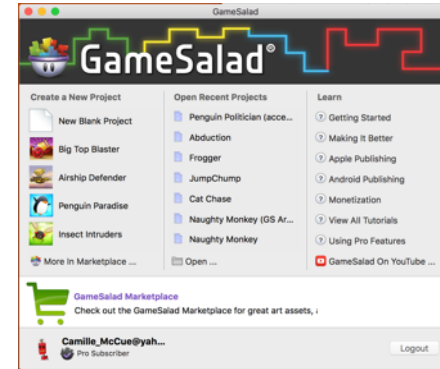


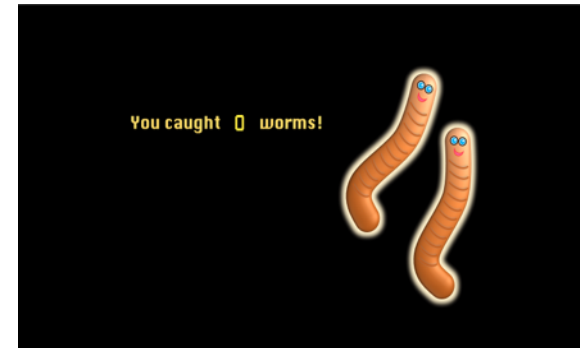
MOBILE APP DEVELOPMENT: EARTHWORMS ON MARS

Using the login and password provided in class,
login to GameSalad.

Create a new Blank Project.



Focus topics: Timers, Touch Sensor, Multi-Scenes



EARTHWORMS

This game can be made for ANY platform the student chooses.

The screenshot shows the GameSalad software interface. At the top, there is a menu bar with 'GameSalad', 'File', 'Edit', 'Format', 'Layout', 'View', 'Window', and 'Help'. The system status bar on the right shows 'Tue 9:02 PM' and '27%' battery. Below the menu bar, there are navigation icons: 'Back/Forward', 'Home', 'Scenes', and 'Tables'. A 'Preview' button with a green play icon is visible. On the right side, there are buttons for 'HTML5 Preview', 'Publish', 'Feedback', and 'Help'. Below these are tabs for 'Project Info', 'Scenes', 'Actors', and 'Tables'. The main workspace contains the following settings:

- Title:** Earthworms on Mars
- Platform:** iPhone 6 Plus Landscape
- Resolution Independence
- Crop Mode for Other Device Resolutions
- Description (Draft):** There WAS no life on Mars. Then humans transported worms to the Red Planet. When a dust storm hit, those little suckers got loose and burrowed deep. Now Matt Damon is in desperate need of them to churn up the soil so he can grow potatoes. So catch some or he'll die!
- Multiplayer (beta):** None

At the bottom of the interface, the user's name 'Camille_McCue@yahoo.com (online)' and 'Pro Subscriber' status are displayed.

Download the Earthworm asset pack
from this URL:

<http://bit.ly/2ciQkiv>

GameSalad File Edit Format Layout View Window Help

Earthworms on Mars

Back/Forward Home Scenes Tables Preview HTML5 Preview Publish Feedback Help

Project Info **Scenes** Actors Tables



Splash



Game



End Page

There are three scenes in this app

Use this + button to add a new scene.
Name each scene.
You can drag the scenes to reorder them.



Import the images.

The screenshot displays the GameSalad software interface. At the top, a yellow banner reads "Import the images." The main window title is "Earthworms on Mars - Splash". The interface includes a menu bar (GameSalad, File, Edit, Format, Layout, View, Window, Help), a toolbar with navigation and editing icons, and a status bar at the bottom showing the user "Camille_McCue@yahoo.com (online)" and "Pro Subscriber".

The central workspace is divided into two main sections. On the left is the "Inspector" and "Library" panel. The "Library" panel has tabs for "Behaviors", "Images", "Sounds", and "Fonts", with "Images" selected and circled in yellow. Under the "Project" tab, several assets are listed:

- endGfx: An image of two worms.
- hole: A green, textured hole in the ground.
- hole front: A close-up of the hole's edge.
- marsSurface: A brown, textured surface representing Mars.
- splashGfx: A splash screen image featuring the planet Mars and a worm.
- worm: A single, cartoonish worm.

On the right is the "Preview" window, which shows a large splash screen. The splash screen features a large, glowing orange planet Mars in the background. The text "EARTHWORMS ON MARS" is displayed in large, yellow, 3D-style letters. Below this, a cartoon worm with blue eyes and a pink mouth is shown crawling on the right side of the planet. At the bottom of the splash screen, the text "Catch some and start terraforming the Red Planet" is written in yellow.

Now make actors and put the images on actors as noted below.

The screenshot shows the GameSalad software interface. The main window displays a splash screen for 'Earthworms on Mars' featuring a large image of Mars and a cartoon earthworm. The interface includes a menu bar (File, Edit, Format, Layout, View, Window, Help), a toolbar with navigation and preview buttons, and an Inspector panel on the left. The Inspector panel is divided into 'Actors', 'Attributes', and 'Devices' tabs. The 'Actors' tab is selected and shows a grid of available actors: Counter, earthworm, hole, holefront, Timer, background, splashScreen, and endScreen. A yellow callout box with arrows pointing to the 'Counter' and 'Timer' actors contains the following text:

These are text boxes.
Later, you will code Counter to display how many earthworms are caught.
Later, you will code Timer to display how much time remains.
The text boxes do not have images.

The bottom of the interface shows a 'Library' panel with 'Standard' and 'Custom' tabs. The 'Standard' tab is active, showing behaviors like 'Accelerate', 'Accelerate Toward', 'Add/Remove Row', and 'Animate'. The status bar at the bottom indicates the user is 'Camille McCue@yahoo.com (online)' and is a 'Pro Subscriber'.

Import the audio files.

The screenshot displays the GameSalad software interface. At the top, a yellow banner reads "Import the audio files." The main window shows a splash screen for a game titled "Earthworms on Mars". The splash screen features a large image of the planet Mars with a cartoonish worm character on the right. The text on the splash screen reads "EARTHWORMS ON MARS" in large, bold, yellow letters, and "Catch some and start terraforming the Red Planet" in smaller yellow text below it. The GameSalad interface includes a menu bar (File, Edit, Format, Layout, View, Window, Help), a toolbar with icons for Back/Forward, Home, Scenes, Tables, and a Preview button, and a sidebar with an Inspector and Library. The Library shows two audio assets: "cartoonHop" and "wackyMarsMix", each with an "Import as Sound" or "Import as Music" button. The bottom status bar shows the user "Camille McCue@yahoo.com (online)" and "Pro Subscriber".

In Attributes, make game variables as shown.

The screenshot shows the GameSalad software interface. The top menu bar includes File, Edit, Format, Layout, View, Window, and Help. The main window displays a game scene titled "Earthworms on Mars - Splash". The scene features a large orange planet (Mars) and a cartoonish worm. The text "EARTHWORMS ON MARS" is prominently displayed in yellow, and below it, the text "Catch some and start terraforming the Red Planet" is shown. The Inspector panel on the left is open to the "Attributes" tab, which is circled in yellow. It shows a list of attributes for the selected actor, including "caught" and "timeRemaining", both of type "integer". The Library panel at the bottom left shows various behaviors, with "Accelerate" selected. The status bar at the bottom indicates the user is "Camille_McCue@yahoo.com (online)" and is a "Pro Subscriber".

Inspector

Game Scene

Actors Attributes Devices

Display Size size

Actor Tags text

Platform Connected boolean

Ad Reward adreward

Player Type Single Player enumerat...

Player 1 Keymap playermap

Player 2 Keymap playermap

Player 3 Keymap playermap

Player 4 Keymap playermap

Player 5 Keymap playermap

Player 6 Keymap playermap

Player 7 Keymap playermap

Player 8 Keymap playermap

caught 0 integer

timeRemaining 0 integer

Library Behaviors Images Sounds Fonts

Standard Custom

Accelerate **Accelerate** (Persistent Behavior)

Accelerate Toward

Add/Remove Row

Animate

Buzz

Change Attribute

Change Image

Change Scene

Change Size

Change Table Value

Specify the speed and direction (angle) of acceleration of an actor. Best used in a rule that checks for a keyboard event. Note: If the drag behavior is not also applied to an actor, acceleration will be continuously applied, adding greater and greater speed to the actor until it has reached its maximum defined

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Add two variables:
caught of type integer
timeRemaining of type integer

Set up device orientation as shown.

The screenshot shows the GameSalad software interface. At the top, a yellow banner reads "Set up device orientation as shown." The main window displays a splash screen for "Earthworms on Mars" featuring a large orange planet (Mars) and a cartoon earthworm. The text on the splash screen reads "EARTHWORMS ON MARS" and "Catch some and start terraforming the Red Planet".

The Inspector panel on the left is open to the "Scene" tab, which is highlighted with a yellow circle. Under the "Screen" category, the "Device Orientation" is set to "Landscape Left". Other settings include "Interface Orientation" (Landscape Left) and "Device Rotation" (0).

The Library panel at the bottom left shows a list of behaviors, with "Accelerate" selected. The description for "Accelerate" reads: "Specify the speed and direction (angle) of acceleration of an actor. Best used in a rule that checks for a keyboard event. Note: If the drag behavior is not also applied to an actor, acceleration will be continuously applied, adding greater and greater speed to the actor until it has reached its maximum defined".

The bottom status bar shows the user "Camille_McCue@yahoo.com (online)" and "Pro Subscriber".

Code the SPLASH scene. This shows the title graphic, then switches to the GAME scene.

The screenshot shows the GameSalad software interface. The top menu bar includes 'GameSalad', 'File', 'Edit', 'Format', 'Layout', 'View', 'Window', and 'Help'. The title bar indicates the current project is 'Earthworms on Mars - splashScreen (Prototype)'. The main workspace displays a preview of the splash screen, which features a red planet (Mars) with the text 'EARTHWORMS ON MARS' and a small worm character. Below the preview is an 'Attributes' panel for the 'splashScreen' scene, listing various properties like Name, Time, Position, Size, Rotation, Color, Image, Tags, Preload Art, and Graphics.

The right-hand side of the interface shows a configuration panel for the scene. It contains two 'Timer' objects. The first timer is set to 'For' 3 seconds and is configured to 'Run to Completion'. Below it is a 'Change Size' object with a 'Growth Rate' of 0.01. The second timer is set to 'After' 3 seconds and is also configured to 'Run to Completion'. Below this timer is a 'Change Scene' object, which is set to 'Go to Scene: Next Scene' and 'No ad', with a 'Scene Index' of 1.

At the bottom of the interface, there is a status bar showing 'Camille_McCue@yahoo.com (online)' and 'Pro Subscriber'.

Play the Music loop on the Martian background.

The screenshot shows the GameSalad software interface. At the top, a yellow banner contains the text "Play the Music loop on the Martian background." The main window title is "Earthworms on Mars - background (Prototype)". The interface includes a menu bar (GameSalad, File, Edit, Format, Layout, View, Window, Help), a toolbar with navigation and action icons, and a status bar at the bottom showing the user "Camille_McCue@yahoo.com (online)" and "Pro Subscriber".

The central workspace displays a "background" object with a Martian surface image. Below the image is an "Attributes" panel with the following settings:

Name	Value	Type
Name	background	text
Time	0	real
Position		point
Size		size
Rotation	0	angle
Color		color
Image	marsSurface	image
Tags		text
Preload Art	<input type="checkbox"/>	boolean
Graphics		attributes

The "Library" panel at the bottom left shows the "Behaviors" tab selected. The "Play Music" action is highlighted, with a tooltip that reads: "This action triggers a music file to play. Set the music to play once or to loop repeatedly." The "Play Music" action configuration window is open, showing the "Sound" set to "wackyMarsMix" and the "Loop" checkbox checked.

Code the HOLE to spawn an earthworm at random intervals.

The screenshot shows the GameSalad software interface. At the top, a yellow banner contains the text "Code the HOLE to spawn an earthworm at random intervals." The main window displays a 3D model of a hole in the ground. Below the model is an "Attributes" table:

Name	Value	Type
Name	hole	text
Time	0	real
Position		point
Size		size
Rotation	0	angle
Color		color
Image	hole	image
Tags		text
Preload Art	<input type="checkbox"/>	boolean
Graphics		attributes

On the right, the "Event Rules" panel is open, showing two rules:

- Timer: EVERY 4 to 10 SECONDS**
 - Every: random(4,10) seconds
 - Run to Completion:
- Spawn Actor: SPAWN A NEW EARTHWORM**
 - Actor: earthworm
 - Layer Order: in front of actor
 - Direction: 0
 - Relative to: actor
 - Position: 0, 0
 - Relative to: actor

An "Expression Editor" window is open over the timer rule, showing the expression `random(4,10)`.

At the bottom of the interface, the user's name "Camille_McCue@yahoo.com (online)" and "Pro Subscriber" status are visible.


No code on the HOLEFRONT.

GameSalad File Edit Format Layout View Window Help

Earthworms on Mars - holefront (Prototype)

Back/Forward Home Scenes Tables Preview HTML5 Preview Publish Feedback Help

Create Group Create Rule



Attributes

Name	holefront	text
Time	0	real
▶ Position		point
▶ Size		size
Rotation	0	angle
▶ Color	<input type="text"/>	color
Image	hole front	image
Tags		text
Preload Art	<input type="checkbox"/>	boolean
▶ Graphics		attributes

+

Drag your behaviors here

Camille_McCue@yahoo.com (online) Pro Subscriber

Tip: Control-click on the holefront and select Send to Front to move it in front of the earthworm and the hole

The screenshot displays the GameSalad software interface for a game titled "Earthworms on Mars - Game". The interface is divided into several panels:

- Inspector:** Shows the selected object, "holefront", with its attributes and devices. Other objects visible include "Counter", "earthworm", and "hole".
- Library:** Lists various behaviors such as "Accelerate", "Accelerate Toward", "Add/Remove Row", "Animate", "Buzz", "Change Attribute", "Change Image", "Change Scene", "Change Size", "Change Table Value", "Change Velocity", "Collide", and "Constrain Attribute". The "Accelerate" behavior is selected, and its description is shown: "Specify the speed and direction (angle) of acceleration of an actor. Best used in a rule that checks for a keyboard event. Note: If the drag behavior is not also applied to an actor, acceleration will be continuously applied, adding greater and greater speed to the actor until it has reached its maximum defined speed. Note that as this behavior never stops executing, if it is a sequential group, subsequent".
- Game Scene:** A 3D view of the game environment showing a desert landscape with several holes and worms. A context menu is open over one of the holes, listing actions: "Send To Front" (highlighted), "Send To Back", "Send Forward", and "Send Backward".

The top of the interface shows the GameSalad menu bar (File, Edit, Format, Layout, View, Window, Help) and system status (23% battery, Tue 9:11 PM). The bottom of the interface shows the user's name "Camille_McCue@yahoo.com (online)" and a "Pro Subscriber" badge.

Code the EARTHWORM .

The screenshot shows the GameSalad software interface. At the top, the menu bar includes Apple, GameSalad, File, Edit, Format, Layout, View, Window, and Help. The title bar reads "Earthworms on Mars - earthworm (Prototype)". The main workspace contains a worm object and a list of four events:

- ▶ On Timer: EARTHWORM POPS UP
- ▶ On Timer: AFTER HALF A SECOND...
- ▶ On Rule: IF PERSON TOUCHES SCREEN ON WORM...
- ▶ On Timer: AFTER A SECOND, IF HE'S NOT CAUGHT...

On the left, the "Attributes" panel for the "earthworm" object is visible:

Name	Value	Type
Name	earthworm	text
Time	0	real
▶ Position		point
▼ Size		size
Width	30	real
Height	80	real
Rotation	0	angle
▶ Color	<input type="text"/>	color
Image	worm	image
Tags		text
Preload Art	<input type="checkbox"/>	boolean
▶ Graphics		attributes
▶ Motion		attributes
▶ Physics		attributes

A yellow text box in the center of the workspace contains the text: "The details of these commands are shown on the next pages."

At the bottom of the interface, the status bar shows "Camille_McCue@yahoo.com (online)" and "Pro Subscriber".

Code the EARTHWORM. These are the pop up and down commands.

GameSalad File Edit Format Layout View Window Help

Earthworms on Mars - earthworm (Prototype)

Back/Forward Home Scenes Tables Preview HTML5 Preview Publish Feedback Help

Create Group Create Rule

Timer: EARTHWORM POPS UP
For 0.25 seconds Run to Completion

Move: OUT OF HOLE
Direction: 90 Relative to: scene Move Type: additive
Speed: 300

Timer: AFTER HALF A SECOND...
After 0.5 seconds Run to Completion

Timer: EARTHWORM MOVES DOWN
For 0.25 seconds Run to Completion

Move: DOWN INTO HOLE
Direction: 270 Relative to: scene Move Type: additive
Speed: 300

Rule: IF PERSON TOUCHES SCREEN ON WORM...

Timer: AFTER A SECOND, IF HE'S NOT CAUGHT...

Attributes

Name	earthworm	text
Time	0	real
Position		point
Size		size
Width	30	real
Height	80	real
Rotation	0	angle
Color		color
Image	worm	image
Tags		text
Preload Art	<input type="checkbox"/>	boolean
Graphics		attributes
Motion		attributes
Physics		attributes

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Code the EARTHWORM. These commands control how he is caught and/or destroyed.

The screenshot displays the GameSalad interface for a project titled "Earthworms on Mars - earthworm (Prototype)". On the left, a preview window shows a cartoon worm actor. Below it, the "Attributes" panel lists properties for the "earthworm" actor, including Name, Time, Position, Size (Width: 30, Height: 80), Rotation, Color, Image (worm), Tags, Preload Art, Graphics, Motion, and Physics.

The main workspace shows a rule titled "Rule: IF PERSON TOUCHES SCREEN ON WORM...". The rule is triggered when "All conditions are valid":

- Actor receives event touch is pressed
- Actor receives event touch is inside

The rule contains three actions:

- Play Sound: MAKE FUNNY SOUND**: Sound: cartoonHop, Loop: unchecked, Run to completion: checked, Volume: 1, Pitch: 1.
- Change Attribute: INCREASE NUMBER CAUGHT BY 1**: Change Attribute: game.caught, To: game.caught+1.
- Destroy: DESTROY EARTHWORM**: Destroy this actor.

Below this rule is an "Otherwise:" section with a timer rule:

- Timer: AFTER A SECOND, IF HE'S NOT CAUGHT...**: After 1 seconds, Run to Completion: checked.
- Destroy: DESTROY EARTHWORM**: Destroy this actor.

At the bottom of the interface, the user "Camille_McCue@yahoo.com (online)" is identified as a "Pro Subscriber".

Code the TIMER. The timer is located on the game scene.

The screenshot shows the GameSalad software interface. The main workspace displays a prototype for a timer, represented by a grey rounded rectangle with the text "Drag Image Here". To the right, a list of rules is visible, including "Change Attribute: START TIME REMAINING AT 30 SECONDS", "Timer: MAKE TIMER COUNT DOWN", "Display Text: SHOW TIMER", and "Rule: WHEN TIMER RUNS OUT...". The bottom-left panel shows the "Attributes" table for the timer actor.

Name	Timer	text
Time	0	real
▶ Position		point
▶ Size		size
Rotation	0	angle
▼ Color		color
Red	1	real
Green	1	real
Blue	1	real
Alpha	0	real

An Alpha of 0 means that the text box actor will be transparent

Code the TIMER. These commands start the timer, make it count down, and show the timeRemaining.

The screenshot shows the GameSalad interface for a prototype titled "Earthworms on Mars - Timer (Prototype)". The interface includes a top menu bar (File, Edit, Format, Layout, View, Window, Help), a toolbar with navigation and preview buttons, and a main workspace. On the left, there is a "Drag Image Here" placeholder and an "Attributes" panel for a "Timer" object. The "Attributes" panel lists various properties like Name, Time, Position, Size, Rotation, and Color (Red, Green, Blue, Alpha) with their respective values and data types.

The main workspace contains four command boxes:

- Change Attribute: START TIME REMAINING AT 30 SECONDS**: Change Attribute: `game.timeRemaini...` To: 30
- Timer: MAKE TIMER COUNT DOWN**: Every 1 seconds Run to Completion
- Change Attribute**: Change Attribute: `game.timeRemaini...` To: `game.timeRemair`
- Display Text: SHOW TIMER**: Text: `game.timeRemaining` Align: [Left] Wrap inside actor Position: 0 0 Relative to: actor Direction: 0 Relative to: actor Font: Silom Size: 30 Color: [Black]

A yellow callout box highlights the "Display Text" command settings, containing the text: "The Display Text command tells the coins text box actor what information it is to show: the value of `timeRemaining`."

At the bottom of the interface, there is a status bar showing "Camille_McCue@yahoo.com (online)" and "Pro Subscriber".

Code the TIMER. These commands cause the game to go to the end scene when time runs out.

The screenshot shows the GameSalad software interface for a game titled "Earthworms on Mars - Timer (Prototype)". The interface includes a menu bar (File, Edit, Format, Layout, View, Window, Help), a toolbar with navigation and preview buttons, and a main workspace. On the left, there is a "Drag Image Here" area and an "Attributes" table. The main workspace displays a list of actions and a rule configuration window.

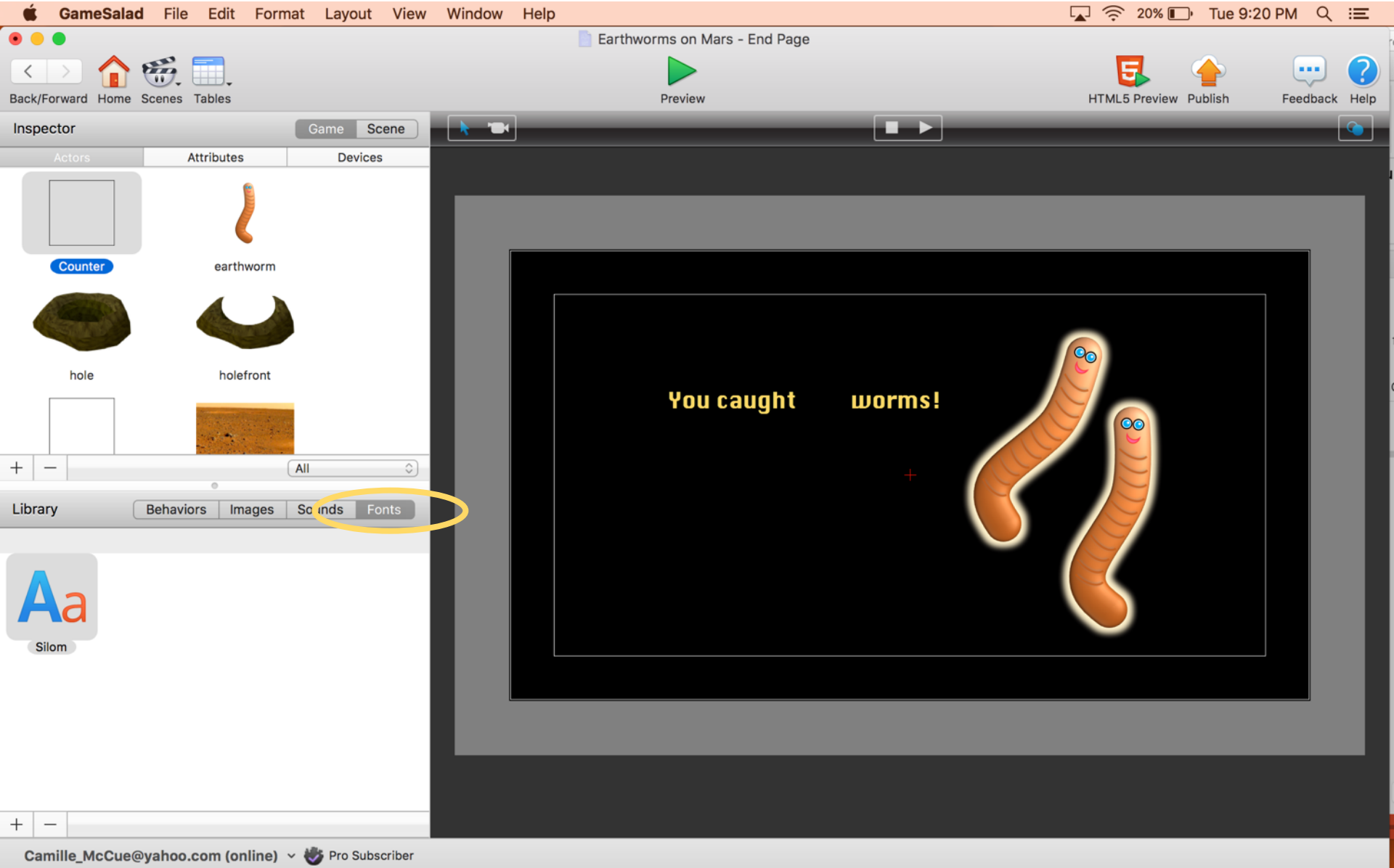
Attributes Table:

Name	Timer	text
Time	0	real
Position		point
Size		size
Rotation	0	angle
Color		color
Red	1	real
Green	1	real
Blue	1	real
Alpha	0	real

Rule Configuration:

- Rule:** WHEN TIMER RUNS OUT...
 - When:** All conditions are valid:
 - Attribute: game.timeR... ≤ 0
 - Action:** Change Scene: GO TO END PAGE SCENE
 - Go to Scene: End Page, No ad
 - Scene Index: 1
 - Otherwise:**

Import the Silom font from the assets pack.
You will need it to match the text in the counter to the other text on the background graphic.



Code the COUNTER. The counter is located on the end page scene.

The screenshot shows the GameSalad software interface. The main window displays a scene titled "Earthworms on Mars - Counter (Prototype)". A text display rule is configured with the following settings:

- Text: game.caught
- Align: Center
- Wrap inside actor:
- Position: X: 0, Y: 0, Relative to: actor
- Direction: 0, Relative to: actor
- Font: Silom (highlighted with a yellow circle)
- Size: 30
- Color: Yellow

The "Attributes" panel on the left shows the following data:

Name	Counter	text
Time	0	real
Position		point
Size		size
Rotation	0	angle
Color		color
Red	1	real
Green	1	real
Blue	1	real
Alpha	0	real
Image		image
Tags		text
Preload Art	<input type="checkbox"/>	boolean
Graphics		attributes

Two yellow callout boxes provide additional information:

- "This it the font you imported." (Note: "it" is misspelled as "it")
- "An Alpha of 0 means that the text box actor will be transparent"

The bottom status bar shows the user is logged in as "Camille_McCue@yahoo.com (online)" and is a "Pro Subscriber".

Code the END PAGE. This page shows how the player performed!

The screenshot displays the GameSalad software interface for a project titled "Earthworms on Mars - endScreen (Prototype)". The main workspace shows a scene with a black background, the text "You caught worms!" in yellow, and two orange worms. The "Attributes" panel on the left lists properties for the scene, including Name (endScreen), Time (0), Position, Size, Rotation (0), Color, Image (endGfx), Tags, Preload Art (checked), and Graphics.

The right-hand side of the interface shows a configuration panel for a "Timer" event. The timer is set to trigger "After" 3 seconds and is configured to "Run to Completion". Below the timer is a "Change Scene" event configuration. The "Go to Scene" dropdown is set to "Splash", and the "No ad" dropdown is set to "No ad". The "Scene Index" is set to 1.

At the bottom of the interface, the user's email "Camille_McCue@yahoo.com (online)" and "Pro Subscriber" status are visible.

Attribute	Value	Type
Name	endScreen	text
Time	0	real
Position		point
Size		size
Rotation	0	angle
Color		color
Image	endGfx	image
Tags		text
Preload Art	<input checked="" type="checkbox"/>	boolean
Graphics		attributes

For the next phase, you will need your phone to execute your app. Follow these steps:

1. Open GameSalad Viewer on your phone or iPad
2. Your mobile device and computer must be on the same wireless network: at school, this is the **AEC network** with password **Hearusroar!**
3. Press the **Preview on device** and then select your device name to play the game on your phone or iPad! Rotate your device to landscape orientation.

