

# Stencyl

Knox Game Design November 2021 Levi D. Smith

#### Overview

- www.stencyl.com
- Windows, Mac, and Linux
- Creates Flash builds by default (free)
  - \$99 / year Create desktop builds
  - \$199 / year Create mobile builds



Pros

- Graphical coding will be familiar to Scratch users
- Behaviors make getting a game up and running fast
- Many example games use for learning
- More robust than Scratch
- Built-in physics engine

Cons

- Large project file size makes checking into source code repository difficult
- Unable to search with text editor in code files
- Flash builds by default. Not supported by many (any?) web browsers
- Only 2D games
- Limited GUI components (lack delay text field input?)

DESIGN

#### Versions

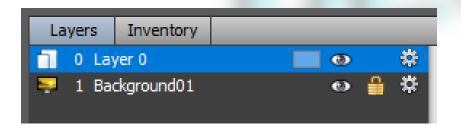


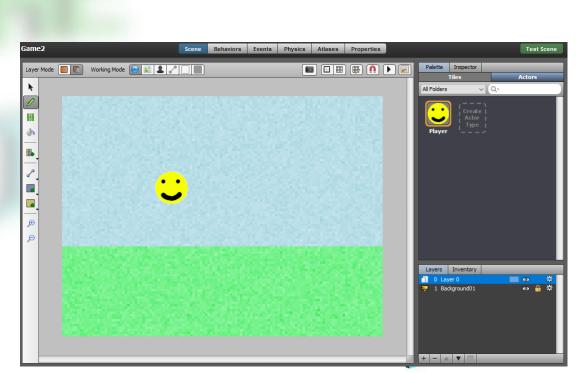
- Some game versions may not be compatible with newer versions of Stencyl
  - Example Stencyl 3.1 game running on Stencyl 4.0
  - Updater tries to bring game to current version (expect issues)
- Previous versions of Stencyl can be downloaded at http://community.stencyl.com/index.php?topic=5530.0

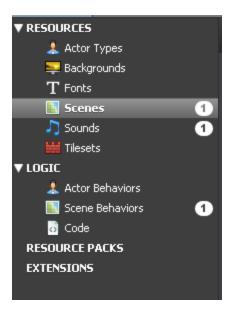
KNOX GAKE Design

# Scenes

- Similar to a room or scene
- 640x480 resolution by default
  - 20 columns x 15 rows, tile size 32 pixels
  - can be changed under Scene Properties
- Layers
  - layers can be moved up and down in the list
  - can be hidden

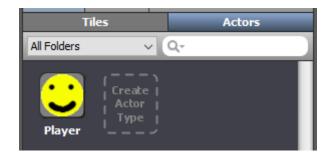




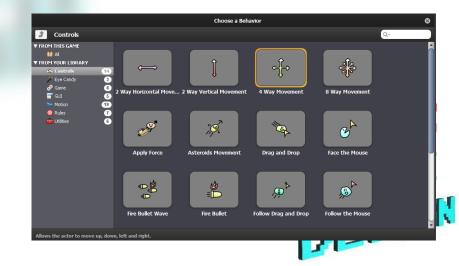


#### Actors

- similar to objects, game objects
- Examples player, enemies, items
- Appearance animation graphics
  - non animated has animation with 1 frame
  - can set animation frame length
  - downloads Pixelitor as editor by default
    - Can use custom image editor and import image files (such as PNG)
  - Set scale to 1x for original image size

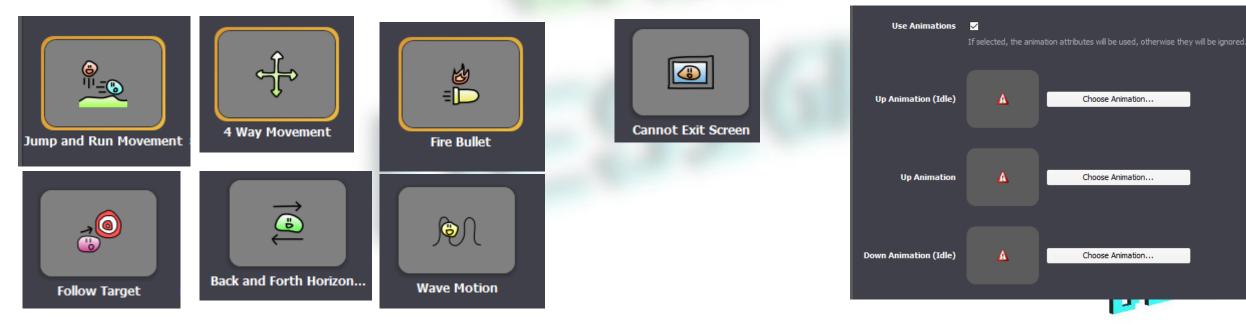






# Behaviors

- Controls (player) or logic (enemies)
- Customization settings
  - Button assignments
  - Specify animations
- Both Actors and Scenes can have behaviors



#### 

4 Way Movement

Allows the actor to move up, down, left and right.

<del></del>

# Behaviors

- Collision behaviors
- Can customize behavior with editor

Dashboard Player × Game2 × Sł	hip × Enemy × Bullet* ×
Bullet	
▼ DEFAULT	Die On Collision With Actor Type         O
	Actor Type       Choose Actor Type         When the actor collides with an actor, it will die if the other actor is of this type.

Die On Collision With Actor Type				
+ Add Event 📃 🔺 🕚				
Collision	when Self : hits a Actor Type — 1st actor $2$ actor of type $2$ : $4$ kill Last Collided Actor : kill Self : Increment Score By 100 :			



#### **Events**

- For custom code not covered by a behavior
  - Actor create
  - Actor update
  - Actor killed (under create)

& Actors

Collisions

Created or Dies

•

2

Specific Actor

Enters or Leaves the Sce

2

Specific Actor

Enters or Leaves a Region

2

Specific Actor

Actor of Type

Member of Group

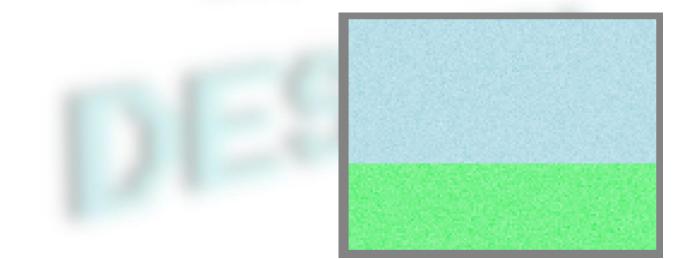
• Input handling

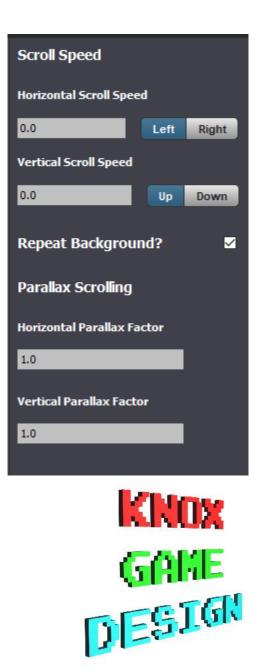
Basics	Basics
🕘 Input	<ul> <li>Image: A state of the state of</li></ul>
🕒 Time	When Creating When Drawing When Updating
Actors	
Basics	when Self + is killed + 2
🖰 Input	Universal
🕒 Time	
L Actors	Keyboard Any Key Focus
🗮 Collisions	Universal (Works for Mouse & Touch)
🎝 Sound	
Mobile	Click On Actor On Region
🖳 Screen	Mobile-Only
$\sqrt{a}$ Attributes	
💼 Advanced	Swipe Multi-Touch
	Desktop-Only
	Any Button
	C Time Time
<u>&amp;</u>	Actors
tor of Type Member of Group	
or Screen	
<u>&amp;</u>	→ Sound ► Game
tor of Type Member of Group	■ Mobile ► □
2 2	Screen Paused



# Backgrounds

- The background image
- Can set scroll speeds and make repeating
- Make sure background layer is below Actor layer
- Can automate parallax





# Sounds

- Supports MP3 and OGG
- Can use Audacity to convert formats
  - Set bitrate to Constant for MP3
- Find behavior to play sound unde Sounds > Playback

File name:	shoot.mp3		~	Save
Save as type:	MP3 Files		$\sim$	Cancel
	Bit Rate Mode:	○ Preset ○ Variable ○ Average ④ Constant		
	Quality	192 kbps $\checkmark$		
	Variable Speed:	Fast ~		
	Channel Mode:	● Joint Stereo ○ Stereo □ Force export to mono		

oundShoot	
Properties	port a Sound
Name SoundShoot Rename 🤗 OK	
	✓ MP3 is imported? (Required for Flash/HTML5 games)
Sound Type Sound Effect 🗸 🤨	OGG is imported? (Required for iOS/Android/Windows/Mac/Linux/HTML5 games)
Type Mono / 44100 Hz / No VBR File Size 4 KB	
Edit MP3 in External Editor	
Edit OGG in External Editor	
Drawing Images	Sounds
Collisions Custom	Extensions
Playback	
stop all sounds ∢●	
+ Add Event - A V	KNOX
Created → play ÷ SoundShoot ÷ ◄	GOBE
	TO TE!
	GAME DESIGN

#### Variables

- Variables are called *Attributes* 
  - Number, Text, Boolean, List, Map, etc
  - Use Game Attribute for attribute that should persist across scenes





# Controls

- For mapping keyboard inputs to virtual keys
- Must map individual letter and number keys to their corresponding values

Controls				H	ow do Controls work?
Name: Key:		Name:	down Down	Name:	
Name: Key:	right Right	Name: Key: Z		Name: Key:	action2 X + -
Name: Key:	enter Enter	Name: Key: O		Name: Key: 1	



when created 🧪

set iSecretNumber to random integer between 1 🔻 and 100 🚽

# Number Guessing Game

NumberGuess when enter 🕴 is pressed A. Adobe Flash Player 32 + Add Event - A V File View Control Help strGuess as number > iSecretNumber Keyboard 0  $\sim$ set strResult to 🛛 strGuess 🚷 💽 - Lower 👻 Number Guessing Game - 2021 Levi D. Smith Keyboard\_1  $\sim$ Guess the number from 1 to 100 Keyboard\_2  $\checkmark$ otherwise if < strGuess as number < iSecretNumber Keyboard\_3  $\sim$ > 75 Keyboard\_4  $\sim$ set strResult to strGuess & - Higher 🚽 Keyboard\_5  $\sim$ 50 - Higher Keyboard\_6  $\sim$ otherwise if 🧲 strGuess as number = iSecretNumber Keyboard 7  $\sim$ set str-Result to str-Guess & - Correct! v & iGuessCount & total guesses v Keyboard\_8  $\sim$ Keyboard\_9  $\sim$ Adobe Flash Player 32 🗧 by 💶 🔻 increment iGuessCount Keyboard\_Enter  $\checkmark$ File View Control Help 🈚 Drawing  $\sim$ set strGuess to 🗔 Number Guessing Game - 2021 Levi D. Smith Created  $\sim$ Guess the number from 1 to 100 vhen drawing 🐲  $\rightarrow$ draw text Number Guessing Game - 2021 Levi D. Smith - at (x: 50 - y: 25 - ) 97 - Correct! 7 total guesses draw text Guess the number from 1 to 100 v at (x: 50 v y: 50 v) when Key 7 🕴 is pressed A. draw text > v & strGuess at (x: 50 v y: 100 v ) set strGuess to strGuess & 7 🗸 draw text strResult at ( x: 50 v y: 150 v )

draw text iSecretNumber at (x: 50 v y: 200 v )



 Note - Games are saved to <user directory>/AppData/Roaming/Stencyl/stencylworks/games by default



