

```
var score = 0,
    gscore = 0,
    countblink = 10,
    ghost = false;
    ghost2 = false;
var player = {
    x: 50,
    y: 100,
    pacmouth: 320,
    pacdir: 0,
    psize: 32,
    speed: 5
};
var enemy = {
    x: 150,
    y: 200,
    speed: 5,
    moving: 0,
    dirx: 0,
    diry: 0,
    flash: 0,
    ghosteat: false
};
var enemy2 = {
    x: 150,
    y: 200,
    speed: 5,
    moving: 0,
    dirx: 0,
    diry: 0,
    flash: 0,
    ghosteat: false
};
var powerdot = {
    x: 10,
    y: 10,
    powerup: false,
    pcountdown: 0,
    ghostNum: 0,
    ghostNum2: 0
};
//setup canvas
var canvas = document.createElement("canvas");
var context = canvas.getContext("2d");
document.body.appendChild(canvas);
canvas.width = 600;
canvas.height = 400;
//import image
var mainImage;
mainImage = new Image();
mainImage.ready = false;
mainImage.onload = checkReady;
mainImage.src = "pac.png";
//add key listener
```

```
var keyclick = {};  
document.addEventListener("keydown", function(event) {  
    keyclick[event.keyCode] = true;  
    move(keyclick);  
}, false);  
document.addEventListener("keyup", function(event) {  
    delete keyclick[event.keyCode];  
}, false);  
// key functions  
function move(keyclick) {  
    //check click key value  
    if (37 in keyclick) {  
        player.x -= player.speed;  
        player.pacdir = 64;  
    }  
    if (38 in keyclick) {  
        player.y -= player.speed;  
        player.pacdir = 96;  
    }  
    if (39 in keyclick) {  
        player.x += player.speed;  
        player.pacdir = 0;  
    }  
    if (40 in keyclick) {  
        player.y += player.speed;  
        player.pacdir = 32;  
    }  
    // prevent run off screen  
    if (player.x >= (canvas.width - 32)) {  
        player.x = 0;  
    }  
    if (player.y >= (canvas.height - 32)) {  
        player.y = 0;  
    }  
    if (player.x < 0) {  
        player.x = (canvas.width - 32);  
    }  
    if (player.y < 0) {  
        player.y = (canvas.height - 32);  
    }  
    //open close mouth  
    if (player.pacmouth == 320) {  
        player.pacmouth = 352;  
    } else {  
        player.pacmouth = 320;  
    }  
    render();  
}  
// function once ready  
function checkReady() {  
    this.ready = true;  
    playgame();  
}  
// game play loop
```

```
function playgame() {
    render();
    requestAnimationFrame(playgame);
}

// random number function
function myNum(n) {
    return Math.floor(Math.random() * n);
}

// draw on canvas
function render() {
    context.fillStyle = "black";
    context.fillRect(0, 0, canvas.width, canvas.height);
    // check if powerup dot is on screen
    if (!powerdot.powerup && powerdot.pcountdown < 5) {
        powerdot.x = myNum(420) + 30;
        powerdot.y = myNum(250) + 30;
        powerdot.powerup = true;
    }
    // check if ghost is on screen
    if (!ghost) {
        enemy.ghostNum = myNum(5) * 64;
        enemy.x = myNum(450);
        enemy.y = myNum(250) + 30;
        ghost = true;
    }
    // check if ghost is on screen
    if (!ghost2) {
        enemy2.ghostNum = myNum(5) * 64;
        enemy2.x = myNum(450);
        enemy2.y = myNum(250) + 30;
        ghost2 = true;
    }
    // move enemy
    if (enemy.moving < 0) {
        enemy.moving = (myNum(20) * 3) + myNum(1);
        enemy.speed = myNum(2) + 1;
        enemy.dirx = 0;
        enemy.diry = 0;
        if (powerdot.ghosteat) {
            enemy.speed = enemy.speed * -1;
        }
        if (enemy.moving % 2) {
            if (player.x < enemy.x) {
                enemy.dirx = -enemy.speed;
            } else {
                enemy.dirx = enemy.speed;
            }
        } else {
            if (player.y < enemy.y) {
                enemy.diry = -enemy.speed;
            } else {
                enemy.diry = enemy.speed;
            }
        }
    }
}
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}
enemy.moving--;
enemy.x = enemy.x + enemy.dirx;
enemy.y = enemy.y + enemy.diry;
// prevent run off screen
if (enemy.x >= (canvas.width - 32)) {
    enemy.x = 0;
}
if (enemy.y >= (canvas.height - 32)) {
    enemy.y = 0;
}
if (enemy.x < 0) {
    enemy.x = (canvas.width - 32);
}
if (enemy.y < 0) {
    enemy.y = (canvas.height - 32);
}
if (enemy2.moving < 0) {
    enemy2.moving = (myNum(20) * 3) + myNum(1);
    enemy2.speed = myNum(2) + 1;
    enemy2.dirx = 0;
    enemy2.diry = 0;
    if (powerdot.ghosteat) {
        enemy2.speed = enemy2.speed * -1;
    }
    if (enemy2.moving % 2) {
        if (player.x < enemy2.x) {
            enemy2.dirx = -enemy2.speed;
        } else {
            enemy2.dirx = enemy2.speed;
        }
    } else {
        if (player.y < enemy2.y) {
            enemy2.diry = -enemy2.speed;
        } else {
            enemy2.diry = enemy2.speed;
        }
    }
}
enemy2.moving--;
enemy2.x = enemy2.x + enemy2.dirx;
enemy2.y = enemy2.y + enemy2.diry;
// prevent run off screen
if (enemy2.x >= (canvas.width - 32)) {
    enemy2.x = 0;
}
if (enemy2.y >= (canvas.height - 32)) {
    enemy2.y = 0;
}
if (enemy2.x < 0) {
    enemy2.x = (canvas.width - 32);
}
if (enemy2.y < 0) {
    enemy2.y = (canvas.height - 32);
}
```

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}  
//Collision detection ghost  
if (player.x <= (enemy.x + 26) && enemy.x <= (player.x + 26) && player.y <= (enemy.y + 26)  
&& enemy.y <= (player.y + 32)) {  
    console.log('ghost');  
    if (powerdot.ghosteat) {  
        score++;  
    } else {  
        gscore++;  
    }  
    player.x = 10;  
    player.y = 100;  
    enemy.x = 300;  
    enemy.y = 200;  
    powerdot.pcountdown = 0;  
}  
if (player.x <= (enemy2.x + 26) && enemy2.x <= (player.x + 26) && player.y <= (enemy2.y + 26)  
) && enemy2.y <= (player.y + 32)) {  
    console.log('ghost');  
    if (powerdot.ghosteat) {  
        score++;  
    } else {  
        gscore++;  
    }  
    player.x = 10;  
    player.y = 100;  
    enemy2.x = 300;  
    enemy2.y = 200;  
    powerdot.pcountdown = 0;  
}  
//Collision detection powerup  
if (player.x <= powerdot.x && powerdot.x <= (player.x + 32) && player.y <= powerdot.y &&  
powerdot.y <= (player.y + 32)) {  
    console.log('hit');  
    powerdot.powerup = false;  
    powerdot.pcountdown = 500;  
    powerdot.ghostNum = enemy.ghostNum;  
    powerdot.ghostNum2 = enemy2.ghostNum;  
    enemy.ghostNum = 384;  
    enemy2.ghostNum = 384;  
    powerdot.x = 0;  
    powerdot.y = 0;  
    powerdot.ghosteat = true;  
    player.speed = 10;  
}  
// powerup countdown  
if (powerdot.ghosteat) {  
    powerdot.pcountdown--;  
    if (powerdot.pcountdown <= 0) {  
        powerdot.ghosteat = false;  
        enemy.ghostNum = powerdot.ghostNum;  
        enemy2.ghostNum = powerdot.ghostNum2;  
        player.speed = 5;  
    }  
}
```

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}
// draw power up dot
if (powerdot.powerup) {
    context.fillStyle = "#ffffff";
    context.beginPath();
    context.arc(powerdot.x, powerdot.y, 10, 0, Math.PI * 2, true);
    context.closePath();
    context.fill();
}
// enemy blinking
if (countblink > 0) {
    countblink--;
} else {
    countblink = 20;
    if (enemy.flash == 0) {
        enemy.flash = 32;
        enemy2.flash = 32;
    } else {
        enemy.flash = 0;
        enemy2.flash = 0;
    }
}
// write score
context.font = "20px Verdana";
context.fillStyle = "white";
context.fillText("Pacman: " + score + " vs Ghost:" + gscore, 2, 18);
// draw characters
context.drawImage(mainImage, enemy2.ghostNum, enemy2.flash, 32, 32, enemy2.x, enemy2.y, 32, 32);
context.drawImage(mainImage, enemy.ghostNum, enemy.flash, 32, 32, enemy.x, enemy.y, 32, 32);
context.drawImage(mainImage, player.pacmouth, player.pacdir, 32, 32, player.x, player.y, 32, 32);
}
```