

KNOX

Stencyl

Knox Game Design

November 2021

Levi D. Smith

DESIGN

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

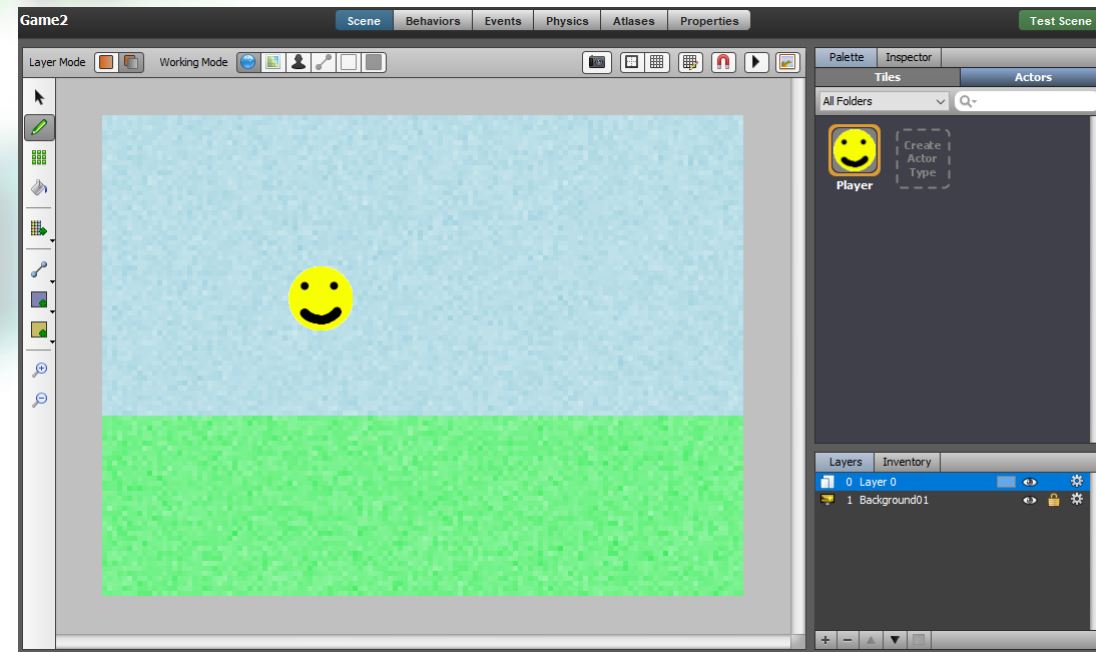
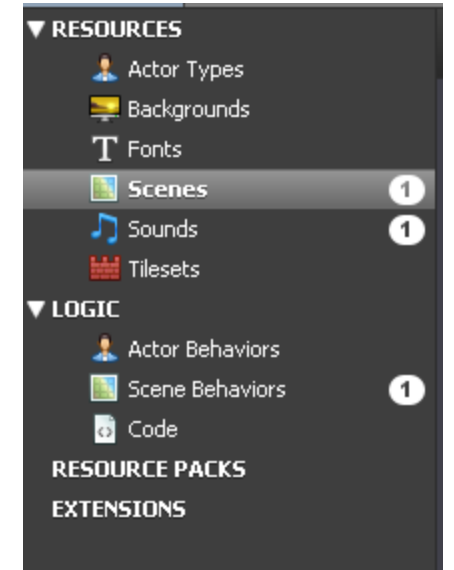
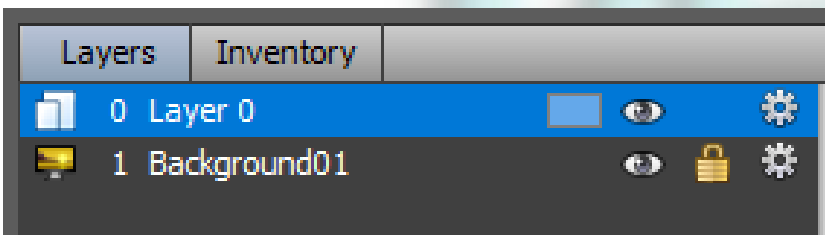
- Large project file size makes checking into source code repository difficult
- Unable to search with text editor in code files
- Flash builds by default. Not supported by many (any?) web browsers
- Only 2D games
- Limited GUI components (lacking text field input?)

Versions

- Current version: 4.0.4
- 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>

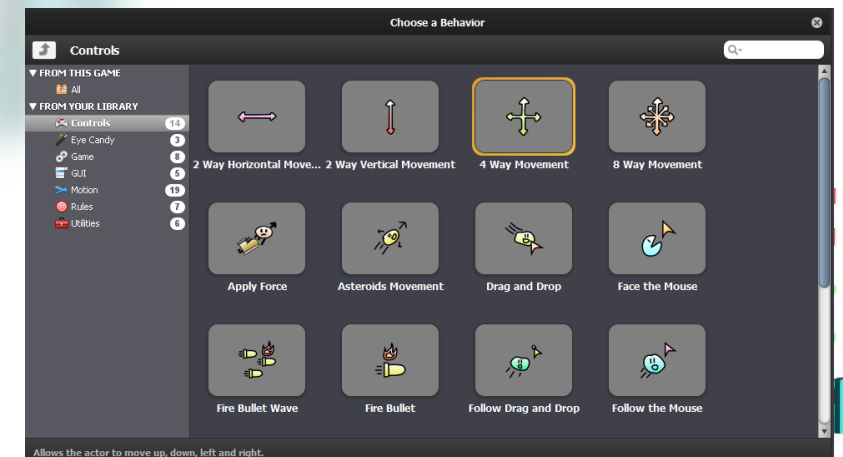
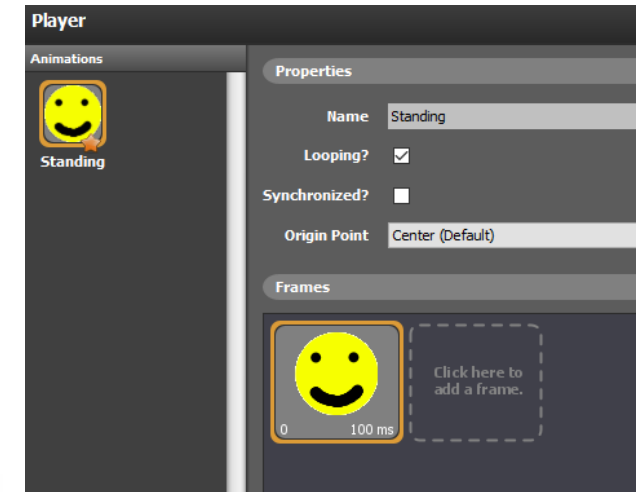
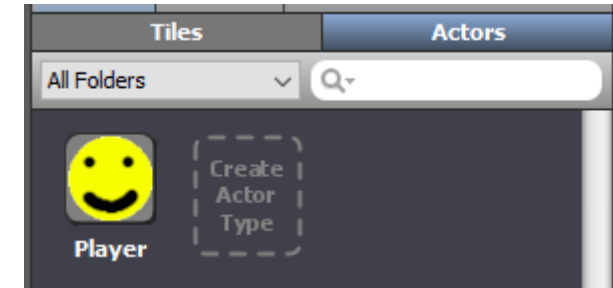
Scenes

- 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

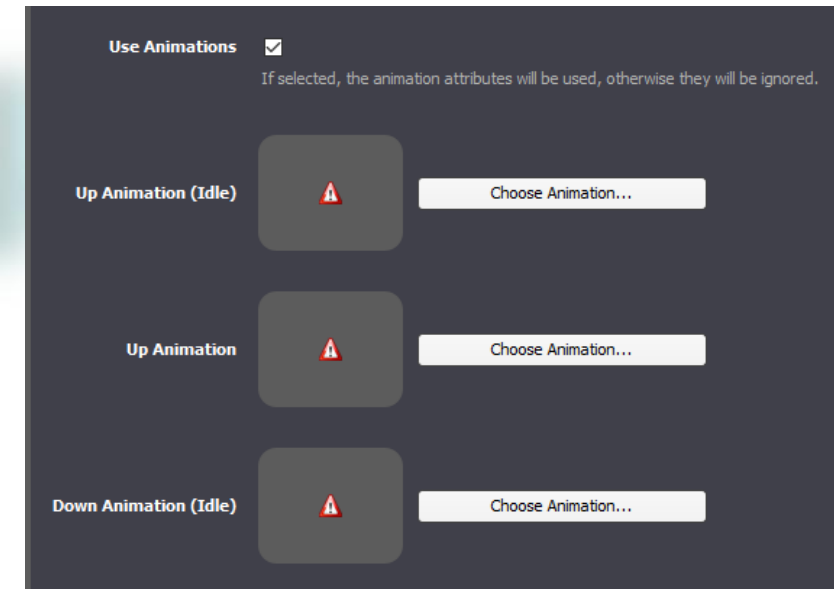
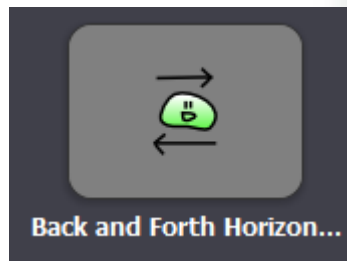
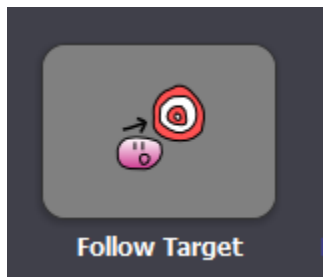
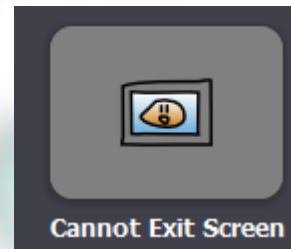
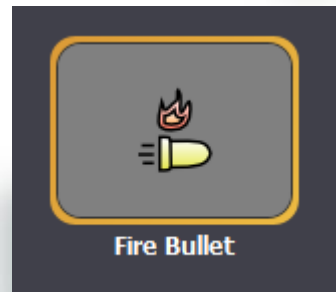
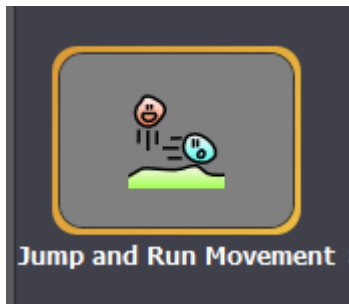
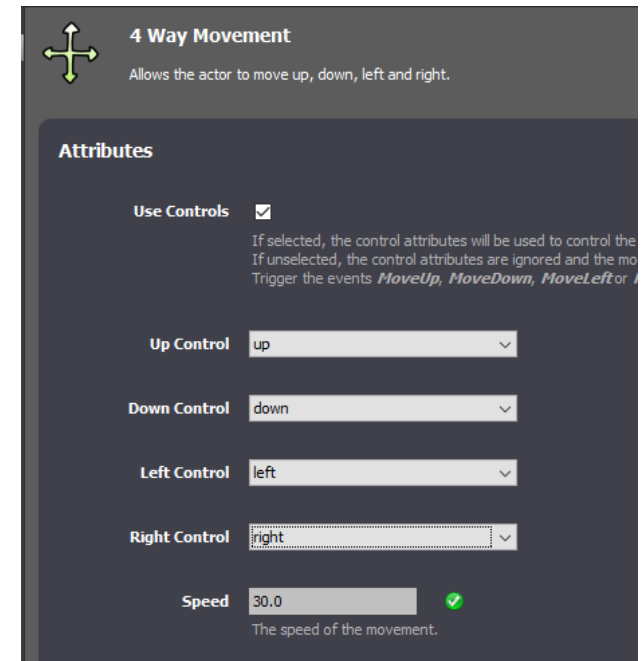
- similar to objects, game objects
- Examples - player, enemies, items
- Appearance - animation graphics
 - non animated has animation with 1 frame
 - can set animation frame length
 - downloads Pixelitor as editor by default
 - Can use custom image editor and import image files (such as PNG)
 - Set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



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

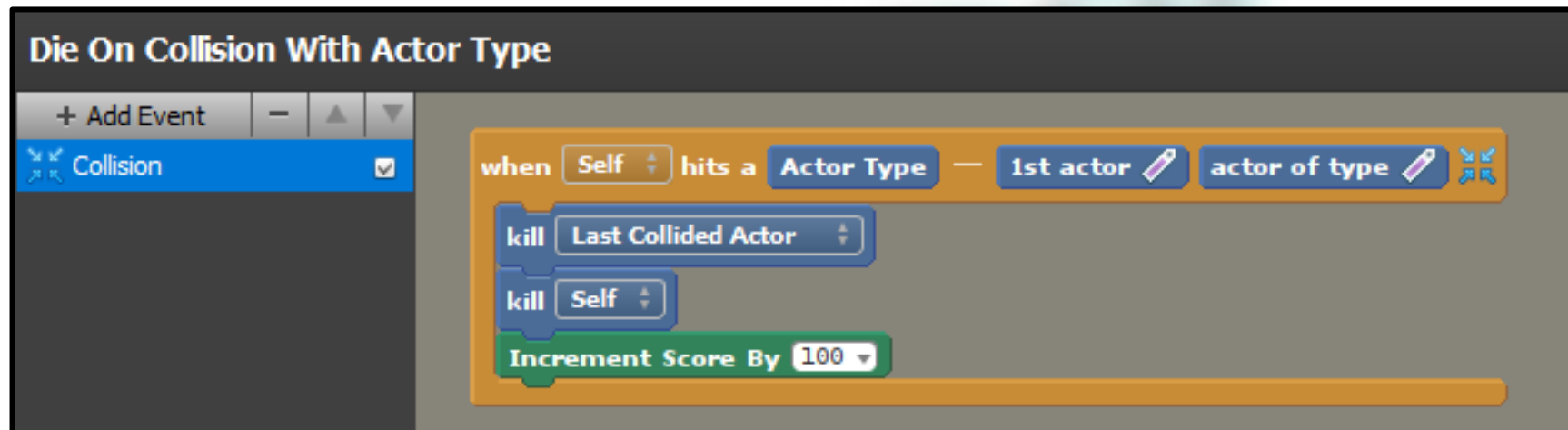
Behaviors

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



Behaviors

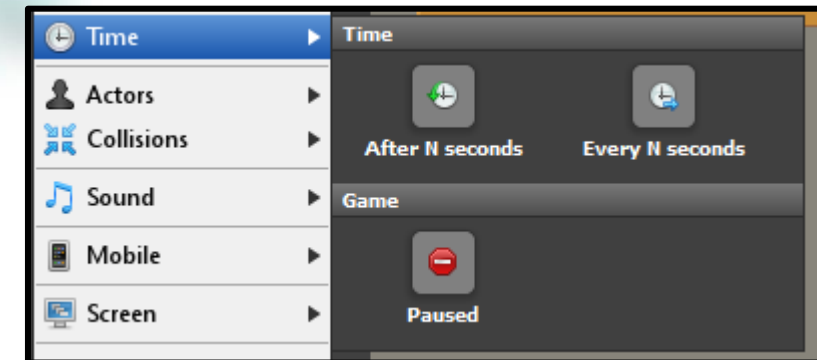
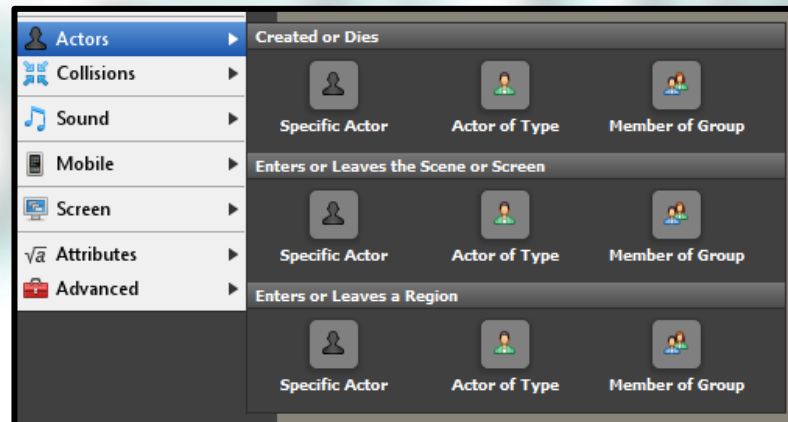
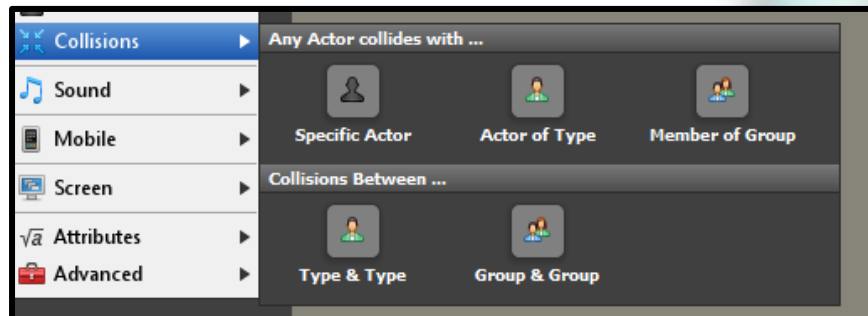
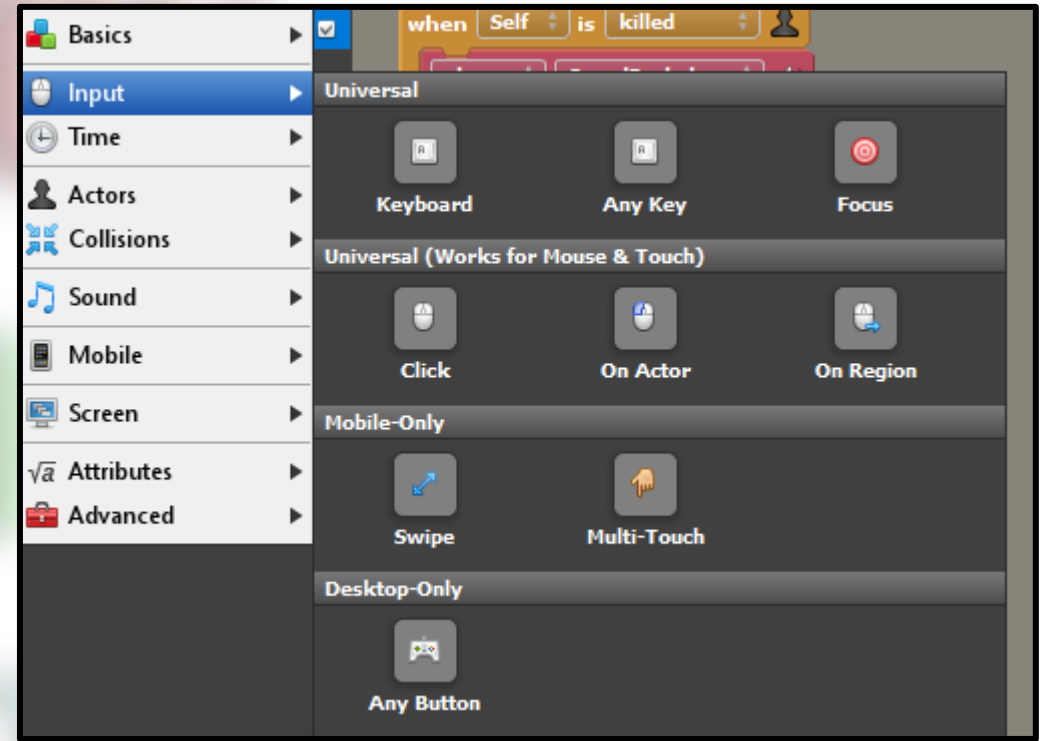
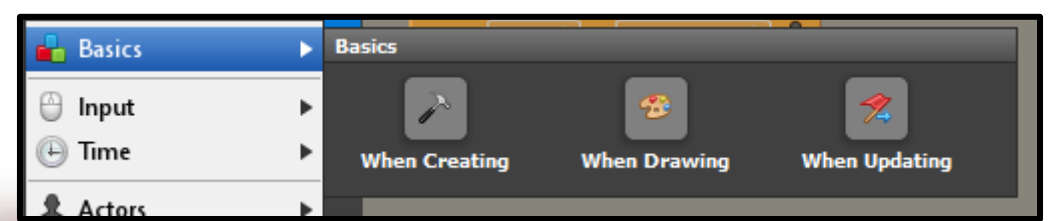
- Collision behaviors
- Can customize behavior with editor



KNOX
GAME
DESIGN

Events

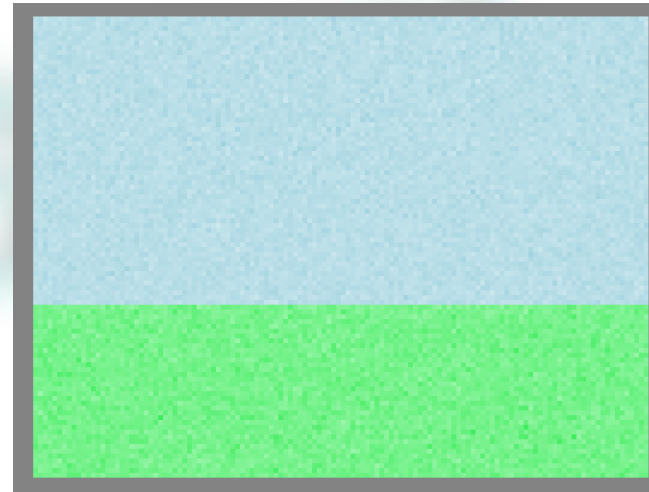
- For custom code not covered by a behavior
 - Actor create
 - Actor update
 - Actor killed (under create)
 - Input handling



DEAD

Backgrounds

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



Scroll Speed

Horizontal Scroll Speed

0.0 Left Right

Vertical Scroll Speed

0.0 Up Down

Repeat Background?

Parallax Scrolling

Horizontal Parallax Factor

1.0

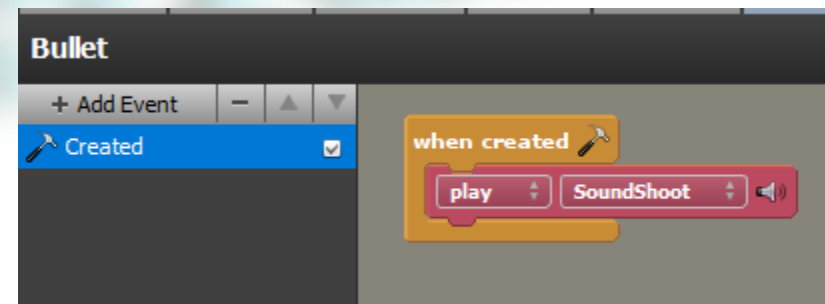
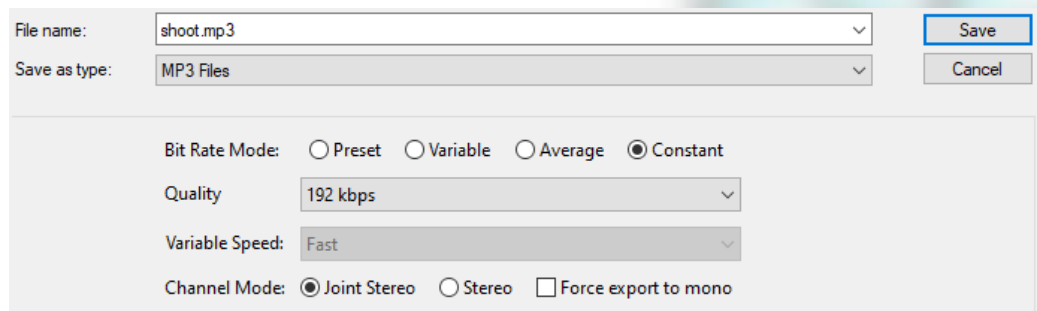
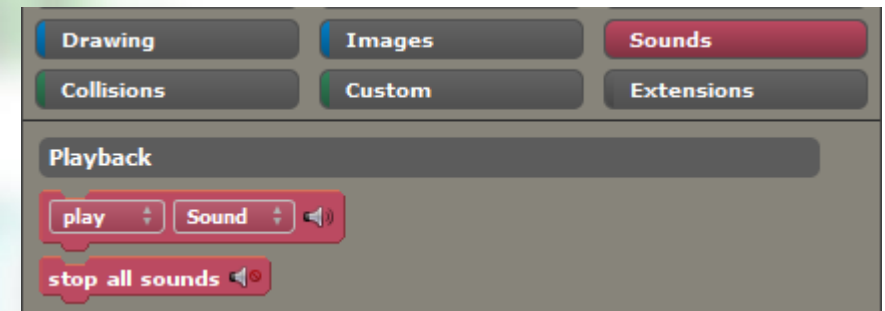
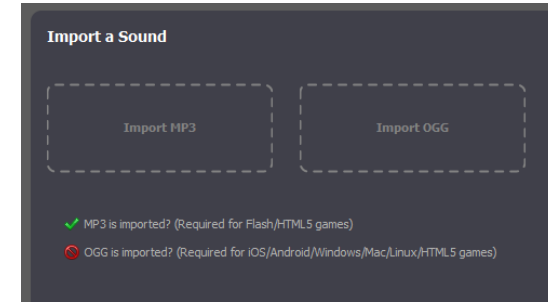
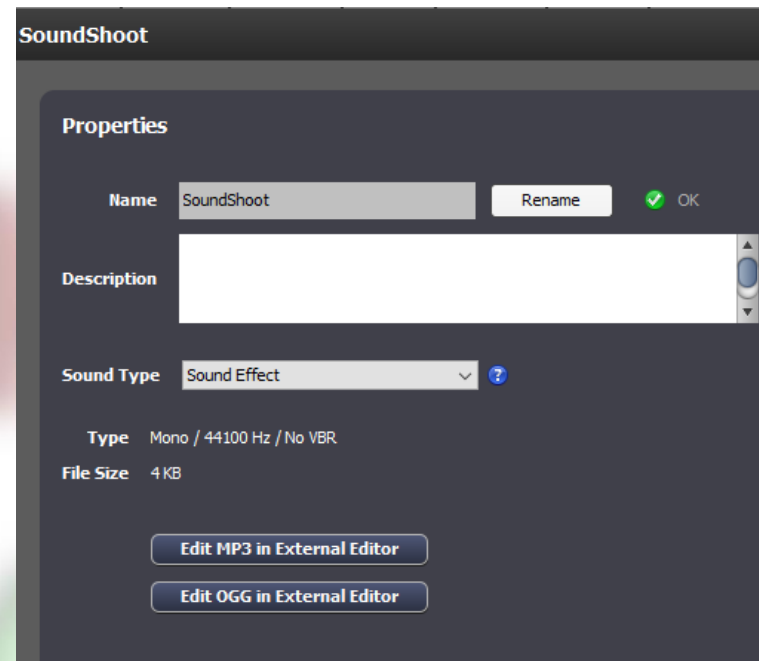
Vertical Parallax Factor

1.0

KNOX
GAME
DESIGN

Sounds

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



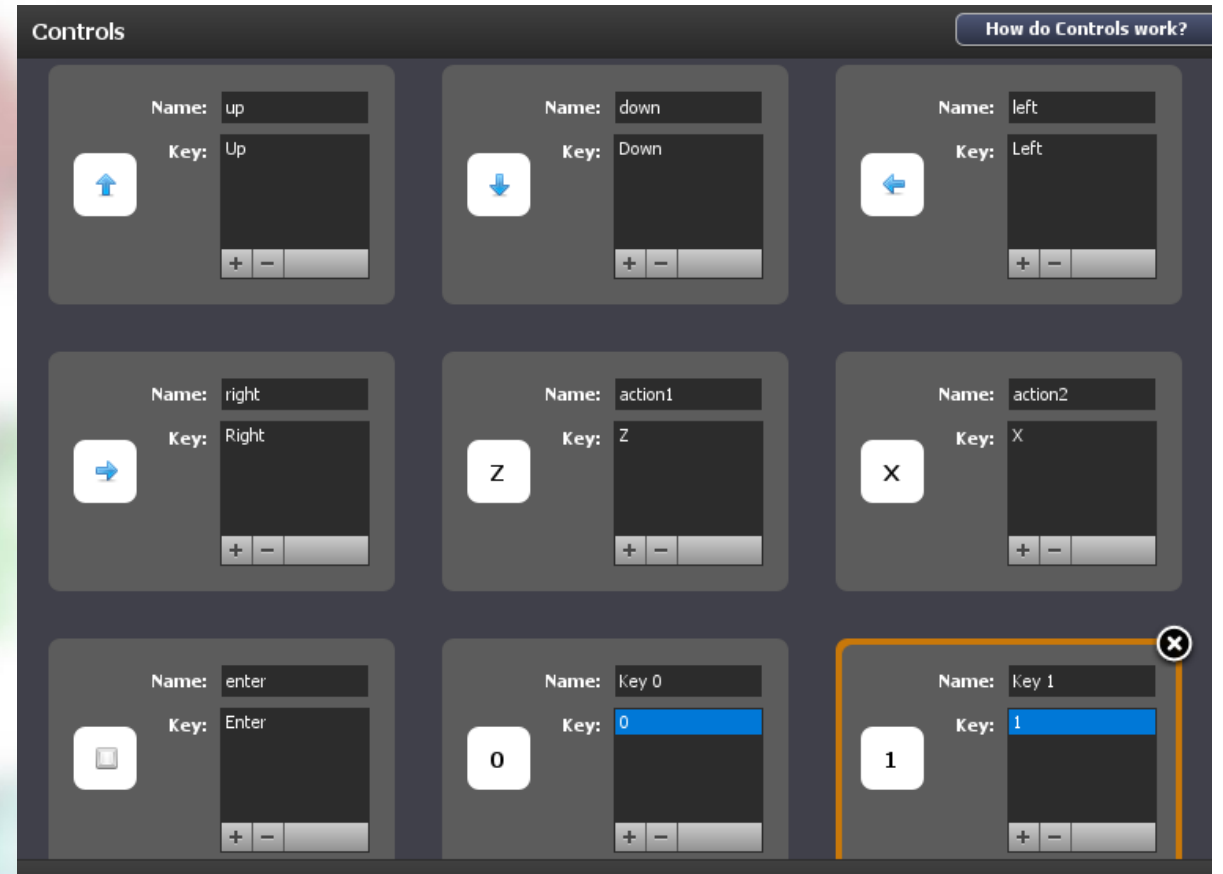
KNOX
GAME
DESIGN

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



Number Guessing Game

```
Adobe Flash Player 32
File View Control Help

Number Guessing Game - 2021 Levi D. Smith
Guess the number from 1 to 100

> 75

50 - Higher
```

```
Adobe Flash Player 32
File View Control Help

Number Guessing Game - 2021 Levi D. Smith
Guess the number from 1 to 100

>

97 - Correct! 7 total guesses
```

NumberGuess

+ Add Event	
Keyboard_0	✓
Keyboard_1	✓
Keyboard_2	✓
Keyboard_3	✓
Keyboard_4	✓
Keyboard_5	✓
Keyboard_6	✓
Keyboard_7	✓
Keyboard_8	✓
Keyboard_9	✓
Keyboard_Enter	✓
Drawing	✓
Created	✓

```
when created
  set iSecretNumber to random integer between 1 and 100
```

```
when enter is pressed
  if strGuess as number > iSecretNumber
    set strResult to strGuess & - Lower
  otherwise if strGuess as number < iSecretNumber
    set strResult to strGuess & - Higher
  otherwise if strGuess as number = iSecretNumber
    set strResult to strGuess & - Correct! & iGuessCount & total guesses
  increment iGuessCount by 1
  set strGuess to
```

```
when Key 7 is pressed
  set strGuess to strGuess & 7
```

```
when drawing
  draw text Number Guessing Game - 2021 Levi D. Smith at ( x: 50 y: 25 )
  draw text Guess the number from 1 to 100 at ( x: 50 y: 50 )
  draw text > & strGuess at ( x: 50 y: 100 )
  draw text strResult at ( x: 50 y: 150 )

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

Game Project

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

KNOX
GAME
DESIGN