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Class ; M.sc Computer science

Exam ; Eos Exam

Subject Code;13T

REG number; 13P21CS013

2. Write a JavaScript code that create three balls within a defined area of the screen

and make the three balls move randomly within that area.

Program;

<html>

<head>

  <title>Random walk</title>

  <link rel="stylesheet" href="./styles.css" />

</head>

<body>

  <div id="area">

    <svg height="120%" width="100%">

    <rect

      x="0"

      y="0"

      width="500"

      height="400"

      stroke="blue"

      fill="transparent"

      stroke-width="8"

    />

  </svg></div>

</body>

<script src="./walk.js"></script>

</html>

CSS;

#area {

  position: relative;

  background-color: aqua;

  margin: 3em auto;

}

.ball {

  background-color: black;

  position: absolute;

  display: inline-block;

  border-radius: 80%;

}

Javascript;

// The area object defines the div in which the balls will be created

const area =

{

    element: document.getElementById('area'),

    width: 500,

    height: 400,

};

  // The initialize function creates the area div on the Html page

  function initialize()

  {

    area.element.style.width = area.width + 'px';

    area.element.style.height = area.height + 'px';

    document.body.appendChild(area.element);

  }

  // The moveTo function moves a given ball to a set x and y coordinates on the page

  function moveTo(ball, x, y)

  {

    ball.element.style.left = x + 'px';

    ball.element.style.top = y + 'px';

  }

  // The changeDirectionIfNecessary function reverses the ball direction when it hits the area borders

  function changeDirectionIfNecessary(ball, x, y)

  {

    if (x < 0 || x > area.width - ball.width)

    {

      ball.dx = -ball.dx;

    }

    if (y < 0 || y > area.height - ball.height)

    {

      ball.dy = -ball.dy;

    }

  }

  //implement  create function

  function create(color, dx, dy)

  {

    const newBall = Object.create(this);

    //Set newBall properties: dx, dy, width, height

        newBall.dx = dx;

        newBall.dy = dy;

        newBall.width = 50;

        newBall.height = 50;

    //set the newBall.element property and initialize it to a Html element "div"

    newBall.element = document.createElement("div")

    //set the backgroundColor, width and height style properties for newBall.element

    newBall.element.style.backgroundColor = color;

    newBall.element.style.width = newBall.width + 'px';

    newBall.element.style.height = newBall.height + 'px';

    // This line set the CSS class for newBall.element

    newBall.element.className += 'ball';

    //set the width and height of newBall based on newBall.element

    //use the Javascript parseInt() function to convert a string value to integer

    newBall.width = parseInt(newBall.element.style.width);

    newBall.height = parseInt(newBall.element.style.height);

    //use the Javascript appendChild() function to add newBall.element to the area element

    area.element.appendChild(newBall.element);

    return newBall;

  }

  // implement update function

  function update(ball, x, y)

  {

    //use moveTo() function to move the ball

        moveTo(ball, x, y);

    //the Javascript setTimeout() method to call changeDirectionIfNecessary() and update() every 15ms

    setTimeout(function()

    {

      changeDirectionIfNecessary(ball,x,y); update(ball,x+ball.dx,y+ball.dy);},15);

  }

  // This is expected to create 3 balls within the area div

   initialize();

   const ball1 = create('navyblue', 4, 3);

   const ball2 = create('red', 1, 5);

   const ball3 = create('pink', 2, 2);

   moveTo(ball1, 1, 1);

   moveTo(ball2, 10, 10);

   moveTo(ball3, 20, 20);

   // This is expected to make the 3 balls move around the area div

   update(ball1, 70, 0);

   update(ball2, 20, 200);

   update(ball3, 300, 330);

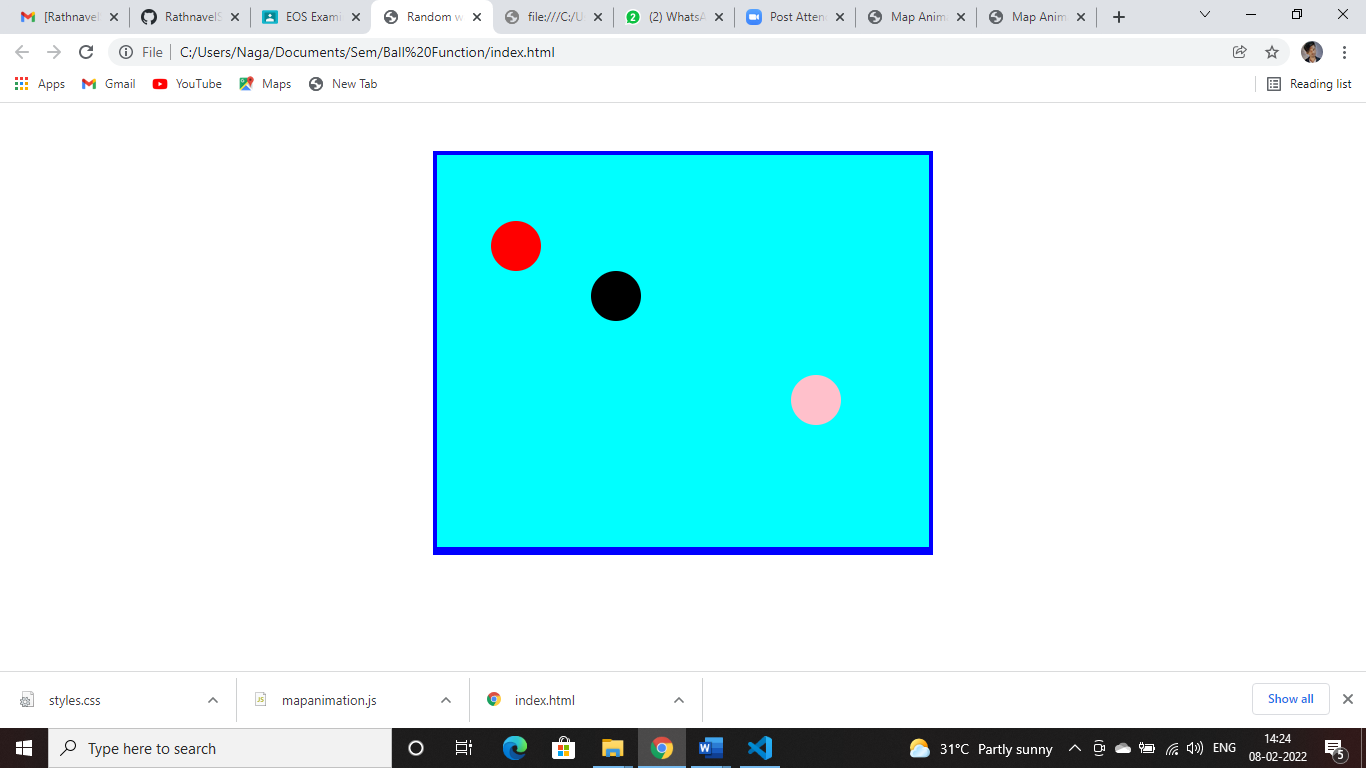
  // Do not change code past this point

  if (typeof module !== 'undefined') {

    module.exports = { update, create, changeDirectionIfNecessary, moveTo, area };

  }

Output;



8. Write a JavaScript code to determine stops between 2 locations. Then add an animated marker on the map to highlight the bus routes.

Program;

<!DOCTYPE html>

<html>

<head>

    <meta charset="utf-8" />

    <title>Map Animation</title>

    <meta name="viewport" content="initial-scale=1,maximum-scale=1,user-scalable=no" />

    <script src="https://api.mapbox.com/mapbox-gl-js/v1.11.0/mapbox-gl.js"></script>

    <link href="https://api.mapbox.com/mapbox-gl-js/v1.11.0/mapbox-gl.css" rel="stylesheet" />

    <link href="./styles.css" rel="stylesheet" />

</head>

<body>

    <div id="map"></div>

    <div class="map-overlay top">

        <button style="font-size: 1.5em" onclick="move()">

            Show stops between TKT Mill to RVS College of arts & Science

        </button>

    </div>

    <script src="./mapanimation.js"></script>

</body>

</html>

Css;

body {

  margin: 0;

  padding: 0;

}

#map {

  position: absolute;

  top: 0;

  bottom: 0;

  width: 100%;

}

.map-overlay {

  position: absolute;

  left: 0;

  padding: 10px;

}

Javascript;

// This array contains the coordinates for all bus stops between veerapandi pirivu and Sulur.

const busStops = [

      [77.3340698681723,11.059121796310777],

      [77.31618082141581,11.040226383292973],

      [77.28307918601305,10.994350078644636],

      [77.21932052658723,11.002392409202388],

      [77.18402590843613,11.01713128339071],

      [77.13439732821607,11.028722050850808],

];

// add own access token

mapboxgl.accessToken = 'pk.eyJ1IjoidGhpcnVuYXZ1YWthcmFzYW4iLCJhIjoiY2t4ZTV2cWR5MW9pdjJ2a3Qxazg3aWQwbSJ9.U9XpbDEbBblFxgoIzpNYkQ';

// This is the map instance

let map = new mapboxgl.Map({

  container: 'map',

  style: 'mapbox://styles/mapbox/outdoors-v11',

  center: [77.3340698681723,11.059121796310777],

  zoom: 12

});

//add a marker to the map at the first coordinates in the array busStops. The marker variable should be named "marker"

var marker = new mapboxgl.Marker({"color": "#b40219"})

.setLngLat([77.3340698681723,11.059121796310777])

.addTo(map);

//counter here represents the index of the current bus stop

let counter = 0;

function move() {

  //move the marker on the map every 1000ms. Use the function marker.setLngLat() to update the marker coordinates

  // Use counter to access bus stops in the array busStops

  // Make sure call move() after increment the counter.

  setTimeout(() => {

    if(counter >= busStops.length) return;

    marker.setLngLat(busStops[counter]);

    counter++;

    move();

  }, 1000);

}

OUTPUT;

