Gaming Bootcamp

of South Dakota

1

Space Invaders

The invasion is coming!!!!



Play the game we are building: Click

Today's Game



Challenge: Reproduce the famous Space Invaders arcade games

Goal: Add your own creativity into a game that you know.

Features:

- Invaders move back and forth across the screen
- A UFO comes out for extra live
- Use 8-bit characters, fonts, and game-play

Setup Layout

- Layout size (<u>854, 480</u>)
- Enable "snap to grid"
- Enable "show grid"
- Set grid to 10 & 10

(NOTE: You must click back to another grid width to get it to set. It is a bug in Construct2)

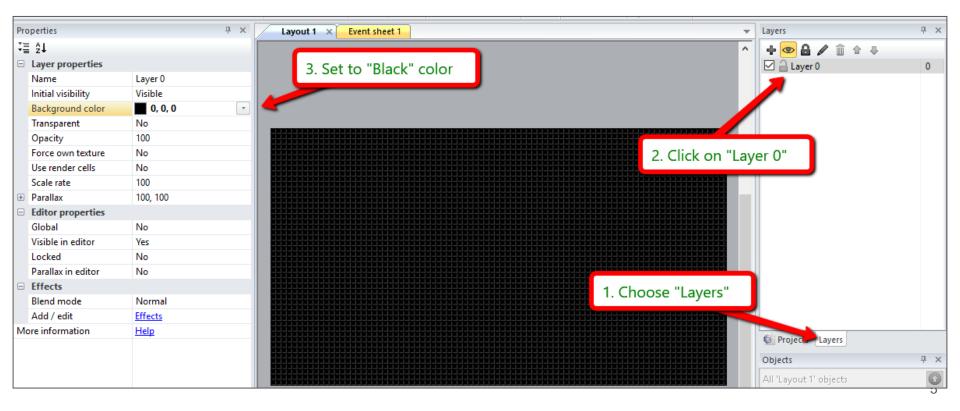


File Home	View Events				
	ayer Bar 🔲 Bookmarks Bar Z Order Bar 📝 Tilemap Bar	 Q Zoom in Q Zoom out 	✓ Snap to grid✓ Show grid	Grid width 10 Grid height 10	
✓ Project Bar	Object Bar 🛛 Configurations Bar	Q Zoom to 100%			Stile
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	i i				
Layout properties					
Name	Layout 1				
Event sheet	Event sheet 1				
Active layer	Layer 0				
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E Layout Size	854, 480				
Effects	200,200				
Add / edit	Effects				
Project Properties	View				
More information	Help				
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Set the Layout Background Color



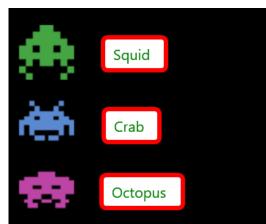


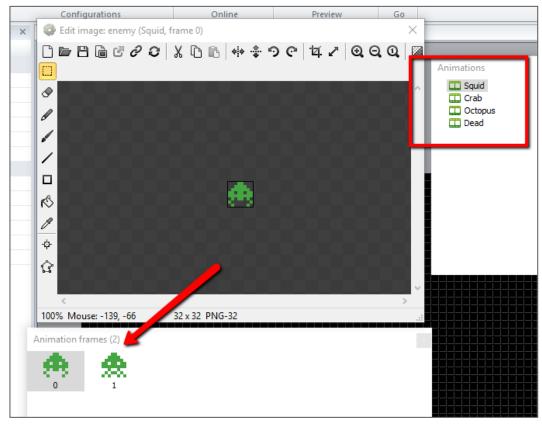


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Create Invaders

- New Sprite
- Create 4 animations:
 - Crab, Squid,
 Octopus, and Dead
- Each has 2 images (except Dead)



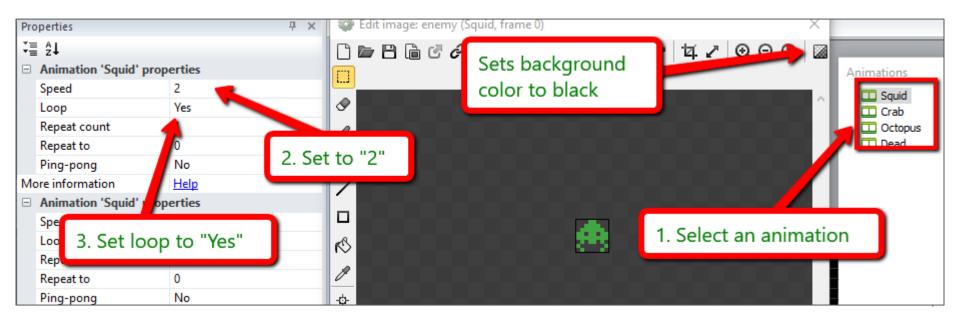


Adjust Animation Speed

• Set the animation's Speed to "2" and loop to "yes" for each animation

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• Also, this button changes the background to black. Helps see the white objects



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Layout Invaders

• Name it "enemy"

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Create Player

- New Sprite
- Two Animation
 - Default \bigcirc
 - Dead \bigcirc
- Create your own "Dead" image

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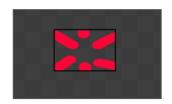
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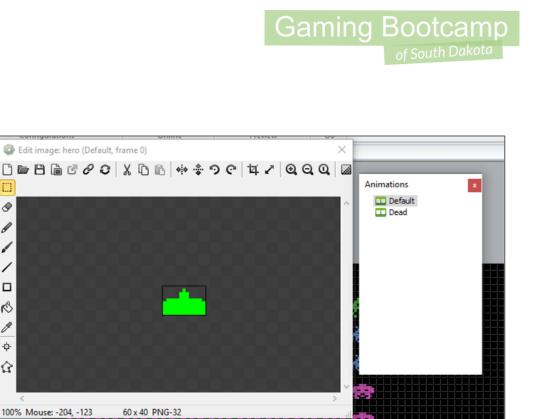
8 фŵ

Animation frames (1)

0

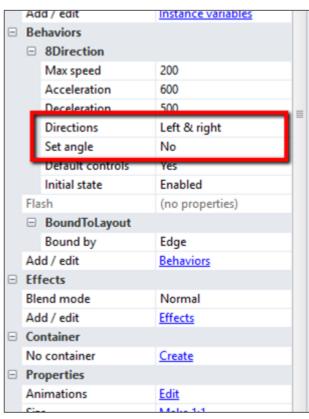
• Name it "player"

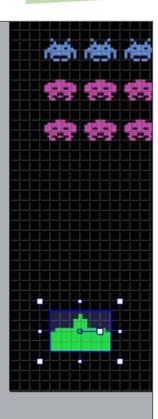




Create Player

- Name "Player"
- Behaviors
 - 8-Direction
 - Flash
 - Bound to Layout
- Set Properties
 - Direction: Left & Right
 - Set angle: No





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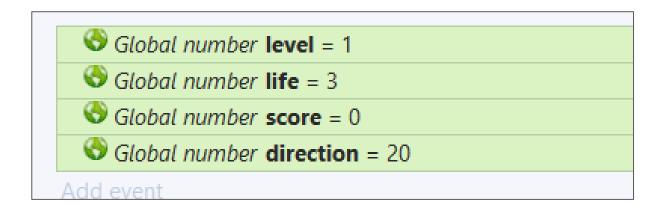
Create Two Sprites

- Fill them with a "Red"
- Name them:
 - flipLeft
 - flipRight
- Set Opacity to "40"
- Initial Visibility to "Invisible"



Define Global Variables

- Setup four global variables, all "Numbers"
- "direction" will be used to determine which direction the enemies are going



Move Our Enemies

• Event: System / "Every X Seconds" with the value: 0.5/level

Parameters for System: Every X seconds	
Specify time, in seconds, between running the actions. Interval is limited by the framerate (actions will not run more than once per tick).	Parameters for enemy: Set X
Interval (seconds) 0.5/level	New X co-ordinate, in pixels.
Cancel Help on expressions Back Done	enemy.x + direction
	Cancel Help on expressions Back Done



Turn Enemies Around at Edge

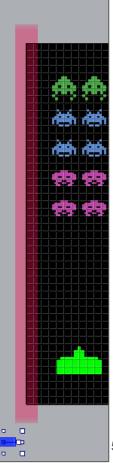
- Two Events with Two Conditions each.
- First: On collision with **flipRight** change direction to **-20**
- Second: On collision with flipLeft change direction to +20
- Test Game enemies move back & forth while slowing dropping

	• enemy	On collision with	enemy	Set Y to enemy.Y + 1
2		flipright	🗱 System	Set direction to -20
	🗱 System	Pick all 🏚 enemy	Add action	
2	• enemy	On collision with flipleft	enemy	Set Y to enemy.Y + 1
5	🗱 System	Pick all 🏚 enemy	🗱 System	Set direction to 20
			Add action	

Add Player's Bullet

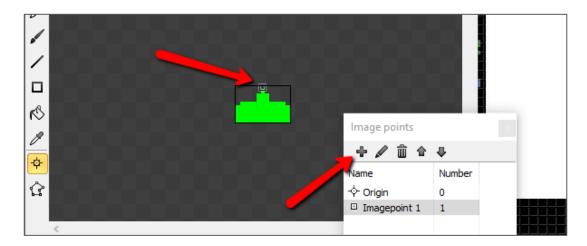
- Add a new Sprite
- Fill with a solid color (like Blue)
- Name "bullet"
- Behaviors
 - Bullet
 - Destroy Outside of Layout
- Place outside of layout
- Make sure it is "**pointing**" right
- Also Add Keyboard to layout

= z	1		
Na	ame	bullet	
Ph	ugin	Sprite	
UI	D	58	
GI	obal	No	
Common			
La	yer	Layer 0	
Ar	ngle	0	
O	pacity	100	
Po	sition	-30, 530	
Size		30, 10	
Instance variables			
Ac	ld / edit	Instance variables	
Be	ehaviors		
-	Bullet		
	Speed	400	
	Acceleration	0	
	Gravity	0	
	Bounce off solids	No	
	Set angle	Yes	
	Initial state	Enabled	
De	estroyOutsideLayout	(no properties)	
Ac	ld / edit	<u>Behaviors</u>	
	fects		
Ble	end mode	Normal	
	ld / edit	Effects	
_	ntainer		
	o container	Create	
	operties		
	nimations	Edit	
Siz		Make 1:1	0
Ini	tial visibility	Visible	



Player Can Shoot!!!

• Add an image point for the bullet.



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• Set bullet's "Angle of Motion" to 270 (up)



Kill Enemy & Track Score



• Different points for each type of enemy.

5日	•{	enemy	On collision with	bullet	bullet	Destroy
					Add action	
6	-	enemy	Is animation "Crab	" playing	🗱 System	Add 300 to score
					enemy	Set animation to "Dead" (play from beginning)
					Add action	
7	_	enemy	Is animation "Octo	pus"	🗱 System	Add 200 to score
		_	playing		enemy	Set animation to "Dead" (play from beginning)
					Add action	
8	-	enemy	Is animation "Squi	d" playing	🗱 System	Add 100 to score
					enemy	Set animation to "Dead" (play from beginning)
					Add action	

Kill Enemies

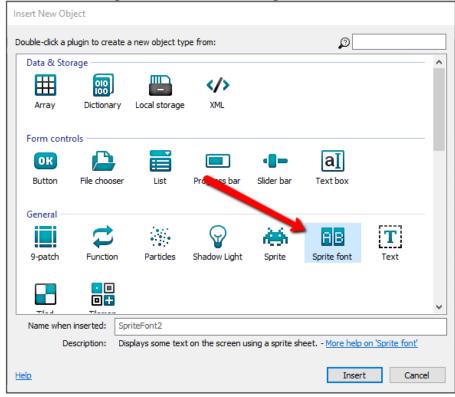


• After the "**Dead**" animation finishes, destroy the enemy



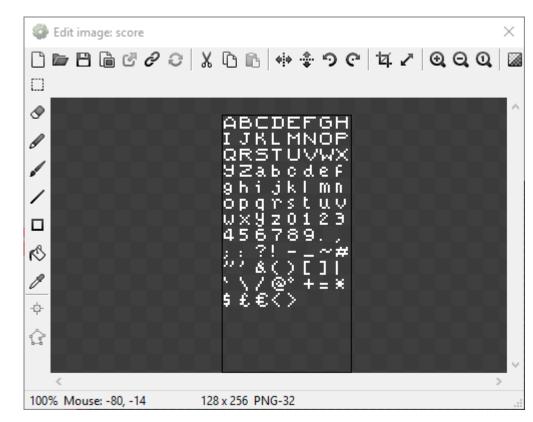
Create On Screen Display

• We are going to use "**Sprite font**" object



Create On Screen Display

- After selecting "Insert" and choosing where to goes, you will be prompted with an image with black fonts.
- We are going to replace them with an image of white fonts
- Open the provided font image named "fontwhite.png"



Add Three Sprite Fonts

- Add three "Sprite Fonts" each with the white text
- Name them score, level, and lives
- Set text for each.

Properties				
Sprite font	Edit			
Character width	16			
Character height	16			
Character set	ARCDEEGHUKI MNOPOR			
Text	Score: 0			
Ocale	1			
Initial visibility	Visible			
Horizontal alignment	Left			
Vertical alignment	Тор			
Hotspot	Top-left			
Wrapping	Word			
C 1 1	0			
Character spacing	0			
Line height	0			



Update the Display

- Gaming Bootcamp
- Keep the display updated with the global variables

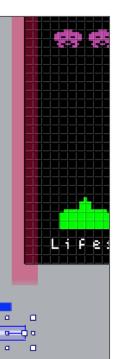
10	🗱 System	Every tick	score	Set text to "Score: " & score
			lives	Set text to "Lifes: " & life
			level	Set text to "Level: " & level
			Add action	

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Invaders Shoot Back

- Add a Sprite for the invader's bullet
- Name it "bulletenemy"
- Behaviors
 - Bullet
 - Destroy Outside of Layout

Bullet Speed Acceleration Gravity Bounce off solids Set angle Initial state estroyOutsideLayout dd / edit ffects lend mode dd / edit	400 0 0 No Yes Enabled (no properties) Behaviors Normal			
Acceleration Gravity Bounce off solids Set angle Initial state estroyOutsideLayout dd / edit ffects end mode	0 0 No Yes Enabled (no properties) Behaviors Normal			
Gravity Bounce off solids Set angle Initial state estroyOutsideLayout dd / edit ffects end mode	0 No Yes Enabled (no properties) Behaviors			
Bounce off solids Set angle Initial state estroyOutsideLayout dd / edit ffects lend mode	No Yes Enabled (no properties) Behaviors Normal			
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itial animation	Default			
itial frame	0			
ollisions	Enabled			
information	Help			
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Invaders Shoot Back

- Every (0 to 1) second, ONE of the invaders shoots
- Two Event conditions second one is "Pick a Random"

	🗱 System	Every random(0,1) seconds	💏 enemy	Spawn [bulletenemy on layer 0 (image point 0)
11	🗱 System	Pick a random _{🕫 enemy}		Set 🛹 Bullet angle of motion to 90 degrees
		instance	Add action	

Invaders Shoot Back

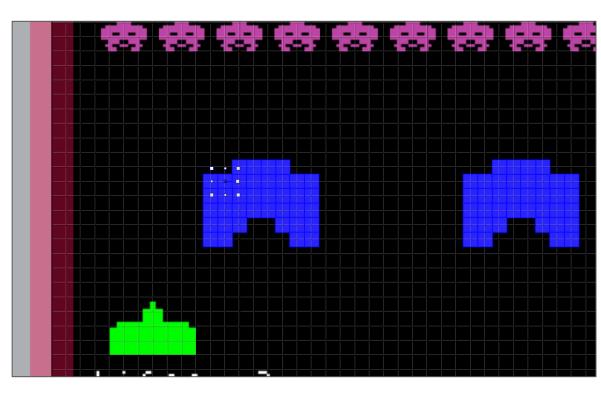
- Bullet hits player, lose a live, flash & change animation
- Once **dead** animation finishes, change player back



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Add Shields

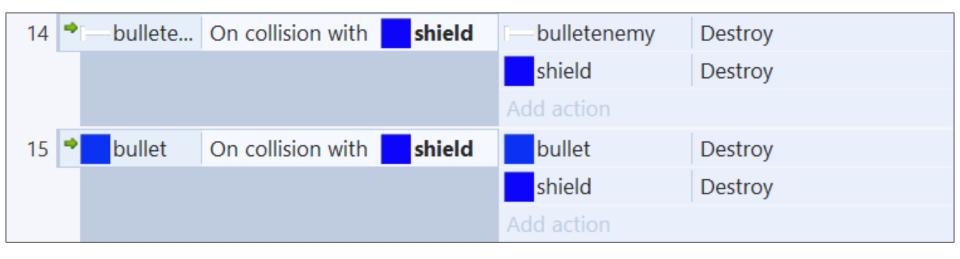
- Create a **Sprite**, fill with "**Blue**"
- Name it "shield"
- And resize it to **10, 10** (smallest it came be because of our grid)
- Build a shield with copies of this Sprite
- Make 4 shields



Destroy The Shield



• If either the enemy or the player's bullet hits the shield, the shield gets destroyed.



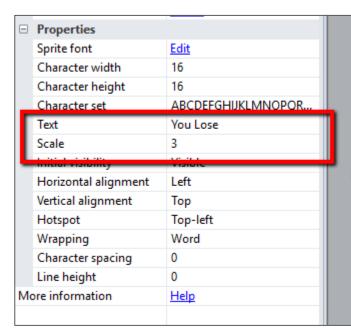
Bullets Colliding With Bullets

- Gaming Bootcamp of South Dakota
- Let's let our bullets destroy an enemy bullet if they hit



You Lose

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- Add another **Sprite Font** for a "you lose" message
- Set the "Scale" to "3"
- Place under your layout





You Lose

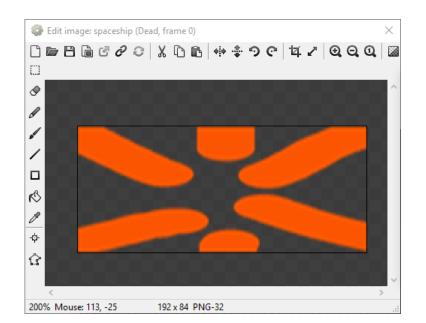


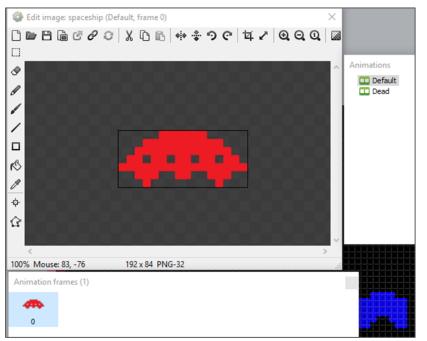
• Display the you lose message if you run out of lives

17	🗱 System	life ≤ 0	📥 player	Destroy
			youLose	Set position to (240, 260)
			Add action	

Create the UFO

- Create a new Sprite
- Add the UFO as the "Default" animation
- Create your own "Dead" animation





Create the UFO

- Name "spaceship"
- Behaviors
 - Bullet
 - Destroy Outside Layout
 - Flash
- Place outside of layout

	Ad	d / edit	Instance variables
Þ	Be	haviors	
		Bullet	
		Speed	150
	Acceleration		0
		Gravity	0
	Bounce off solids		No
	Set angle		Yes
		Initial state	Enabled
	De	stroyOutsideLayout	(no properties)
	Flash		(no properties)
	Ad	d / edit	Behaviors
_			

Create UFO Bullet

- Create a Sprite for the UFO bullet
- Name bulletSpaceship
- Fill with a solid color (or make an image)
- Make sure it points "right"
- Behaviors
 - Bullet
 - Destroy Outside Layout

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Pro	operties			д	×		Layout 1	I X	Event sh	eet 1	
	ậ↓										
	Object type properties										
	Name		bulletsSpaceship								
	Plugin		Sprite								-0
	UID		218								
	Global		No						- A		D
	Common							T			
	Layer		Layer 0								
	Angle		0						Sc	ore	2 . 0
	Opacity	y	100								
+	Positio	n	90, -90								, db, db,
Ŧ	Size		50, 10								
	Instand	e variables								h dès	计合约语句
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	Behaviors						h rèth rèth				
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	Spe	ed	400			- 영광 영광 성	: 영화 영화				
	Acc	eleration	0				**				
	Gra	vity	0					- 29 29			
	Bou	unce off solids	No								
	Set	angle	Yes								
	Init	ial state	Enabled								
	Destroy	OutsideLayout	(no properties)								
	Add / e	edit	Behaviors								
	Effects										

Spawn The UFO

- Every 15 seconds, spawn the UFO and have it randomly shoot at us
- Set the angle of motion to **90** (down)

18	System	Every 15 seconds	🗱 System	Create object An spaceship on layer 0 at (0, 45)
			🗱 System	Wait random(0,6) seconds
		🦚 spaceship	Spawn bulletsSpaceship on layer 0 (image point 0)	
			bulletsSpaceship	Set 🛹 Bullet angle of motion to 90 degrees
			Add action	

UFO Shoots Player

- UFO bullets take a live for our player
- Also, make sure they destroy the shield



Shoot the UFO



• Player shoots the UFO and gets 900 points PLUS a bonus life

21	bullet	On collision with 🦔	🗱 System	Add 900 to score
		spaceship	🗱 System	Add 1 to life
			🦚 spaceship	Set animation to "Dead" (play from beginning)
			🦚 spaceship	Flash: Flash 0.1 on 0.1 off for 999 seconds
			Add action	
22	⇒ m spaces	On animation "Dead" finished	🦚 spaceship	Destroy
			Add action	

Go To Next Level

• When there are no more invaders, increase the level and restart layout

23	🗱 System	enemy.Count = 0	System	Add 1 to level
			🗱 System	Restart layout
			Add action	