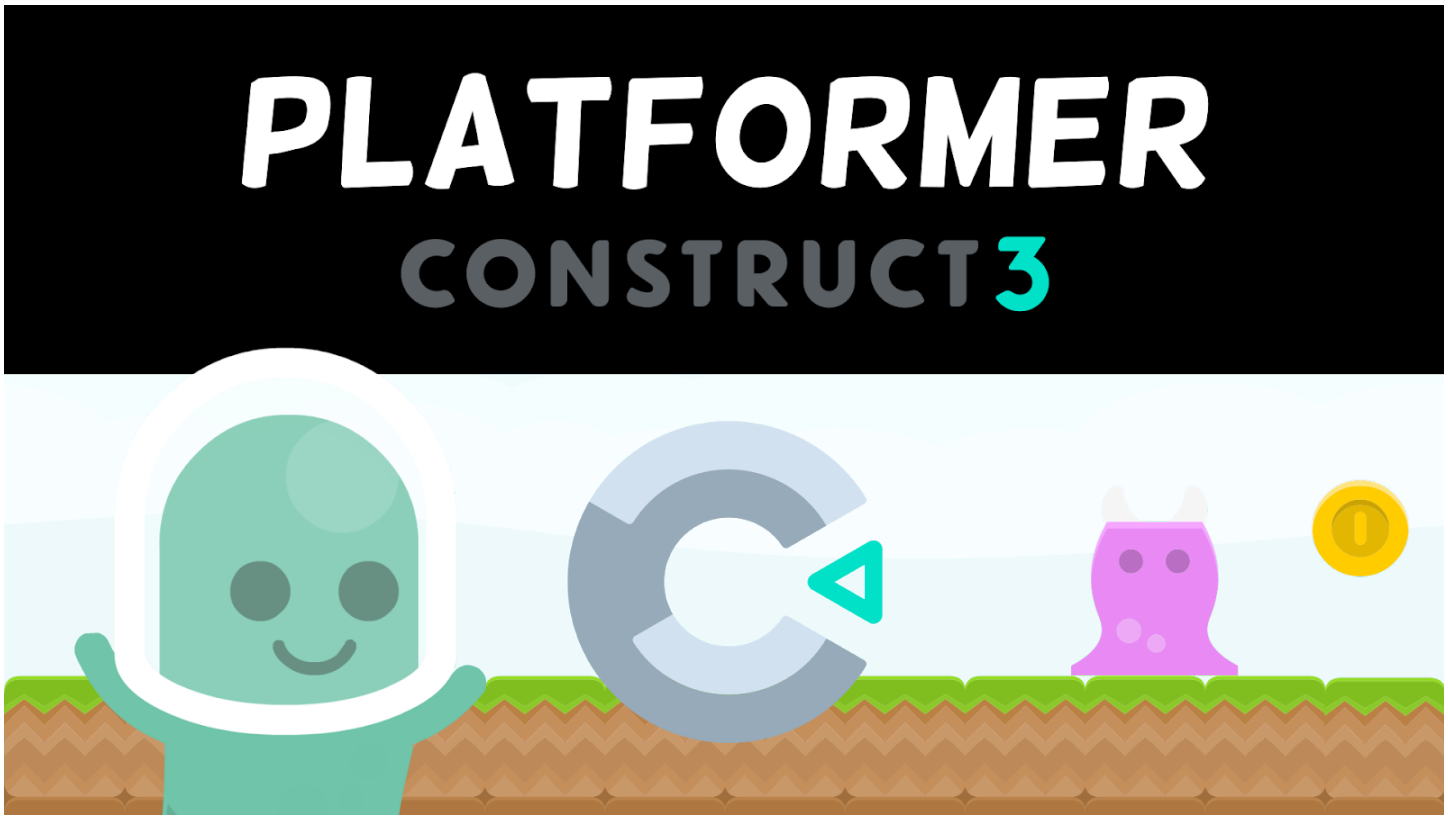

Game Project Guide

By James Colestock

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Game Assets

Step		Detailed Instructions
❑	Download the Game Assets	Download zip archive containing project files, staging somewhere convenient, e.g., Desktop, My Documents, USB flash drive, etc.
❑	Extract Files	Extract archive, using program of choice, to desired location on computer/flash drive

Creating the Project

Step		Detailed Instructions
❑	Launch Construct 3	Navigate to **editor.construct.net** in your browser, e.g., Chrome
❑	Log in to Construct 3	■ USER ACCOUNT > LOG IN ○ **Username**: <enter Construct 3 username> ○ **Password**: <enter Construct 3 password> ○ Click "**Log in**"
❑	Change Site Settings	■ To the left of the web address i.e., **https://editor.construct.net**, click the lock icon ■ Click "**Site Settings**" ■ Change "**Pop-ups and redirects**" to "**Allow**" ■ Reload page for changes to take effect
❑	Create New Project	■ PROJECT > NEW ○ New Project ■ **Name**: Platformer ■ **Choose preset**: 1080p landscape ■ Select CREATE
❑	Save Project*	■ PROJECT > SAVE AS > CLOUD SAVE ■ Select a cloud service, e.g., Dropbox, OneDrive, Google Drive ■ Authenticate and authorize service ■ Navigate to desired storage location, and save project using "**Platformer.c3p**" for the filename ■ Select SAVE **Note**: To access your project in the future: ○ PROJECT > OPEN RECENT > "**Platformer.c3p**" **- OR -** ○ PROJECT > CLOUD OPEN > Navigate to "**Platformer.c3p**"

* Assumes use of Google Drive

Project Properties

Step		Detailed Instructions
❑	Set Project Properties	■ Select "Platformer" > Set/confirm the following properties: ○ About ■ **Name**: Platformer ■ **Version**: 1.0.0.0 ■ **Description**: A model platform-style game ■ **ID**: com.colestock.game.platformer ■ **Author**: <enter your name> ■ **Email**: <enter your email> ■ **Website**: <enter your website> ○ Startup ■ **First layout**: Layout 1 ■ **Loader style**: Percentage text ○ Display ■ **Viewport size** (Width x Height): 1920 x 1080 ■ **Orientations**: Landscape ○ Advanced ■ **Runtime**: Construct 3 ○ Editor ■ Check "**Bundle addons**"
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

Setting the Stage

Step		Detailed Instructions
❑	Rename Layout	Right-click "Layout 1" > Rename to "**Level 1**"
❑	Rename Event Sheet	Right-click "Event sheet 1" > Rename to "**Level 1 Event Sheet**"
❑	Set Layout Properties	■ Select "Level 1" > Set the following properties: ○ Layout ■ **Size** (Width x Height): 3840 x 1080 ○ Editor ■ **Margins** (Width x Height): 500 x 500 ■ Check "**Show grid**" ■ Check "**Snap to grid**" ■ **Grid size** (Width x Height): 96 x 96
❑	Rename "Layer 0"	Right-click "Layer 0" > Rename to "**Background**"
❑	Create Sky Tiled Background	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Tiled Background" > Name: "**Sky**" > INSERT

		■ When crosshair appears, click inside "Level 1" layout > Tiled Background Editor will appear ■ Click folder icon > Browse to and OPEN: **sky-background-1024x1024.png** ■ Click X to close; Sky object should be on "Background" layer
❏	Position Sky Background	Snap the Sky object to the upper left-hand corner of the layout (0,0) and enlarge until it covers the entire layout; it is OK if it covers more than the visible layout
❏	Create Ground	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Ground**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **ground-96x96.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **0** ■ Click X to close; Ground object should be on "Background" layer
❏	Duplicate Ground	Create a 40 x 2 (Width x Height) section of Ground objects using **Ctrl + drag** (left mouse button) at the bottom of the layout
❏	Lock "Background" Layer	Select "Background" layer > Click lock icon
❏	Create "Game" Layer	■ Under "Layers" > Right-click "**Add layer at top**" > Rename new layer to "**Game**" ■ Make sure the "Game" layer is active, unlocked, and listed **above** the "Background" layer
❏	Create Grass	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Grass**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **grass-96x96.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **0** ■ Click X to close; Grass object should be on "Game" layer
❏	Duplicate Grass	Create a 40 x 1 (Width x Height) section of Grass objects using **Ctrl + drag** (left mouse button) on top of the Ground

❑	Create "Solids" Family	■ Right-click FAMILIES > Select "Add family" ○ Click "**Grass**" ○ Click "Add" to place in family > OK ■ Right-click "Family1" > Rename to "**Solids**"
❑	Assign Behavior to "Solids" Family	■ Right-click "Solids" Family > Select "Family Behaviors" ○ Click "**Add new behavior**" ○ Select "**Solid**" under "Attributes" > ADD ○ Click X to close
❑	Lock "Game" Layer	Select "Game" layer > Click lock icon
❑	Unlock "Background" Layer	Select "Background" layer > Click lock icon
❑	Create Bush	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Bush**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **bush-96x58.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **58** ■ Click X to close; Bush object should be on "Background" layer
❑	Duplicate Bush	Create a couple of Bush objects using **Ctrl + drag** (left mouse button) on top of the Grass. **Note**: Check and uncheck "Snap to grid" option for maximum control over placement of objects on the layout!
❑	Lock "Background" Layer	Select "Background" layer > Click lock icon
❑	Preview Layout	From "Level 1" layout > Click "Preview" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

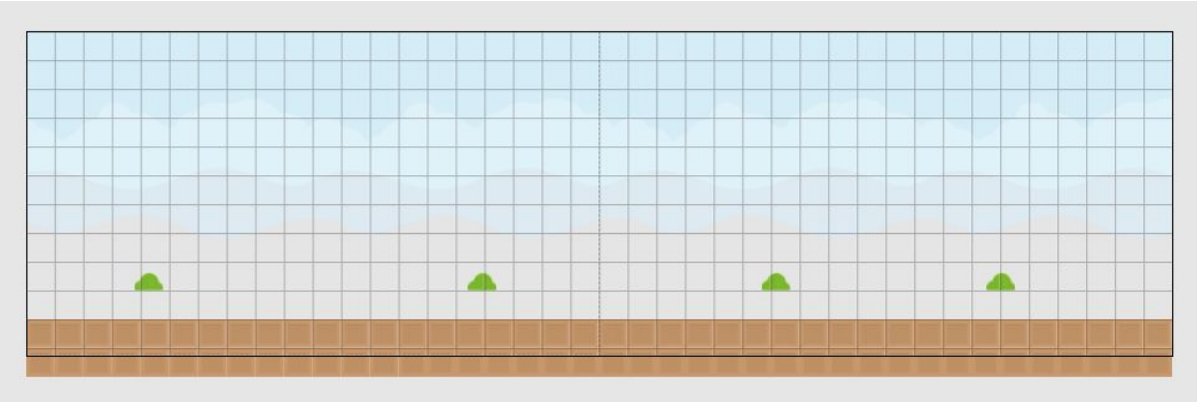


FIGURE 1: Snapshot of "Level 1" Layout ("Background" layer only)

FIGURE 2: Snapshot of "Level 1" Layout ("Game" layer only)

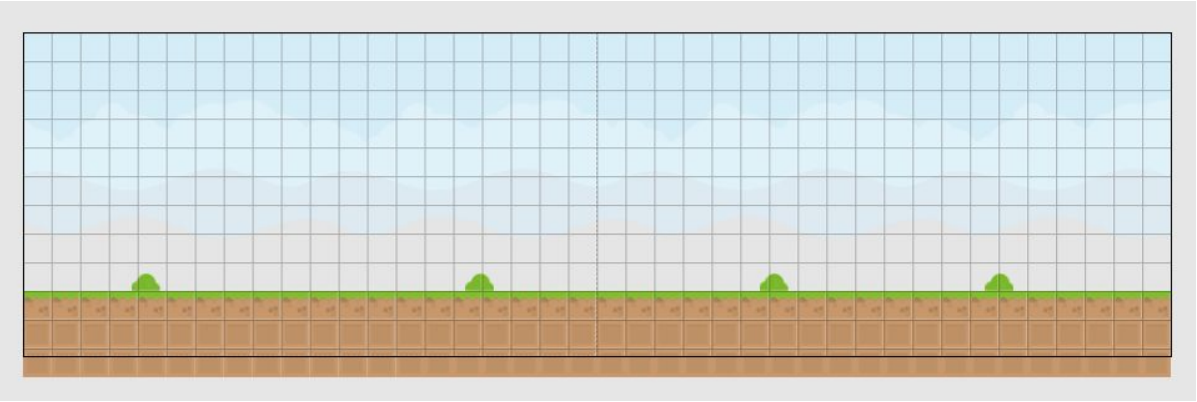


FIGURE 3: Snapshot of "Level 1" Layout (all layers)

The Player

Step		Detailed Instructions
❑	Create Player	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Player**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Select "Resize" option: ○ Image Canvas Size ■ **Width** (pixels): 85 ■ **Height** (pixels): 117 ○ Select OK ■ Select "Fill" option: ○ Enter Custom Color (in color palette) ■ **Red**: 111 ■ **Green**: 196 ■ **Blue**: 169 ■ **Alpha**: 255 ○ Click on canvas to fill object ■ Select "Edit the collision polygon" option ○ Right-click "**Set to bounding box**" ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **43** ■ Set **Y** to **117** ■ Click X to close; Player object should be on "Game" layer
❑	Assign Behaviors to the Player	■ Right-click "**Player**" > Select "Edit behaviors" ■ Click "**Add new behavior**" to add each behavior: ○ Select "**Platform**" under "Movements" > ADD ○ Select "**Bound to layout**" under "General" > ADD ○ Select "**Scroll To**" under "General" > ADD ○ Click X to close
❑	Set Player Platform Behavior Properties	■ Select "**Player**" > Set the following properties: ○ Behaviors (Platform) ■ **Deceleration**: 1200 ■ **Jump strength**: 800
❑	Assign Player to "Solids" Family	■ Select "**Solids**" Family > Right-click "Edit family" ○ Click "**Player**" ○ Click "Add" to place in family > OK

❑	Preview Layout	From "Level 1" layout > Click "Preview" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

The Alien

Step		Detailed Instructions
❑	Create Alien	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Alien**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **alien-stand-76x113.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **38** ■ Set **Y** to **113** ■ Click X to close; Alien object should be on "Game" layer
❑	Rename Default Animation	■ Right-click "**Alien**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Animation 1**" > Rename to "**Stand**"
❑	Create "Walk" Animation	■ Right-click "**Alien**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Add Animation**" > Rename new animation to "**Walk**"; make sure it is selected ■ Create a four-frame animation: **Frame #** / **Image** / **Origin (X,Y)** **Frame 0** / alien-walk-77x117.png / 39, 117 **Frame 1** / alien-walk-80x115.png / 40, 115 **Frame 2** / alien-walk-77x117.png / 39, 117 **Frame 3** / alien-walk-77x115.png / 39, 115 ■ For **each frame** you need to: ○ Right-click "**Add Frame**" within "Frames" and select (not necessary for Frame 0) ○ Click the **folder icon** and **navigate to the image file** ○ Select "**Edit the image points**" option

		○ Change "Origin" image point to reflect the **X and Y values** ■ Right-click "Delete" any remaining empty frames ■ Click X to close the "Animations Editor" window
❏	Set "Walk" Animation Properties	■ Right-click "**Alien**" > Select "Edit animations" > Select "**Walk**" ○ Animation Properties ■ **Speed**: 8 ■ Check "**Loop**" ■ Click X to close
❏	Create "Jump" Animation	■ Right-click "**Alien**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Add Animation**" > Rename new animation to "**Jump**"; make sure it is selected ■ Click folder icon > Browse to and OPEN: **alien-jump-85x115.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **43** ■ Set **Y** to **115** ■ Click X to close
❏	Create "Fall" Animation	■ Right-click "**Alien**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Add Animation**" > Rename new animation to "**Fall**"; make sure it is selected ■ Click folder icon > Browse to and OPEN: **alien-fall-83x117.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **42** ■ Set **Y** to **117** ■ Click X to close
❏	Create "Success" Animation	■ Right-click "**Alien**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Add Animation**" > Rename new animation to "**Success**"; make sure it is selected ■ Click folder icon > Browse to and OPEN: **alien-success-83x112.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **42** ■ Set **Y** to **112** ■ Click X to close; Alien object should be on "Game" layer
❏	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

On the Move

Step		Detailed Instructions
❑	Add Keyboard Object to Project	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Keyboard" > Name: "**Keyboard**" > INSERT
❑	Add Mouse Object to Project	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Mouse" > Name: "**Mouse**" > INSERT
❑	Create "Player Event Sheet"	■ Right-click EVENT SHEETS > Select "Add event sheet" ■ Rename to "**Player Event Sheet**"
❑	Include "Player Event Sheet" in "Level 1 Event Sheet"	■ Right-click "**Level 1 Event Sheet**" > Select "Open" (Optionally, double-click to open) ■ Right-click "**Include event sheet**" > Double-click "**Player Event Sheet**"
❑	Create "Movement" Event Group	■ Right-click "**Player Event Sheet**" > Select "Open" ■ Right-click > "**Add group**" ○ **Name**: Movement ○ **Description**: Events and triggers related to player movement ○ Select OK
❑	Create Event to Position Alien (To Player)	■ Click "**Add event to 'Movement'**" ○ Double-click "**System**" ○ Double-click "**Every tick**" (under "General") ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Set position to another object**" (under "Size & Position") ■ **Object**: Player ■ **Image point**: 0 ○ Select DONE
❑	Hide the Player	■ Select "**Player**" > Set the following property: ○ Properties ■ Uncheck "**Initially visible**"
❑	Create Keyboard Events to Mirror Alien	■ Click "**Add event to 'Movement'**" ○ Double-click "**Keyboard**" ○ Double-click "**On key pressed**" (under "Keyboard") ○ Click "**<click to choose>**" and press "**Left arrow**" > OK ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Alien**"

		○ Double-click "**Set mirrored**" (under "Appearance") ■ **State**: Mirrored ○ Select DONE ■ Click "**Add event to 'Movement'**" ○ Double-click "**Keyboard**" ○ Double-click "**On key pressed**" (under "Keyboard") ○ Click "**<click to choose>**" and press "**Right arrow**" > OK ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Set mirrored**" (under "Appearance") ■ **State**: Not mirrored ○ Select DONE
❏	Add Keyboard Event for Alien "Walk" Animation	■ Click "**Add event to 'Movement'**" ○ Double-click "**Keyboard**" ○ Double-click "**Key is down**" (under "Keyboard") ○ Click "**<click to choose>**" and press "**Left arrow**" > OK ○ Select DONE ■ Right-click event > Select "**Make OR block**" ■ Right-click event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Keyboard**" ○ Double-click "**Key is down**" (under "Keyboard") ○ Click "**<click to choose>**" and press "**Right arrow**" > OK ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Walk" ○ Select DONE ■ Right-click event > Select "**Add**" > Select "**Add 'Else'**" ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Stand" ○ Select DONE
❏	Add "Platform is Jumping" Event	■ Click "**Add event to 'Movement'**" ○ Double-click "**Player**" ○ Double-click "**Is jumping**" (under "Platform") ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Jump" ○ Select DONE

❑	Add "Platform Is Falling" Event	■ Click "**Add event to 'Movement'**" ○ Double-click "**Player**" ○ Double-click "**Is falling**" (under "Platform") ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Fall" ○ Select DONE
❑	Debug Layout	From "Level 1" layout > Click "Debug layout" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

FIGURE 4: Snapshot of "Level 1 Event Sheet" (after On The Move)

FIGURE 5: Snapshot of "Player Event Sheet" (after On The Move)

Obstacles

Step		Detailed Instructions
❑	Create Grass Platform	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**GrassPlatform**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear

		■ Click folder icon > Browse to and OPEN: **grass-platform-96x56.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **56** ■ Click X to close; GrassPlatform object should be on "Game" layer
❑	Assign Grass Platform to "Solids" Family	■ Select "**Solids**" Family > Right-click "Edit family" ○ Click "**GrassPlatform**" ○ Click "Add" to place in family > OK
❑	Duplicate Grass Platform	Create multiple Grass Platform objects using **Ctrl + drag** (left mouse button) for the player to jump on. **Note**: Check and uncheck "Snap to grid" option for maximum control over placement of objects on the layout!
❑	Create Floating Bridge	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Bridge**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **floating-bridge-95x27.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **48** ■ Set **Y** to **14** ■ Click X to close; Bridge object should be on "Game" layer
❑	Assign Floating Bridge to "Solids" Family	■ Select "**Solids**" Family > Right-click "Edit family" ○ Click "**Bridge**" ○ Click "Add" to place in family > OK
❑	Assign Horizontal Sine Behavior to Floating Bridge	■ Right-click "**Bridge**" > Select "Edit behaviors" ■ Click "**Add new behavior**": ○ Select "**Sine**" under "Movements" > ADD ○ Rename "**BridgeSideToSide**" ○ Click X to close
❑	Set Floating Bridge Properties	■ Select "**Bridge**" > Set/confirm the following properties: ○ Behaviors (BridgeSideToSide) ■ **Movement**: Horizontal ■ **Period**: 10 ■ **Magnitude**: 150 ■ Check "**Preview**" (optional)

❑	Duplicate Floating Bridge	Create multiple Floating Bridge objects using **Ctrl + drag** (left mouse button) for the player to jump on. **Note**: You can control (or vary) the movement of each bridge by adjusting its individual Sine behavior properties; explore additional properties to discover what they do!
❑	Preview Layout	From "Level 1" layout > Click "Preview" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

Cashin' In

Step		Detailed Instructions
❑	Create Get Coins Sign	■ Make sure "Background" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**GetCoins**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **get-coins-96x96.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **96** ■ Click X to close; GetCoins object should be on "Background" layer ■ Position near the beginning of the layout
❑	Create Exit Sign	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Exit**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **exit-96x96.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **96** ■ Click X to close; Exit object should be on "Game" layer ■ Position near the end of the layout

❑	Create Coin	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Coin**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **coin-48x48.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **24** ■ Set **Y** to **24** ■ Click X to close; Coin object should be on "Game" layer
❑	Duplicate Coin	Create multiple Coin objects using **Ctrl + drag** (left mouse button) for the player to collect. **Note**: Check and uncheck "Snap to grid" option for maximum control over placement of objects on the layout. You can also add variation by rotation each coins using the rotation handle.
❑	Bring Alien to Top of Layer (Z Order)	■ Make sure "Game" layer is active and unlocked ■ VIEW > BARS > Z-ORDER BAR (if bar is not visible) ■ Drag "Alien" to top of "Game" layer
❑	Create "Start & End Level Event Sheet"	■ Right-click EVENT SHEETS > Select "Add event sheet" ■ Rename to "**Start & End Level Event Sheet**"
❑	Include "Start & End Level Event Sheet" in "Level 1 Event Sheet"	■ Right-click "**Level 1 Event Sheet**" > Select "Open" (Optionally, you can double-click to open) ■ Right-click > "**Include event sheet**" > Double-click "**Start & End Level Event Sheet**"
❑	Create Global Variable to Track Number of Coins Remaining	■ Right-click "**Start & End Level Event Sheet**" > Select "Open" ■ Right-click "**Add global variable**": ○ **Name**: CoinsLeft ○ **Type**: Number ○ **Initial value**: 0 ○ **Description**: Number of coins left on current game level ○ Select OK
❑	Create "Start of Level" Event Group	■ Right-click > "**Add group**" ○ **Name**: Start of Level ○ **Description**: Events and triggers that occur at the beginning of any game-related layout ○ Select OK

❑	Create "On Start of Layout" Event and Action to Set CoinsLeft	■ Click "**Add event to 'Start of Level'**" ○ Double-click "**System**" ○ Double-click "**On start of layout**" (under "Start & end") ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Set value**" (under "Global & local variables") ■ **Variable**: CoinsLeft ■ **Value**: Coin.Count ○ Select DONE
❑	Create "Goal" Event Group	■ Right-click "**Player Event Sheet**" > Select "Open" ■ Right-click > "**Add group**" ○ **Name**: Goal ○ **Description**: Events and triggers related to player goals ○ Select OK
❑	Create "On Player Collision with Coin" Event and Actions	■ Click "**Add event to 'Goal'**" ○ Double-click "**Player**" ○ Double-click "**On collision with another object**" (under "Collisions") ■ **Object**: Coin ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Coin**" ○ Double-click "**Destroy**" (under "Misc") ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Subtract from**" (under "Global & local variables") ■ **Variable**: CoinsLeft ■ **Value**: 1 ○ Select DONE
❑	Create "End of Level" Event Group	■ Right-click "**Start & End Level Event Sheet**" > Select "Open" ■ Right-click > "**Add group**" ○ **Name**: End of Level ○ **Description**: Events and triggers related to ending any game-related layout ○ Select OK
❑	Create "Success" Event and Actions	■ Click "**Add event to 'End of Level'**" ○ Double-click "**Player**" ○ Double-click "**On collision with another object**" (under "Collisions") ■ **Object**: Exit ○ Select DONE ■ Right-click event > Select "**Add**" > Select "**Add another condition**"

		○ Double-click "**System**" ○ Double-click "**Compare variable**" (under "Global & local variables") ■ **Variable**: CoinsLeft ■ **Comparison**: = Equal to ■ **Value**: 0 ○ Select DONE ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Wait**" (under "Time") ■ **Seconds**: 3.0 ○ Select DONE ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Restart layout**" (under "Layout")
❑	Debug Layout	From "Level 1" layout > Click "Debug layout" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

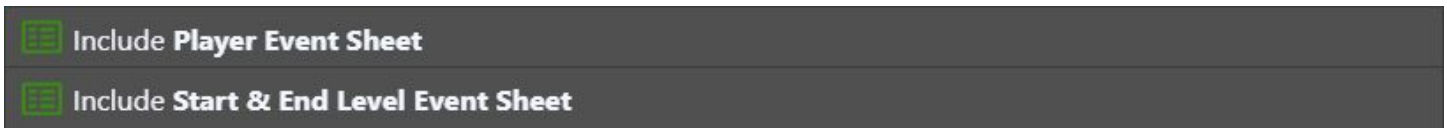


FIGURE 6: Snapshot of "Level 1 Event Sheet" (after Cashin' In)

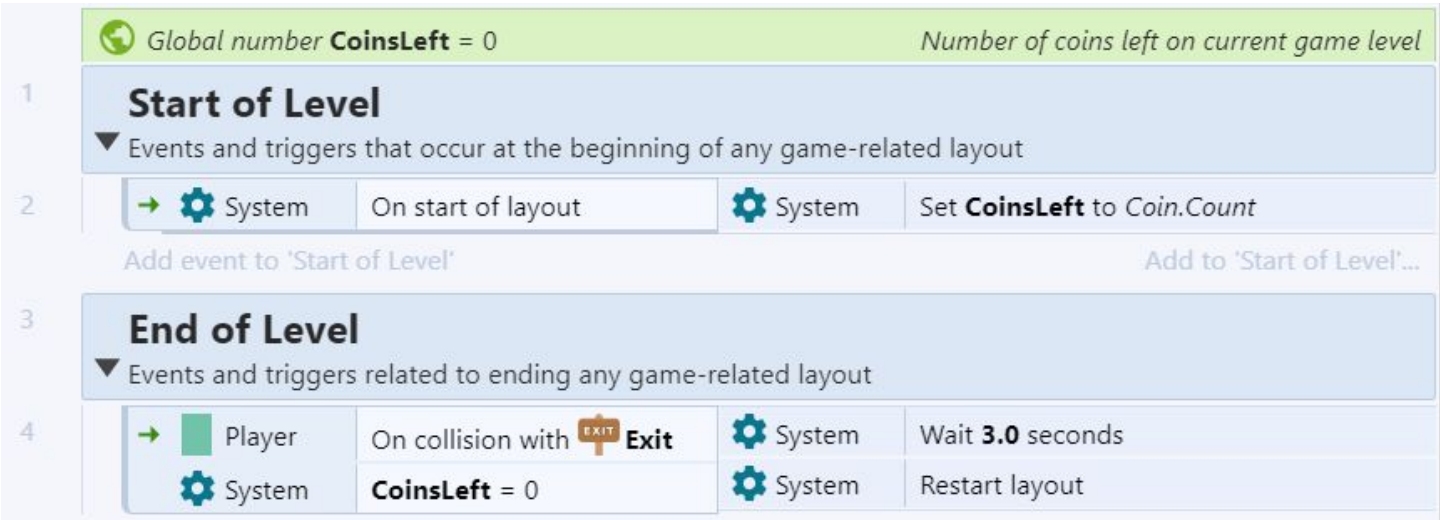


FIGURE 7: Snapshot of "Start & End Level Event Sheet" (after Cashin' In)

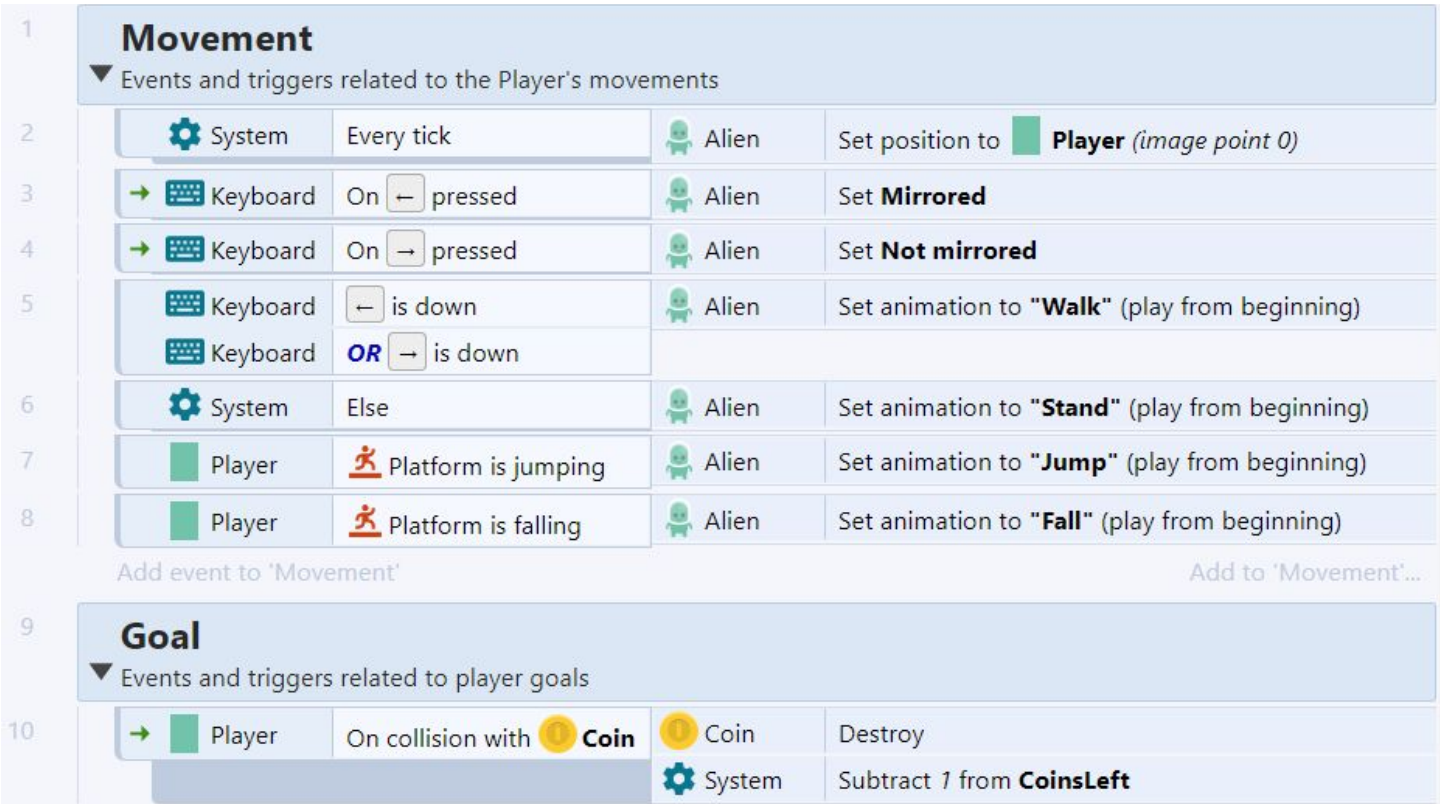


FIGURE 8: Snapshot of "Player Event Sheet" (after Cashin' In)

Barnacles & Bees

Step		Detailed Instructions
❑	Create Barnacle	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Barnacle**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Within "Frames" > Right-click "**Import Frames**" > "**From Strip**" ■ Click folder icon > Browse to and OPEN: **barnacle-2x1-66x75.png** ■ When Import Sprite Strip dialog appears: ○ Number of horizontal cells: **2** ○ Number of vertical cells: **1** ○ Direction**: Horizontal** ○ Check "**Replace entire animation**" ○ Select IMPORT ■ Select "Edit the collision polygon" option ○ Right-click "**Guess the polygon shape**"

		○ Right-click "**Apply to whole animation**" ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **33** ■ Set **Y** to **75** ○ Right-click "**Apply to whole animation**" ■ Click X to close; Barnacle object should be on "Game" layer
❑	Rename Default Animation	■ Right-click "**Barnacle**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Animation 1**" > Rename to "**Chomp**"
❑	Set "Chomp" Animation Properties	■ Right-click "**Barnacle**" > Select "Edit animations" > Select "**Chomp**" ○ Animation Properties ■ **Speed**: 2 ■ Check "**Loop**" ■ Click X to close
❑	Create "Enemies" Family	■ Right-click FAMILIES > Select "Add family" ○ Click "**Barnacle**" ○ Click "Add" to place in family > OK ■ Right-click "Family1" > Rename to "**Enemies**"
❑	Duplicate Barnacle	Create multiple Barnacle objects using **Ctrl + drag** (left mouse button) for the player to avoid.
❑	Create Bee	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Bee**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Within "Frames" > Right-click "**Import Frames**" > "**From Strip**" ■ Click folder icon > Browse to and OPEN: **bee-2x1-93x72.png** ■ When Import Sprite Strip dialog appears: ○ Number of horizontal cells: **2** ○ Number of vertical cells: **1** ○ Direction**: Horizontal** ○ Check "**Replace entire animation**" ○ Select IMPORT ■ Select "Edit the collision polygon" option ○ Right-click "**Guess the polygon shape**" ○ Right-click "**Apply to whole animation**" ■ Select "Edit the image points" option

		○ Change existing "Origin" image point ■ Set **X** to **47** ■ Set **Y** to **36** ○ Right-click "**Apply to whole animation**" ■ Click X to close; Bee object should be on "Game" layer
❑	Rename Default Animation	■ Right-click "**Bee**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Animation 1**" > Rename to "**Fly**"
❑	Set "Fly" Animation Properties	■ Right-click "**Bee**" > Select "Edit animations" > Select "**Fly**": ○ Animation Properties ■ **Speed**: 5 ■ Check "**Loop**" ■ Click X to close
❑	Assign Bee to "Enemies" Family	■ Select "**Enemies**" Family > Right-click "Edit family" ○ Click "**Bee**" ○ Click "Add" to place in family > OK
❑	Assign Horizontal Sine Behavior to Bee	■ Right-click "**Bee**" > Select "Edit behaviors" ■ Click "**Add new behavior**": ○ Select "**Sine**" under "Movements" > ADD ○ Rename "**BeeSideToSide**" ○ Click X to close
❑	Assign Vertical Sine Behavior to Bee	■ Right-click "**Bee**" > Select "Edit behaviors" ■ Click "**Add new behavior**": ○ Select "**Sine**" under "Movements" > ADD ○ Rename "**BeeUpDown**" ○ Click X to close
❑	Set Bee Properties	■ Select "**Bee**" > Set/confirm the following properties: ○ Behaviors (BeeSideToSide) ■ **Movement**: Horizontal ■ **Period**: 8 ■ **Period random**: 15 ■ **Period offset random**: 5 ■ **Magnitude**: 50 ■ **Magnitude random**: 15 ■ Check "**Preview**" (optional) ○ Behaviors (BeeUpDown) ■ **Movement**: Vertical ■ **Period**: 8 ■ **Period random**: 15 ■ **Magnitude**: 25 ■ **Magnitude random**: 5 ■ Check "**Preview**" (optional)
❑	Duplicate Bee	Create multiple Bee objects using **Ctrl + drag** (left mouse button) for the player to avoid.

		Note: You can control (or vary) the movement of each bee by adjusting its individual Sine behavior properties; explore additional properties to discover what they do!
❑	Create Particles	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "**Particles**" > Name: "**Particles**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **particle-star-20x21.png** ■ Click X to close; Particles object should be on "Game" layer ■ Drag the Particles **object outside of the layout** into margin
❑	Set Particles Properties	■ Select "**Particles**" > Set/confirm the following properties: ○ Properties ■ **Rate**: 150 ■ **Spray Cone**: 360 ■ **Type**: One-shot ○ Initial particle properties ■ **Speed**: 180 ■ **Size**: 48 ■ **Grow rate**: -25 ■ **X randomiser**: 5 ■ **Y randomiser**: 5 ○ Particle lifetime properties ■ **Gravity**: 75 ■ **Timeout**: 1.5
❑	Create "Particles" Image Point on Player	■ Select "**Player**" > Select "Edit animations" ■ Select "Edit the image points" option ○ Under "Image Points" > Right-click "**Add a new image point**" ■ Set **X** to **43** ■ Set **Y** to **59** ○ Rename to "**Particles**" ■ Click X to close
❑	Create "On Player Collision with Enemies" Event and Actions to Destroy Player and End Game	■ Right-click "Start & End Level Event Sheet" > Select "Open" ■ Click "**Add event to 'End of Level'**" ○ Double-click "**Player**" ○ Double-click "**On collision with another object**" (under "Collisions") ■ **Object**: Enemies ○ Select DONE

		■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Destroy**" (under "Misc") ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Spawn another object**" (under "Misc") ■ **Object**: Particles ■ **Layer**: Player.LayerName ■ **Image point**: "Particles" ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Destroy**" (under "Misc") ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Wait**" (under "Time") ■ **Seconds**: 3.0 ○ Select DONE ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Restart layout**" (under "Layout") ■ Drag event to very top of the "**End of Level**" event group
❏	Bring Alien to Top of Layer (Z Order)	■ Make sure "Game" layer is active and unlocked ■ VIEW > BARS > Z-ORDER BAR (if bar is not visible) ■ Drag "Alien" to top of "Game" layer
❏	Preview Layout	From "Level 1" layout > Click "Preview" in main toolbar
❏	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 💾

Global number **CoinsLeft** = 0 — *Number of coins left on current game level*

1 **Start of Level**
Events and triggers that occur at the beginning of any game-related layout

2 System | On start of layout | System | Set **CoinsLeft** to *Coin.Count*

Add event to 'Start of Level' — Add to 'Start of Level'...

3 **End of Level**
Events and triggers related to ending any game-related layout

4 Player | On collision with **Enemies**
- Alien | Destroy
- Player | Spawn **Particles** on layer **Player.LayerName** *(image point "Particles")*
- Player | Destroy
- System | Wait **3.0** seconds
- System | Restart layout

5 Player | On collision with **Exit**
System | **CoinsLeft** = 0
- System | Wait **3.0** seconds
- System | Restart layout

FIGURE 9: Snapshot of "Start & End Level Event Sheet" (after Barnacles & Bees)

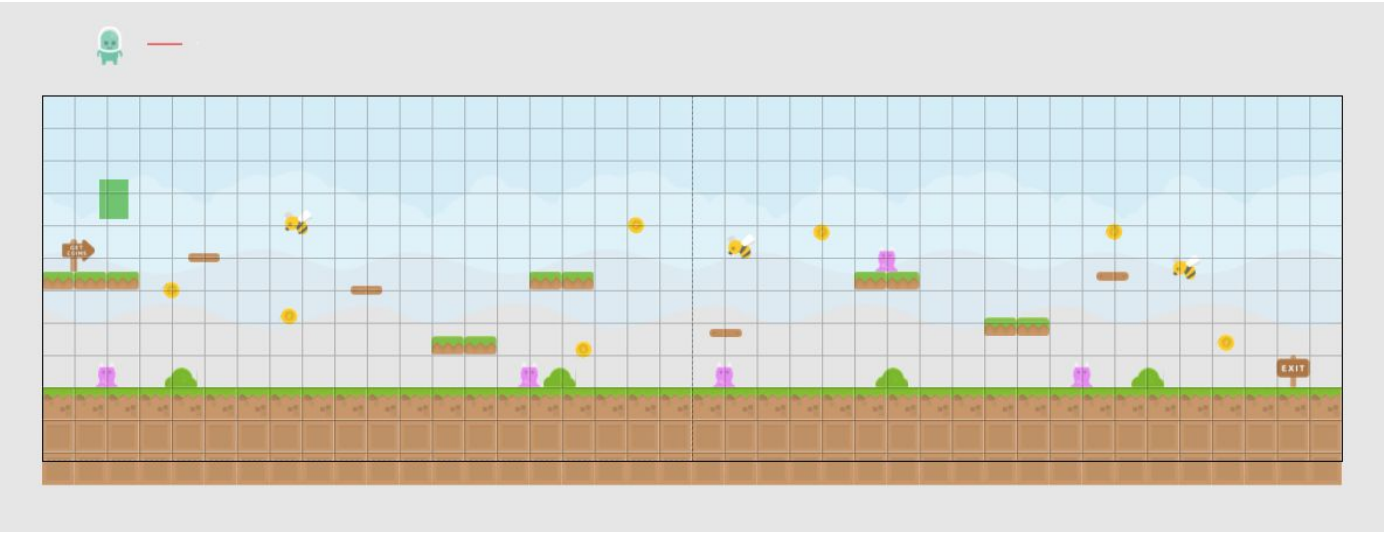


FIGURE 10: Snapshot of "Level 1" Layout (after Barnacles & Bees)

The Castle

Step		Detailed Instructions
❑	Create Castle Object Types	Create Sprite object types for the castle **using information from the table** below. Remember, to place each object type on its correct layer and to add object types that belong to the "Solids" family.

Name	File	Origin (X, Y)	Layer	Solids Family
Stone	stone-96x96.png	0, 0	**Background**	NO
StoneLeft	stone-left-96x96.png	0, 0	**Background**	NO
StoneRight	stone-right-96x96.png	0, 0	**Background**	NO
CastleFlag	castle-flag-96x96.png	0, 0	**Background**	NO
CastleWindow	castle-window-96x192.png	0, 0	**Background**	NO
Spire	spire-160x160.png	**80, 160**	**Background**	NO
StoneTop	stone-top-96x96.png	0, 0	**Game**	**YES**
StoneTopLeft	stone-top-left-96x96.png	0, 0	**Game**	**YES**
StoneTopMiddle	stone-top-middle-96x44.png	**0, 44**	**Game**	**YES**
StoneTopRight	stone-top-right-96x96.png	0, 0	**Game**	**YES**

❑	Create Castle	Duplicate and arrange objects until you have created a castle (minus the door and spire flags) **referring to the figures below**. **Note**: Move objects up and down, as needed, using the Z-Order Bar, e.g., place all castle-related objects below the bushes; place the alien behind the stones atop the castle.

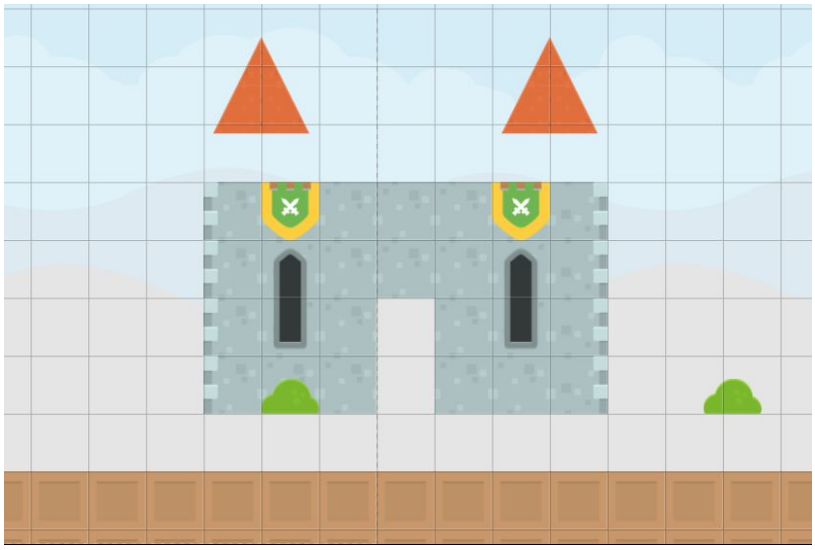


FIGURE 11: Snapshot of Castle ("Background" layer only)

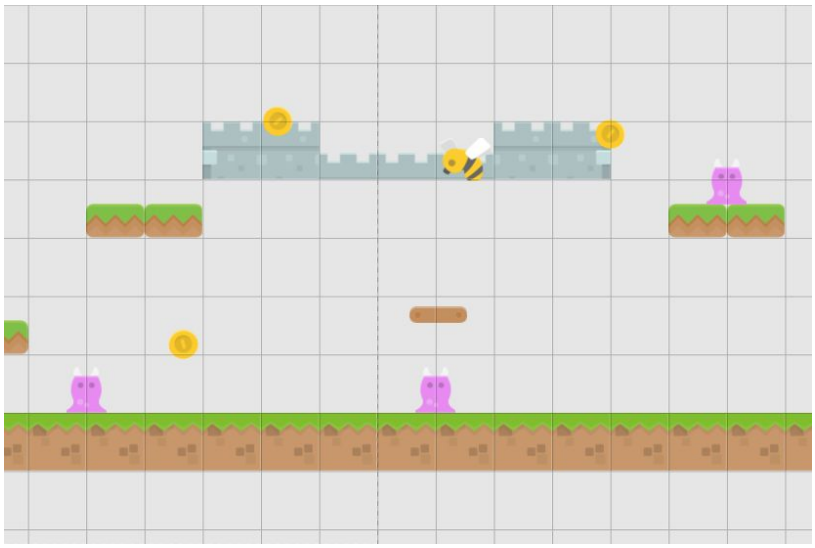


FIGURE 12: Snapshot of Castle ("Game" layer only)

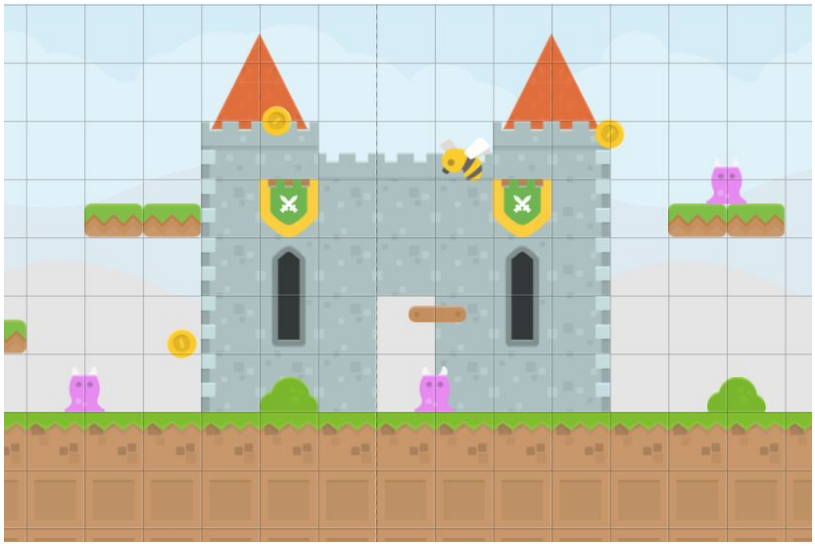
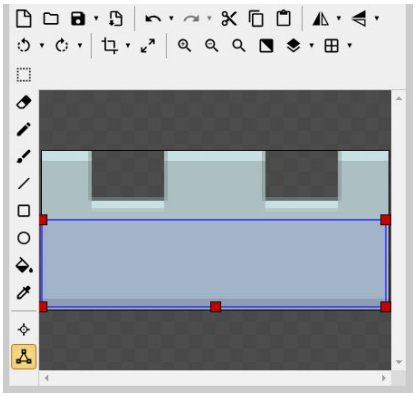
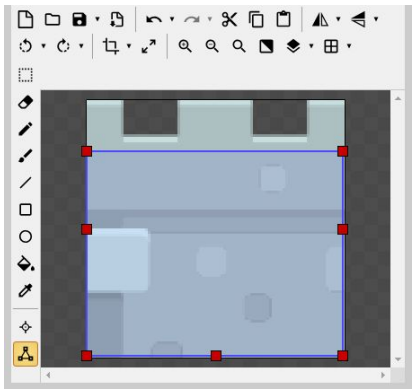
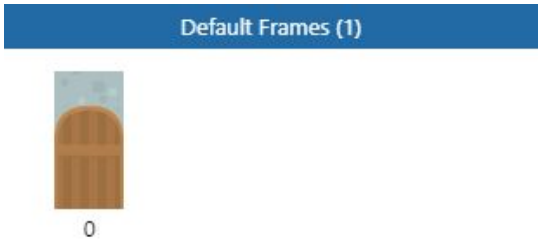


FIGURE 13: Snapshot of Castle (All layers)

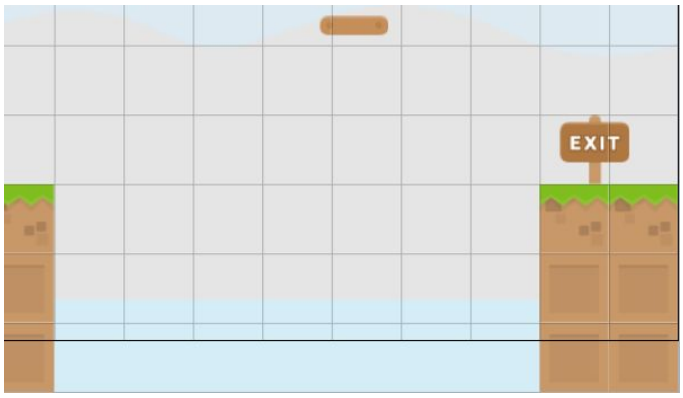
❑	Adjust Collision Polygons of Castle Top Stones	■ Adjust the collision polygons of the following object types, to resemble the figures below, using the "Edit the collision polygon" option: ○ **StoneTopLeft** ○ **StoneTop** ○ **StoneTopMiddle** ○ **StoneTopRight**   **Note**: This step is necessary to make the player appear to walk on the castle's roof, instead of simply on top of it.
❑	Create Castle Door	■ Make sure "Background" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**CastleDoor**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Within "Frames" > Right-click "**Import Frames**" > "**From Strip**" ■ Click folder icon > Browse to and OPEN: **castle-door-4x1-96x192.png** ■ When Import Sprite Strip dialog appears: ○ Number of horizontal cells: **4** ○ Number of vertical cells: **1** ○ Direction**: Horizontal** ○ Check "**Replace entire animation**" ○ Select IMPORT ■ Select "Edit the collision polygon" option ○ Right-click "**Guess the polygon shape**" ○ Right-click "**Apply to whole animation**" ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **192** ○ Right-click "**Apply to whole animation**"

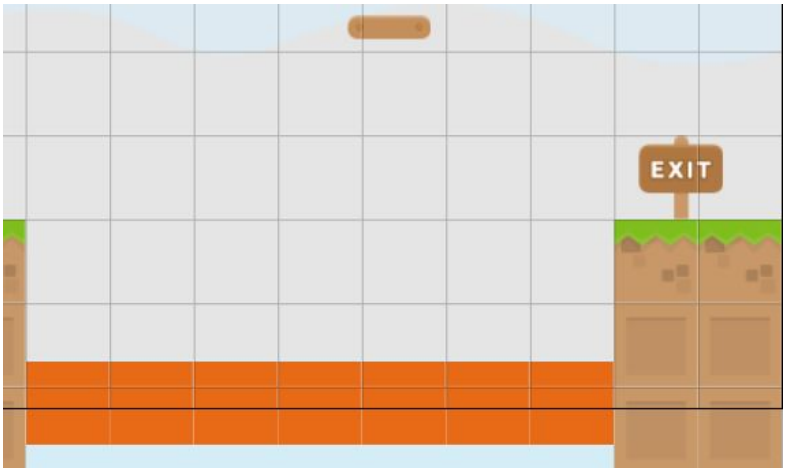
		■ Click X to close; CastleDoor object should be on "Background" layer; position as appropriate
❑	Rename Default Animation	■ Right-click "**CastleDoor**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Animation 1**" > Rename to "**Default**"
❑	Create "Open" Animation	■ Right-click "**CastleDoor**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Default**" > Select "Duplicate" ■ Rename new animation to "**Open**" ■ Within "Frames", rearrange/duplicate/delete frames until it resembles the following **three-frame** animation: ■ Click X to close
❑	Set "Open" Animation Properties	■ Right-click "**CastleDoor**" > Select "Edit animations" > Select "**Open**": ○ Animation Properties ■ **Speed**: 3 ■ Uncheck "**Loop**" ■ Click X to close
❑	Create "Close" Animation	■ Right-click "**CastleDoor**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Default**" > Select "Duplicate" ■ Rename new animation to "**Close**" ■ Within "Frames", rearrange/duplicate/delete frames until it resembles the following **four-frame** animation: ■ Click X to close

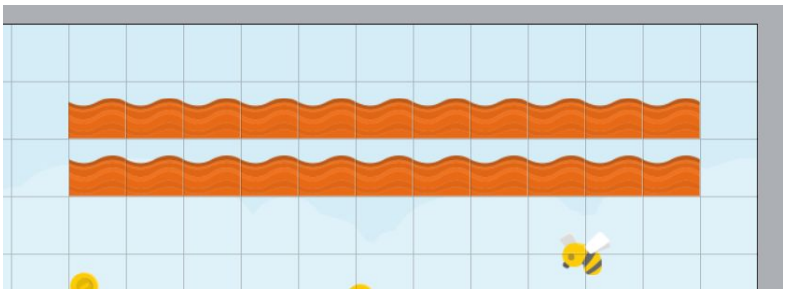
❑	Set "Close" Animation Properties	■ Right-click "**CastleDoor**" > Select "Edit animations" > Select "**Close**": ○ Animation Properties ■ **Speed**: 3 ■ Uncheck "**Loop**" ■ Click X to close
❑	Modify "Default" Animation	■ Right-click "**CastleDoor**" > Select "Edit animations" > Select "**Default**" animation ■ Within "Frames", rearrange/duplicate/delete frames until it resembles the following **single-frame** animation:  ■ Click X to close
❑	Create Green Flags for Castle Spires	■ Make sure "Background" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**FlagGreen**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Within "Frames" > Right-click "**Import Frames**" > "**From Strip**" ■ Click folder icon > Browse to and OPEN: **flag-green-2x1-65x70.png** ■ When Import Sprite Strip dialog appears: ○ Number of horizontal cells: **2** ○ Number of vertical cells: **1** ○ Direction**: Horizontal** ○ Check "**Replace entire animation**" ○ Select IMPORT ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **70** ○ Right-click "**Apply to whole animation**" ■ Click X to close; FlagGreen object should be on "Background" layer; position as appropriate

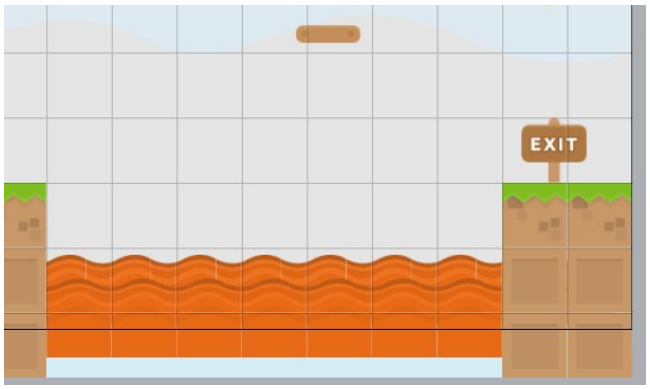
		Note: Move objects up and down, as needed, using the Z order bar, e.g., place flags behind the castle's spires.
❑	Rename Default Animation	■ Right-click "**FlagGreen**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Animation 1**" > Rename to "**Wave**"
❑	Set "Wave" Animation Properties	■ Right-click "**FlagGreen**" > Select "Edit animations" > Select "**Wave**": ○ Animation Properties ■ **Speed**: 1.5 ■ Check "**Loop**" ■ Click X to close
❑	Preview Layout	From "Level 1" layout > Click "Preview" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 💾

The Moat

Step		Detailed Instructions
❑	Prepare Layout for Castle Moat	■ Make sure "Game" and "Background" layers are unlocked ■ Move or delete objects necessary to clear the way for a **7-tile-wide moat**; your layout should resemble: 
❑	Create Lava	■ Make sure "Background" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Lava**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Select "Resize" option: ○ Image Canvas Size ■ **Width** (pixels): 96

		■ **Height** (pixels): 96 ○ Select OK ■ Select "Fill" option: ○ Enter Custom Color (in color palette) ■ **Red**: 232 ■ **Green**: 106 ■ **Blue**: 23 ■ **Alpha**: 255 ○ Click on canvas to fill object ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0** ■ Set **Y** to **0** ■ Click X to close; Lava object should be on "Background" layer
❑	Duplicate Lava	Create a **7 x 1** (Width x Height) section of Lava objects using **Ctrl + drag** (left mouse button) at the bottom of the moat using a combination of snap-to-grid and manual movements: 
❑	Create Top of Lava	■ Make sure "Background" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**LavaTop**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **lava-top-96x68.png** ■ Select "Edit the collision polygon" option ■ Right-click "**Guess the polygon shape**" ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **0**

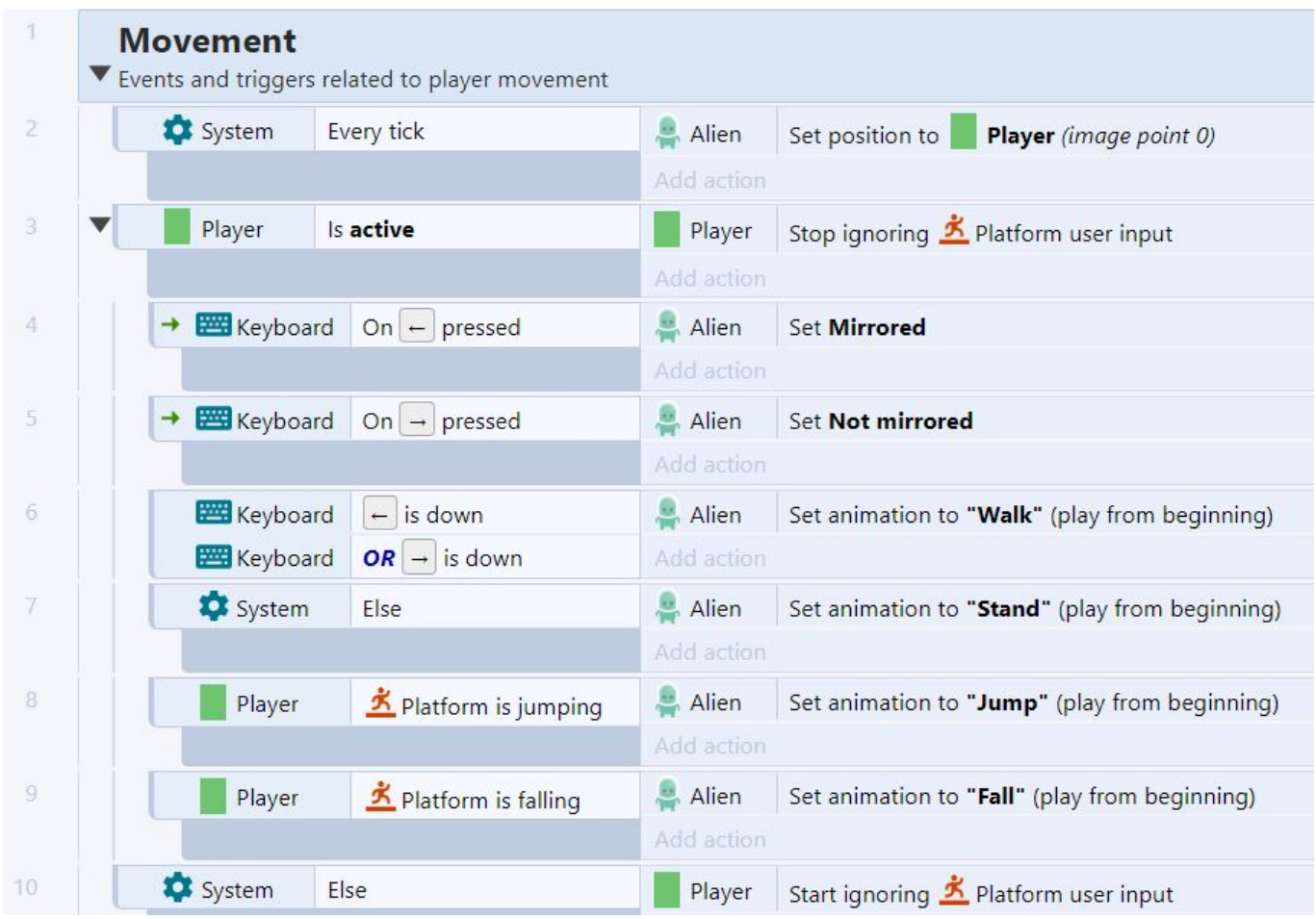
		■ Set **Y** to **68** ■ Click X to close; Lava object should be on "Background" layer
❑	Assign Lava Top to "Enemies" Family	■ Select "**Enemies**" Family > Right-click "Edit family" ○ Click "**LavaTop**" ○ Click "Add" to place in family > OK
❑	Assign Horizontal Sine Behavior to Top of Lava	■ Right-click "**LavaTop**" > Select "Edit behaviors" ■ Click "**Add new behavior**": ○ Select "**Sine**" under "Movements" > ADD ○ Rename "**LavaSideToSide**" ○ Click X to close
❑	Assign Vertical Sine Behavior to Lava Top	■ Right-click "**LavaTop**" > Select "Edit behaviors" ■ Click "**Add new behavior**": ○ Select "**Sine**" under "Movements" > ADD ○ Rename "**LavaUpDown**" ○ Click X to close
❑	Set Lava Top Properties	■ Select "**LavaTop**" > Set/confirm the following properties: ○ Behaviors (LavaSideToSide) ■ **Movement**: Horizontal ■ **Period**: 8 ■ **Magnitude**: 45 ■ Check "**Preview**" (optional) ○ Behaviors (LavaUpDown) ■ **Movement**: Vertical ■ **Period**: 8 ■ **Magnitude**: 15 ■ Check "**Preview**" (optional)
❑	Duplicate Lava Top	Create **two separate 11 x 1** (Width x Height) **sections of Lava Top objects** using Ctrl + drag (left mouse button) and the snap-to-grid feature. For now, **place these above the moat where you can easily work with them**.  **Note:** To select multiple objects you can highlight them using your mouse or **Shift + Click** (left mouse button).
❑	Modify Properties of One Strip of Lava Top	■ Select one of the two "**LavaTop**" strips you created by highlighting or **Shift + Click** > Set the following properties: ○ Behaviors (LavaSideToSide)

		■ **Period**: 12 ■ **Magnitude**: 24 ○ Behaviors (LavaUpDown) ■ **Period**: 8 ■ **Magnitude**: 12
❑	Position and Order Lava Top Strips	■ Carefully select the 11 x 1 strips of "**LavaTop**" objects, one strip at a time, positioning them in the moat ■ Using the Z Order Bar, place Lava and LavaTop objects **beneath the Ground objects** and Lava **beneath the LavaTop**: ■ When completed, your moat should resemble the following: 
❑	Preview Layout	From "Level 1" layout > Click "Preview" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

Tracking the Player

	Step	Detailed Instructions
❑	Add Instance Variable to the Player	■ Right-click "**Player**" > Select "Edit instance variables" ○ Click "**Add new instance variable**" ■ **Name**: active ■ **Type**: Boolean ■ Uncheck "**Initial value**" ■ **Description**: Whether player is active ■ Select OK ■ Click X to close
❑	Add Action to Activate Player at Start of Each Level	■ Right-click "**Start & End Level Event Sheet**" > Select "Open" ■ Under the "**On start of layout**" event within the "**Start of Level**" event group click "**Add action**": ○ Double-click "**Player**" ○ Double-click "**Set boolean**" (under "Instance variables") ■ **Instance variable**: active ■ **Value**: True ○ Select DONE
❑	Add "Deactivate Player" Action to "Success" Event	■ Under the "Success" event (collision with Exit & CoinsLeft = 0) within the "**End of Level**" event group, click "**Add action**": ○ Double-click "**Player**" ○ Double-click "**Set boolean**" (under "Instance variables") ■ **Instance variable**: active ■ **Value**: False ○ Select DONE ■ Drag action up so that it is **listed first** for the event
❑	Modify "Movement" Event Group to Restrict Player Movement (if inactive)	■ Right-click "Player Event Sheet" > Select "Open" ■ Click "**Add event to 'Movement'**" ○ Double-click "**Player**" ○ Double-click "**Is boolean instance variable set**" (under "Instance variables")

		■ **Instance variable**: active ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Set ignoring input**" (under "Platform") ■ **Input**: Stop ignoring ○ Select DONE ■ Right-click event > Select "**Add**" > Select "**Add 'Else'**" ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Set ignoring input**" (under "Platform") ■ **Input**: Start Ignoring ○ Select DONE ■ Drag newly-created events near the top of the event group, placing **immediately beneath the positioning event** ■ Drag previous events—minus the positioning event—within the **'Player is active'** block, making them **sub-events**



❏	Debug Layout	From "Level 1" layout > Click "Debug layout" in main toolbar
❏	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

Raising the Gate

Step		Detailed Instructions
❑	Assign Fade (Out) Behavior to Alien	■ Right-click "**Alien**" > Select "Edit behaviors" ■ Click "**Add new behavior**": ○ Select "**Fade**" under "General" > ADD ○ Rename "**FadeOut**" ○ Click X to close
❑	Assign Fade (In) Behavior to Alien	■ Right-click "**Alien**" > Select "Edit behaviors" ■ Click "**Add new behavior**": ○ Select "**Fade**" under "General" > ADD ○ Rename "**FadeIn**" ○ Click X to close
❑	Set Alien Fade Properties	■ Select "**Alien**" > Set/confirm the following properties: ○ Behaviors (FadeOut) ■ **Fade in time**: 0 ■ **Wait time**: 0.5 ■ **Fade out time**: 1 ■ Uncheck **Destroy** ■ Uncheck **Enabled** ○ Behaviors (FadeIn) ■ **Fade in time**: 1.5 ■ **Wait time**: 0.5 ■ **Fade out time**: 0 ■ Uncheck **Destroy** ■ Uncheck **Enabled**
❑	Add Instance Variable to Castle Door	■ Select "**CastleDoor**" > Select "Edit instance variables" ○ Click "**Add new instance variable**" ■ **Name**: open ■ **Type**: Boolean ■ Uncheck **Initial Value** ■ **Description**: Whether door is open ■ Select OK ■ Click X to close
❑	Annotate Unique ID (UID) of Grass Object in Front of Castle Door	■ Make sure "Game" layer is active and unlocked ■ Click on Grass object in front of the CastleDoor object

		■ Annotate its UID from the Properties Bar (example below):
❏	Create "Castle Door" Event Group	■ Right-click "**Level 1 Event Sheet**" > Select "Open" ■ Right-click > "**Add group**" ○ **Name**: Castle Door ○ **Description**: Events and triggers that control interactions with the castle door ○ Select OK
❏	Create Open Castle Door Event	■ Click "**Add event to 'Castle Door'**" ○ Double-click "**Player**" ○ Double-click "**On collision with another object**" (under "Collisions") ■ **Object**: Grass ○ Select DONE ■ Right-click event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Grass**" ○ Double-click "**Pick by unique ID**" (under "Misc") ■ **Unique ID**: <UID you annotated previously> ○ Select DONE ■ Right-click event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**CastleDoor**" ○ Double-click "**Is boolean instance variable set**" (under "Instance variables") ■ **Instance variable**: open ○ Select DONE ○ Right-click newly-created condition > Select "**Invert**" ■ Click "**Add action**" ○ Double-click "**CastleDoor**" ○ Double-click "**Set boolean**" (under "Instance variables") ■ **Instance variable**: open ■ **Value**: True ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Set boolean**" (under "Instance variables") ■ **Instance variable**: active ■ **Value**: False

		○ Select DONE ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Stand" ○ Select DONE ■ Click "**Add action**" ○ Double-click "**CastleDoor**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Open" ○ Select DONE
❑	Create Castle Door Open Animation Finished Event	■ Click "**Add event to 'Castle Door'**" ○ Double-click "**CastleDoor**" ○ Double-click "**On finished**" (under "Animations") ■ **Animation**: "Open" ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Set position**" (under "Size & Position") ■ **X**: CastleDoor.X+(CastleDoor.Width/2) ■ **Y**: CastleDoor.Y ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Set enabled**" (under "ScrollTo") ■ **State**: disabled ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Restart Fade**" (under "FadeOut") ○ Select DONE
❑	Create Alien Fade Out Finished Event	■ Click "**Add event to 'Castle Door'**" ○ Double-click "**Alien**" ○ Double-click "**On fade-out finished**" (under "FadeOut") ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Set position**" (under "Size & Position") ■ **X**: Player.X ■ **Y**: 0 ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Set enabled**" (under "ScrollTo")

		■ **State**: enabled ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Alien**" ○ Double-click "**Restart Fade**" (under "FadeIn") ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Set boolean**" (under "Instance variables") ■ **Instance variable**: active ■ **Value**: True ○ Select DONE ■ Click "**Add action**" ○ Double-click "**CastleDoor**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Close" ○ Select DONE
❏	Create Castle Door Close Animation Finished Event	■ Click "**Add event to 'Castle Door'**" ○ Double-click "**CastleDoor**" ○ Double-click "**On finished**" (under "Animations") ■ **Animation**: "Close" ○ Select DONE ■ Click "**Add action**" ○ Double-click "**CastleDoor**" ○ Double-click "**Set boolean**" (under "Instance variables") ■ **Instance variable**: open ■ **Value**: False ○ Select DONE
❏	Add Additional Coin and Enemy Objects to Layout	Add additional instances of the Coin, Barnacle, and Bee objects, as desired, around the top of the castle so that the player has to raise the gate to complete the level
❏	Debug Layout	From "Level 1" layout > Click "Debug layout" in main toolbar
❏	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

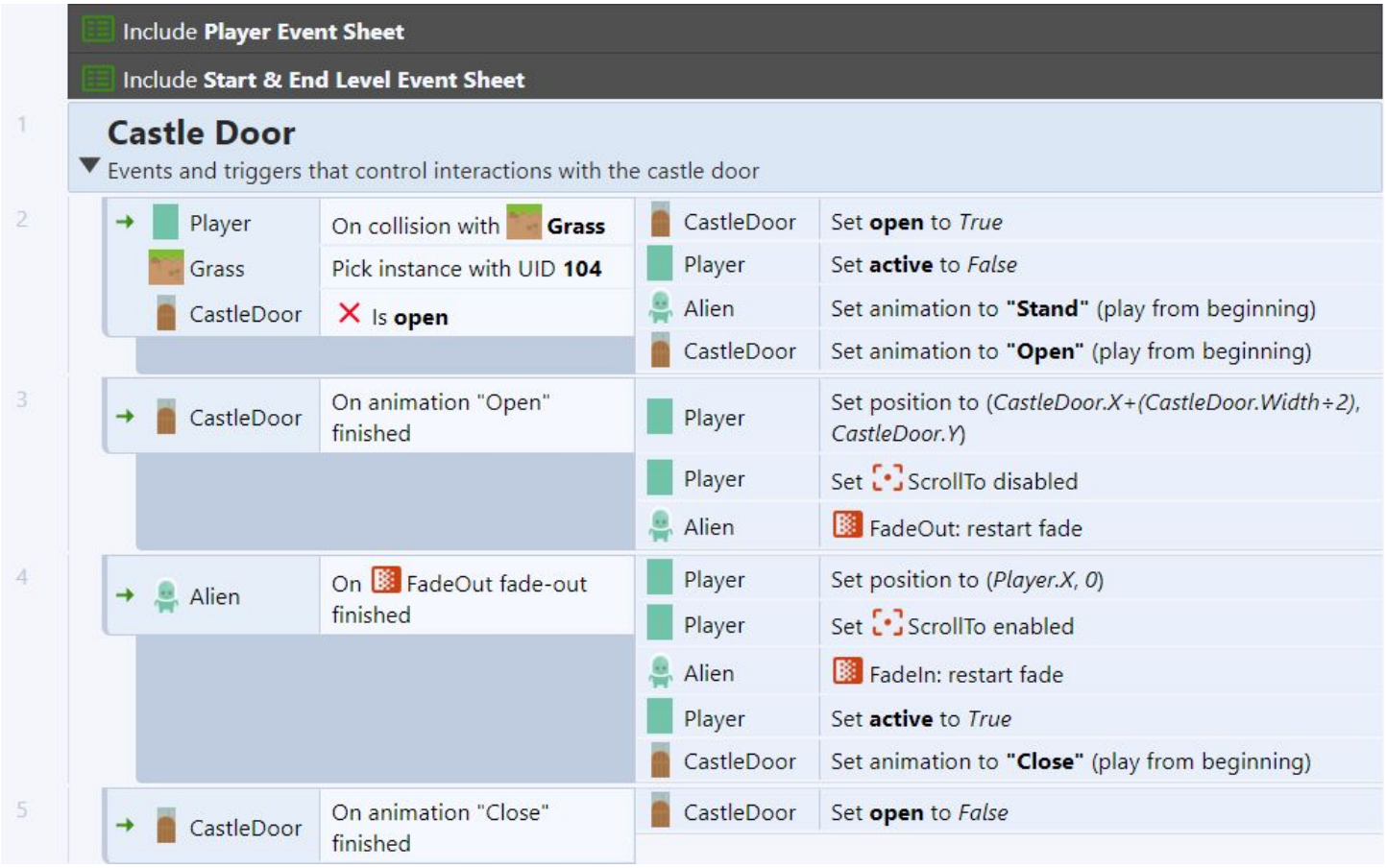
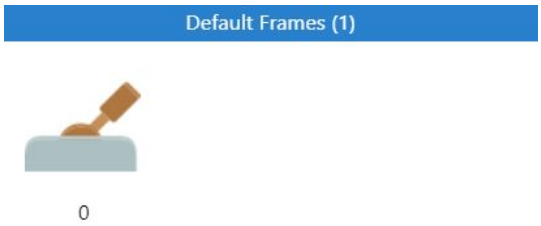
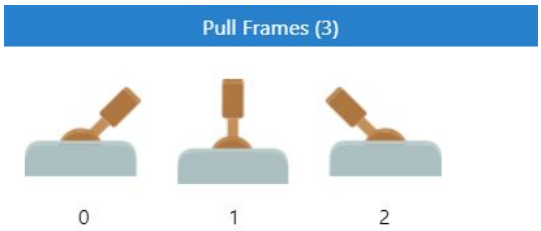


FIGURE 14: Snapshot of "Level 1 Event Sheet" (after Raising the Gate)

Crossing the Moat

Step		Detailed Instructions
❑	Create Lever	■ Make sure "Game" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**Lever**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Within "Frames" > Right-click "**Import Frames**" > "**From Strip**" ■ Click folder icon > Browse to and OPEN: **lever-3x1-71x65.png** ■ When Import Sprite Strip dialog appears: ○ Number of horizontal cells: **3** ○ Number of vertical cells: **1** ○ Direction: **Horizontal** ○ Check "**Replace entire animation**" ○ Select IMPORT

		■ Within "Frames", rearrange/duplicate/delete frames until it resembles the following **single-frame** animation:  ■ Select "Edit the collision polygon" option ■ Right-click "**Guess the polygon shape**" ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **35** ■ Set **Y** to **60** ■ Click X to close; Lever object should be on "Game" layer; position strategically before the moat
❑	Rename Default Animation	■ Right-click "**Lever**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Animation 1**" > Rename to "**Default**"
❑	Create "Pull" Animation	■ Right-click "**Lever**" > Select "Edit animations" ■ Under "Animations" > Right-click "**Add Animation**" ■ Rename new animation to "**Pull**" ■ Within "Frames" > Right-click "**Import Frames**" > "**From Strip**" ■ Click folder icon > Browse to and OPEN: **lever-3x1-71x65.png** ■ When Import Sprite Strip dialog appears: ○ Number of horizontal cells: **3** ○ Number of vertical cells: **1** ○ Direction: **Horizontal** ○ Check "**Replace entire animation**" ○ Select IMPORT ■ Verify that your **three-frame** animation resembles the following: 

<table>
<tr><td></td><td></td><td>

- Select "Edit the image points" option; change existing "Origin" image points:

Frame #	Origin (X, Y)
Frame 0	35, 60
Frame 1	36, 65
Frame 2	38, 60

- Click X to close

</td></tr>
<tr><td>❑</td><td>Set "Pull" Animation Properties</td><td>

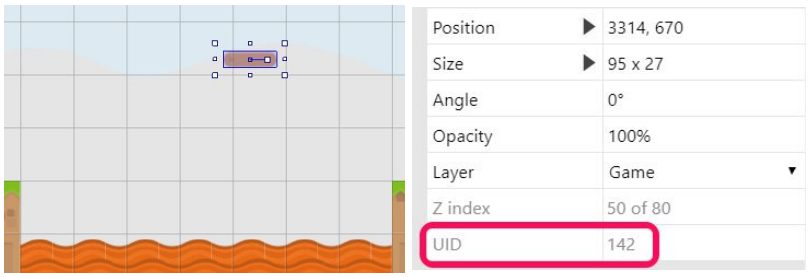
- Right-click "**Lever**" > Select "Edit animations" > Select "**Pull**":
  - Animation Properties
    - **Speed**: 3
    - Uncheck "**Loop**"
- Click X to close

</td></tr>
<tr><td>❑</td><td>Add Instance Variable to Lever</td><td>

- Right-click "**Lever**" > Select "Edit instance variables"
  - Click "**Add new instance variable**"
    - **Name**: pulled
    - **Type**: Boolean
    - Uncheck "**Initial Value**"
    - **Description**: Whether lever has been pulled
    - Select OK
- Click X to close

</td></tr>
<tr><td>❑</td><td>Annotate Unique ID (UID) of Bridge Above the Moat</td><td>

- Make sure "Game" layer is active and unlocked
- Click on Bridge object above the moat
- Annotate its UID from the Properties Bar (example below):



</td></tr>
<tr><td>❑</td><td>Create "Start of Level 1" Event Group</td><td>

- Right-click "**Level 1 Event Sheet**" > Select "Open"
- Right-click > "**Add group**"
  - **Name**: Start of Level 1
  - **Description**: Events and triggers that occur at the beginning of the Level 1 layout only
  - Select OK

</td></tr>
</table>

		■ **Drag event group to top** of event sheet
❑	Create "On Start of Layout" Event to Disable Floating Bridge Above Moat	■ Click "**Add event to 'Start of Level 1'**" ○ Double-click "**System**" ○ Double-click "**On start of layout**" (under "Start & end") ■ Right-click newly-created event > Select "**Add**" > Select "**Add sub-event**" ○ Double-click "**Bridge**" ○ Double-click "**Pick by unique ID**" (under "Misc") ■ **Unique ID**: <UID you annotated previously> ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Bridge**" ○ Double-click "**Set enabled**" (under "BridgeSideToSide") ■ **State**: Disabled ○ Select DONE
❑	Create "Lever" Event Group	■ Right-click > "**Add group**" ○ **Name**: Lever ○ **Description**: Events and triggers that control the lever and access to the final floating bridge ○ Select OK
❑	Create "Player Collision with Lever" Event	■ Click "**Add event to 'Lever'**" ○ Double-click "**Player**" ○ Double-click "**On collision with another object**" (under "Collisions") ■ **Object**: Lever ○ Select DONE ■ Right-click event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Lever**" ○ Double-click "**Is boolean instance variable set**" (under "Instance variables") ■ **Variable**: pulled ○ Select DONE ○ Right-click newly-created condition > Select "**Invert**" ■ Click "**Add action**" ○ Double-click "**Lever**" ○ Double-click "**Set boolean**" (under "Instance variables") ■ **Instance variable**: pulled ■ **Value**: True ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Lever**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Pull" ○ Select DONE

❏	Create Lever Pull Animation Finished Event	■ Click "**Add event to 'Lever'**" ○ Double-click "**Lever**" ○ Double-click "**On finished**" (under "Animations") ■ **Animation**: "Pull" ○ Select DONE ■ Right-click event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Bridge**" ○ Double-click "**Pick by unique ID**" (under "Misc") ■ **Unique ID**: <UID you annotated previously> ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Bridge**" ○ Double-click "**Set enabled**" (under "BridgeSideToSide") ■ **State**: Enabled ○ Select DONE
❏	Debug Layout	From "Level 1" layout > Click "Debug layout" in main toolbar
❏	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 💾

Include **Player Event Sheet**

Include **Start & End Level Event Sheet**

1 **Start of Level 1**
Events and triggers that occur at the beginning of the Level 1 layout only

2	System	On start of layout	Add action	Add...
3	Bridge	Pick instance with UID **143**	Bridge	Set BridgeSideToSide **Disabled**

Add event to 'Start of Level 1' — Add to 'Start of Level 1'...

4 **Castle Door**
Events and triggers that control interactions with the castle door

5	Player	On collision with **Grass**	CastleDoor	Set **open** to *True*
	Grass	Pick instance with UID **104**	Player	Set **active** to *False*
	CastleDoor	Is **open**	Alien	Set animation to **"Stand"** (play from beginning)
			CastleDoor	Set animation to **"Open"** (play from beginning)
6	CastleDoor	On animation "Open" finished	Player	Set position to (*CastleDoor.X+(CastleDoor.Width÷2), CastleDoor.Y*)
			Player	Set ScrollTo disabled
			Alien	FadeOut: restart fade
7	Alien	On FadeOut fade-out finished	Player	Set position to (*Player.X, 0*)
			Player	Set ScrollTo enabled
			Alien	FadeIn: restart fade
			Player	Set **active** to *True*
			CastleDoor	Set animation to **"Close"** (play from beginning)
8	CastleDoor	On animation "Close" finished	CastleDoor	Set **open** to *False*

Add event to 'Castle Door' — Add to 'Castle Door'...

9 **Lever**
Events and triggers that control the lever and access to the final floating bridge

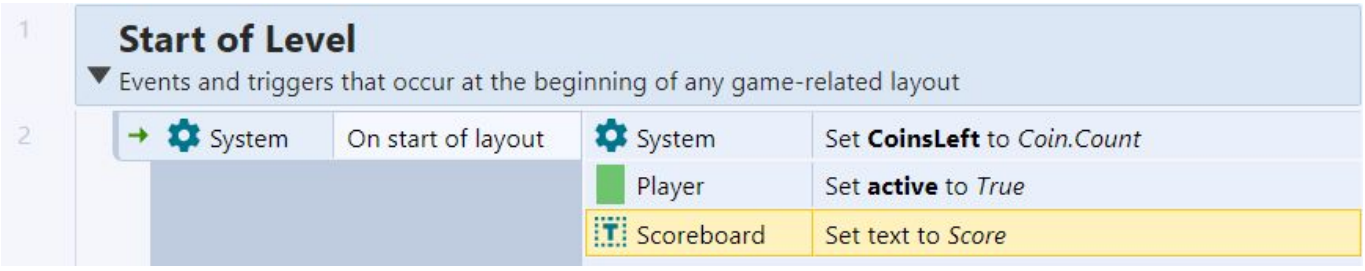
10	Player	On collision with **Lever**	Lever	Set **pulled** to *True*
	Lever	Is **pulled**	Lever	Set animation to **"Pull"** (play from beginning)
11	Lever	On animation "Pull" finished	Bridge	Set BridgeSideToSide **Enabled**
	Bridge	Pick instance with UID **143**		

FIGURE 15: Snapshot of "Level 1 Event Sheet" (after Crossing the Moat)

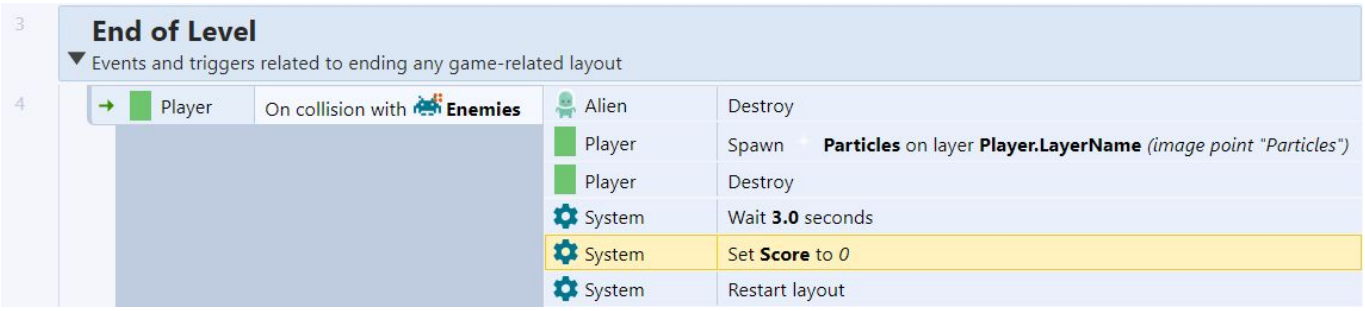
Keeping Score

Step		Detailed Instructions
❑	Add "Almendra Bold" Web Font to Project	■ Right-click FONTS > Select "Import files" ■ Browse to and IMPORT **almendra-bold.woff2**
❑	Lock "Background" and "Game" Layers	■ Select "Background" layer > Click lock icon ■ Select "Game" layer > Click lock icon
❑	Create "HUD" Layer	■ Under "Layers" > Right-click "**Add layer at top**" > Rename new layer to "**HUD**" ■ Make sure the "HUD" layer is active, unlocked, and listed **above** the "Game" layer
❑	Set "HUD" Layer Properties	■ Select "HUD" layer > Set the following properties: ○ Scroll & zoom ■ **Parallax** (X x Y): 0% x 0% ○ Appearance ■ **Opacity**: 80%
❑	Create Scoreboard	■ Make sure "HUD" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "**Text**" > Name: "**Scoreboard**" > INSERT ■ When crosshair appears, click inside "Level 1" layout; Scoreboard object should be on "HUD" layer
❑	Set Scoreboard Properties	■ Select "**Scoreboard**" > Set/confirm the following properties: ○ Common ■ **Position**: 1620, 0 ■ **Size** (Width x Height): 250 x 150 ○ Properties ■ **Text**: <empty> ■ **Font**: almendra-bold ■ **Size**: 72 ■ **Color**: 51 (Red), 56 (Green), 57 (Blue) ■ **Horizontal alignment**: Right
❑	Create Global Variable to Track Score	■ Right-click "**Start & End Level Event Sheet**" > Select "Open" ■ Right-click "**Add global variable**" ○ **Name**: Score ○ **Type**: Number ○ **Initial value**: 0 ○ **Description**: Current score of the game ○ Select OK
Global number **Score** = 0		*Current score of the game*

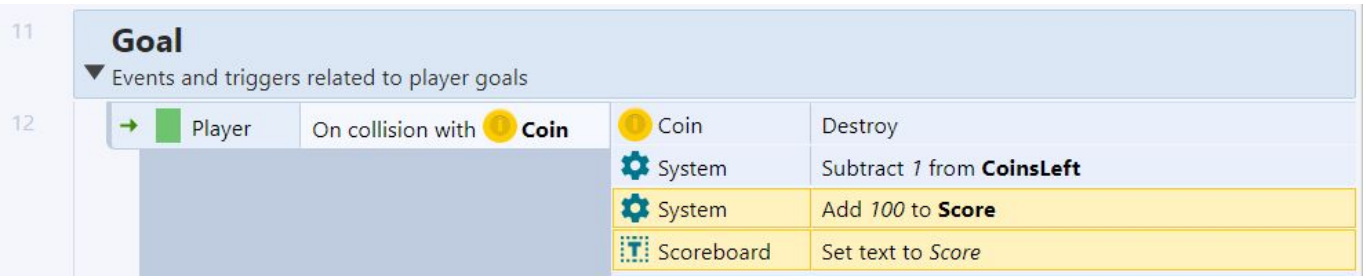
❑	Add Action to Set Scoreboard Text at Start of Level	■ Under the "**On start of layout**" event within the "**Start of Level**" event group, click "**Add action**": ○ Double-click "**Scoreboard**" ○ Double-click "**Set text**" (under "Text") ■ **Text**: Score ○ Select DONE



❑	Add Action "On Player Collision with Enemies" Event to Reset Score	■ Under the "**On collision with Enemies**" event within the "**End of Level**" event group, click "**Add action**": ○ Double-click "**System**" ○ Double-click "**Set value**" (under "Global & local variables") ■ **Variable**: Score ■ **Value**: 0 ○ Select DONE ■ Drag action up so that it is the second-to-last action



❑	Add Actions to Increment Score and Update Scoreboard as Coins Are Collected	■ Right-click "**Player Event Sheet**" > Select "Open" ■ Under the "**On collision with Coin**" event within the "**Goal**" event group, click "**Add action**": ○ Double-click "**System**" ○ Double-click "**Add to**" (under "Global & local variables") ■ **Variable**: Score ■ **Value**: 100 ○ Select DONE ■ Under the "**On collision with Coin**" event within the "**Goal**" event group, click "**Add action**": ○ Double-click "**Scoreboard**" ○ Double-click "**Set text**" (under "Text") ■ **Text**: Score ○ Select DONE



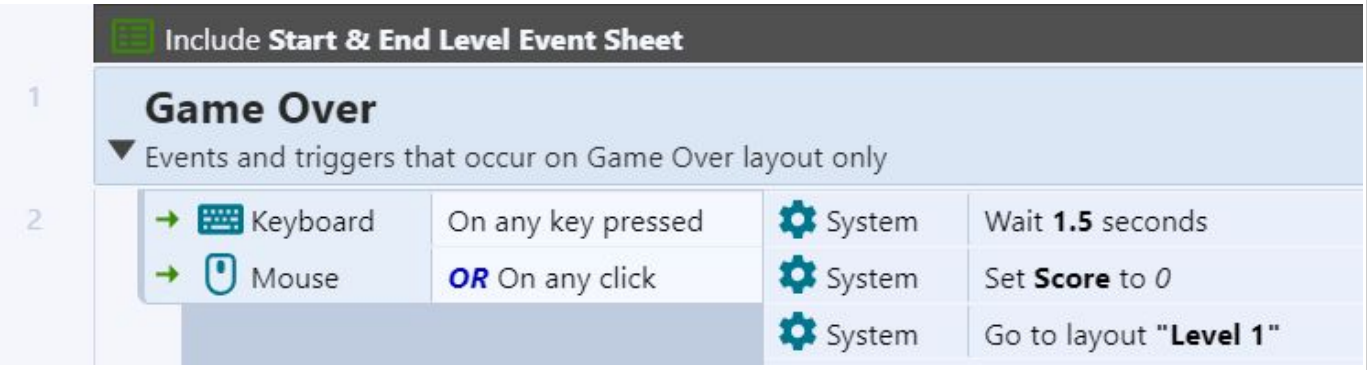
❑	Lock "HUD" Layer	Select "HUD" layer > Click lock icon
❑	Debug Layout	From "Level 1" layout > Click "Debug layout" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

You Win!

Step		Detailed Instructions
❑	Create "Game Over" Layout	Right-click LAYOUTS > Select "**Add layout**" > Select "**Add event sheet**" option
❑	Rename Layout	Right-click "Layout 1" > Rename to "**Game Over**"
❑	Rename Event Sheet	Right-click "Event sheet 1" > Rename to "**Game Over Event Sheet**"
❑	Set Layout Properties	■ Select "Game Over" > Set the following properties: ○ Layout ■ **Size** (Width x Height): 1920 x 1080 ○ Editor ■ **Margins** (Width x Height): 500 x 500
❑	Rename "Layer 0"	Right-click "Layer 0" > Rename to "**Background**"
❑	Create "You Win" Background	■ Make sure "Background" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**YouWin**" > INSERT ■ When crosshair appears, click inside "Game Over" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **you-win-1920x1080.png** ■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **960** ■ Set **Y** to **540** ■ Click X to close; YouWin object should be on "Background" layer

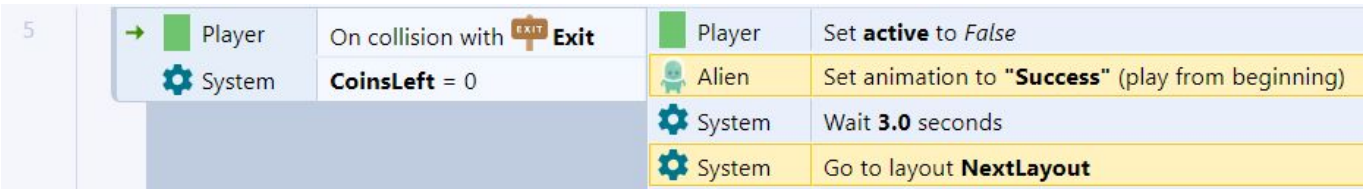
❑	Position "You Win" Background	■ Right-click "YouWin" object on "Game Over" layout > "Align" > Layout > **Center horizontal** ■ Right-click "YouWin" object on "Game Over" layout > "Align" > Layout > **Center vertical**
❑	Lock "Background" Layer	Select "Background" layer > Click lock icon
❑	Create "Content" Layer	■ Under "Layers" > Right-click "**Add layer at top**" > Rename new layer to "**Content**" ■ Make sure the "Content" layer is active, unlocked, and listed **above** the "Background" layer
❑	Add Scoreboard to "Game Over" Layout	■ Drag a Scoreboard object onto the "**Game Over**" layout; it should be assigned to the "**Content**" layer
❑	Set Scoreboard Properties	■ Right-click "**Scoreboard**" object on "Game Over" layout > Set/confirm the following properties: ○ Common ■ **Position**: 1090, 610 ■ **Size** (Width x Height): 800 x 300 ○ Properties ■ **Size**: 144 ■ **Horizontal alignment**: Left
❑	Include "Start & End Level Event Sheet" in "Game Over Event Sheet"	■ Right-click "**Game Over Event Sheet**" > Select "Open" ■ Right-click > "**Include event sheet**" > Double-click "**Start & End Level Event Sheet**"
❑	Create "Game Over" Event Group	■ Right-click > "**Add group**" ○ **Name**: Game Over ○ **Description**: Events and triggers that occur on Game Over layout only ○ Select OK
❑	Add "Press Anything to Play Again" Event	■ Click "**Add event to 'Game Over'**" ○ Double-click "**Keyboard**" ○ Double-click "**On any key pressed**" (under "Keyboard") ■ Right-click event > Select "**Make OR block**" ■ Right-click event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Mouse**" ○ Double-click "**On any click**" (under "Mouse") ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Wait**" (under "Time") ■ **Seconds**: 1.5 ○ Select DONE ■ Click "**Add action**" ○ Double-click "**System**"

		○ Double-click "**Set value**" (under "Global & local variables") ■ **Variable**: Score ■ **Value**: 0 ○ Select DONE ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Go to layout (by name)**" (under "Layout") ■ **Layout**: "Level 1" ○ Select DONE

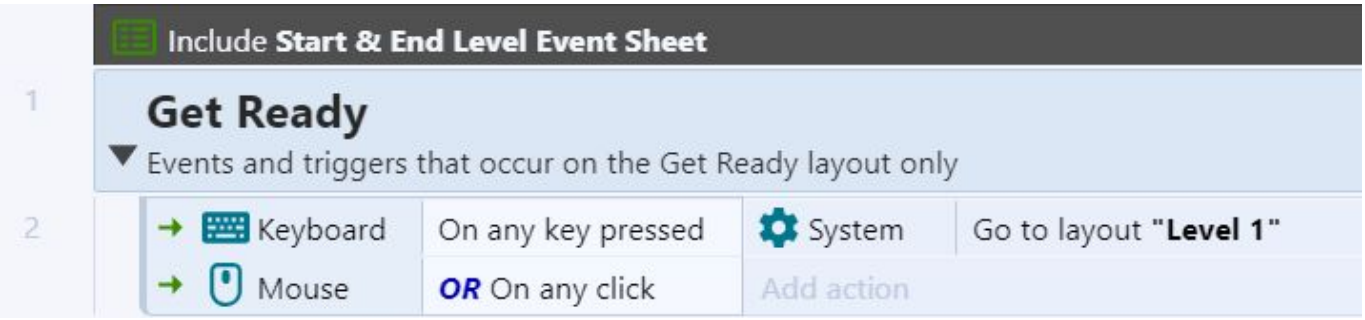


❑	Lock "Content" Layer	■ Select "Content" layer > Click lock icon
❑	Create Global Variable to Track Next Game Layout	■ Right-click "**Start & End Level Event Sheet**" > Select "Open" ■ Right-click "**Add global variable**" ○ **Name**: NextLayout ○ **Type**: String ○ **Initial value**: <empty> ○ **Description**: Game layout to go to next ○ Select OK

❑	Add "Go to Next Game Layout" Action to "Success" Event	■ Under the "Success" event (collision with Exit & CoinsLeft = 0) within the "**End of Level**" event group, click "**Add action**": ○ Double-click "**System**" ○ Double-click "**Go to layout (by name)**" (under "Layout") ■ **Layout**: NextLayout ○ Select DONE
❑	Remove "Restart Layout" Action from "Success" Event	■ Under the "Success" event (collision with Exit & CoinsLeft = 0) within the "**End of Level**" event group: ○ Right-click "**System | Restart layout**" action > Delete
❑	Add Alien "Success" Animation Action	■ Under the "Success" event (collision with Exit & CoinsLeft = 0) within the "**End of Level**" event group, click "**Add action**": ○ Double-click "**Alien**" ○ Double-click "**Set animation**" (under "Animations") ■ **Animation**: "Success"

		○ Select DONE ■ Drag action up so that it is listed second for the event
		
❑	Add "Set Next Layout" Action to "On Start of Layout" Event in "Level 1 Event Sheet"	■ Right-click "**Level 1 Event Sheet**" > Select "Open" ■ Under the "**On start of layout**" event within the "**Start of Level 1**" event group, click "**Add action**": ○ Double-click "**System**" ○ Double-click "**Set value**" (under "Global & local variables") ■ **Variable**: NextLayout ■ **Value**: "Game Over" ○ Select DONE
❑	Create "Get Ready" Layout	Right-click LAYOUTS > Select "**Add layout**" > Select "**Add event sheet**" option
❑	Rename Layout	Right-click "Layout 1" > Rename to "**Get Ready**"
❑	Rename Event Sheet	Right-click "Event sheet 1" > Rename to "**Get Ready Event Sheet**"
❑	Set Layout Properties	■ Select "Get Ready" > Set the following properties: ○ Layout ■ **Size** (Width x Height): 1920 x 1080 ○ Editor ■ **Margins** (Width x Height): 500 x 500
❑	Rename "Layer 0"	Right-click "Layer 0" > Rename to "**Background**"
❑	Create "Get Ready" Background	■ Make sure "Background" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**GetReady**" > INSERT ■ When crosshair appears, click inside "Get Ready" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **get-ready-1920x1080.png**

		■ Select "Edit the image points" option ○ Change existing "Origin" image point ■ Set **X** to **960** ■ Set **Y** to **540** ■ Click X to close; GetReady object should be on "Background" layer
❑	Position "Get Ready" Background	■ Right-click "GetReady" object on "Get Ready" layout > "Align" > Layout > **Center horizontal** ■ Right-click "GetReady" object on "Get Ready" layout > "Align" > Layout > **Center vertical**
❑	Lock "Background" Layer	Select "Background" layer > Click lock icon
❑	Create "Content" Layer	■ Under "Layers" > Right-click "**Add layer at top**" > Rename new layer to "**Content**" ■ Make sure the "Content" layer is active, unlocked, and listed **above** the "Background" layer
❑	Create Author Text	■ Make sure "Content" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "**Text**" > Name: "**Author**" > INSERT ■ When crosshair appears, click inside "Get Ready" layout; you should see an Author object should be on "Content" layer
❑	Set Author Properties	■ Select "**Author**" > Set/confirm the following properties: ○ Common ■ **Position**: 580, 714 ■ **Size** (Width x Height): 760 x 120 ■ **Opacity**: 40% ○ Properties ■ **Text**: Game Project by <your name here> ■ **Font**: almendra-bold ■ **Size**: 36 ■ **Color**: 51 (Red), 56 (Green), 57 (Blue) ■ **Horizontal alignment**: Center
❑	Create Credits Text	■ Make sure "Content" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "**Text**" > Name: "**Credits**" > INSERT ■ When crosshair appears, click inside "Get Ready" layout; Credits object should be on "Content" layer
❑	Set Credits Properties	■ Select "**Credits**" > Set/confirm the following properties: ○ Common ■ **Position**: 360, 800 ■ **Size** (Width x Height): 1200 x 160

		■ **Opacity**: 70% ○ Properties ■ **Text**: <copy and paste from credits.txt> ■ **Font**: almendra-bold ■ **Size**: 16 ■ **Color**: 51 (Red), 56 (Green), 57 (Blue) ■ **Horizontal alignment**: Center ■ **Vertical alignment**: Center
❑	Include "Start & End Level Event Sheet" in "Get Ready Event Sheet"	■ Right-click "**Get Ready Event Sheet**" > Select "Open" ■ Right-click > "**Include event sheet**" > Double-click "**Start & End Level Event Sheet**"
❑	Create "Get Ready" Event Group	■ Right-click > "**Add group**" ○ **Name**: Get Ready ○ **Description**: Events and triggers that occur on the Get Ready layout only ○ Select OK
❑	Add "Press Anything to Play" Event	■ Click "**Add event to 'Get Ready'**" ○ Double-click "**Keyboard**" ○ Double-click "**On any key pressed**" (under "Keyboard") ■ Right-click event > Select "**Make OR block**" ■ Right-click event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Mouse**" ○ Double-click "**On any click**" (under "Mouse") ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Go to layout (by name)**" (under "Layout") ■ **Layout**: "Level 1" ○ Select DONE
		
❑	Lock "Content" Layer	Select "Content" layer > Click lock icon
❑	Update Project Properties	■ Select "Platformer" > Set the following property: ○ Startup ■ **First layout**: Get Ready
❑	Preview Layout	From "Get Ready" layout > Click "Preview" in main toolbar

❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

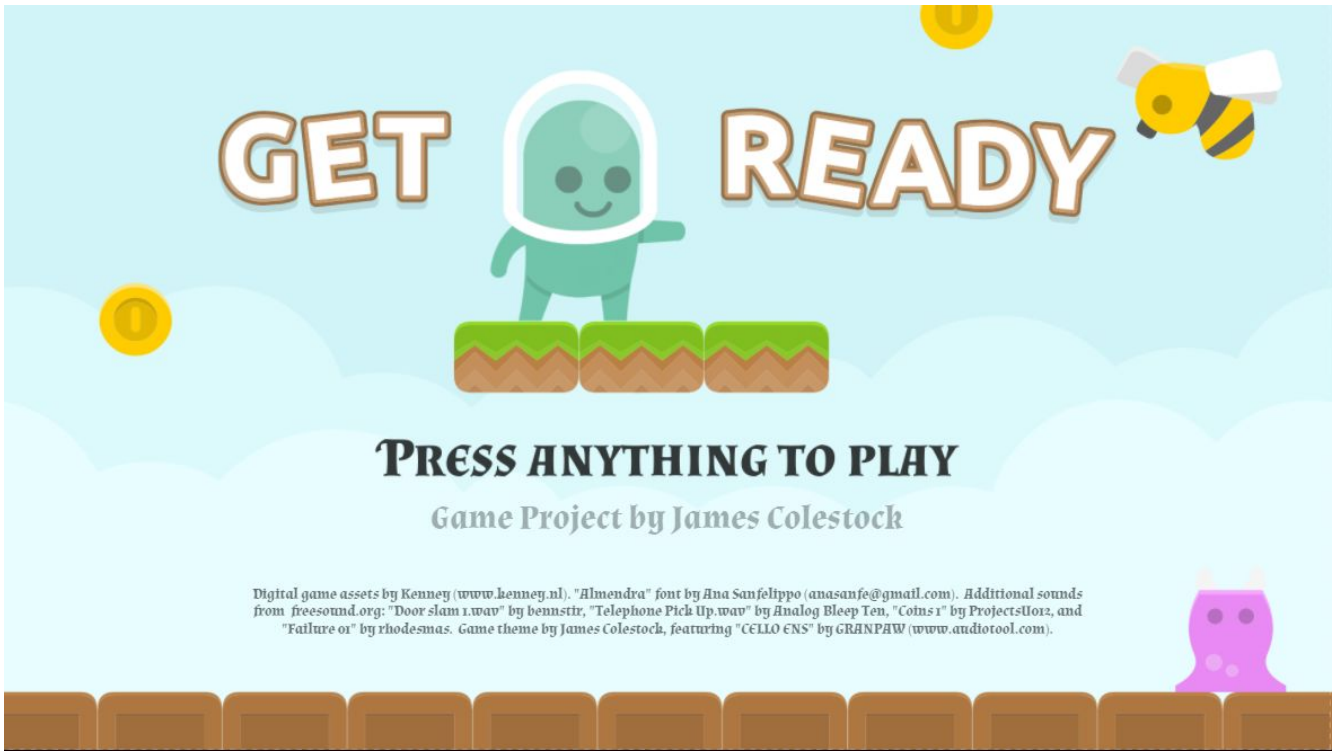


FIGURE 16: Snapshot of "Get Ready" Layout (all layers)

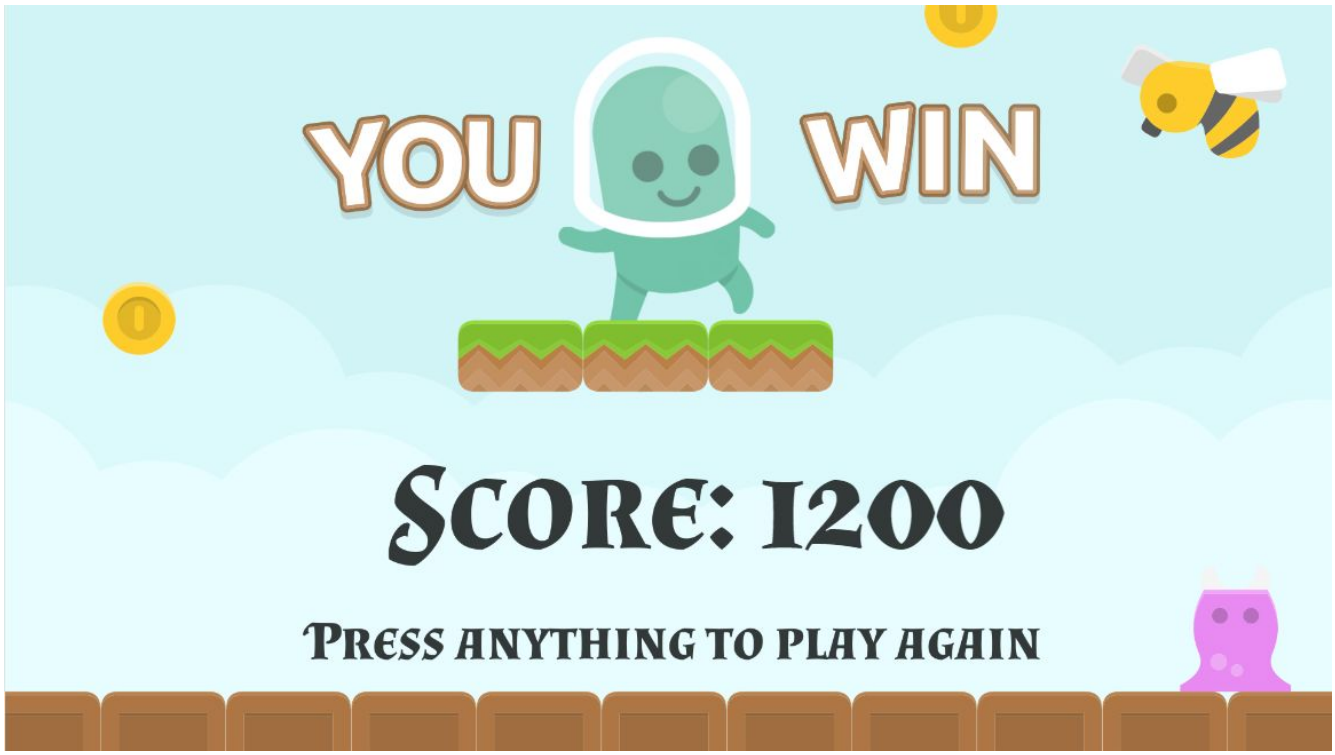
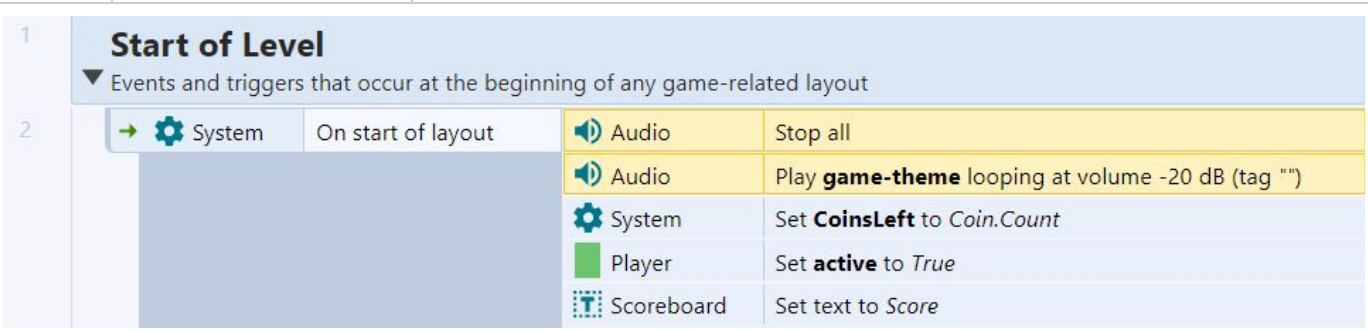


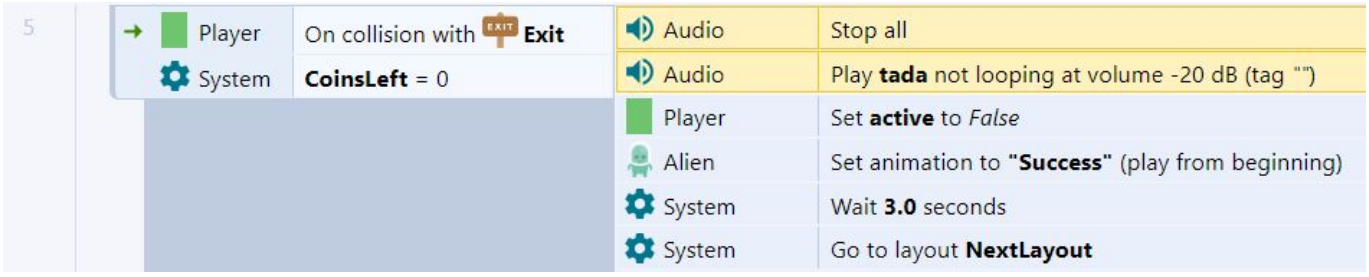
FIGURE 17: Snapshot of "Game Over" Layout (all layers)

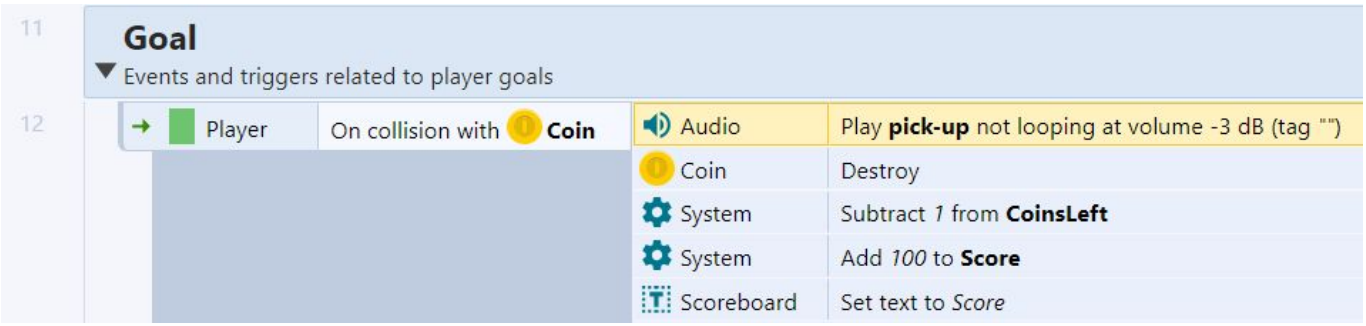
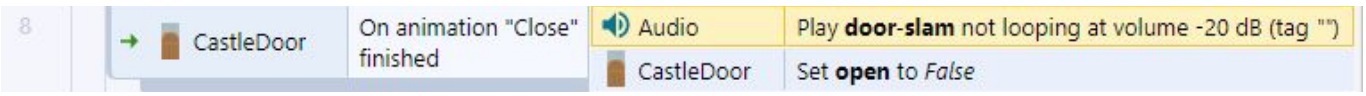
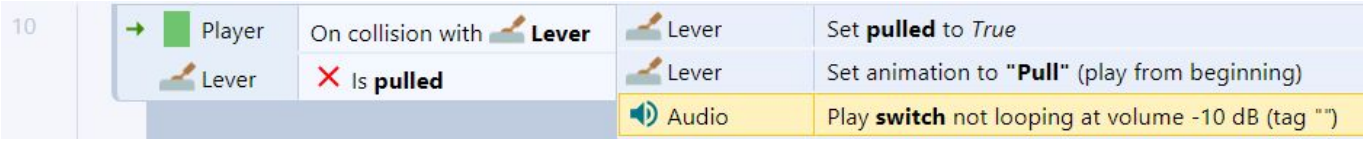
Fresh Beats

	Step	Detailed Instructions
❑	Import Game Sounds	■ Right-click SOUNDS > Select "Import sounds" ■ Browse to and IMPORT the following files: ○ **door-slam.wav** ○ **game-over.wav** ○ **game-theme.wav** ○ **pick-up.wav** ○ **switch.wav** ○ **tada.wav**
❑	Add Audio Support to Project	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "**Audio**" (under "Media") > INSERT
❑	Add Actions to Play "Game Theme" At Start of Each Level	■ Right-click "**Start & End Level Event Sheet**" > Select "Open" ■ Under the "**On start of layout**" event within the "**Start of Level**" event group click "**Add action**": ○ Double-click "**Audio**" ○ Double-click "**Stop all**" (under "Audio") ■ Under the "**On start of layout**" event within the "**Start of Level**" event group click "**Add action**": ○ Double-click "**Audio**" ○ Double-click "**Play**" (under "Audio") ■ **Audio file**: game-theme ■ **Loop**: looping ■ **Volume**: -20 ○ Select DONE ■ Drag actions up so that they are listed first for the event



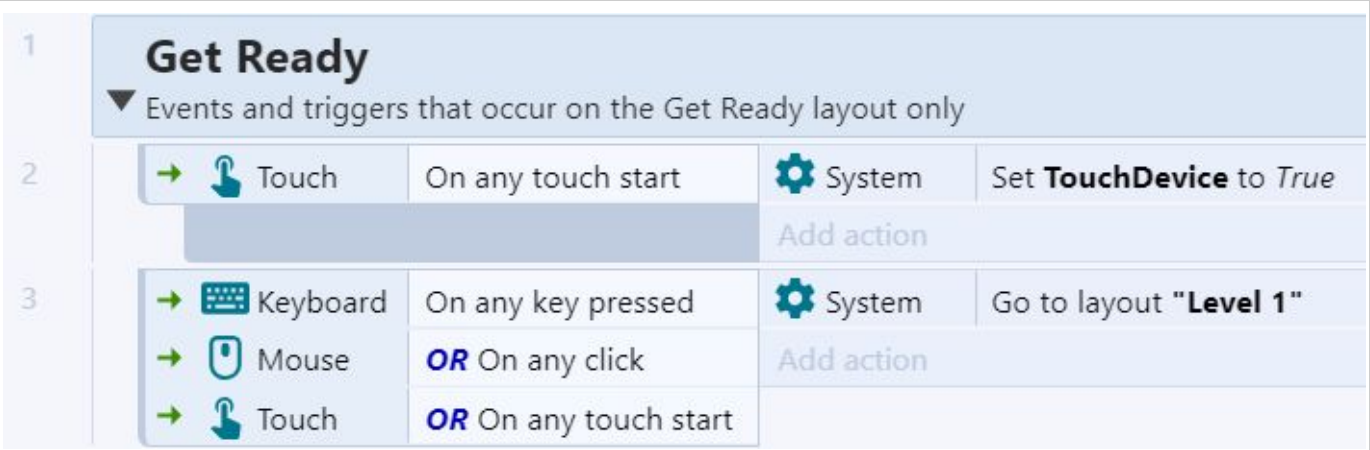
❑	Add Actions to Play "Game Over" On Collision With Enemies	■ Under the "**On collision with Enemies**" event within the "**End of Level**" event group click "**Add action**": ○ Double-click "**Audio**" ○ Double-click "**Stop all**" (under "Audio") ■ Under the "**On collision with Enemies**" event within the "**End of Level**" event group click "**Add action**": ○ Double-click "**Audio**"

		○ Double-click "**Play**" (under "Audio") ■ **Audio file**: game-over ■ **Loop**: not looping ■ **Volume**: -5 ○ Select DONE ■ Drag actions up so that they are listed first for the event
❑	Add Actions to Play "Ta Da" Upon "Success" Event	■ Under the "Success" event (collision with Exit & CoinsLeft = 0) within the "**End of Level**" event group, click "**Add action**": ○ Double-click "**Audio**" ○ Double-click "**Stop all**" (under "Audio") ■ Under the "Success" event (collision with Exit & CoinsLeft = 0) within the "**End of Level**" event group, click "**Add action**": ○ Double-click "**Audio**" ○ Double-click "**Play**" (under "Audio") ■ **Audio file**: tada ■ **Loop**: not looping ■ **Volume**: -20 ○ Select DONE ■ Drag actions up so that they are listed first for the event
		
❑	Add Action to Play "Pick Up" When Coins Are Collected	■ Right-click "**Player Event Sheet**" > Select "Open" ■ Under the "**On collision with Coin**" event within the "**Goal**" event group, click "**Add action**": ○ Double-click "**Audio**" ○ Double-click "**Play**" (under "Audio") ■ **Audio file**: pick-up ■ **Loop**: not looping ■ **Volume**: -3

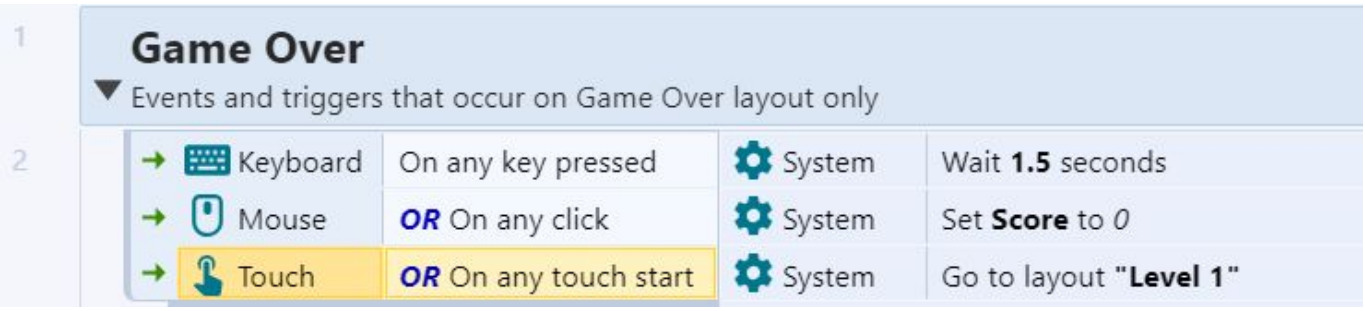
		○ Select DONE ■ Drag action up so that it is listed first for the event
		
❑	Add Action to Play "Door Slam" When Castle Door Closes	■ Right-click "**Level 1 Event Sheet**" > Select "Open" ■ Under the "**On animation 'Close' finished**" event within the "**Castle Door**" event group, click "**Add action**": ○ Double-click "**Audio**" ○ Double-click "**Play**" (under "Audio") ■ **Audio file**: door-slam ■ **Loop**: not looping ■ **Volume**: -20 ○ Select DONE ■ Drag action up so that it is listed first for the event
		
❑	Add Action to Play "Switch" When Lever Is Pulled	■ Under the "**On collision with Lever and pulled = False**" event within the "**Lever**" event group, click "**Add action**": ○ Double-click "**Audio**" ○ Double-click "**Play**" (under "Audio") ■ **Audio file**: switch ■ **Loop**: not looping ■ **Volume**: -10 ○ Select DONE ■ Drag action down so that it is listed last for the event
		
❑	Preview Layout	From "Get Ready" layout > Click "Preview" in main toolbar
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 💾

Touch Controls

Step		Detailed Instructions
❑	Add Touch Object to Project	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "**Touch**" > Name: "Touch" > INSERT
❑	Create Global Variable to Track Whether User is Playing On Touch-Enabled Device	■ Right-click "**Get Ready Event Sheet**" > Select "Open" ■ Right-click "**Add global variable**": ○ **Name**: TouchDevice ○ **Type**: Boolean ○ Uncheck "**Initial Value**" ○ **Description**: If user is playing on a touch-enabled device ○ Select OK
Global boolean **TouchDevice** = false		*If user is playing on a touch-enabled device*
❑	Add "Device Detection" Event	■ Click "**Add event to 'Get Ready'**" ○ Double-click "**Touch**" ○ Double-click "**On any touch start**" (under "Touch") ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Set boolean** (under "Global & local variables") ■ **Variable**: TouchDevice ■ **Value**: True ○ Select DONE ■ Drag event to the top of the event group
❑	Add "Touch" Condition to "Press Anything to Play" Event	■ Right-click "**Press Anything to Play**" event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Touch**" ○ Double-click "**On any touch start**" (under "Touch")

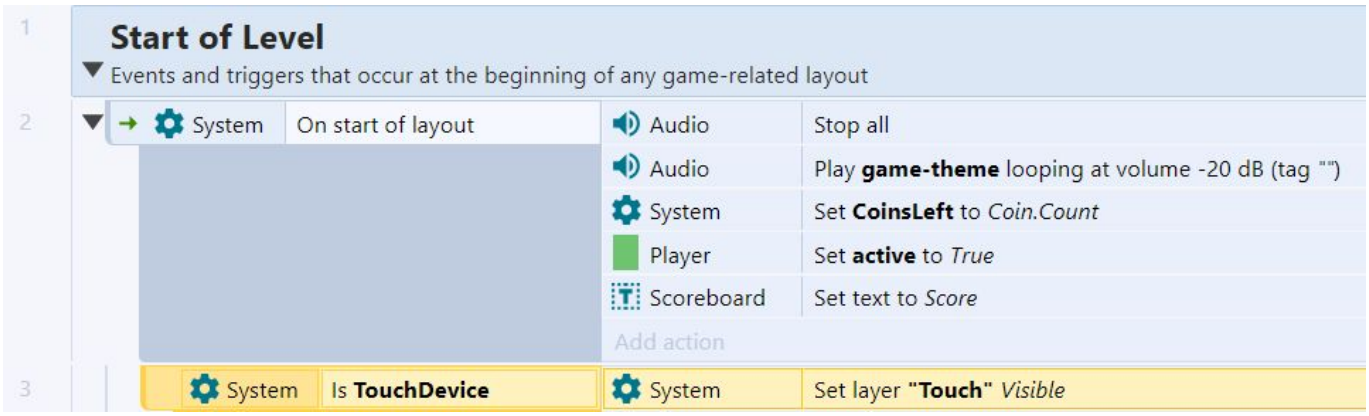


❑	Add "Touch" Condition to "Press Anything to Play Again" Event	■ Right-click "**Game Over Event Sheet**" > Select "Open" ■ Right-click "**Press Anything to Play Again**" event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Touch**" ○ Double-click "**On any touch start**" (under "Touch")



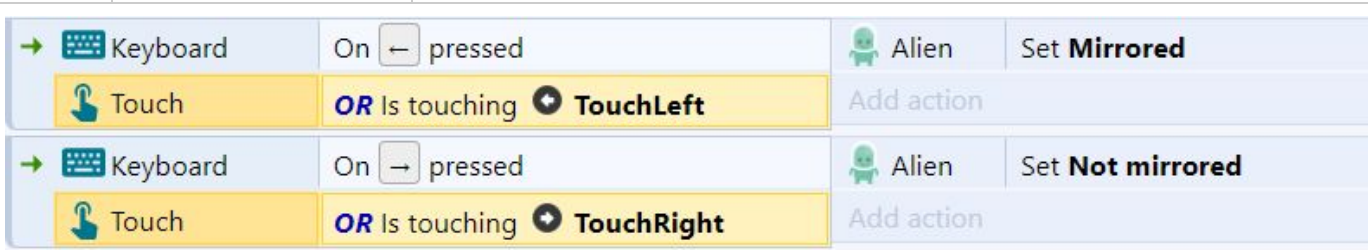
❑	Create "Touch" Layer	■ Open "**Level 1**" Layout ■ Under "Layers" > Right-click "**Add layer at top**" > Rename new layer to "**Touch**" ■ Make sure the "Touch" layer is active, unlocked, and listed **above** the "HUD" layer
❑	Set "Touch" Layer Properties	■ Select "Touch" layer > Set the following properties: ○ Layer properties ■ Uncheck "**Initially visible**" ○ Scroll & zoom ■ **Parallax** (X x Y): 0% x 0% ○ Editor ■ Check "**Parallax in editor**"
❑	Create Touch Left Arrow	■ Make sure "Touch" layer is active and unlocked ■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**TouchLeft**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **touch-left-240x240.png** ■ Select "Edit the collision polygon" option ■ Right-click "**Set to bounding box**" ■ Click X to close; TouchLeft object should be on "Touch" layer
❑	Set Touch Left Arrow Properties	■ Select "**TouchLeft**" > Set the following properties: ○ Common ■ **Position**: 192, 960 ■ **Opacity**: 50%

❑	Create Touch Right Arrow	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**TouchRight**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **touch-right-240x240.png** ■ Select "Edit the collision polygon" option ■ Right-click "**Set to bounding box**" ■ Click X to close; TouchRight object should be on "Touch" layer
❑	Set Touch Right Arrow Properties	■ Select "**TouchRight**" > Set the following properties: ○ Common ■ **Position:** 480, 960 ■ **Opacity:** 50%
❑	Create Touch Up Arrow	■ Right-click OBJECT TYPES > Select "Add new object type" ■ Select "Sprite" > Name: "**TouchUp**" > INSERT ■ When crosshair appears, click inside "Level 1" layout > Animations Editor will appear ■ Click folder icon > Browse to and OPEN: **touch-up-240x240.png** ■ Select "Edit the collision polygon" option ■ Right-click "**Set to bounding box**" ■ Click X to close; TouchUp object should be on "Touch" layer
❑	Set Touch Up Arrow Properties	■ Select "**TouchUp**" > Set the following properties: ○ Common ■ **Position**: 1728, 960 ■ **Opacity**: 50%
❑	Lock "Touch" Layer	Select "Touch" layer > Click lock icon
❑	Add Subevent to Show "Touch" Layer	■ Right-click "**Start & End Level Event Sheet**" > Select "Open" ■ Right-click "**On start of layout**" event > Select "**Add**" > Select "**Add sub-event**": ○ Double-click "**System**" ○ Double-click "**Is boolean set**" (under "Global & local variables") ■ **Variable**: TouchDevice ○ Select DONE ■ Click "**Add action**" ○ Double-click "**System**" ○ Double-click "**Set layer visible**" (under "Layers")

		■ **Layer**: "Touch" ■ **Visibility**: Visible ○ Select DONE
		
❑	Create Touch Events to Move Player	■ Right-click "**Player Event Sheet**" > Select "Open" ■ Click "**Add event to 'Movement'**" ○ Double-click "**Touch**" ○ Double-click "**Is touching object**" (under "Touch") ■ **Object**: TouchRight ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Simulate control**" (under "Platform") ■ **Control**: Right ○ Select DONE ■ Click "**Add event to 'Movement'**" ○ Double-click "**Touch**" ○ Double-click "**Is touching object**" (under "Touch") ■ **Object**: TouchLeft ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Simulate control**" (under "Platform") ■ **Control**: Left ○ Select DONE ■ Click "**Add event to 'Movement'**" ○ Double-click "**Touch**" ○ Double-click "**Is touching object**" (under "Touch") ■ **Object**: TouchUp ○ Select DONE ■ Click "**Add action**" ○ Double-click "**Player**" ○ Double-click "**Simulate control**" (under "Platform") ■ **Control**: Jump

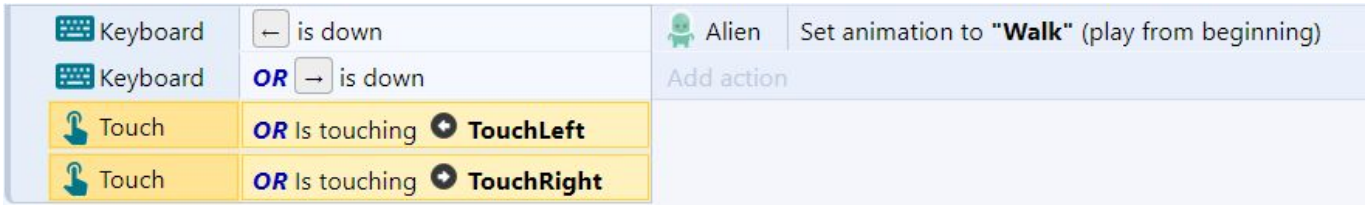
		○ Select DONE ■ Drag events to the top so that they are the listed immediately after the "**Player | active = True**" subevent

❑	Add Touch Conditions to Events that Mirror Player	■ Right-click "**Mirror on Left arrow pressed**" event > Select "**Make OR block**" ■ Right-click "**Mirror on Left arrow pressed**" event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Touch**" ○ Double-click "**Is touching object**" (under "Touch") ■ **Object**: TouchLeft ○ Select DONE ■ Right-click "**Mirror on Right arrow pressed**" event > Select "**Make OR block**" ■ Right-click "**Mirror on Right arrow pressed**" event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Touch**" ○ Double-click "**Is touching object**" (under "Touch") ■ **Object**: TouchRight ○ Select DONE



❑	Add Touch Conditions to Event that Sets "Walk" Animation	■ Right-click "**Set animation to 'Walk'**" event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Touch**" ○ Double-click "**Is touching object**" (under "Touch")

		■ **Object**: TouchLeft ○ Select DONE ■ Right-click "**Set animation to 'Walk'**" event > Select "**Add**" > Select "**Add another condition**" ○ Double-click "**Touch**" ○ Double-click "**Is touching object**" (under "Touch") ■ **Object**: TouchRight ○ Select DONE



Thoroughly test your project and its touch controls using a combination of the following methods:		
❑	Local Testing (from non-touch enabled device, e.g., desktop)	■ Select "**Touch**" > Set the following properties: ○ Properties ■ Check **Use mouse input** ■ From "Get Ready" layout > Click "Debug layout" in main toolbar **Note**: Toggle the value of the **Use mouse input** property as needed to test touch controls from a PC; **make sure that before publishing, however, that the value is set to 'No'** so that touch controls are not shown to those using a keyboard and mouse
❑	Remote Testing (from touch-enabled device)	■ Click "**Remote Preview**" in main toolbar ■ Scan the provided **QR code** or enter the provided **URL** to test on your remove device, e.g., phone, tablet, etc.
❑	Save Project	PROJECT > SAVE or (**Ctrl + S**) or Click 🖫

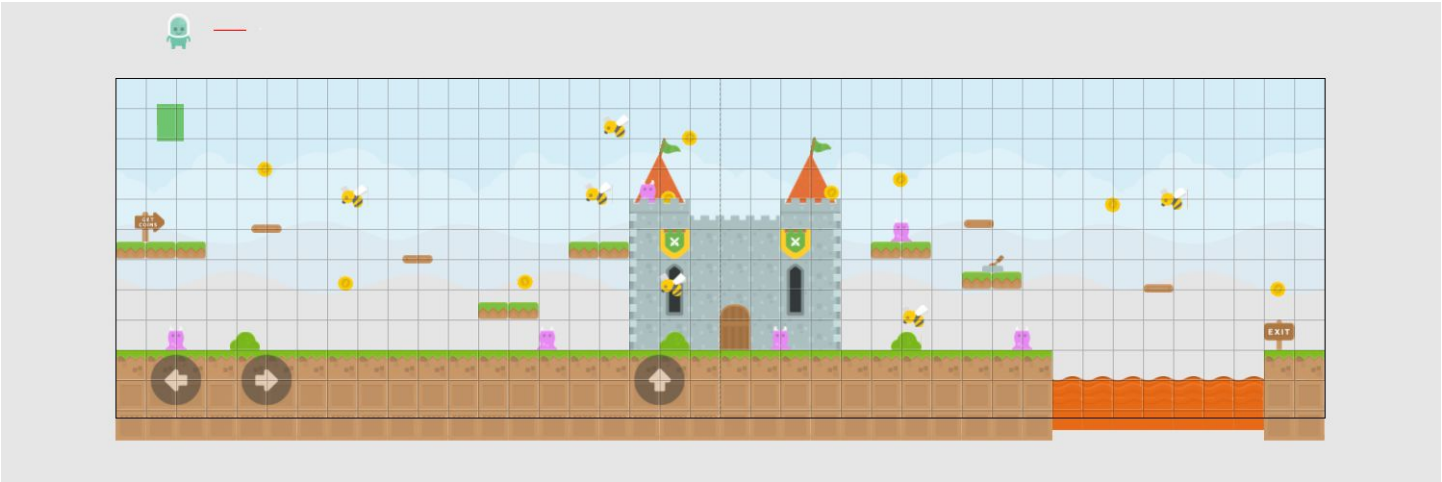


FIGURE 18: Snapshot of "Level 1" Layout (all layers)

	Include **Start & End Level Event Sheet**			
	Global boolean **TouchDevice** = false			*If user is playing on a touch-enabled device*
1	**Get Ready** Events and triggers that occur on the Get Ready layout only			
2	→ Touch	On any touch start	System	Set **TouchDevice** to *True*
3	→ Keyboard	On any key pressed	System	Go to layout **"Level 1"**
	→ Mouse	***OR*** On any click		
	→ Touch	***OR*** On any touch start		

FIGURE 19: Final "Get Ready Event Sheet"

	Include **Start & End Level Event Sheet**			
1	**Game Over** Events and triggers that occur on the Game Over layout only			
2	→ Keyboard	On any key pressed	System	Wait **1.5** seconds
	→ Mouse	***OR*** On any click	System	Set **Score** to *0*
	→ Touch	***OR*** On any touch start	System	Go to layout **"Level 1"**

FIGURE 20: Final "Game Over Event Sheet"

Global number **CoinsLeft** = 0		*Number of coins left on current game level*
Global number **Score** = 0		*Current score of the game*
Global string **NextLayout** =		*Game layout to go to next*

1 **Start of Level**
Events and triggers that occur at the beginning of any game-related layout

2	System	On start of layout	Audio: Stop all
			Audio: Play **game-theme** looping at volume -20 dB (tag "")
			System: Set **CoinsLeft** to *Coin.Count*
			Player: Set **active** to *True*
			Scoreboard: Set text to *Score*
3	System	Is **TouchDevice**	System: Set layer **"Touch"** *Visible*

Add event to 'Start of Level' — Add to 'Start of Level'...

4 **End of Level**
Events and triggers related to ending any game-related layout

5	Player	On collision with **Enemies**	Audio: Stop all
			Audio: Play **game-over** not looping at volume -5 dB (tag "")
			Alien: Destroy
			Player: Spawn **Particles** on layer **Player.LayerName** *(image point "Particles")*
			Player: Destroy
			System: Wait **3.0** seconds
			System: Set **Score** to *0*
			System: Restart layout
6	Player	On collision with **Exit**	Audio: Stop all
	System	**CoinsLeft** = 0	Audio: Play **tada** not looping at volume -20 dB (tag "")
			Player: Set **active** to *False*
			Alien: Set animation to **"Success"** (play from beginning)
			System: Wait **3.0** seconds
			System: Go to layout **NextLayout**

FIGURE 21: Final "Start & End Level Event Sheet"

1	**Movement**			
	Events and triggers related to the Player's movements			
2	System	Every tick	Alien	Set position to **Player** *(image point 0)*
3	Player	Is **active**	Player	Stop ignoring Platform user input
4	Touch	Is touching **TouchRight**	Player	Simulate Platform pressing Right
5	Touch	Is touching **TouchLeft**	Player	Simulate Platform pressing Left
6	Touch	Is touching **TouchUp**	Player	Simulate Platform pressing Jump
7	Keyboard	On ← pressed	Alien	Set **Mirrored**
	Touch	*OR* Is touching **TouchLeft**		
8	Keyboard	On → pressed	Alien	Set **Not mirrored**
	Touch	*OR* Is touching **TouchRight**		
9	Keyboard	← is down	Alien	Set animation to **"Walk"** (play from beginning)
	Keyboard	*OR* → is down		
	Touch	*OR* Is touching **TouchLeft**		
	Touch	*OR* Is touching **TouchRight**		
10	System	Else	Alien	Set animation to **"Stand"** (play from beginning)
11	Player	Platform is jumping	Alien	Set animation to **"Jump"** (play from beginning)
12	Player	Platform is falling	Alien	Set animation to **"Fall"** (play from beginning)
13	System	Else	Player	Start ignoring Platform user input
	Add event to 'Movement'			Add to 'Movement'...
14	**Goal**			
	Events and triggers related to player goals			
15	Player	On collision with **Coin**	Audio	Play **pick-up** not looping at volume -3 dB (tag "")
			Coin	Destroy
			System	Subtract *1* from **CoinsLeft**
			System	Add *100* to **Score**
			Scorebo...	Set text to *Score*

FIGURE 22: Final "Player Event Sheet"

Include **Player Event Sheet**

Include **Start & End Level Event Sheet**

1 **Start of Level 1**

Events and triggers that occur at the beginning of the Level 1 layout only

2	System	On start of layout	System	Set **NextLayout** to *"Game Over"*
3	Bridge	Pick instance with UID **143**	Bridge	Set BridgeSideToSide **Disabled**

Add event to 'Start of Level 1' Add to 'Start of Level 1'...

4 **Castle Door**

Events and triggers that control interactions with the castle door

5	Player	On collision with **Grass**	CastleDoor	Set **open** to *True*
			Player	Set **active** to *False*
	Grass	Pick instance with UID **104**	Alien	Set animation to **"Stand"** (play from beginning)
	CastleDoor	Is **open**	CastleDoor	Set animation to **"Open"** (play from beginning)
6	CastleDoor	On animation "Open" finished	Player	Set position to (*CastleDoor.X+(CastleDoor.Width÷2)*, *CastleDoor.Y*)
			Player	Set ScrollTo disabled
			Alien	FadeOut: restart fade
7	Alien	On FadeOut fade-out finished	Player	Set position to (*Player.X, 0*)
			Player	Set ScrollTo enabled
			Alien	FadeIn: restart fade
			Player	Set **active** to *True*
			CastleDoor	Set animation to **"Close"** (play from beginning)
8	CastleDoor	On animation "Close" finished	Audio	Play **door-slam** not looping at volume -20 dB (tag "")
			CastleDoor	Set **open** to *False*

Add event to 'Castle Door' Add to 'Castle Door'...

9 **Lever**

Events and triggers that control the lever and access to the final floating bridge

10	Player	On collision with **Lever**	Lever	Set **pulled** to *True*
			Lever	Set animation to **"Pull"** (play from beginning)
	Lever	Is **pulled**	Audio	Play **switch** not looping at volume -10 dB (tag "")
11	Lever	On animation "Pull" finished	Bridge	Set BridgeSideToSide **Enabled**
	Bridge	Pick instance with UID **143**		

FIGURE 23: Final "Level 1 Event Sheet"

Publishing (itch.io)

Step		Detailed Instructions
❑	Export Project using Web (HTML5) Option	■ PROJECT > EXPORT > Double-click "**Web (HTML5)**" ○ Export options ■ Check "**Deduplicate images**" ■ Check "**Recompress images**" ■ Check "**Minify script**" ○ Select NEXT ■ Click "**Download Platformer.zip**"; Select OK
❑	Register for an itch.io Account (or use GitHub)	■ Navigate to **https://itch.io/register** in your browser ■ Provide a username, password, email address, accept terms and conditions; verify your email, if requested
❑	Log on to your itch.io Account	■ Navigate to **https://itch.io/login** in your browser and provide your credentials
❑	Publish Game to itch.io	■ Click "**Upload a Game**" ■ Click "**Create new project**" ■ Project ○ **Title**: Platformer ○ **Short description or tagline**: Go Chuck, Go! ○ **Classification**: Game ○ **Kind of project**: HTML ○ **Release status**: Prototype ■ Cover Image ○ Click **"Upload Cover Image"** > Browse to and OPEN **platformer-650x500.png** > Click "**Upload**" ■ Pricing ○ Check "**No payments**" ■ Uploads ○ Click **"Upload files"** > Browse to and OPEN **Platformer.zip** ○ Check "**Hide this file and prevent it from being downloaded**" ■ Embed Options ○ Check **"Mobile friendly"** ○ Check **"Automatically start on page load"** ○ Check **"Fullscreen button"** ■ Details ○ **Description**: A model platform-style game that I built while learning Construct 3 ○ **Genre**: Platformer

		■ Click "**Save & view page**"
❑	Test Game	■ Click "**Run game**" from your game's project page ■ (Optional) Click "**Edit theme**" and use your artistic skills to customize the project page ■ Play game, testing thoroughly on multiple browsers and devices, utilizing the **Secret URL feature**
❑	Make Game Public (Optional)	■ Click "**Edit game**" to return to your game's project page ■ Visibility & Access ○ Check **"Public"** > Click "**Save**" ■ Click "**View game**" to verify that your game is published

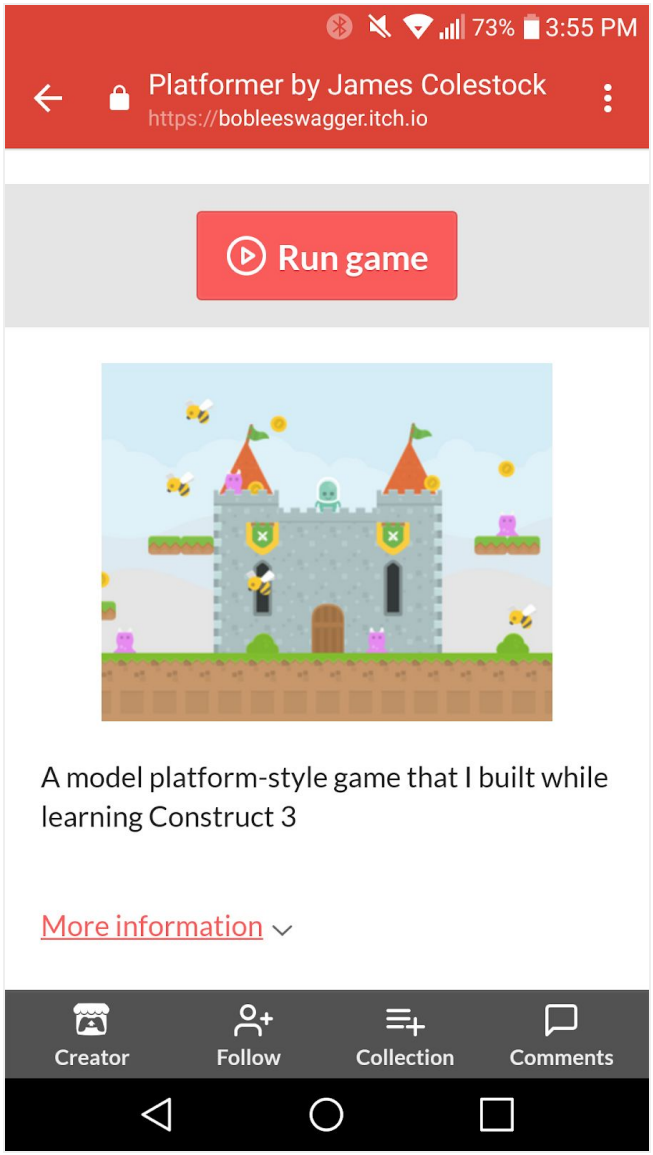


FIGURE 24: Final Platformer Game on itch.io (from mobile)

Publishing (Scirra Arcade)

Step		Detailed Instructions
❑	Export Project using Scirra Arcade Option	■ PROJECT > EXPORT > Double-click "**Scirra Arcade**" ○ Export options ■ Check "**Deduplicate images**" ■ Check "**Recompress images**" ■ Check "**Minify script**" ○ Select NEXT ■ Click "**Download Platformer.zip**"; Select OK
❑	Log On to Scirra Arcade	■ Navigate to **scirra.com/arcade/submit** in your browser ■ If necessary, create an account, providing a username, password, and email address; accept relevant terms and conditions
❑	Publish Game to Scirra Arcade	■ Click "**Upload a Game**" ■ Upload File(s) ○ Click **"Choose File"** > Browse to and OPEN **Platformer.zip** ○ Click "**Upload**" ■ Game Details ○ **Game Name**: Platformer ○ **Description**: A model platform-style game that I built while learning Construct 3 ○ **Short Description**: A model platform-style game ○ **Instructions**: [k]Left Arrow[/k] to go Left, [k]Right Arrow[/k] to go Right, and [k]Up Arrow[/k] to Jump! ○ **Category**: Tutorial Games ○ **Version**: 1.0.0.0 ○ Check "**Mobile Enabled**" ○ Check "**Work in Progress**" ○ Uncheck "**Adult Content**" ○ Click "**Update Details**" ■ Pictures ○ Click **"Choose File"** > Browse to and OPEN **platformer-450x300.png** ○ Click "**Upload**" ■ Publish Game ○ Check **"Third Party Advertisments"** ○ Check **"Copyright Confirmation"** ○ Check **"Terms and Conditions"** ○ Check **"Game Content"** ○ Click "**Publish My Game!"**

❑	Play Game	■ Navigate to **scirra.com/arcade/game-manager** > Click "**Your Games**" ■ Annotate URL to published Platformer game, e.g., scirra.com/arcade/tutorial-games/platformer-XXXXX ■ Play game, testing thoroughly on multiple browsers and devices

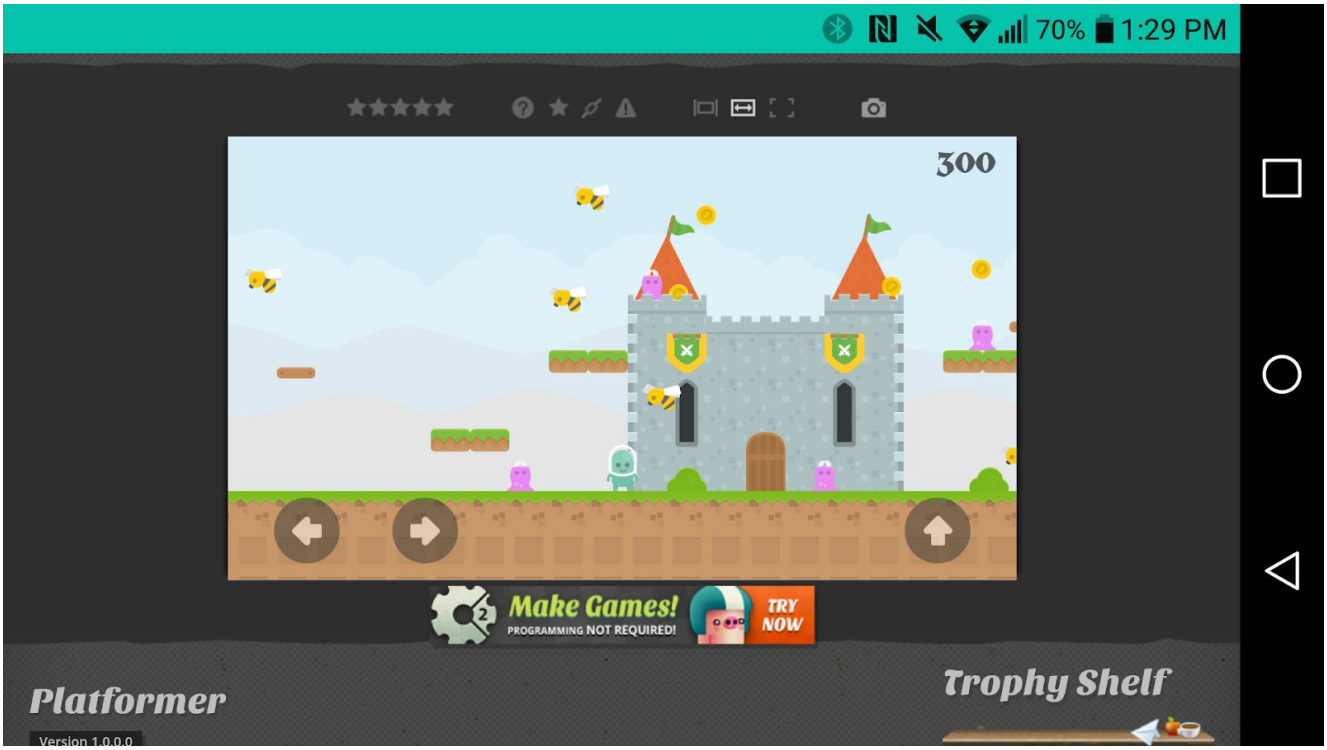


FIGURE 25: Final Platformer Game on Scirra Arcade (from smartphone)