# University of Newcastle Coding & STEAM 2019

## Week 4 Homework Task

In this document, we explain the homework task for Week 4 of the Coding & STEAM program. Please note that, in each week of the program there will be 2 hours of homework, which will count towards the total number of NESA accreditation hours (32) for participating in the program.

**We would prefer that you complete this activity while logged in your Student Account (the account name and password that I sent to you).** If you do complete the homework with your personal or Teacher Account, that is okay – but please let me know this in the email that you send me about completing the homework task.

This week’s homework task is to recreate a scene in Scratch, which has two animated characters (Sprites): a flying Hippo and a Bat. When you are working through the task, you are welcome to choose Sprites and a backdrop that are different to those we have used. We have included the steps for completing this week’s homework task, split into six different subtasks and using the Hippo and Bat Sprites, in the Homework Task Detail section of this document. If you are stuck or would like some guidance on how to complete parts of the homework task, we recommend that you follow the steps in the Homework Task Detail section.

Homework Scene Script

*[Begin Scene]*

*(The Hippo starts from the left side of the Stage and flies to the right side of the Stage. The Hippo collides with the Bat while flying to the right side of the screen)*

***Bat:*** *Hey!*

***Bat:*** *Watch where you’re going!*

*(The Hippo continues flying, flies off the right side of the Stage and disappears)*

*[End Scene]*

A video of the final scene created in Scratch is available to view online from this link: [hckmd.com/animate](http://hckmd.com/animate) and this video is also available to download from the “*Homework Scene Video”* link on the Week 4 session page, which is under the **Homework** heading. Note that, the scene begins when the *green flag* is clicked, that the Hippo moves back to it starting position after the green flag is clicked, and that the Bat stops flapping its wings when the Hippo disappears from the Stage.

After you have created the scene in Scratch, please share the project and add it to the “*STEAM 2019 Week 4 Homework”* Class Studio. Then, email me at [Daniel.Hickmott@uon.edu.au](mailto:Daniel.Hickmott@uon.edu.au) with the subject line *“Coding & STEAM Week 4 Homework”* before the Week 5 session and let me know whether you have completed the tasks and/or have any questions about them. Once I have received this email and have checked that you have shared the completed project in the “*STEAM 2019 Week 4 Homework”* Class Studio, I will record that you have completed the Week 4 Homework.

## Homework Task Detail

In this section, we have split the Homework task into subtasks, which explain one set of steps for creating the Homework scene, from start to finish in Scratch.

1. **Create a Project Titled “Homework Scene”**

Please note that you should be logged into a Scratch account (preferably the username that I sent you), when performing these tasks.

To create a new Project from within the Scratch editor (the screen that has all of the Sprites and blocks in it), you can go to the *File* menu and then click on the *New* button, as demonstrated in the image below:



Another way to create a Project, if you are on the Scratch homepage or on a Project page, is through the Create link at the top of the page. This link is highlighted in red in the image below:



Once you have a new Project open, you can change the title of this through the Editor or on the Project page. In the Editor, you can edit the text in the box at the top of the stage to change the name of the Project. This text box is highlighted in red in the image below:



To complete this step, you should change the text in that box to “Homework Scene” so that this becomes the Project’s title.

1. **Change the Backdrop and Delete the Cat**

The backdrop in a new Scratch Project will always be completely white. In this homework task, you should change the backdrop to something more appropriate for the scene. If you click the *Choose a Backdrop* button, which is highlighted in red in the image below, you can choose a different backdrop from the Scratch library. In the scene in the “*Homework Scene”* video, we have used the backdrop called “woods” from the Scratch library’s backdrops.



Whenever you create a new Project in Scratch, the Cat sprite will always be on the Stage to start with. We are going to use different Sprites (the Hippo and Bat), so we can delete the Cat Sprite. To do this, right click on the Cat in the Sprites section and click the Delete button, as highlighted in red in the image below.



When you have done this, the Sprite will disappear from the Stage (and from the Sprites section of the editor).

1. **Add the Characters and Animate Them**

There are two characters in the scene: A **Hippo** and a **Bat**.

You can add these Sprites to the scene by using the *choose sprite from library* button, which is highlighted in red in the image below.



You can choose the Sprites from the library and add them to the scene by selecting them and clicking *OK*. For our scene, we used the **Hippo1** and **Bat1** Sprites. Once you have added the **Hippo1** and **Bat1** Sprites to the project, you should position them on the Stage in similar positions to those shown below (the **Hippo** on the left side of the Stage and the **Bat** towards the centre of the Stage).



Both of these Sprites have costumes and we can use **forever, next costume** and **wait** blocksto make them flap their wings. Add the following blocks to **both of the Sprites**:

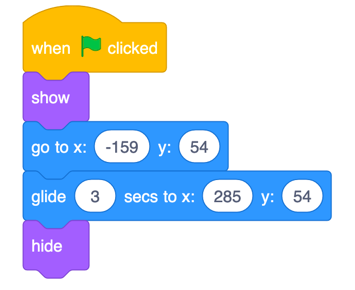


Now, when you click the *green flag* button, both **Sprites** will start flapping their wings.

1. **Make the Hippo Fly Across the Screen**

Next, we will make the **Hippo** fly across to the right side of the Stage and disappear when the *green flag* is clicked.

Next, add the blocks in the image below to the **Hippo** Sprite. You can place them separate to the stack with the **forever** block on top. The blocks in this stack and what they do are explained briefly after the image.



Make sure that you change the **x** and **y** in the **go to** block to be on the left side of the Stage and the **secs**in the **glide** block to be 3, so that the **Hippo** flies slowly across the screen.

The blocks in the stack over cause the following actions to happen:

* The **show** block makes the **Hippo** appear again (after it has made invisible by the **hide** block)
* The **go to** block moves the **Hippo** back to its original spot, on the left side of the Stage
* The **glide** block moves the **Hippo** to the right side of the Stage
* The **hide** block makes the **Hippo** disappear from the Stage (this makes the Sprite invisible)

Now, when you click the *green flag* button, the **Hippo** will fly across to the right side of the Stage. Note that the project is still “running” after the **Hippo** disappears and the **Bat** continues to flap its wings. You can tell the project is still “running” because the *green flag* is glowing. Clicking the *green flag* again will restart the scene, and make the **Hippo** reappear, move back to the left and fly to the right side of the Stage again.

1. **Stop the Animations at the End of the Scene**

Next, you will add a block to the **Hippo** Sprite to stop the **Bat** flapping its wings when the scene ends (when the **Hippo** reaches the right side of the Stage and disappears). As we used a **forever** block to make the **Bat** and **Hippo** flap their wings, they will continue to do this until the *red stop* button is clicked, or until we use the **stop all** block.

To make the project stop once the **Hippo** disappears, you should add a **stop all** block (from the *Control* section) to the stack of blocks you added to the **Hippo** Sprite. The stack of blocks will look like the image below, after adding the **stop all** block (which is highlighted by the red rectangle).



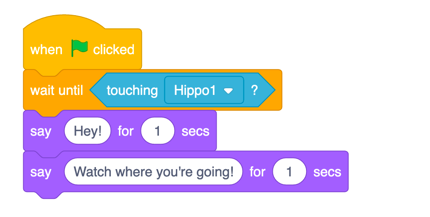
Now, when you click the *green flag* button the **Hippo** will fly across the screen, it will disappear and the **Bat** will stop flapping its wings.

1. **Add a Collision to the Scene**

The final step is to add the collision between the **Hippo** and the **Bat,** and the dialogue that is described in the Script, back on page 1 of this document.

After the **Hippo** and the **Bat** collide, the **Bat** should say the following with **2 say** blocks: “Hey! Watch where you’re going!”.

There are a few different ways to do this, in our project we used the **wait until** (from the *Control* section)and **touching** (from the *Sensing* section)blocks. In the **Bat** Sprite, you should add the blocks in the image below. These stacks can be placed separately to the stack of blocks that make the **Bat** flap its wings (the stack with the **forever, next costume** and **wait** blocks).



You will have to drag the **wait until** block from the *Control* section onto the stack of blocks first. Then, you can drag a **touching** block from the *Sensing* section and select **Hippo1** from the dropdown in the **touching** block.

Make sure that you change the number in the **secs** part in each of the **say** blocks to *1* instead of *2,* so that the **Bat** says these two lines before the scene ends.

The **wait until** block will make it so that the **Bat** doesn’t follow the **say** blocks until the **Bat** and **Hippo** Sprites are touching (when the **Hippo** collides with the **Bat**). When the two Sprites touch, the **Bat** will then follow the **say** blocks and say to the **Hippo**: “Hey! Watch where you’re going!”.

After adding that stack of blocks with the **wait until** block to the **Bat** sprite, check what happens when you click the *green flag*. The **Hippo** should fly across the Stage, collide with the **Bat**, and the **Bat** should say: “Hey! Watch where you’re going!”.

Does the final scene you have in Scratch match the Homework Scene Video that was shown during the Week 4 session? You can view the video again by going to [hckmd.com/animate](http://hckmd.com/animate) or downloading the video from the “*Homework Scene Video”* link on the Week 4 session page, which is under the **Homework** heading

1. **Share the Project and Add it to the Homework Studio**

Once you have completed the previous steps to create the scene, you should share the project and add it to the “STEAM Week 4 Homework” *Class Studio*. The key steps to complete this task are 1) to share the Project, and 2) add the project to the Studio.

To share the project, you can click the *Share* button when you are within the *Editor* view (the view that has all of the Sprites and blocks). The *Share* button, which is at the top-right corner of the *Editor* view, is highlighted by the red rectangle in the image below:



After clicking on the *Share* button, you will be taken to the Project page, where you can add your project to the studio. To do this, click on the *Add to Studio* button and then click the plus icon next to the *STEAM 2019 Week 4 Homework* Studio (highlighted by the red rectangle), as shown in the image below:



Once you have clicked on the plus icon, you will notice that the label for the Studio goes green and a tick appears next to the Studio name. Click the “Okay” button and the project should be added to the homework Studio. You can check that the project has been added correctly by going back to the “STEAM 2019 Week 4 Homework” Studio and checking that it is in there. If you cannot see the “STEAM 2019 Week 4 Homework”, this could be because you are logged into your personal or Teacher Account. If you are logged into your personal or Teacher Account, you can skip this step and let me know this in the email you send me about the homework. After you have completed this last task, please email me and let me know, so that I can record that you have finished it.