Worksheet Details:

You will use this worksheet to record your responses to all activities that require you to do so in the instructions. Each time an activity references this worksheet to record your responses, you must open this copy of your worksheet and add your response in the appropriate section. This specific worksheet will be **used for all activities in Week 5**.

To complete the assignment, you must follow these steps:

1. Complete this worksheet with the responses from your activity.
2. You'll find that each question has a submission block where you must put in your answers.
3. You must complete all the blocks available under a question. Leaving a block empty will mean the question is not being answered (even if you answer it somewhere else).
4. Make sure you place the correct answer under the right question. Misplaced answers will not be marked.
5. Save and submit this worksheet to Savanna.

Instructions:

1. You must fill out this worksheet and submit it as your assignment response.
2. Use tools like Foxit, Adobe Acrobat, or PDFGear to add your responses in the blank **spaces provided under a question or set of instructions**.

3. Read the instructions and questions carefully before responding.
4. **Do not** try to edit any part of this worksheet!
5. Save this worksheet using the convention "*FirstName_LastName_Assignment_Week5.pdf*".

Week 5 – Activity: Functions and Custom Blocks

Go through the instructions provided on Savanna and complete the following tasks.

Task 0: Custom Block Creation

Learn to create a custom block in Scratch that performs a simple task.

Task:

Set up Your Project

- Start a **new project** and title it "My First Function."
- **Think of a Repetitive Action You Want to Simplify.**
- **Choose an Action:** Make a sprite dance by moving up and down repeatedly.

Create a Custom Block.

- **Go to My Blocks**: In the blocks palette on the left, scroll down to find the "My Blocks" category.
- **To create a New Block, click the "Make a Block" button. A dialog box will then** appear.
    - **Name Your Block**: Enter a "Dance" as the name of your custom block.
- **Define the Custom Block**: After creating it, a new block will appear in your "My Blocks" category. Click and drag it to the scripting area to start defining its function.

Define What the Custom Block Does.

- **Add Movement Blocks:**
    - From the "Motion" category, drag a "change y by [10]" block to move the sprite up.
    - Next, add a "wait [0.5] seconds" block from the "Control" category to create a pause.
    - Then, add another "change y by [-10]" block to move the sprite back down.

- Finally, add another “wait [0.5] seconds” block.
- **Make a Loop**: To repeat the dance, wrap these blocks in a “repeat [10]” block from the “Control” category (or however many times you want the sprite to dance).

Use the Custom Block in Your Project.

- **Add an Event to Call the Block:** You must trigger the custom block.
  - From the “Events” category, drag out the block “when [green flag] clicked.”
  - Place the “Dance” block under the " When green flag clicked” block. This will start the dance when the project runs.

Test Your Custom Block.

- **Run the Project**: Click the green flag at the top of the stage to start your project.
- **Observe the Action**: Watch the sprite perform the dance action you programmed with your custom block.

Save and Share Your Project.

- **Save Your Project**: To ensure your progress is saved, click on “File” and select “Save now.”
- **Share Your Project**: To make the project page public, click the “Share” button at the top and copy the link.

Your Response:

In the space below, paste the project link that you copied from the project above.

Task 1: Advanced Animation with Functions

Learn how to use custom blocks to simplify and manage complex animations that would otherwise require repetitive code by creating a dynamic animated scene.

Task:

Step 1: Start a **new project** titled "Function Animation."

Step 2: Select or **Create Sprites** for the Animated Scene

Choose or design sprites that will participate in the animation. These could be characters, objects, or abstract shapes.

How to Do This:

- Pick sprites from the platform's library, or create your own using the sprite editor.

Step 3: Design Custom Blocks for Sprite Animations

Create custom blocks to handle specific animations like spinning, jumping, or fading in/out. This will help simplify your code and make the animation more efficient.

How to Do This:

- Find the option to create a custom block (usually labeled "Make a Block").
- Give each block a descriptive name (e.g., "Spin," "Jump," "Fade") and add the necessary commands for the animation.

Example Blocks:

- **Custom Block 1 (Spin):** Rotate the sprite by a certain number of degrees.
  - `Repeat 10 times → Turn [15] degrees → Wait [0.1] seconds`
- **Custom Block 2 (Jump):** Make the sprite move up and down to simulate a jump.
  - `Change [y] by 20 → Wait 0.1 seconds → Change [y] by -20`
- **Custom Block 3 (Fade In/Out):** Gradually change the sprite's transparency to fade in or out.
  - `Repeat 10 times → Change [ghost effect] by 10%`

Step 4: Combine Animations Using Event Triggers

Use event triggers (like key presses, clicking on sprites, or timed events) to initiate the animations and create a cohesive scene.

How to Do This:

- Use blocks like “When green flag clicked,” “When space key pressed,” or “When this sprite clicked” to start the animations.
- Call the custom blocks you created in response to these events.

Example Flow:

- When the green flag is clicked, the first sprite starts spinning.
- After 3 seconds, the second sprite starts jumping.
- After the jump, the third sprite fades out.

Example Block:

- `When [green flag] clicked → Call [Spin] block`
- `Wait 3 seconds → Call [Jump] block → Call [Fade] block`

Step 5: Test Your Animation Scene

Run the project and test if the custom animations trigger correctly and work smoothly as part of the scene.

Check:

- Ensure that each sprite follows the animation instructions.
- Verify that the custom blocks function as expected (e.g., the sprite spins smoothly, jumps at the right time, or fades in/out).
- Make sure the transitions between animations happen seamlessly.

Step 6: Share Your Animation

- Once satisfied with the animation, click the “Share” button.
- Copy the link to your project.

Your Response:

In the space below, paste the project link that you copied from the project above.

Task 2: Interactive Story with Branching Paths

Develop an interactive story that uses custom blocks to handle branching story paths based on user choices.

Task:

Step 1: Start a **new project** named "Story Paths."

Step 2: Create a **Storyline** with **Multiple Decision Points**

Design a storyline with several decision points where the player can make choices. These choices will lead to different story outcomes.

How to Do This:

- Create a simple plot with branching paths. For example, the player might help or ignore a character, leading to different results.

Step 3: Use Custom Blocks for Decision Logic and Outcomes

Create custom blocks to manage the logic behind each decision point. These blocks will simplify your project by allowing you to reuse the decision logic easily.

How to Do This:

- Use a "Make a Block" or custom block function to create blocks for different choices or events (e.g., "Go Left," "Go Right").
- Use conditional statements (e.g., if-else) inside each block to define the outcomes based on the player's choices.

Example Custom Block:

- **Custom Block 1 (Go Left):**
  - If the player goes left, move to the forest and display the forest scene.
  - It triggers a new choice or outcome if they encounter danger in the forest.
- **Custom Block 2 (Go Right):**
  - If the player goes right, display the peaceful village and continue the story.

Step 4: Implement Event Blocks for User Interaction

Use event blocks (e.g., when the player clicks on certain sprites) to let the player make choices in the story.

How to Do This:

- Set up events that allow the player to choose their path. For example, clicking on different sprites (like arrows or buttons) could trigger different story paths.

Example Block:

- `When [left arrow] sprite clicked → Call [Go Left] block`
- `When [right arrow] sprite clicked → Call [Go Right] block`

Step 5: Test Your Story for Branching Logic

Run through your story to ensure the choices work correctly and lead to different outcomes based on the user's decisions.

Check:

- Make sure each decision leads to a different part of the story.
- Verify that the custom blocks manage the decision logic correctly.
- Ensure the story has no dead ends (paths that lead nowhere).

Step 6: Share Your Interactive Story

- Once you are happy with your story, click the "Share" button.
- Copy the link to your interactive story.

Your Response:

In the space below, paste the project link that you copied from the project above.

Once you have completed this worksheet:

1. Save as .pdf.
2. Rename it per the instructions.
3. Upload to Savanna as your Week 8 Assignment Submission.
4. **Celebrate a job well done!**