

Interactive Animations and Games ('21-'22)

Programming for Entertainment

Resources

Name(s) _____ Period _____ Date _____

Activity Guide - CS in Entertainment



Entertainment Exploration

Computer Science has played a huge role in the evolution of many (if not all) fields of entertainment. To better understand how CS has changed these fields, and to get a feel for how you might use programming to create entertainment with your programming skills, you're going to look into some of the ways people are developing software that entertains.

Topics (check the one you've selected)

- ☐ **Movies and Television** (eg. programming 2d or 3d animations, computer generated special effects)
- ☐ **Music** (eg. computer generated music, digital instruments)
- ☐ **Games** (eg. video game programming, animation)
- ☐ **Art** (eg. interactive art, algorithmic art)
- ☐ **Other** (describe) _____

Researching your Topic

Go online to search for how computer science has impacted your field of entertainment. Try to focus on how CS or programming is used to *create* entertainment, instead of just places where computers are *used* in entertainment.

Consider using the following patterns to find information (use your topic in place of the blank):

Programming for _____
 Computer Science in _____
 Algorithmic _____
 Creating _____ with code

Use the space below to record notes about interesting products you find, patterns that you're seeing, or problems within your chosen topic that people are trying to address.

Research Notes

Interesting Information

Based on the research your group did on the last page, select **one** of the uses of CS you found to focus on. Answer the following questions for your chosen use.

You may need to head back online to gather more details about your chosen use.

What Problem Does it Solve?

Why is CS used in this way? How is it solving a problem in the creation of entertainment?

How is it an Improvement?

What makes the use of CS better than prior approaches? Does it allow creators to do things easier, faster, or in ways that were impossible before?

An Interesting Fact or Use

What's an interesting fact about the use of CS in this field, or an interesting product that was created with CS?

An Open Question

What questions are you left with after exploring the use of CS in your chosen field?

Interactive Animations and Games ('21-'22)

Plotting Shapes

Resources

Name _____ Period _____ Date _____

Activity Guide - Plotting Shapes B

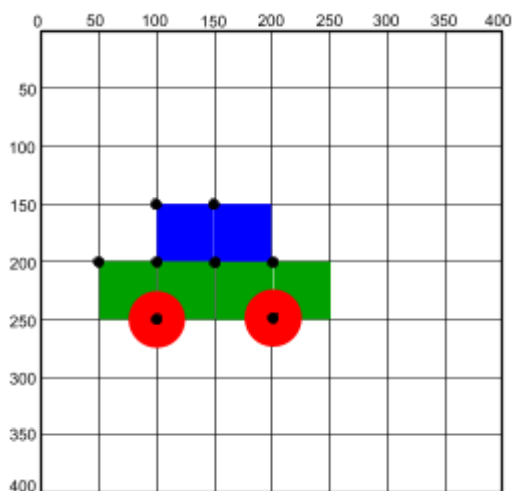


IMPORTANT!! DON'T LET YOUR PARTNER SEE THIS PAPER!

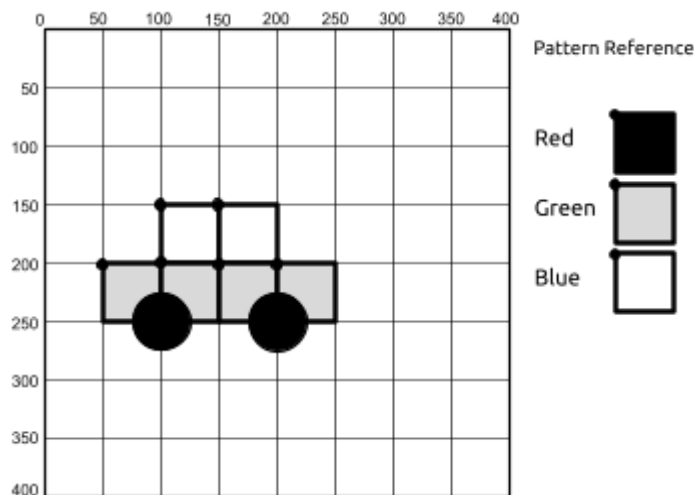
Overview

Your partner should have the Drawing Tool open on a computer where you cannot see it. Alternate turns trying explaining how to draw your image. Afterwards check their work but make sure to keep your drawings hidden.

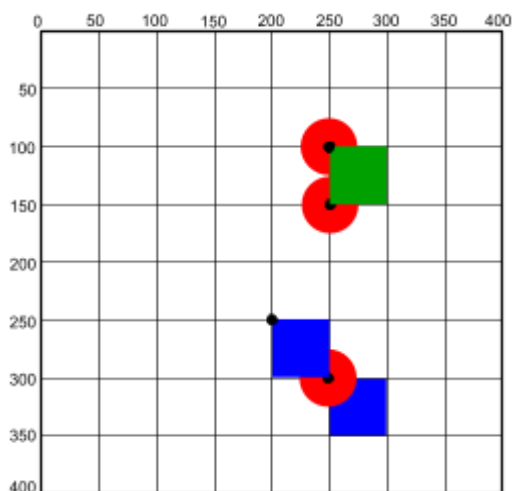
Drawing 1B (Color)



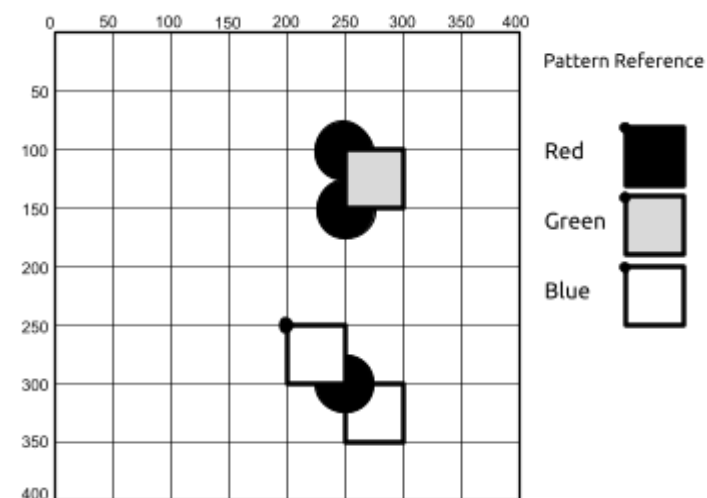
Drawing 1B (Black and White)



Drawing 2B (Color)

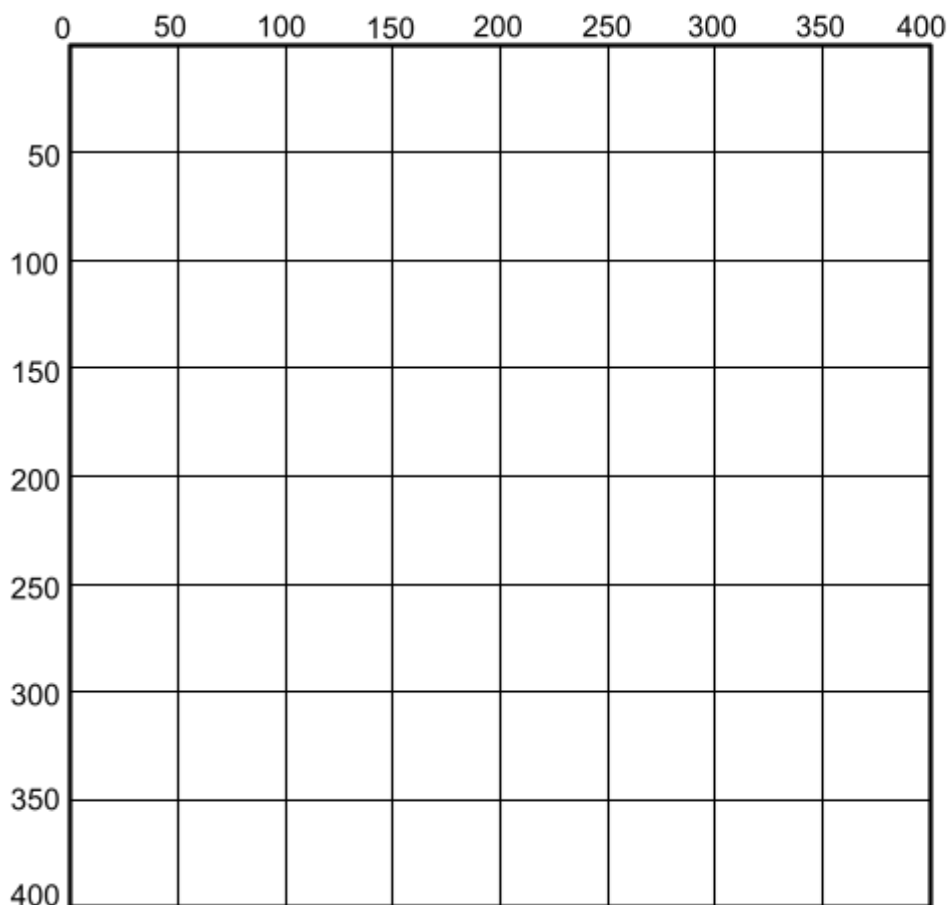


Drawing 2B (Black and White)



Draw Your Own

Use the space below to draw your own image with the shapes. Then see if you can communicate it to your partner to draw using the shape drawing tool in Game Lab. You can also give your drawing to another group to use as a challenge.



Shape Size

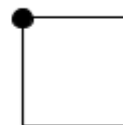
These shapes are the correct size



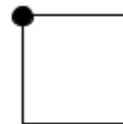
Pattern Reference

If you don't have red, green, or blue to draw with fill in the patterns or colors you'll use instead

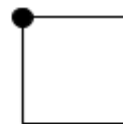
Red



Green



Blue



Reflect

What things were important in communicating about position, color, and order of the shapes in this activity?

What's another way you have seen similar problems solved in the past?

Name _____ Period _____ Date _____



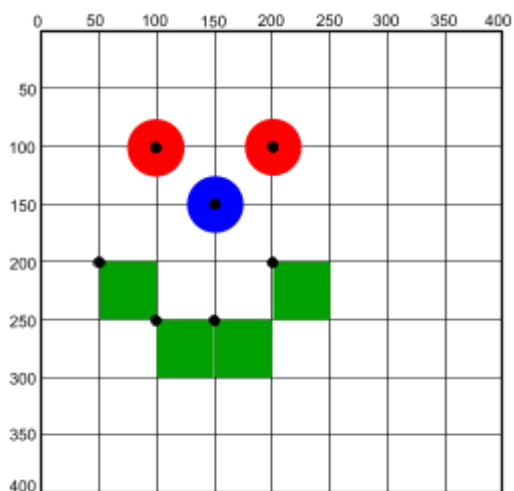
Activity Guide - Plotting Shapes A

IMPORTANT!! DON'T LET YOUR PARTNER SEE THIS PAPER!

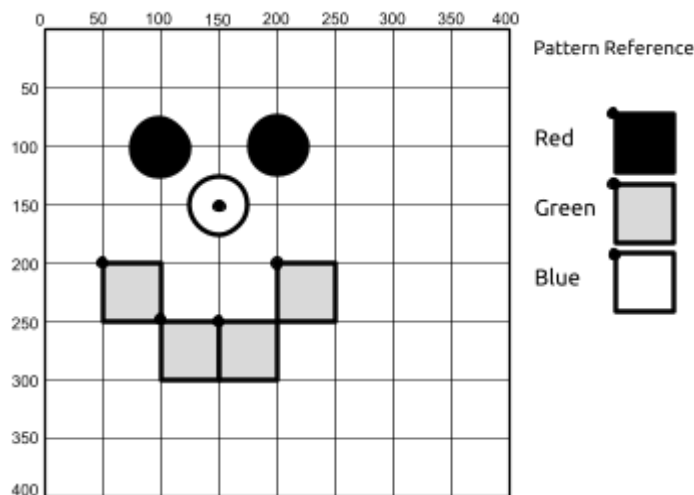
Overview

Your partner should have the Drawing Tool open on a computer where you cannot see it. Alternate turns trying explaining how to draw your image. Afterwards check their work but make sure to keep your drawings hidden.

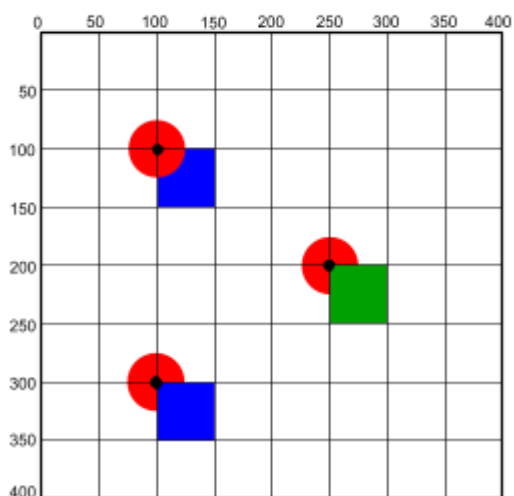
Drawing 1A (Color)



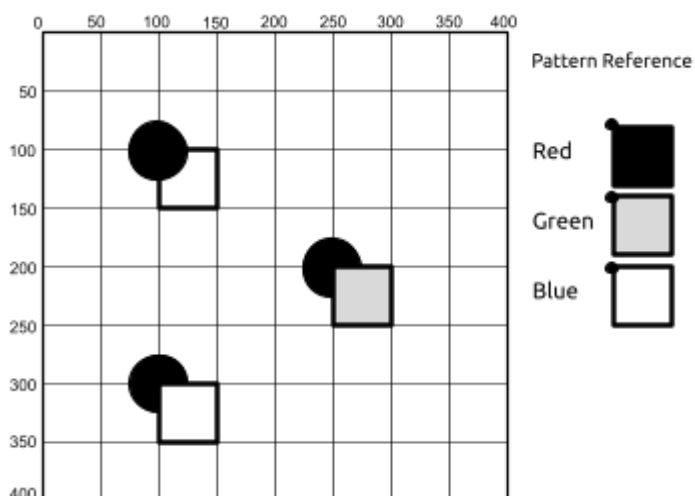
Drawing 1A (Black and White)



Drawing 2A (Color)

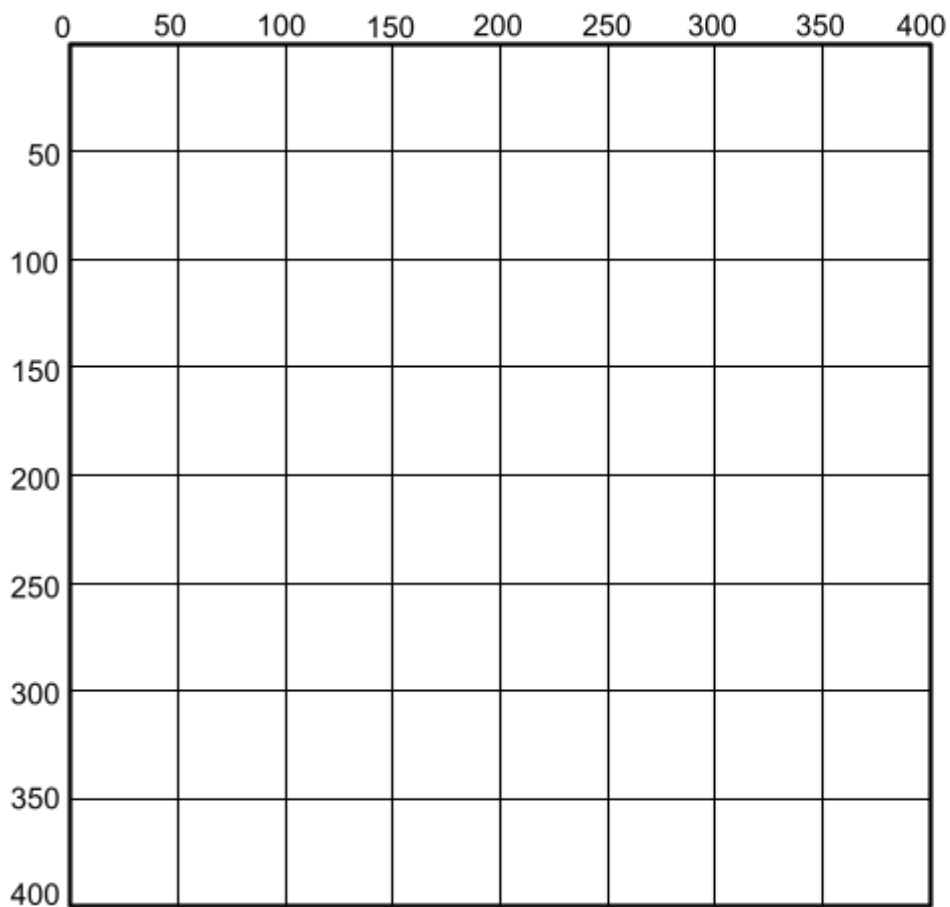


Drawing 2A (Black and White)



Draw Your Own

Use the space below to draw your own image with the shapes. Then see if you can communicate it to your partner to draw using the shape drawing tool in Game Lab. You can also give your drawing to another group to use as a challenge.



Shape Size

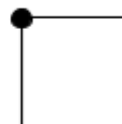
These shapes are the correct size



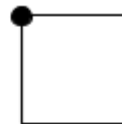
Pattern Reference

If you don't have red, green, or blue to draw with fill in the patterns or colors you'll use instead

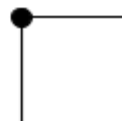
Red



Green



Blue



Reflect

What things were important in communicating about position, color, and order of the shapes in this activity?

What's another way you have seen similar problems solved in the past?

Interactive Animations and Games ('21-'22)

Mini-Project - Captioned Scenes

Resources

Captioned Scenes Project Rubric

Key Concept	Extensive Evidence	Convincing Evidence	Limited Evidence	No Evidence
Modularity	Multiple sprites, with multiple properties used.	Multiple sprites, each with at least one property used.	At least one sprite, with at least one property used.	No sprites are used in the program.
Algorithms and Control Structures	Program is well sequenced and properly overlays elements on the screen.	Program may contain some incorrectly sequenced code, but generally looks correct.	Program has significant sequencing errors, but does display elements on the screen.	Errors are significant enough to keep the program from running.
Position and the Coordinate System	At least 6 shapes, sprites, or text are placed correctly on the screen using the coordinate system.	At least 3 shapes, sprites, or text are placed on the screen using the coordinate system.	At least 1 shape, sprite, or text is placed on the screen using the coordinate system.	No elements (shapes, sprites, or text) are placed on the screen using the coordinate system.
Creating a Digital Artifact	Elements are used as described in the project guide and clearly display a captioned scene.	Elements are generally used as described in the project guide..	Some elements are used as described in the project guide.	The project guide is not filled out or is unrelated to the program.

Name(s) _____ Period _____ Date _____

Activity Guide - Sprite Scene Planning



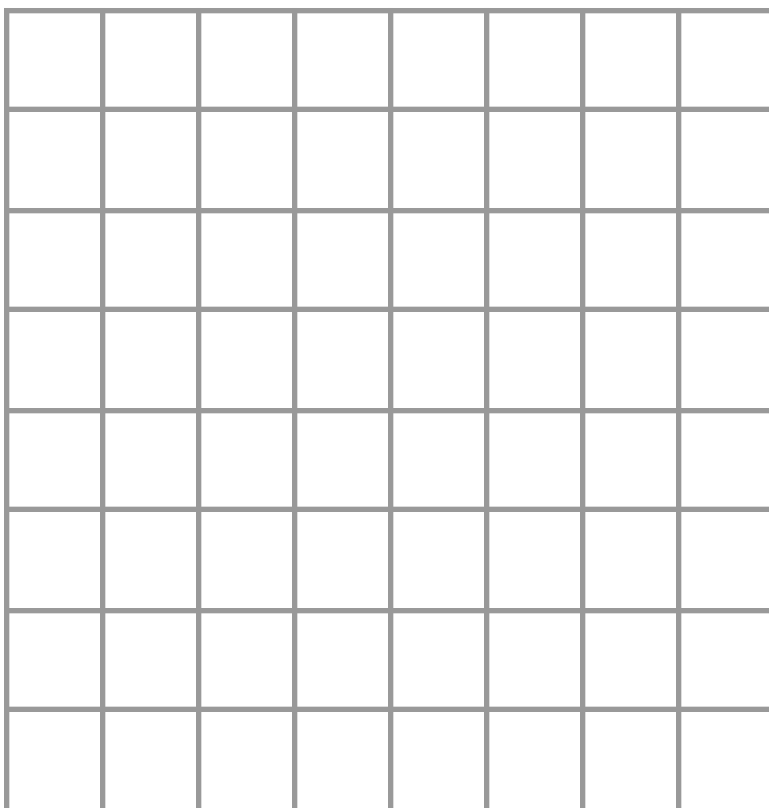
Sprite Scene Planning

Using shapes, sprites, and text, you're going to create a simple scene. You can think of this like a page in a story, a panel in a comic, or just a standalone scene.

Sketch your Scene

The first thing to consider when designing your scene is what your background will look like. You can use the drawing commands that you've used in the past to layout a simple background over which you will place your sprites.

The space below is 50 by 50. That means each square on the paper will map to 50 pixels on the computer. Sketch out your background using only the drawing commands (reference provided to the right). List the sprites you'll use below.



Shapes:

background(color)

rect(x, y, width, height)

ellipse(x, y, width, height)

line(x1, y1, x2, y2)

text(string, x, y, width, height)

textSize(pixels)

Color and Style:

fill('color')

noFill()

stroke('color')

noStroke()

strokeWeight()

Sprite Label	Description

Interactive Animations and Games ('21-'22)

Mini-Project - Animation

Resources

Animation Project Rubric

Key Concept	Extensive Evidence	Convincing Evidence	Limited Evidence	No Evidence
Modularity	Multiple sprites, with multiple properties updated in the draw loop	Multiple sprites, each with at least one property updated inside the draw loop	At least one sprite, with at least one property updated after sprite creation.	No sprites, or no sprite properties are updated after the sprite is created.
Algorithms and Control Structures	Program is well sequenced and properly separates code in and out of the draw loop.	Program correctly separates code in and out of the draw loop to create animation. May contain some incorrectly sequenced code.	Program is animated through the draw loop, but some code is improperly placed in or out of the loop.	Draw loop is not used to create animation
Position and Movement	Multiple elements are placed on the screen using the coordinate system, and move in different ways.	At least one element is placed on the screen using the coordinate system and moves during the program.	At least one element is placed on the screen using the coordinate system.	No elements (sprites or shapes) are placed on the screen using the coordinate system.
Variables	Multiple variables are used and their values are updated during the program. At least one variable or property uses the counter pattern.	At least one variable is used, and its value is updated during the program.	At least one variable is used in the program.	No variables.

Name(s) _____ Period _____ Date _____

Activity Guide - Animated Scene



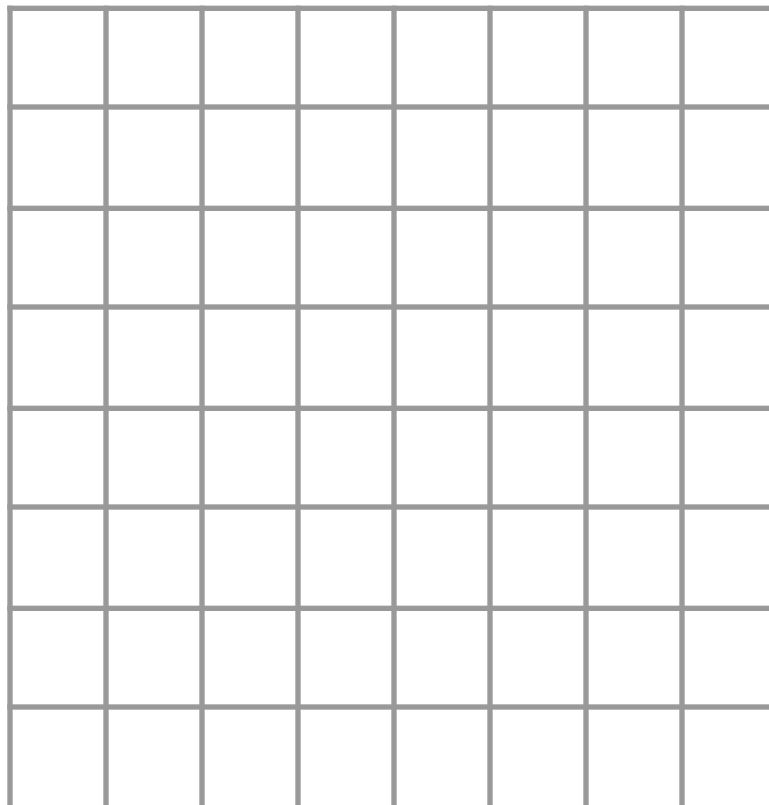
Using random numbers and the counter pattern, you're going to create an animated scene.

Define

Write out a short description of your scene, including what sorts of animations it will include.

Prepare

Before thinking about the animations, sketch out exactly what the scene will look like as it just starts. This is the set up that you will need to code outside of the draw loop. Make sure you know which parts are shapes and which are sprites.



Sprites

List the sprites you will use in the box below.

Sprite Label	Description

Animations

For each sprite that will be animated, choose the sprite property that will be updated in the draw loop, and whether you will use random numbers or the counter pattern

Sprite	Property	Counter Pattern or Random?

Try

Once your teacher has approved your plan, go to Code Studio and start coding.

Reflect

What part of your animation are you most proud of?

What was the most challenging?

Interactive Animations and Games ('21-'22)

Project - Interactive Card

Resources

Name(s) _____ Period _____ Date _____

Computer Science Practices Reflection



How I've grown	Practice	How I want to grow
	Problem Solving	
	Persistence	
	Creativity	
	Collaboration	
	Communication	

Name(s) _____ Period _____ Date _____

Project Guide - Interactive Card

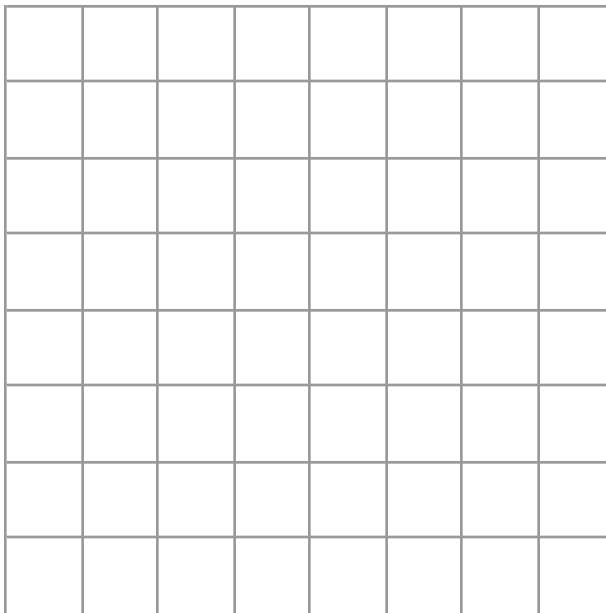


Overview

You're going to be developing an interactive digital card to share with someone you care about, but you'll need to do some planning before you start to program.

Sketch your Idea

Take a few minutes to sketch out your idea. It can include shapes, text, and sprites!



Shapes:
background(color)
rect(x, y, width, height)
ellipse(x, y, width, height)
line(x1, y1, x2, y2)
text(string, x, y, width, height)
textSize(pixels)
Color and Style:
fill('color')
noFill()
stroke('color')
noStroke()
strokeWeight()

Planning your Sprites

Use the table below to plan out your sprites. (You need at least three, but you can use as many as you want!) Next to each sprite, plan out the image it will use and which properties will be changing.

Sprite Label	Image(s)	Properties

Developing Interactions

The final element of your card to consider is how the user will interact with it, and how the sprites may interact with each other. You'll want to include conditionals that respond to keyboard input (such as `keyDown()`) as well as conditionals that respond to changing variables or sprite properties (such as `sprite.y > 300`). Use the table below to plan out all of your conditionals and the corresponding action

If / Else if / Else	Condition	Action

Develop Your Card

Once your teacher has approved your design, go to Code Studio to program your card.

Check Your Card

Check your card to make sure it has everything it needs.

Reflect

What part of your project are you most proud of? _____

Why? _____

If you had more time, what improvement would you make to your card?

Peer Review - Interactive Card



Pre-Review

Creator's Name: _____

One thing I want feedback on is... _____

Reviewer Section

Reviewer's Name: _____

Evidence I Found	Types of Evidence	Ideas for More
	Multiple sprites, with multiple properties updated in the draw loop	
	Program responds to multiple types of user input and uses at least one random number	
	Program is well sequenced and properly separates code in and out of the draw loop.	
	Uses multiple conditionals inside the draw loop, at least one of which is triggered by a variable or sprite property	
	Multiple elements are placed on the screen using the coordinate system, and move in different ways.	
	Multiple variables are used and their values are updated during the program. At least one variable or property uses the counter pattern.	

Free Response Feedback

I like... _____

I wish... _____

What if... _____

Creator's Reflection

1. What piece of feedback was most helpful to you? Why?

2. What piece of feedback surprised you the most? Why?

3. Based on feedback, what changes will you make to your interactive card?

Unit 3 Chapter 1 Project Rubric

Key Concept	Extensive Evidence	Convincing Evidence	Limited Evidence	No Evidence
Program Development	You gave thoughtful feedback to peers and you responded to peer feedback by making appropriate changes to program	You gave and responded to peer feedback.	You gave some feedback to peers.	You did not give feedback to peers
Multiple Sprites	You used multiple sprites, with multiple properties updated in the draw loop	You used multiple sprites, each with at least one property updated inside the draw loop	You used at least one sprite, with at least one property updated after sprite creation.	You did not use any sprites, or no sprite properties are updated after the sprite is created.
User Input	Your program responds to multiple types of user input and uses at least one random number	Your program responds to user input and uses at least one random number	Your program uses a random number or responds to a user input.	Your program does not use random numbers or respond to user input.
Program Sequence	Your program is well sequenced and properly separates code in and out of the draw loop.	Your program correctly separates code in and out of the draw loop to create animation. Your program may contain some incorrectly sequenced code.	Your program is animated through the draw loop, but some code is improperly placed in or out of the loop.	Your draw loop is not used to create animation
Conditionals and Variables	Your program uses multiple conditionals inside the draw loop, at least one of which is triggered by a variable or sprite property	Your program uses a conditional that is triggered by a variable or sprite property inside the draw loop.	Your program uses at least one conditional inside the draw loop.	Your program uses no conditionals.
Position and Movement	Multiple elements are placed on the screen using the coordinate system, and move in different ways.	At least one element is placed on the screen using the coordinate system and moves during the program.	At least one element is placed on the screen using the coordinate system.	No elements (sprites or shapes) are placed on the screen using the coordinate system.
Variables	Multiple variables are used and their values are updated during your program. At least one variable or property uses the counter pattern.	At least one variable is used, and its value is updated during the program.	At least one variable is used in your program.	No variables are used in your program

Unit 3 Chapter 1 Project - Student Checklist

Key Concept	Extensive Evidence
Program Development	<input type="checkbox"/> You gave thoughtful feedback to peers <input type="checkbox"/> You responded to peer feedback by making appropriate changes to program
Multiple Sprites	<input type="checkbox"/> You used multiple sprites <input type="checkbox"/> You used multiple properties updated in the draw loop
User Input	<input type="checkbox"/> Your program responds to multiple types of user input <input type="checkbox"/> Your program uses at least one random number
Program Sequence	<input type="checkbox"/> Your program is well sequenced <input type="checkbox"/> Your program properly separates code that belongs in and out of the draw loop.
Conditionals and Variables	<input type="checkbox"/> Your program uses multiple conditionals inside the draw loop <input type="checkbox"/> At least one of the conditionals is triggered by a variable or sprite property
Position and Movement	<input type="checkbox"/> Your program uses multiple elements that are placed on the screen using the coordinate system <input type="checkbox"/> Elements move in different ways.
Variables	<input type="checkbox"/> Your program uses multiple variables <input type="checkbox"/> Your variable values are updated during your program <input type="checkbox"/> At least one variable or property uses the counter pattern.

Interactive Animations and Games ('21-'22)

Collision Detection

Resources

Name(s) _____ Period _____ Date _____

Activity Guide - Collisions B



Draw Your Sprites:

In the grid below, draw two square sprites on the left hand line. The sprites can be touching or not. Don't let your partner see your sprites.

0									
1									
2									
3									
4									
5									
6									
7									
8									
9									
10									
11									
12									
13									
14									
15									
16									
17									
18									
19									
20									

Sprite Properties:

Using the grid, find the y position of the sprite (right in the middle of the square) and the sprite's height.

	y	height
sprite 1		
sprite 2		

Activity Guide - Collisions B



Collision Detection:

Copy the information from the first page onto this chart, then turn your picture over so your partner can't peek. The chart below is the only information your partner should see about your sprites. Once you've filled out the first chart, trade this worksheet with your partner so you can both try out your collision detectors.

	y	height
sprite1		
sprite2		

STOP!

Trade worksheets with your partner before continuing.

Look at the information on the chart above. Can you think of any way that you could use these numbers to figure out whether the two sprites are touching? Brainstorm your ideas below.

Do you think the sprites are touching?. Why or why not?

Check your partner's drawing to see whether you were correct. Do you think your strategy was effective?

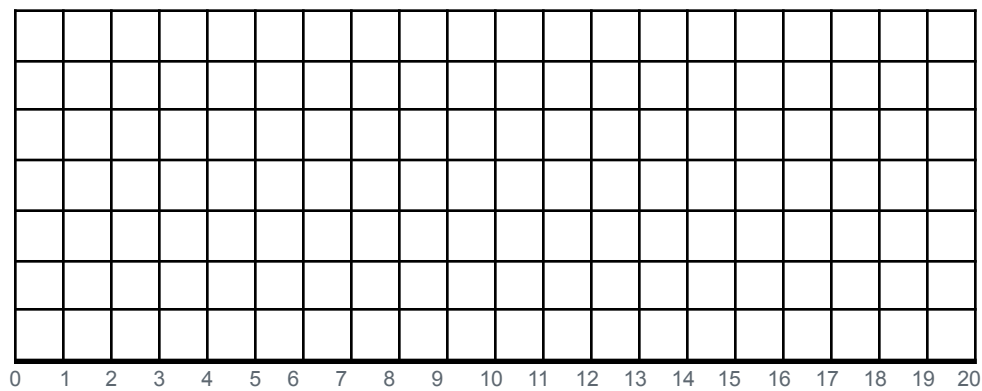
Name(s) _____ Period _____ Date _____

Activity Guide - Collisions A



Draw Your Sprites:

In the grid below, draw two square sprites on the bottom line. The sprites can be touching or not. Don't let your partner see your sprites.



Sprite Properties:

Using the grid, find the x position of the sprite (right in the middle of the square) and the sprite's width. This is the only information you should tell your partner about the sprites.

	x	width
sprite 1		
sprite 2		

Activity Guide - Collisions A



Collision Detection:

Copy the information from the first page onto this chart, then turn your picture over so your partner can't peek. The chart below is the only information your partner should see about your sprites. Once you've filled out the first chart, trade this worksheet with your partner so you can both try out your collision detectors.

	x	width
sprite1		
sprite2		

STOP!

Trade worksheets with your partner before continuing.

Look at the information on the chart above. Can you think of any way that you could use these numbers to figure out whether the two sprites are touching? Brainstorm your ideas below.

Do you think the sprites are touching?. Why or why not?

Check your partner's drawing to see whether you were correct. Do you think your strategy was effective?

Interactive Animations and Games ('21-'22)

Mini-Project - Side Scroller

Resources

Unit 3 Side Scroller Project Rubric

Key Concept	Extensive Evidence	Convincing Evidence	Limited Evidence	No Evidence
Program Development	The project guide is complete and reflects the project as submitted.	The project guide is mostly complete and is generally reflective of the submitted project.	The project guide is filled out, but is not complete or does not reflect the submitted project.	The project guide is incomplete or missing.
Program Development	The program code effectively uses whitespace, good naming conventions, indentation and comments to make the code easily readable.	The program code makes use of whitespace, indentation, and comments.	The program code has few comments and does not consistently use formatting such as whitespace and indentation.	The program code does not contain comments and is difficult to read.
Algorithms and Control Structures	The game includes multiple different interactions between sprites, responds to multiple types of user input (e.g. different arrow keys).	The game includes at least one type of sprite interaction and responds to user input.	The game responds to user input through a conditional.	The game includes no conditionals.
Variables	The game includes multiple variables that are updated during the game and affect how the game is played.	The game includes at least one variable that is updated during the game and affects the way the game is played	There is at least one variable used in the program.	There are no variables, or they are not updated.

Name(s) _____ Period _____ Date _____

Project Guide - Side Scroller



Overview

In this project, you'll use what you have learned to make a side scroller, a type of game with backgrounds that move across the screen from side to side. There's a sample side scroller in Code Studio.

Sample Game

Play the sample game a few times. You can make your game similar to this one, or change it to fit your preferences.

Things to Keep the Same	Things to Change

What parts of programming this game are you not sure how to do yet?

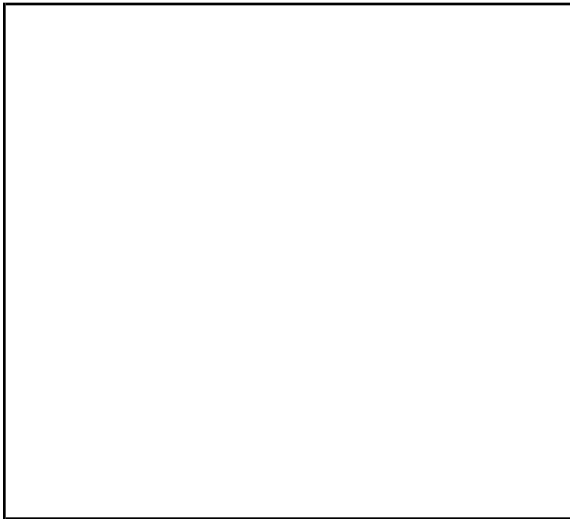
Sprites

This game has three sprites: the player (frog), the obstacle (mushroom) and the target (fly). Choose what you want to use for your player, obstacle, and target, and write down where you will find the image.

Sprite	Sample	Your Choice	Image/Animation Source
Player	frog		
Obstacle	mushroom		
Target	fly		

Background

What do you want the background to look like? Draw a picture, and describe the shapes you will use to make it.



Sprite Movements and Interactions

Are there any other things you would like to change about the way the sprites move or interact with each other?

Program your Game

Once your teacher has approved your design, go to Code Studio to create your game.

Check Your Program

Check your program to make sure it has everything it needs.

Reflect

What part of your project are you most proud of? _____

Why? _____

If you had more time, what improvement would you make to your game?

Interactive Animations and Games ('21-'22)

Mini-Project - Flyer Game

Resources

Unit 3 Flyer Game Project Rubric

Key Concept	Extensive Evidence	Convincing Evidence	Limited Evidence	No Evidence
Program Development	The project guide is complete and reflects the project as submitted.	The project guide is mostly complete and is generally reflective of the submitted project.	The project guide is filled out, but is not complete or does not reflect the submitted project.	The project guide is incomplete or missing.
Program Development	The program code effectively uses whitespace, good naming conventions, indentation and comments to make the code easily readable.	The program code makes use of whitespace, indentation, and comments.	The program code has few comments and does not consistently use formatting such as whitespace and indentation.	The program code does not contain comments and is difficult to read.
Algorithms and Control Structures	The game includes multiple different interactions between sprites, responds to multiple types of user input (e.g. different arrow keys).	The game includes at least one type of sprite interaction and responds to user input.	The game responds to user input through a conditional.	The game includes no conditionals.
Position and Movement	Complex movement such as acceleration, moving in a curve, or jumping is included in multiple places in the program.	The program includes some complex movement, such as jumping, acceleration, or moving in a curve.	The program includes simple independent movement, such as a straight line or rotation.	There is no movement in the program, other than direct user control.
Variables	The game includes multiple variables that are updated during the game and affect how the game is played.	The game includes at least one variable that is updated during the game and affects the way the game is played	There is at least one variable used in the program.	There are no variables, or they are not updated.

Name(s) _____ Period _____ Date _____

Project Guide - Flyer Game



Overview

In this project, you'll use what you have learned to make a flyer game. There's a sample flyer game in Code Studio.

Sample Game

Play the sample game a few times. You can make your game similar to this one, or change it to fit your preferences.

Things to Keep the Same	Things to Change

What parts of programming this game are you not sure how to do yet?

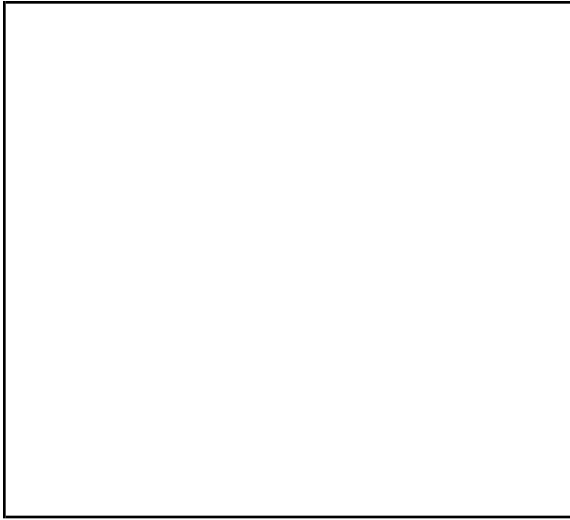
Sprites

This game has three sprites: the player (flybot), the obstacle (rocks) and the target (coin). Choose what you want to use for your player, obstacle, and target, and write down where you will find the image.

Sprite	Sample	Your Choice	Image/Animation Source
Player	flybot		
Obstacle (2)	rocks		
Target	coin		

Background

What do you want the background to look like? Draw a picture, and describe the shapes you will use to make it.



Sprite Movements and Interactions

Are there any other things you would like to change about the way the sprites move or interact with each other?

Program your Game

Once your teacher has approved your design, go to Code Studio to create your game.

Check Your Program

Check your program to make sure it has everything it needs.

Reflect

What part of your project are you most proud of? _____

Why? _____

If you had more time, what improvement would you make to your game?

Interactive Animations and Games ('21-'22)

The Game Design Process

Resources

Name(s) _____ Period _____ Date _____

Project Guide - Defender Game



Overview

Building a larger piece of software like a game can quickly get complex. Starting with a plan can help you stay organized and identify issues ahead of time. A lot of the work you do here will make it much easier to keep track of what you need to do once you begin writing your actual code.

Gameplay and Visuals

Start by thinking about what your game actually does. What does it look like? How do you actually play it? What will make it fun, interesting, or relevant to the player?

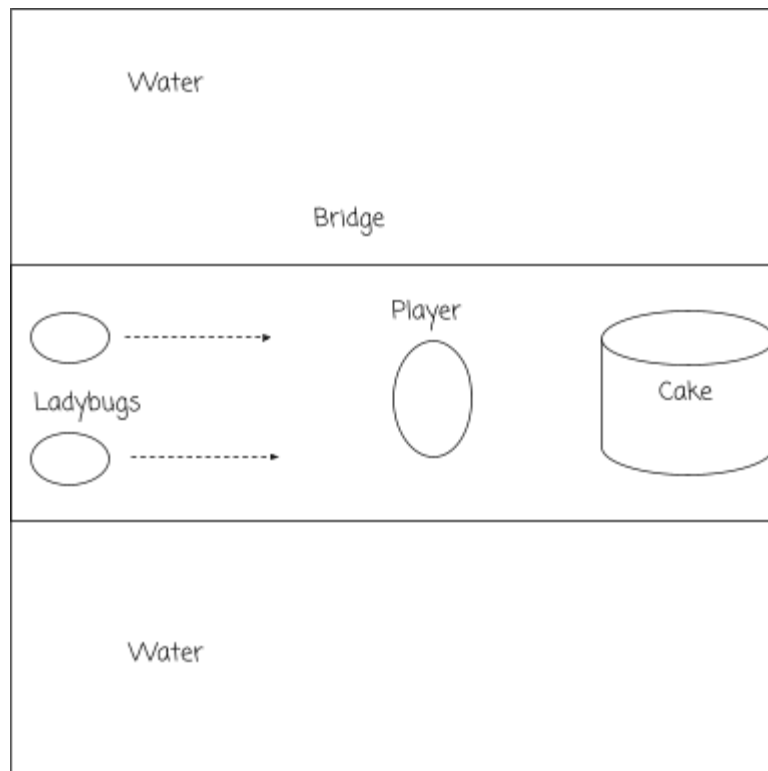
Describe Your Game

In a couple of sentences describe the game you are going to build and how it will work.

You are an alien defending your cake from evil ladybugs. Ladybugs march across a bridge towards your cake. You'll need to push the ladybugs off the bridge into the water. Get points for stopping ladybugs and lose points for letting ladybugs get through.

Draw Your Game

Draw a quick sketch of how your game will work. Who are the characters. What does the background look like? How do things move? Label things to make them more clear.



Sprites and Variables

Using the description of your game above, figure out what information and characters you'll need to keep track of through your game. Fill in a description for each in the space below.

Sprites

In the table below list information about the different sprites in your game. Where are they located? How do they move? How do they interact with other sprites?

Name (Label) and Appearance	At Start of Game (Animation, position, rotation, velocity, rotation speed)	User and Sprite and Interactions (Does the user control this sprite? How does it move? Does it ever need to reset its position? Does it interact with other sprites? How?)
<i>player - alien</i>	<i>x: 300 y: 200 No rotation or velocity</i>	<i>Arrow keys move the sprite in 4 directions Displaces ladybugs</i>
<i>cake - cake</i>	<i>x: 350 y: 200 No rotation or velocity</i>	<i>Never moves When ladybugs touch you lose points</i>
<i>enemy1 - ladybug</i>	<i>x: 0 y: random between 150 and 250 velocityX: 2 (may need to make faster)</i>	<i>Moves across the screen left to right Player sprite can displace the ladybugs If they hit the water reset and give the player a point. If they hit the cake reset, remove 5 points</i>
<i>enemy2 - ladybug</i>	<i>x: 0 y: random between 150 and 250 velocityX: 2 (may need to make faster)</i>	<i>Same as the other one</i>

Variables

Think about the information your game needs to keep track of. Is there a score? A number of lives? Describe each variable in the space below.

Name (Label)	What It Keeps Track Of	How It Changes During the Game (What's the starting value, when will it change?)
<i>score</i>	<i>Player's score</i>	<i>Starts at 0. When ladybugs pushed in water get 1 point. When ladybugs hit cake lose 5 points.</i>

Functions

Your draw loop shouldn't have a lot of complex code. Instead, break your program up into the major steps you'll need for your game to work. The different behaviors you described for your sprites and variables should help you decide what these steps should be. Then describe what the code for that function should do.

Function Name	What Happens In This Function What behaviors that you outlined for your sprites does this function include? Can this function be used at multiple places in your program?
<i>gameBackgroundO</i>	<i>Draws the background of the game</i>
<i>enemiesTouchCakeO</i>	<i>Resets enemies when they touch the cake. Decreases the player's score.</i>
<i>movePlayerO</i>	<i>Moves the player with arrow keys and changes animations</i>
<i>displaceEnemiesO</i>	<i>Player pushes the ladybugs</i>
<i>enemiesTouchWaterO</i>	<i>If either ladybug touches the water they get reset and the player's score is increased</i>
<i>showScoreO</i>	<i>Shows the score on the screen</i>

Interactive Animations and Games ('21-'22)

Using the Game Design Process

Resources

Name(s) _____ Period _____ Date _____

Project Guide - Planning Your Platform Game



Overview

Building a larger piece of software like a game can quickly get complex. Starting with a plan can help you stay organized and identify issues ahead of time. A lot of the work you do here will make it much easier to keep track of what you need to do once you begin writing your actual code.

Gameplay and Visuals

Start by thinking about what your game actually does. What does it look like? How do you actually play it? What will make it fun, interesting, or relevant to the player?

Describe Your Game

In a couple of sentences describe the game you are going to build and how it will work.

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Interactive Animations and Games ('21-'22)

Project - Design a Game

Resources

Name(s) _____ Period _____ Date _____

Computer Science Practices Reflection



How I've grown	Practice	How I want to grow
	Problem Solving	
	Persistence	
	Creativity	
	Collaboration	
	Communication	

Name(s) _____ Period _____ Date _____

Project Guide - Planning Your Game



Overview

Building a larger piece of software like a game can quickly get complex. Starting with a plan can help you stay organized and identify issues ahead of time. A lot of the work you do here will make it much easier to keep track of what you need to do once you begin writing your actual code.

Gameplay and Visuals

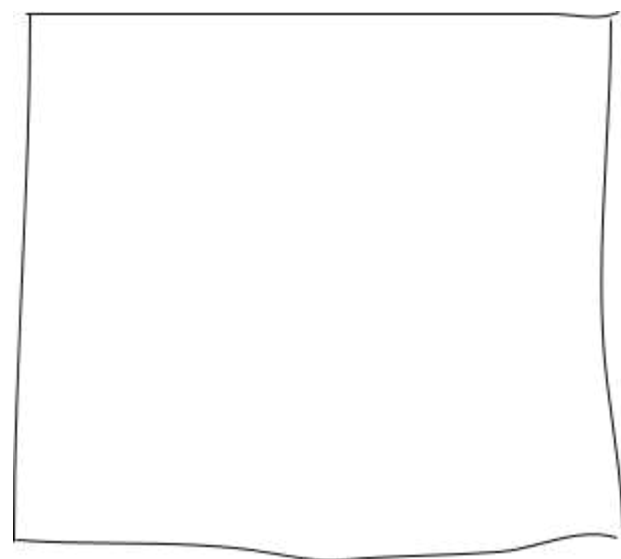
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Function Name	What Happens In This Function What behaviors that you outlined for your sprites does this function include? Can this function be used at multiple places in your program?

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Program your Game

Once your teacher has approved your design, go to Code Studio to create your game.

Check Your Program

Check your program to make sure it has everything it needs.

Reflect

What part of your project are you most proud of? _____

Why? _____

If you had more time, what improvement would you make to your game?

Peer Review - Make Your Own Game



Pre-Review

Creator's Name: _____

One thing I want feedback on is... _____

Reviewer Section

Reviewer's Name: _____

Evidence I Found	Types of Evidence	Ideas for More
	The program code uses spacing, good naming conventions, and comments to make the code easily readable.	
	At least three functions are used to organize code into logical pieces. At least one of these functions is called multiple times in the program.	
	The game has at least three backgrounds that are displayed while the game is running, and at least one change is triggered automatically through a variable (e.g. score).	
	The game includes multiple different interactions between sprites, responds to multiple types of user input (e.g. different arrow keys).	
	Complex movement such as acceleration, moving in a curve, or jumping is included in multiple places in the program.	
	The game includes multiple variables that are updated during the game and affect how the game is played.	

Free Response Feedback

I like... _____

I wish... _____

What if... _____

Creator's Reflection

1. What piece of feedback was most helpful to you? Why?

2. What piece of feedback surprised you the most? Why?

3. Based on feedback, what changes will you make to your game proposal?

Unit 3 Chapter 2 Project Rubric

Key Concept	Extensive Evidence	Convincing Evidence	Limited Evidence	No Evidence
Program Development	Your project guide is complete and reflects the project as submitted.	Your project guide is mostly complete and is generally reflective of the submitted project.	Your project guide is filled out, but is not complete or does not reflect the submitted project.	Your project guide is incomplete or missing.
Program Readability	Your program code effectively uses whitespace, good naming conventions, indentation and comments to make the code easily readable.	Your program code makes use of whitespace, indentation, and comments.	Your program code has few comments and does not consistently use formatting such as whitespace and indentation.	Your program code does not contain comments and is difficult to read.
Use of Functions	At least three functions are used to organize your code into logical segments. At least one of these functions is called multiple times in your program.	At least two functions are used in your program to organize your code into logical segments.	At least one function is used in your program.	There are no functions in your program.
Backgrounds and Variables	Your game has at least three backgrounds that are displayed during run time, and at least one change is triggered automatically through a variable (e.g. score).	Your game has multiple backgrounds that are displayed during run time (e.g. main background and “end game” screen)	Your game has multiple backgrounds.	Your game does not have multiple backgrounds.
Interactions and Controls	Your game includes multiple different interactions between sprites, and it responds to multiple types of user input (e.g. different arrow keys).	Your game includes at least one type of sprite interaction and it responds to user input.	Your game responds to user input through a conditional.	Your game includes no conditionals.
Position and Movement	Complex movement such as acceleration, moving in a curve, or jumping is included in multiple places in your program.	Your program includes some complex movement, such as jumping, acceleration, or moving in a curve.	Your program includes simple independent movement, such as a straight line or rotation.	There is no movement in your program, other than direct user control.
Variables	Your game includes multiple variables that are updated during the game and affect how the game is played.	Your game includes at least one variable that is updated during the game and affects the way the game is played	There is at least one variable used in your program.	There are no variables, or they are not updated.

Unit 3 Chapter 2 Project - Student Checklist

Key Concept	Extensive Evidence
Program Development	<ul style="list-style-type: none"><input type="checkbox"/> Your project guide is complete<input type="checkbox"/> Your project guide reflects the project as submitted.
Program Readability	<ul style="list-style-type: none"><input type="checkbox"/> Your program code effectively uses whitespace<input type="checkbox"/> Your program code uses good naming conventions<input type="checkbox"/> Your program uses indentation<input type="checkbox"/> Your program uses comments to make the code easily readable.
Use of Functions	<ul style="list-style-type: none"><input type="checkbox"/> Your code uses at least three functions to organize code into logical segments.<input type="checkbox"/> At least one of your functions is called multiple times in the program
Backgrounds and Variables	<ul style="list-style-type: none"><input type="checkbox"/> Your game has at least three backgrounds that are displayed during run time<input type="checkbox"/> Your game has at least one change that is triggered automatically through a variable (e.g. score).
Interactions and Controls	<ul style="list-style-type: none"><input type="checkbox"/> Your game includes multiple different interactions between sprites<input type="checkbox"/> Your game responds to multiple types of user input (e.g. different arrow keys).
Position and Movement	<ul style="list-style-type: none"><input type="checkbox"/> Your program includes complex movement such as acceleration, moving in a curve, or jumping in multiple places
Variables	<ul style="list-style-type: none"><input type="checkbox"/> Your game includes multiple variables that are updated during the game and affect how the game is played.