

게임프로그래밍

운석 피하기

2017948031 김철환



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코드 분석

컴포넌트 만들기 + 시작함수 만들기

```
var myGamePiece;  
var myObstacles = [];  
var myScore;  
  
function startGame() {  
    myGamePiece = new component(30, 30, "red", 10, 120);  
    myGamePiece.gravity = 0.05;  
    myScore = new component("30px", "Consolas", "black", 280, 40, "text");  
    myGameArea.start();  
}
```

캔버스로 게임 틀 만들기

```
var myGameArea = {  
    canvas : document.createElement("canvas"),  
    start : function() {  
        this.canvas.width = 480;  
        this.canvas.height = 270;  
        this.context = this.canvas.getContext("2d");  
        document.body.insertBefore(this.canvas, document.body.childNodes[0]);  
        this.frameNo = 0;  
        this.interval = setInterval(updateGameArea, 20);  
    },  
    clear : function() {  
        this.context.clearRect(0, 0, this.canvas.width, this.canvas.height);  
    }  
}
```

속도,중력,바닥,충돌 만들기

```
this.newPos = function() {
    this.gravitySpeed += this.gravity;
    this.x += this.speedX;
    this.y += this.speedY + this.gravitySpeed;
    this.hitBottom();
}

this.hitBottom = function() {
    var rockbottom = myGameArea.canvas.height - this.height;
    if (this.y > rockbottom) {
        this.y = rockbottom;
        this.gravitySpeed = 0;
    }
}

this.crashWith = function(otherobj) {
    var myleft = this.x;
    var myright = this.x + (this.width);
    var mytop = this.y;
    var mybottom = this.y + (this.height);
    var otherleft = otherobj.x;
    var otherright = otherobj.x + (otherobj.width);
    var othertop = otherobj.y;
    var otherbottom = otherobj.y + (otherobj.height);
    var crash = true;
    if ((mybottom < othertop) ||
        (mytop > otherbottom) ||
        (myright < otherleft) ||
        (myleft > otherright)) {
        crash = false;
    }
    return crash;
}
```

게임상태 업데이트 (장애물,점수 등)

```
function updateGameArea() {
    var x, height, gap, minHeight, maxHeight, minGap, maxGap;
    for (i = 0; i < myObstacles.length; i += 1) {
        if (myGamePiece.crashWith(myObstacles[i])) {
            return;
        }
    }
    myGameArea.clear();
    myGameArea.frameNo += 1;
    if (myGameArea.frameNo == 1 || everyinterval(150)) {
        x = myGameArea.canvas.width;
        minHeight = 20;
        maxHeight = 200;
        height = Math.floor(Math.random()*(maxHeight-minHeight+1)+minHeight);
        minGap = 50;
        maxGap = 200;
        gap = Math.floor(Math.random()*(maxGap-minGap+1)+minGap);
        myObstacles.push(new component(10, height, "green", x, 0));
        myObstacles.push(new component(10, x - height - gap, "green", x, height + gap));
    }
    for (i = 0; i < myObstacles.length; i += 1) {
        myObstacles[i].x += -1;
        myObstacles[i].update();
    }
    myScore.text="SCORE: " + myGameArea.frameNo;
    myScore.update();
    myGamePiece.newPos();
    myGamePiece.update();
}

function everyinterval(n) {
    if ((myGameArea.frameNo / n) % 1 == 0) {return true;}
    return false;
}

function accelerate(n) {
    myGamePiece.gravity = n;
}

</script>
<br>
<button onmousedown="accelerate(-0.2)" onmouseup="accelerate(0.05)">ACCELERATE</button>
```

코드 추가

우주선과 배경에 사진 추가, 사운드 추가

```
function startGame() {  
    //우주선 사진이랑 배경 사진, 점수  
    myGamePiece = new component(30, 30, "spaceship.png", 115, 440, "image");  
    myBackground = new component(270, 656, "spacemap.jpg", 0, 0, "image")  
    myScore = new component("30px", "Consolas", "black", 80, 40, "text");  
    //사운드 추가  
    mySound = new sound("boom.mp3");  
    myMusic = new sound("space.mp3");  
    //크롬은 사용자의 명시적인 액션이 없는 상태에서의 음원 재생을 허용하지 않는다.  
    btnPlay.onclick = function () {  
        myMusic.play();  
    }  
    myGameArea.start();  
}
```

자동재생이 안되서 노래 재생버튼

키보드 동시입력 추가

```
var myGameArea = {
  canvas : document.createElement("canvas"),
  start : function() {
    this.canvas.width = 270;
    this.canvas.height = 480;
    this.context = this.canvas.getContext("2d");
    document.body.insertBefore(this.canvas, document.body.childNodes[0]);
    this.frameNo = 0;
    this.interval = setInterval(updateGameArea, 20);
    //키보드 입력
    window.addEventListener('keydown', function (e) {
      myGameArea.keys = (myGameArea.keys || []);
      myGameArea.keys[e.keyCode] = true;
    })
    window.addEventListener('keyup', function (e) {
      myGameArea.keys[e.keyCode] = false;
    })
  },
  clear : function() {
    this.context.clearRect(0, 0, this.canvas.width, this.canvas.height);
  }
}
```


좌우 벽 추가

```
//벽 안 넘어가게  
this.hitBottom = function() {  
    var rockbottom = myGameArea.canvas.height - this.height;  
    if (this.y > rockbottom) {  
        this.y = rockbottom;  
    }  
}  
  
this.hitleft = function(){  
    var hitleft = myGameArea.canvas.width - myGameArea.canvas.width ;  
    if (this.x < 0) {  
        this.x = hitleft;  
    }  
}  
  
this.hitright = function(){  
    var hitright = myGameArea.canvas.width - this.width ;  
    if (this.x > hitright) {  
        this.x = hitright;  
    }  
}
```

랜덤값으로 세로로 운석 떨어지게 변경

```
function updateGameArea() {  
    var x, y;  
    for (i = 0; i < myObstacles.length; i += 1) {  
        if (myGamePiece.crashWith(myObstacles[i])) {  
            //사운드 추가  
            mySound.play();  
            return;  
        }  
    }  
    myGameArea.clear();  
    //이사이애 넣기  
    myBackground.newPos();  
    myBackground.update();  
    myScore.text="SCORE: " + myGameArea.frameNo;  
    myScore.update();  
    myGamePiece.newPos();  
    myGamePiece.update();  
    //  
    myGameArea.frameNo += 1;  
    if (myGameArea.frameNo == 1 || everyinterval(25)) {  
        // x = myGameArea.canvas.width;  
        // y = Math.floor(Math.random() * 601) -200  
        x = Math.floor(Math.random() * 250)  
        y = 0;  
        myObstacles.push(new component(30, 30,"rock.png", x, y, "image"));  
    }  
    for (i = 0; i < myObstacles.length; i += 1) {  
        //myObstacles[i].x += -2;  
        myObstacles[i].y += 3;  
        myObstacles[i].update();  
    }  
    // 키보드 입력으로 속도 조절  
    if (myGameArea.keys && myGameArea.keys[37]) {myGamePiece.speedX = -1.5; }  
    if (myGameArea.keys && myGameArea.keys[39]) {myGamePiece.speedX = 1.5; }  
    if (myGameArea.keys && myGameArea.keys[38]) {myGamePiece.speedY = -1.5; }  
    if (myGameArea.keys && myGameArea.keys[40]) {myGamePiece.speedY = 1.5; }
```

코드 구현

<https://aestura.github.io/Aestura2.io/>



참고

https://www.w3schools.com/graphics/game_intro.asp

<https://curryyou.tistory.com/337>

<https://github.com/Aestura/Aestura2.io>

