Lesson 5.1: Introduction to Game Design

Objectives

In this lesson, students will:
- ❖ Be able to describe characteristics of what makes a game a game
- ❖ Explore and practice game design programming using events and initialization code.

Agenda

1. Introduction to Game Design	10 mins
2. Game Demonstration	10 mins
3. Making our Diver Move	20 mins
4. Wrap Up and Reflections	10 mins

Preparation

- ❏ Projector to demonstrate game and guide students
- ❏ Computers with internet connection
- ❏ Remix the game so that you can demonstrate it to students. Become familiar with the code as you will explain it to students step by step.

Resources & Links

- ❏ Solution project for demo: https://scratch.mit.edu/projects/261565076/

1. Introduction to Game Design

In small groups, ask students to generate a list of games they like. After a few minutes, ask them the following questions about their list:

- o What do the games have in common?
- o What is it that makes a game a game?
- o What are different ways that you win a game?
- o Do all games involve winning or losing?

2. Game Demonstration

Overview:

In this activity you will code a game together with your students. You will code and explain a few instructions at a time and then students will code the instructions in their own game.

Before students sign into Scratch, **demonstrate** the game so that students know what they will be creating. (use the following project to demo: https://scratch.mit.edu/projects/261565076/)

Explain to students how the lesson will take place. In this lesson, the first section of the game will be coded and then finalized in the next lesson. It is helpful to have a means for students to half close their laptops or turn their monitors off while you are demonstrating a set of instructions.

3. Making Our Diver Move

Display your screen and demonstrate and explain step by step as you code the project:

- ● Create a new project. By default the Cat Sprite is always created for us. Delete the cat by selecting it and right clicking and selecting "Delete" or simply clicking on the x in the upper right corner.

OR

- Create the diver Sprite (People category). Give the diver sprite a name by typing it in the oval area labeled Sprite.
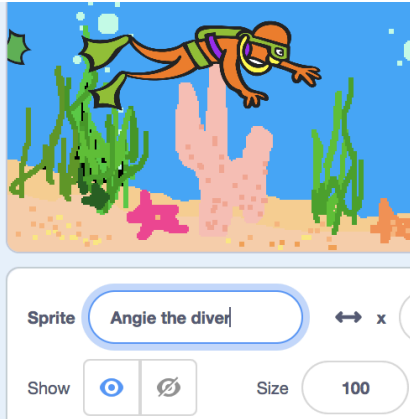

- Now let's pick a cool underwater stage.   We go to the Stage area and click on the icon at the bottom.
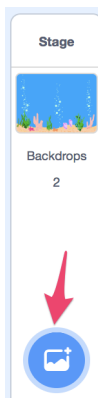
Click on the icon and go to the **Underwater** category. There are 2 backdrops to choose from.

- During the game, the space bar made the diver move up and then back down to avoid the fish. When I drag the diver around the stage and let go of the mouse, the x and y values at the bottom right of the screen change depending on where the diver is.
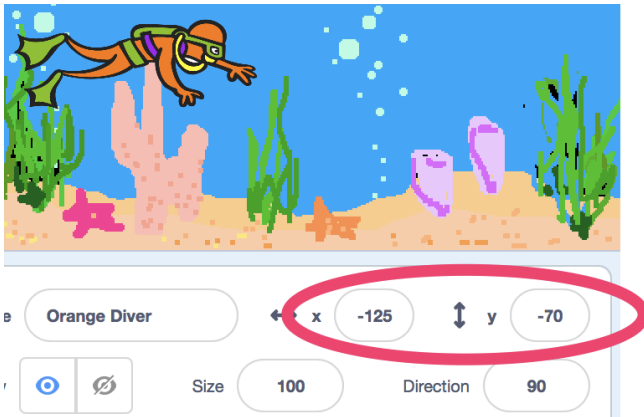
If I move the diver up, what happens to the y value ?   It gets bigger. So if we want the diver to move up, we can change the y value to a bigger value.   So, to move the diver up we can change the value of 'y' by using the **change y by 70** block.

Click on the instruction to demonstrate what happens to the diver.

- The diver moves up when the space bar is pressed. That is the **event** we want to use, so we go to the Events category and choose the 'when space key pressed'.
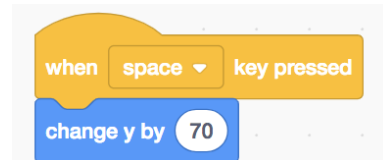
- After the diver moves up, we want the diver to come back down. We can use the same **change y** instruction. What value do we use so the diver moves back down?   The same value as moving up, but the opposite so we use -70.

Students' Turn:

Students code the instructions to add the diver, backdrop and the event to make the diver jump up and back down.

Continue to **demonstrate** the next steps:

7. Drag the diver to where we want it's starting position to be, towards the bottom left. To make sure the diver always starts in this location, use the x and y values shown in the bottom right, the current diver location. Add instructions to go to that location when the green flag is clicked. This is our initialization code.
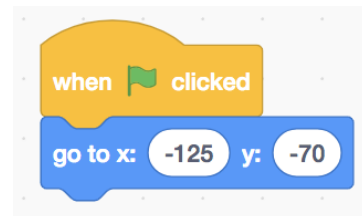
8. Click on the space bar to demonstrate these instructions: It looks like nothing happened. That is because computers are so fast and we could not see the diver move up and then back down because it happened so fast.

   Additionally, we want the diver to stay up a little while to avoid the fish. To do that we can use the **wait** instruction. Try the code again.

   This is the code to make the diver jump:

   ```
   when  space ▼  key pressed
   change y by  70
   wait  0.8  seconds
   change y by  -70
   ```
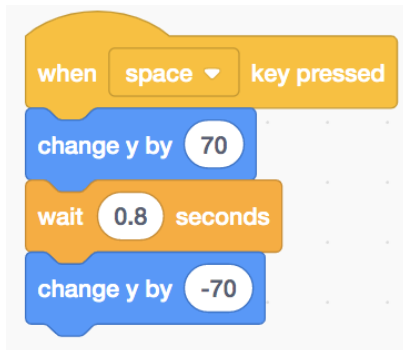
Students' Turn:

Students code the instructions to initialize the diver's starting position and the code to make the diver jump up and down when the space bar is clicked to avoid the fish.

4. Wrap Up and Reflections

> **Reflection Points:**
>
> - What did you learn today?
> - Why did we add a wait statement after the diver moves up and before it moves back down?
> - What is the purpose of initialization code?
> - **Prompt** students for what is missing from the game.

This was a good start coding the diver game. During the next lesson we will code the fish sprite and finish coding the diver to make the diver react when a fish runs into him.