

SilverCoders

MEJORA DE LA ALFABETIZACIÓN DIGITAL MEDIANTE MÉTODOS EFECTIVOS
DE APRENDIZAJE PARA ADULTOS



RETO #27 ASTEROIDES

PROGRAMA DE CODIFICACIÓN PARA ADULTOS +55



SILVER CODERS

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ESTRUCTURA DEL RETO

DESCRIPCIÓN

El juego que vamos a crear ahora es similar al conocido Asteroids.

OBJETIVO GENERAL

En este reto vamos a desarrollar un juego tipo Asteroides mientras aprendemos unas instrucciones que nos permiten repetir varias veces la misma instrucción.

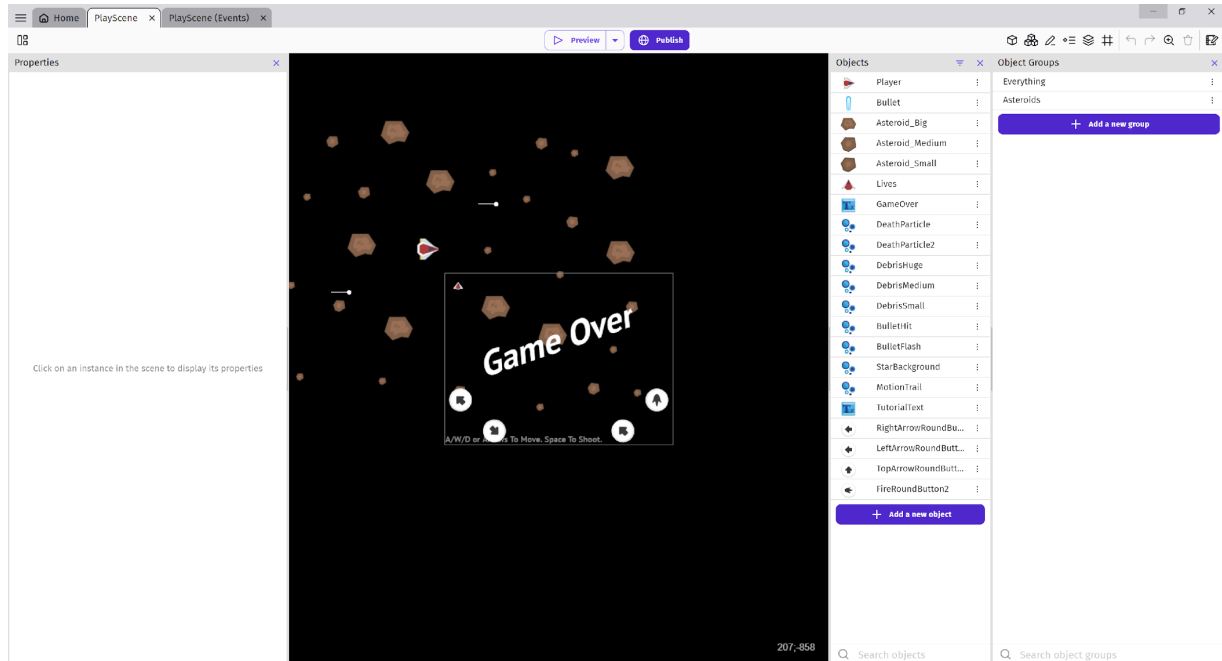
OBJETIVOS DE APRENDIZAJE

Al final de este desafío, usted será capaz de ...:

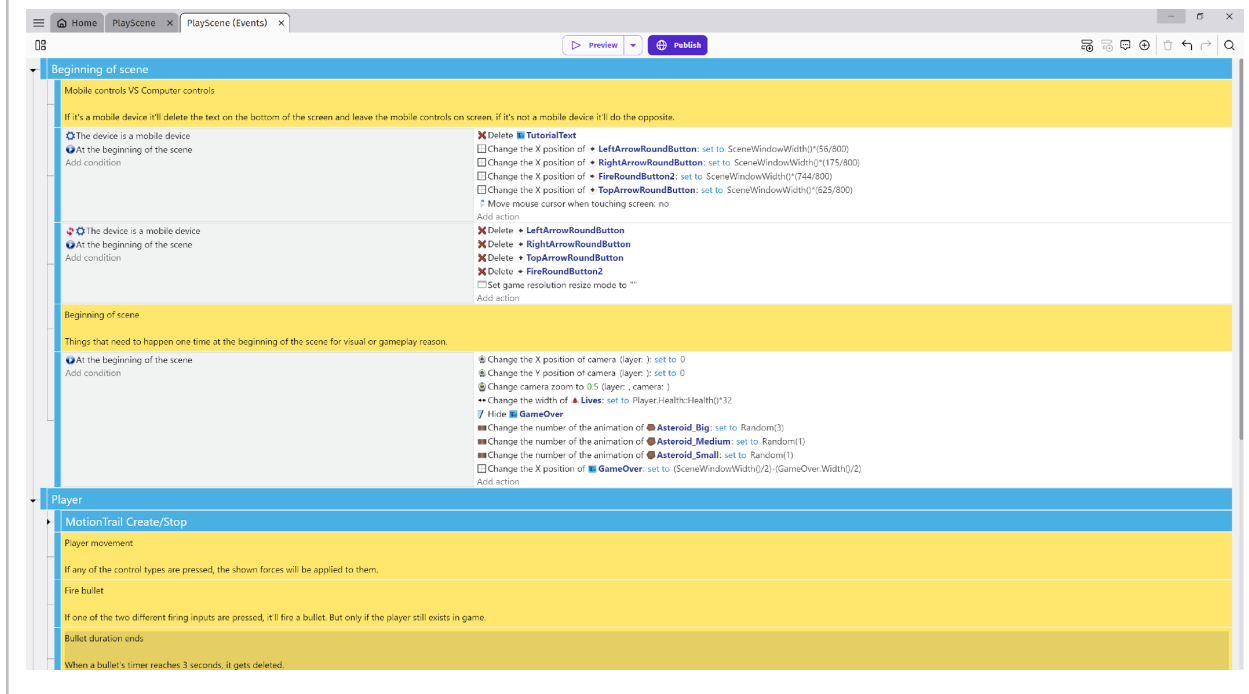
- Tener experiencia con una suite de programación visual y ser capaz de codificar una pequeña pieza de software estándar con ella.
- Saber qué son las sentencias y las líneas de comando y qué significan para un compilador.
- Ser capaz de escribir instrucciones utilizando una sintaxis correcta y con un mínimo de errores.
- Saber qué son los operadores, qué hacen y qué símbolos corresponden a cada operador.
- Comprender la asignación de valores a variables y cómo modificarlos.
- Conocer todas las operaciones aritméticas básicas y cómo utilizarlas.
- Reconocer y saber utilizar todas las estructuras de datos relacionadas con los números.
- Conocer las estructuras vinculadas al uso de texto, como cadenas y caracteres.
- Ser capaz de utilizar correctamente las sentencias If para ejecutar código según una determinada condición fija definida.
- Ser capaz de utilizar instrucciones de control de bucle.

INSTRUCCIONES

Esta es tu configuración inicial. En este caso sólo hemos proporcionado los objetos básicos que necesitarás para el juego. Como de costumbre empieza por revisarlos cuidadosamente.



También tenemos el código que inicia el juego y tenemos la estructura para el resto del código.



Nuestro objetivo es crear un juego en el que destruyamos asteroides cuando estén en la pantalla.

Empecemos por permitir al jugador controlar la nave, utilizando las teclas o el dispositivo móvil.

MotionTrail Create/Stop	
Player movement	
If any of the control types are pressed, the shown forces will be applied to them.	
If one of these conditions is true: [A] w key is pressed [A] Up key is pressed [M] The cursor/touch is on • TopArrowRoundButton Add a sub-condition Add condition	Apply to Player a force of angle <code>Player.Angle()</code> and length 4.5 Add action
If one of these conditions is true: [A] a key is pressed [A] Left key is pressed [M] The cursor/touch is on • LeftArrowRoundButton Add a sub-condition Add condition	Apply to Player a torque of -0.5 Add action
If one of these conditions is true: [A] d key is pressed [A] Right key is pressed [M] The cursor/touch is on • RightArrowRoundButton Add a sub-condition Add condition	Apply to Player a torque of 0.5 Add action

Ahora definimos todo lo relacionado con los disparos y las balas.

Fire bullet	
If one of the two different firing inputs are pressed, it'll fire a bullet. But only if the player still exists in game.	
If one of these conditions is true: [A] Space key is released & If all of these conditions are true: [M] The cursor/touch is on • FireRoundButton2 [M] A touch has ended Add a sub-condition Add a sub-condition [M] The number of Player objects > 0 [T] Trigger once Add condition	Play the sound <code>LaserFire.wav</code> , vol.: 40, loop: no Create object Bullet at position <code>Player.PointX("BulletSpawn");Player.PointY("BulletSpawn")</code> (layer:) Create object BulletFlash at position <code>Player.PointX("BulletFlash");Player.PointY("BulletFlash")</code> (layer:) Rotate Bullet towards <code>Player.Angle()+90</code> at speed 0 deg/second Rotate BulletFlash towards <code>Player.Angle()+90</code> at speed 0 deg/second Add to Bullet a permanent force, angle: <code>Player.Angle()</code> degrees and length: 350 pixels Change the z-order of Bullet : set to <code>Player.ZOrder()-2</code> Change the z-order of BulletFlash : set to <code>Player.ZOrder()-1</code> Add action
Bullet duration timer	
When a bullet is fired, it starts a timer with that bullet so it can be deleted later.	
Add condition	Start (or reset) the timer "End" of Bullet Add action
Bullet duration ends	
When a bullet's timer reaches 3 seconds, it gets deleted. *This is important because otherwise your game could end up needlessly tracking hundreds/thousands of instances of the bullets by the end of a game.	
[T] The timer "End" of Bullet > 3 seconds Add condition	Delete Bullet Add action

También abordamos qué ocurre si disparamos una bala que no impacta en nada (¿recuerdas que nos hicimos esta pregunta hace unos retos?).

Ahora nos ocupamos de recibir un impacto y perder.

Getting hurt	
If the player object collides with anything, other than the bullet because it doesn't have the physics behavior, then it gets hurt.	
● Player is colliding with Everything Add condition	● Play the sound Bump.wav , vol.: 60, loop: no 📡 Shake camera on "1" layer for: 1 seconds. Use an amplitude of 2px on X axis and 2px on Y axis, angle rotation amplitude 1 degrees, and zoom amplitude 2 percent. Wait 0.1 seconds between shakes. Keep shaking until stopped: no ⚡ Make Player blink for 1.5 seconds ⚡ Make Lives blink for 1.5 seconds 💥 Damage Player , removing 1 from its health ➡ Change the width of Lives set to: $\text{Player.Health}:\text{Health} \times 32$ Add action
Dying	
If the player's health reached 0 or below, it's considered dead and will apply the following effects.	
● Player is dead Add condition	● Play the sound Death.wav , vol.: 50, loop: no ➡ Create object DeathParticle at position $\text{Player.X}();\text{Player.Y}()$ (layer:) ➡ Create object DeathParticle2 at position $\text{Player.X}();\text{Player.Y}()$ (layer:) 🔄 Rotate DeathParticle towards $\text{Player.Angle}()$ at speed 0 deg/second ✖ Delete Player ⚡ Show GameOver Add action

Ahora nos ocupamos de los asteroides. En este juego, cuando golpeamos un asteroide grande, se rompe en asteroides medianos y los asteroides medianos se rompen en asteroides pequeños. Cuando chocamos contra asteroides pequeños, se destruyen.

Destroying each asteroid size	
For "each instance of each type of asteroid" that collides with a bullet, the following actions will happen.	
Repeat for each instance of Asteroid_Big: 📡 Bullet is in collision with Asteroid_Big Add condition	● Play the sound Explosion.wav , vol.: 60, loop: no ➡ Create object Asteroid_Medium at position $\text{Asteroid_Big.X}();\text{Asteroid_Big.Y}()$ (layer:) ➡ Create object Asteroid_Medium at position $\text{Asteroid_Big.X}();\text{Asteroid_Big.Y}()$ (layer:) ➡ Create object DebrisHuge at position $\text{Asteroid_Big.X}();\text{Asteroid_Big.Y}()$ (layer:) ➡ Create object BulletHit at position $\text{Bullet.PointX}(\text{"BulletHit"});\text{Bullet.PointY}(\text{"BulletHit"})$ (layer:) 🔄 Rotate Asteroid_Medium towards $\text{RandomFloatInRange}(0, 360)$ at speed 0 deg/second ➡ Apply to Asteroid_Medium a force of angle $\text{Asteroid_Medium.Angle}()$ and length 3 ✖ Delete Asteroid_Big ✖ Delete Bullet Add action
Repeat for each instance of Asteroid_Medium: 📡 Bullet is in collision with Asteroid_Medium Add condition	● Play the sound Explosion.wav , vol.: 55, loop: no ➡ Create object Asteroid_Small at position $\text{Asteroid_Medium.X}();\text{Asteroid_Medium.Y}()$ (layer:) ➡ Create object Asteroid_Small at position $\text{Asteroid_Medium.X}();\text{Asteroid_Medium.Y}()$ (layer:) ➡ Create object DebrisMedium at position $\text{Asteroid_Medium.X}();\text{Asteroid_Medium.Y}()$ (layer:) ➡ Create object BulletHit at position $\text{Bullet.PointX}(\text{"BulletHit"});\text{Bullet.PointY}(\text{"BulletHit"})$ (layer:) 🔄 Rotate Asteroid_Small towards $\text{RandomFloatInRange}(0, 360)$ at speed 0 deg/second ➡ Apply to Asteroid_Small a force of angle $\text{Asteroid_Small.Angle}()$ and length 3 ✖ Delete Asteroid_Medium ✖ Delete Bullet Add action
Repeat for each instance of Asteroid_Small: 📡 Bullet is in collision with Asteroid_Small Add condition	● Play the sound Explosion.wav , vol.: 50, loop: no ➡ Create object DebrisSmall at position $\text{Asteroid_Small.X}();\text{Asteroid_Small.Y}()$ (layer:) ➡ Create object BulletHit at position $\text{Bullet.PointX}(\text{"BulletHit"});\text{Bullet.PointY}(\text{"BulletHit"})$ (layer:) ✖ Delete Asteroid_Small ✖ Delete Bullet Add action

Por último, hacemos algo que también es típico de los juegos de asteroides: cuando algo sale de la pantalla aparece por el otro lado (envoltura X e Y).

Screenwrap

X Wrap

If something goes outside of +/-840 on the X axis, its position will be switched to be the opposite.

*It moved to be slightly closer to the center to avoid having it repeat the event by still being out of bounds when it's flipped.

Repeat for each instance of Everything:

Add condition

|| If one of these conditions is true:

☐ The X position of the center of **Everything** < -840

☐ The X position of the center of **Everything** > 840

Add a sub-condition

Add condition

Add action

☐ Change the X position of **Everything**: set to (Everything.X()*-0.95)

Add action

Y Wrap

If something goes outside of +/-630 on the Y axis, its position will be switched to be the opposite.

*It moved to be slightly closer to the center to avoid having it repeat the event by still being out of bounds when it's flipped.

Repeat for each instance of Everything:

Add condition

|| If one of these conditions is true:

☐ The Y position of the center of **Everything** < -630

☐ The Y position of the center of **Everything** > 630

Add a sub-condition

Add condition

Add action


☐ Change the Y position of **Everything**: set to (Everything.Y()*-0.95)

Add action

Aquí utilizamos la instrucción Repetir que nos permite ejecutar varias veces una instrucción mientras se cumpla una determinada condición.

RECURSOS

Reto 27 (Básico)



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