

SilverCoders

DIGITAL LITERACY IMPROVEMENT THROUGH EFFECTIVE
LEARNING EXPERIENCES FOR ADULTS



DESAFIO #27 **ASTEROIDS**

CODING TRAINING PROGRAMME **FOR +55 ADULTS**



SILVER CODERS

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ESTRUTURA DO DESAFIO

DESCRIÇÃO

Este jogo que vamos criar agora é semelhante ao conhecido jogo dos Asteroides.

OBJETIVO GERAL

Neste desafio vamos desenvolver um jogo tipo Asteroides enquanto aprendemos algumas instruções que nos permitem repetir várias vezes a mesma instrução.

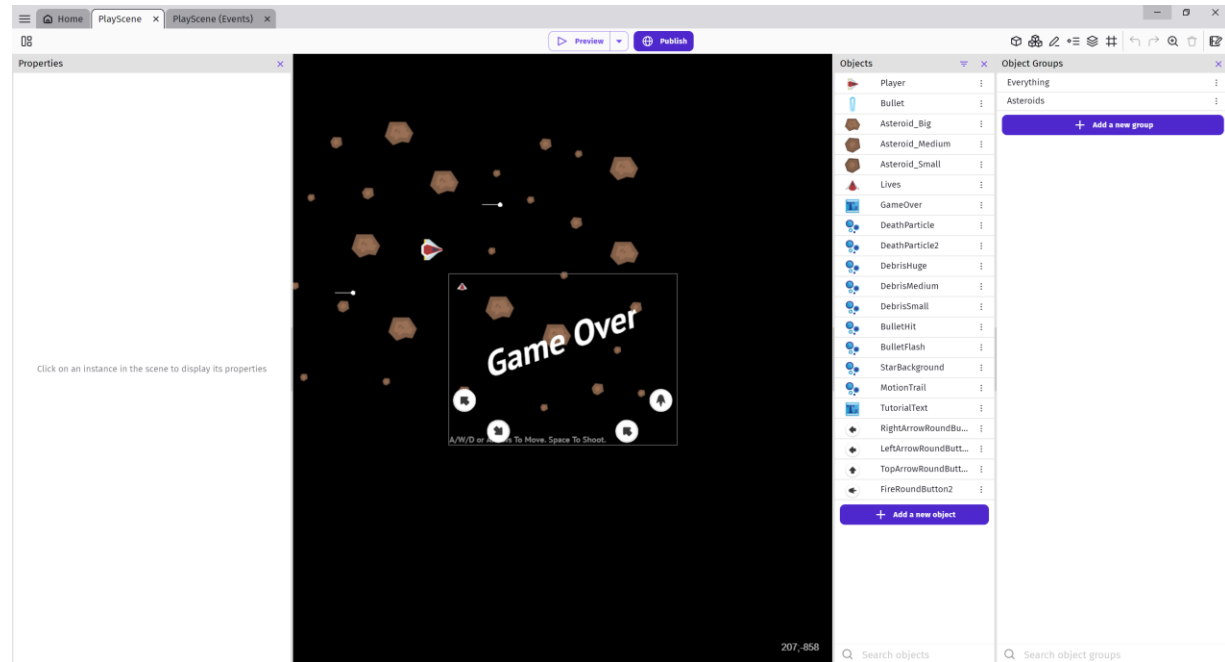
OBJETIVOS DE APRENDIZAGEM

No final deste desafio, poderás...

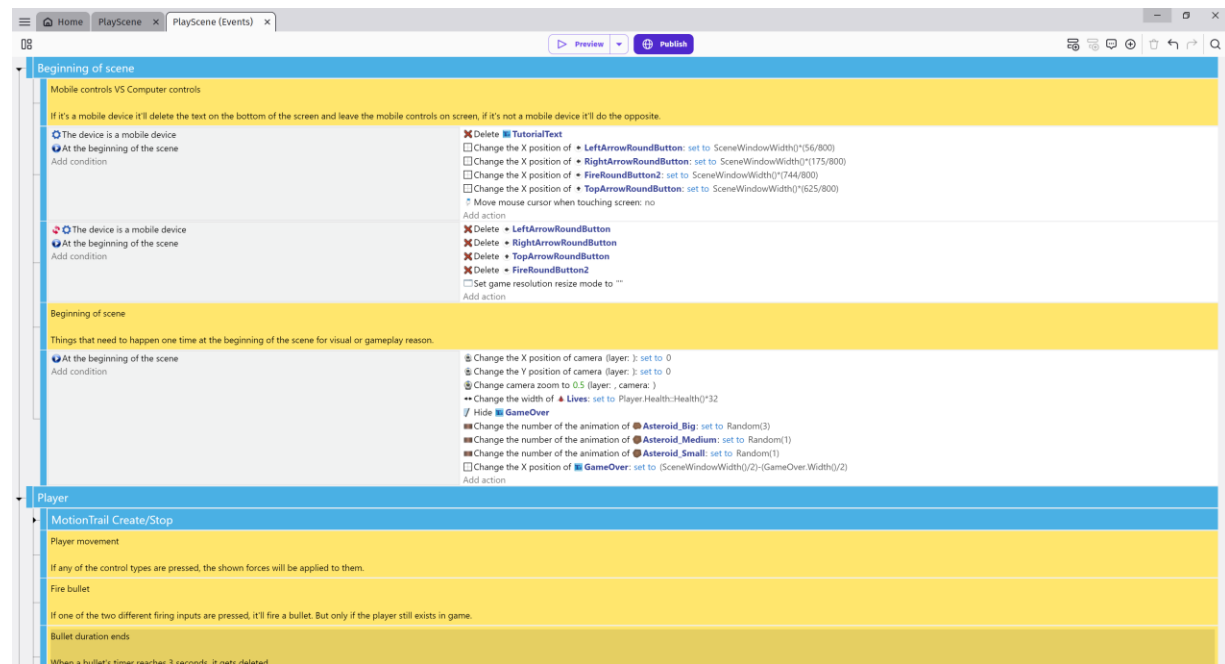
1. Ter experiência com uma suíte de programação visual e ser capaz de codificar uma pequena peça de software padrão com ele.
2. Saber o que são declarações e linhas de comando e o que significam para um compilador.
3. Escrever instruções utilizando a sintaxe correta e com erros mínimos.
4. Saber o que são os operadores, o que fazem e quais os símbolos que representam os operadores.
5. Ser capaz de entender a atribuição de valores a variáveis e como mudá-los.
6. Conhecer todas as operações aritméticas básicas e como usá-las.
7. Reconhecer e saber como utilizar todas as estruturas de dados relacionadas com os números.
8. Conhecer as estruturas ligadas ao uso do texto, como cordas e caracteres.
9. Utilizar declarações condicionais.
10. Utilizar instruções de controlo de ciclos.

INSTRUÇÕES

Esta é a sua configuração inicial. Neste caso, apenas fornecemos os objetos básicos que vai precisar para o jogo. Como sempre, comece por verificá-los cuidadosamente.



Também temos o código que começa o jogo e temos a estrutura para o resto do código.



O nosso objetivo é criar um jogo onde destruíamos asteroides quando eles estão no ecrã.

Começemos por permitir que o jogador controle a nave, utilizando chaves ou o dispositivo móvel.

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 Player.Angle() 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

Agora definimos tudo relacionado com o disparo e as 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 [M] 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 [I] Trigger once Add condition	Play the sound LaserFire.wav , vol.: 40, loop: no Create object Bullet at position Player.PointX("BulletSpawn");Player.PointY("BulletSpawn") (layer:) Create object BulletFlash at position Player.PointX("BulletFlash");Player.PointY("BulletFlash") (layer:) Rotate Bullet towards Player.Angle()+90 at speed 0 deg/second Rotate BulletFlash towards Player.Angle()+90 at speed 0 deg/second Add to Bullet a permanent force, angle: Player.Angle() degrees and length: 350 pixels Change the z-order of Bullet : set to Player.ZOrder()-2 Change the z-order of BulletFlash : set to Player.ZOrder()-1 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.	
The timer "End" of Bullet > 3 seconds Add condition	Delete Bullet Add action

Também abordamos o que acontece se dispararmos uma bala que não atinge nada (lembra-se que tivemos esta pergunta há alguns desafios?).

Agora lidamos com ser atingido e 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 Player.Health:Health()*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 Player.X();Player.Y() (layer:) Create object DeathParticle2 at position Player.X();Player.Y() (layer:) Rotate DeathParticle towards Player.Angle() at speed 0 deg/second Delete Player Show GameOver Add action

Agora lidamos com os asteroides. Neste jogo, quando atingirmos um grande asteroide, ele entra em asteroides médios e os asteroides médios travarão em pequenos asteroides. Quando atingimos pequenos asteroides, são destruídos.

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:

Condition: Bullet is in collision with Asteroid_Big

Actions:

- Play the sound Explosion.wav, vol.: 60, loop: no
- Create object Asteroid_Medium at position Asteroid_Big.X();Asteroid_Big.Y() (layer:)
- Create object Asteroid_Medium at position Asteroid_Big.X();Asteroid_Big.Y() (layer:)
- Create object DebrisHuge at position Asteroid_Big.X();Asteroid_Big.Y() (layer:)
- Create object BulletHit at position Bullet.PointX("BulletHit");Bullet.PointY("BulletHit") (layer:)
- Rotate Asteroid_Medium towards RandomFloatInRange(0, 360) at speed 0 deg/second
- Apply to Asteroid_Medium a force of angle Asteroid_Medium.Angle() and length 3
- Delete Asteroid_Big
- Delete Bullet

Repeat for each instance of Asteroid_Medium:

Condition: Bullet is in collision with Asteroid_Medium

Actions:

- Play the sound Explosion.wav, vol.: 55, loop: no
- Create object Asteroid_Small at position Asteroid_Medium.X();Asteroid_Medium.Y() (layer:)
- Create object Asteroid_Small at position Asteroid_Medium.X();Asteroid_Medium.Y() (layer:)
- Create object DebrisMedium at position Asteroid_Medium.X();Asteroid_Medium.Y() (layer:)
- Create object BulletHit at position Bullet.PointX("BulletHit");Bullet.PointY("BulletHit") (layer:)
- Rotate Asteroid_Small towards RandomFloatInRange(0, 360) at speed 0 deg/second
- Apply to Asteroid_Small a force of angle Asteroid_Small.Angle() and length 3
- Delete Asteroid_Medium
- Delete Bullet

Repeat for each instance of Asteroid_Small:

Condition: Bullet is in collision with Asteroid_Small

Actions:

- Play the sound Explosion.wav, vol.: 50, loop: no
- Create object DebrisSmall at position Asteroid_Small.X();Asteroid_Small.Y() (layer:)
- Create object BulletHit at position Bullet.PointX("BulletHit");Bullet.PointY("BulletHit") (layer:)
- Delete Asteroid_Small
- Delete Bullet

Finalmente, fazemos algo que também é típico dos jogos de asteroides: quando algo sai do ecrã aparece do outro lado (embrulho 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:

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

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

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:

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

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

Here we used the instruction Repeat that allows us to execute several times one instruction while a certain condition is met.

RECURSOS

Challenge 27 (Basic)