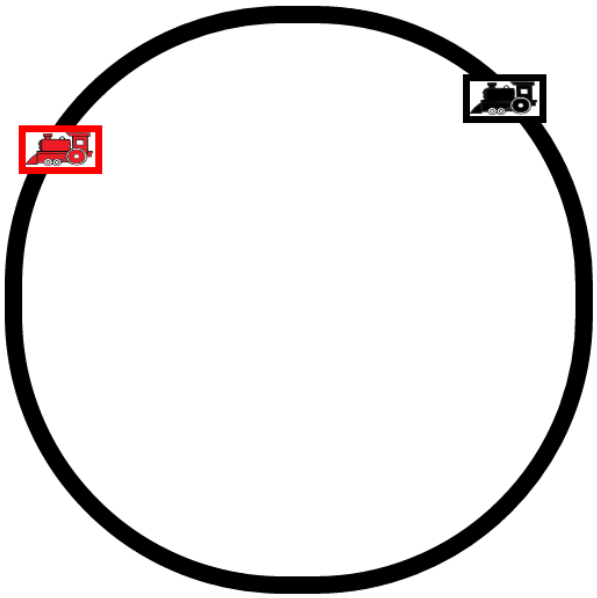
VERY SLOW 0
SLOW 0
MEDIUM 0
FAST 0
VERY FAST 1

1st
speed: 20

red to black distance: 739
green to red distance: 260

2nd
speed: 18

VERY SLOW 0
SLOW 0
MEDIUM 0
FAST 0
VERY FAST 1



VERY SLOW 0
SLOW 0
MEDIUM 0
FAST 0
VERY FAST 1