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APCS Principles, Period 1

3 December 2019

Lab 1203 Ship and Planet Code

```
<!DOCTYPE html>

<html>

  <head>

    <meta charset="UTF-8">

    <title>Template</title>

    <script src="libraries/p5.js"
type="text/javascript"></script>

    <script src="libraries/p5.dom.js"
type="text/javascript"></script>

    <script src="libraries/p5.sound.js"
type="text/javascript"></script>

    <script src="sketch.js" type="text/javascript"></script>

    <script src="planet.js" type="text/javascript"></script>

    <script src="ship.js" type="text/javascript"></script>


    <style> body {padding: 0; margin: 0;} canvas
{vertical-align: top;} </style>

  </head>
```

```
  <body>
  </body>
</html>

//  Ziggy Sheynin
//   Lab 1203 Ship and Planet
//  This is a comment
//  The setup function function is called once when your program
begins
var ship; //declares array
var planet;

function setup() {
  var cnv = createCanvas(800, 800);
  cnv.position((windowWidth-width)/2, 30);
  background(5, 5, 5);
  loadObjects(1);

}
```

```
function draw() {
background(5,5,5,20);
runObjects();

}

function loadObjects(x){
  planet = new Planet (random(width/2), random(height/2), random
(-.4,.4), random(-.4,.4), 1);
  for(var i = 0; i < x; i++){
    ship =new Ship(random(width), random(height), random (-1,1),
random(-1,1), 3);
  }
}

function runObjects(){
  planet.run();
  ship.run();
}

//Ziggy Sheynin
//Lab 903 Extension
```

```
class Planet{
  constructor(x, y, dx, dy, id){
   this.loc = createVector(x, y);
   this.vel = createVector(dx, dy);
   this.acc = createVector(0,0);
   this.clr = color(random(255), random(255), random(255));
   this.id = id;

  }

  run(){
    this.checkedges();
    this.update();
    this.render();
  }

  checkedges(){
    if(this.loc.x < 0){
      this.vel.x = -this.vel.x;
    }
    if(this.loc.x > width){
      this.vel.x = -this.vel.x;
    }
```

```
  if(this.loc.y < 0){
    this.vel.y = -this.vel.y;
  }
  if(this.loc.y > height){
    this.vel.y = -this.vel.y;
    this.loc.y = height -2;
  }

}
update(){
  var planetDistance;
  if(this.id === 1){
   planetDistance = this.loc.dist(ship.loc);
 }
  if(planetDistance < 100){
     //move planet to random location
     this.loc.x = Math.floor(random(0,800));
     this.loc.y = Math.floor(random(0,800));
     this.render();

   }
  this.vel.limit(5);
   this.vel.add(this.acc);
```

```
    this.loc.add(this.vel);









  }


  render(){
    fill(this.clr);
      ellipse (this.loc.x, this.loc.y, 40, 40);
  }



}//  ++++++++++++++++++++++++++++++++++  End Ball Class


//Ziggy Sheynin
//Lab 1203 Ship and Planet


class Ship {
  constructor(x, y, dx, dy, id){
    this.loc = createVector(x, y);
    this.vel = createVector(dx, dy);
    this.acc = createVector(0,0);
```

```
 this.angle = 0;
 this.clr = color(random(255), random(255), random(255));
 this.id = id;


}


run(){
  this.checkedges();
  this.update();
  this.render();
}


checkedges(){
  if(this.loc.x < 0){
    this.loc.x = width;
  }
  if(this.loc.x > width){
    this.loc.x = 0;
  }
  if(this.loc.y < 0){
    this.loc.y =height;
  }
  if(this.loc.y > height){
```

```
  this.loc.y = 0;
  }


}
update(){
  var distToMainBall;


  if(this.id > 2){
   distToMainBall = this.loc.dist(planet.loc);


   if(distToMainBall < 800){
     //add attraction
     this.acc = p5.Vector.sub(planet.loc, this.loc);
     this.acc.normalize();
     this.acc.mult(0.5);


   }
   // if(distToMainBall < 50){ // add repulsion
   //   this.acc = p5.Vector.sub(this.loc, planet.loc);
   //   this.acc.normalize();
   //   this.acc.mult(0.5);
   // }
```

```
    }
    this.vel.limit(5);
     this.vel.add(this.acc);
   this.loc.add(this.vel);



  }


  render(){
    this.heading = this.vel.heading();
    fill(this.clr);
    this.angle = this.angle +1;
    push();
    translate (this.loc.x, this.loc.y);
    rotate (this.heading +1);
    triangle (-5, 8, 5,8,0, -8);


    pop();
  }
}//  ++++++++++++++++++++++++++++++++++  End ship Class
```