Phippy AI Workshop

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For more info: https://phippyai.com/

Welcome to the Phippy AI Workshop where you will train your very own machine-learning model using Scratch. This workshop is best done in pairs or with the help of an adult. Phippy has lots of friends, so invite one of yours to help!

To complete this workshop you will need:
- A print copy of Phippy's AI Friend book
- A computer with a webcam
- An internet or wifi connection

Setup: Open the Scratch Model

1. Download the Scratch template from the phippyai.com website. The file should say `phippy-ai-template.sb3`.

2. Open Scratch from the phippyai.com website. This is a special version of scratch with a plug-in for machine learning.

3. Click on the `File` drop-down, then click "`Load from your computer`".
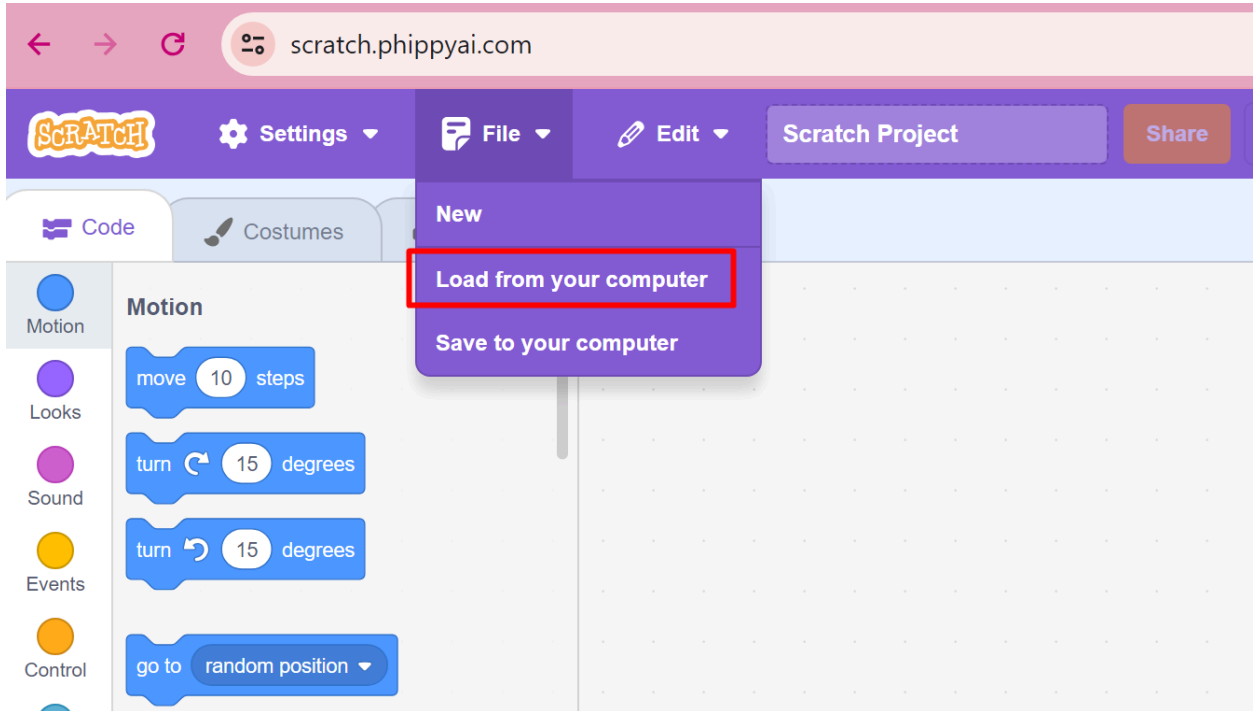
4. Navigate to your Downloads folder and select the file: `phippy-ai-template.sb3`. Then click `Open`.

5. The project will load and you will see Kimani standing on a boat. If the website asks you to use your camera, click allow.

6. You should see yourself in the scratch stage if the camera is working. If you don't see yourself, there are a few things we can try.
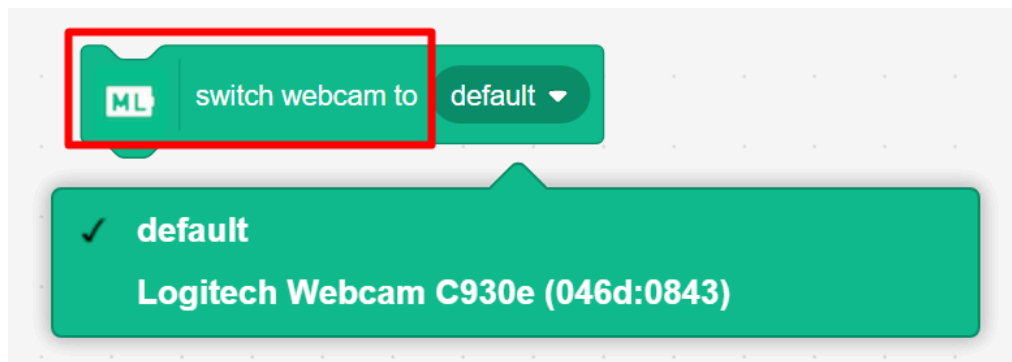
Troubleshooting the Camera

If the camera is not working…

Find the "`turn video`" block. Turn it off, and click the block. Turn it on, and click the block again.
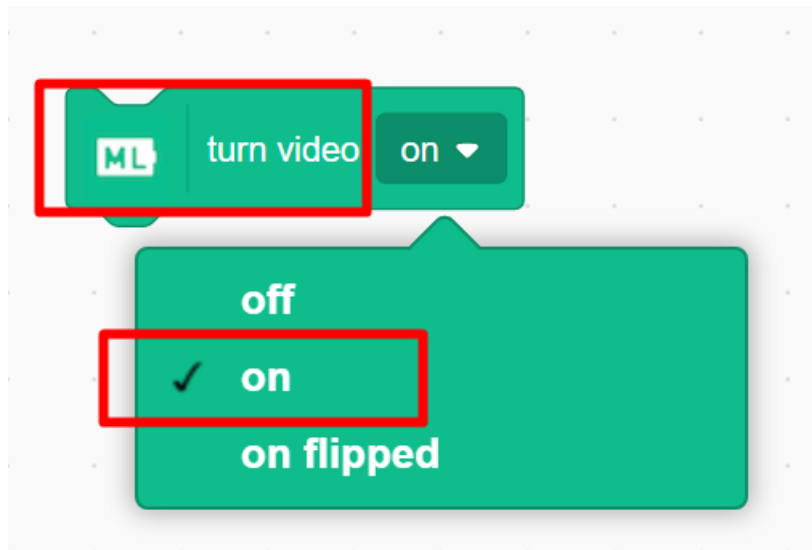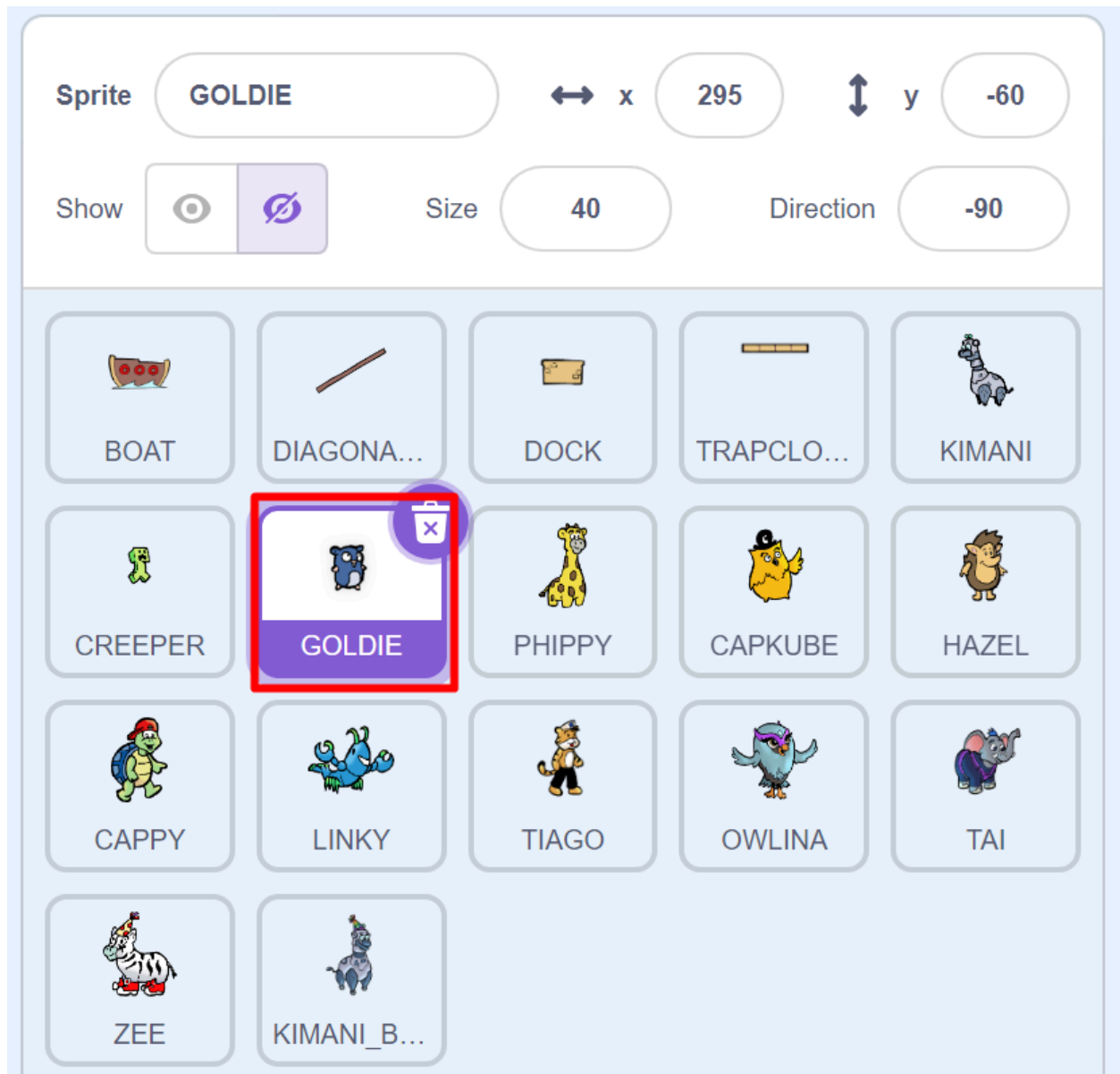

Find the "`switch webcam to`" block. Try selecting different webcam options in the drop-down menu. Click the block to enable your changes.
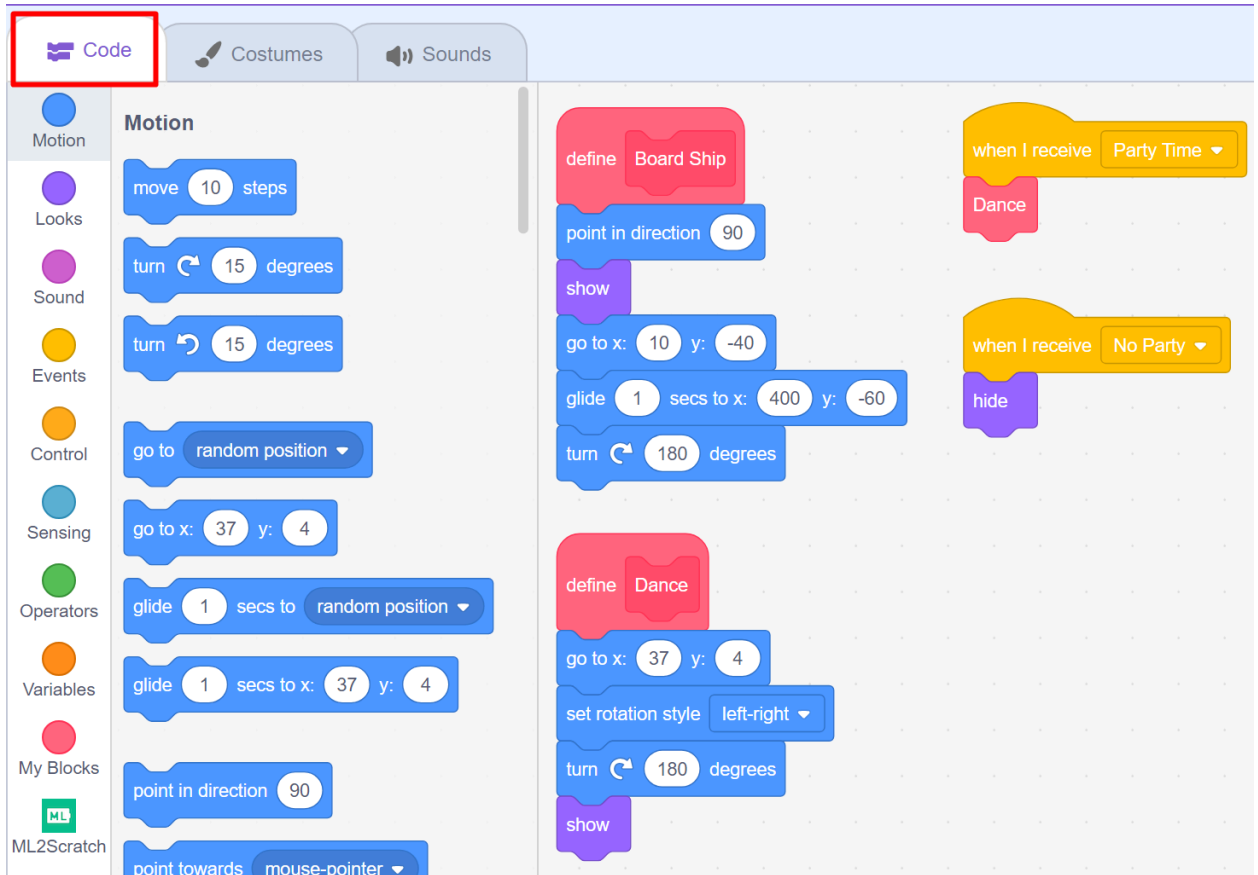
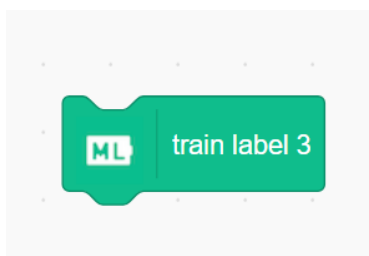# Part 1: Train Kimani to Scan Goldie

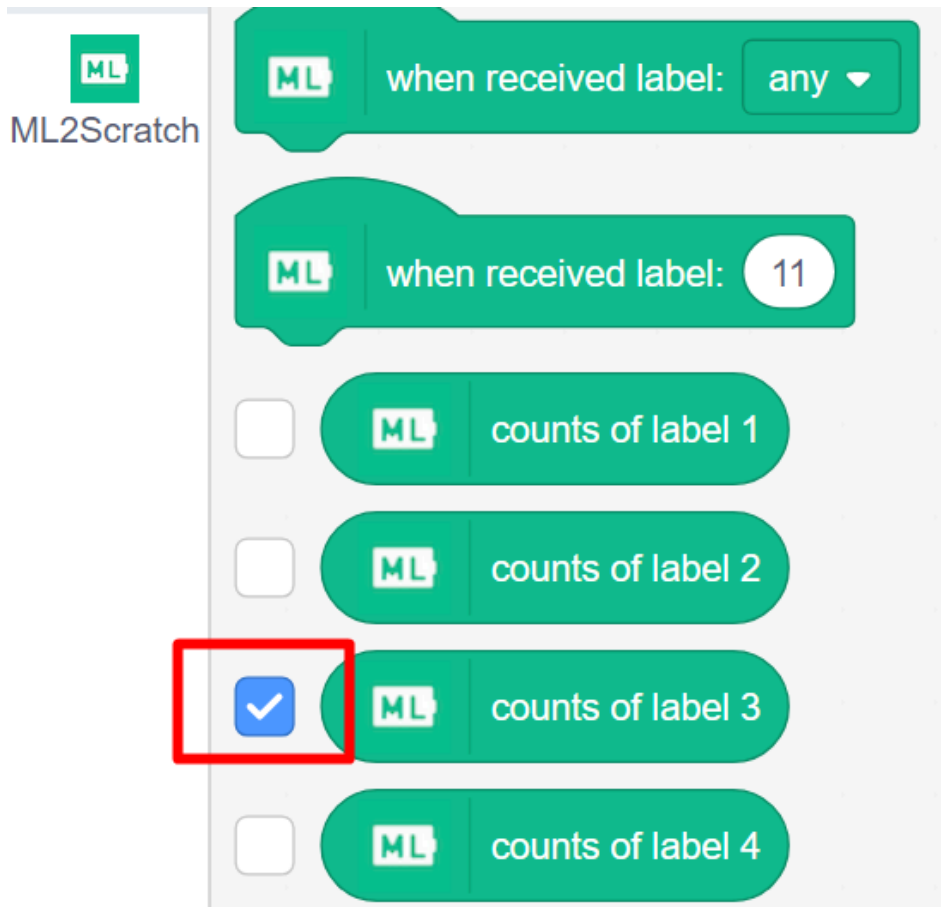1. Find Goldie and click on their sprite

2. You should see some coding blocks already assembled. If you don't see it, click on Code.

3. We need to train Kimani to scan our friend Goldie. Drag the "`train label 3`" block from the `ML2Scratch` module.

4. Check the blue box for "`counts of label 3`". A window should appear in your game called "`ML2Scratch: counts of label 3`".

5. Find the page in the book with all the characters. The page is after "Kimani's Mission". Find Goldie and hold them up to the camera so that they cover the entire stage.
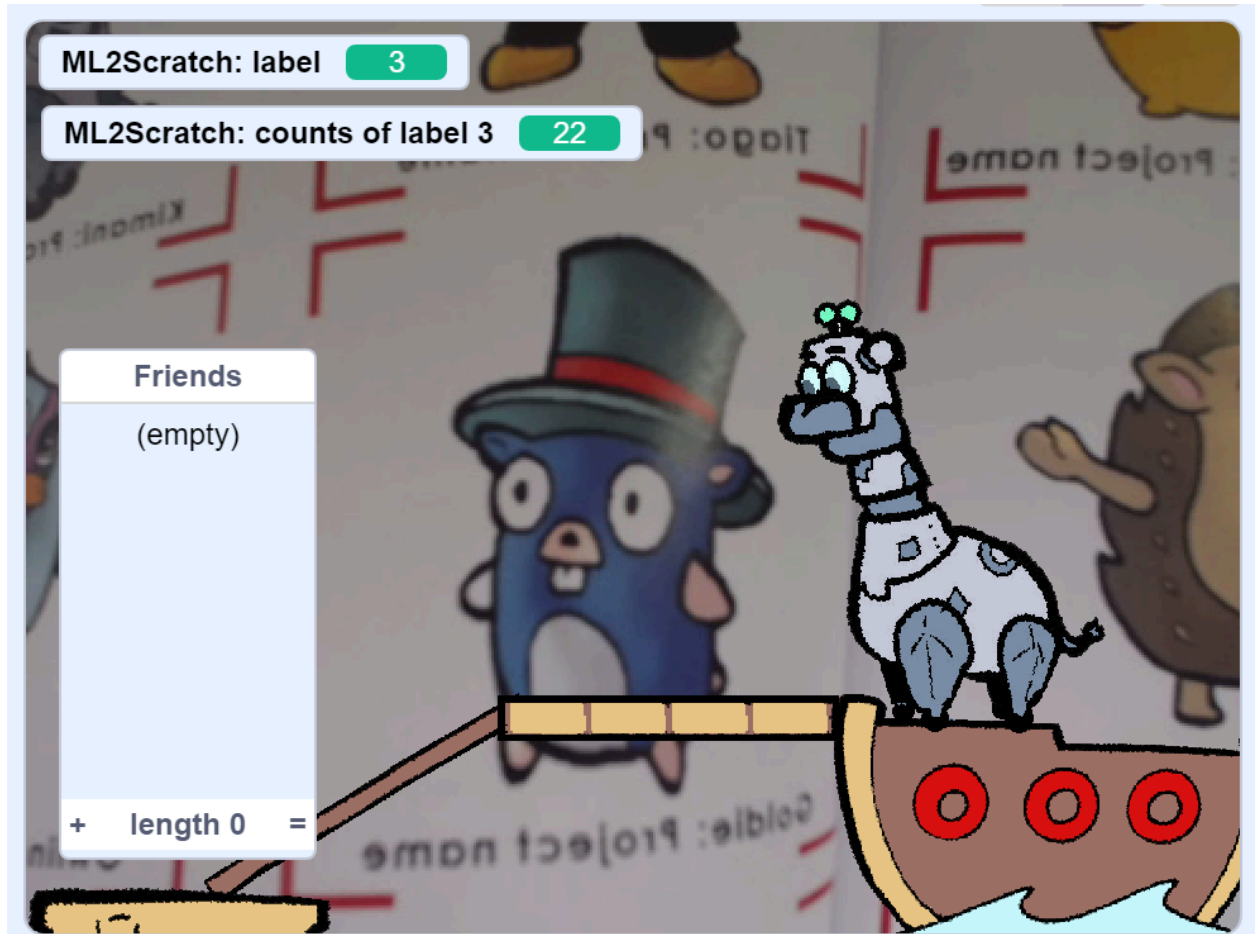
6. While you are holding up Goldie, click on "`train label 3`" about 20 times. Each time you click the camera captures an image and uses that to recognize Goldie in the future.
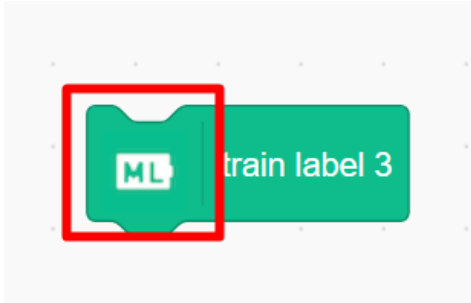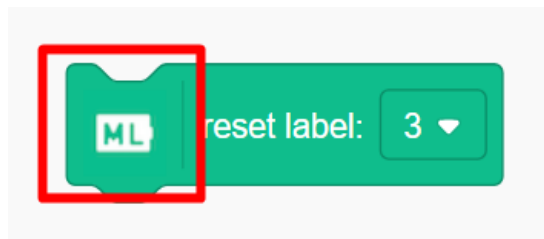

The first box lets you know the camera sees label 3. The second box is how many times you clicked to train Goldie.
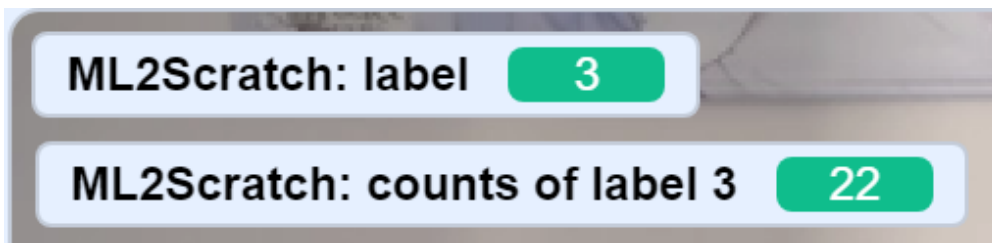
OPTIONAL

If you think you messed up and want to reset your training data, drag this box and set it to label 3. Then click on the red highlighted area to reset your training data. **Only do this if you accidentally scanned something other than Goldie.**

7. Why isn't Goldie appearing? We need the program to make Goldie appear when it detects label 3. Find these blocks under `ML2Scratch` and `My Blocks`. Set "`when received label`" to 3.
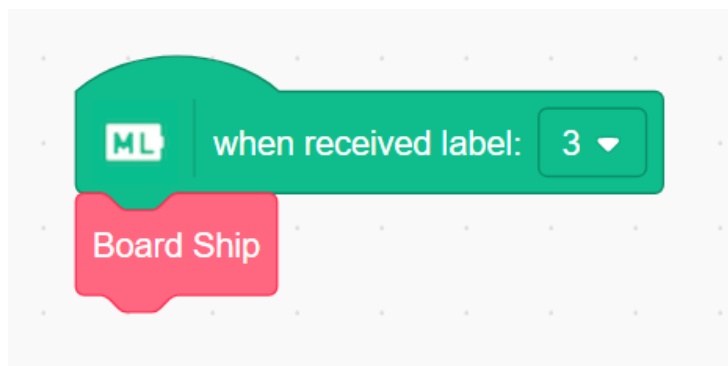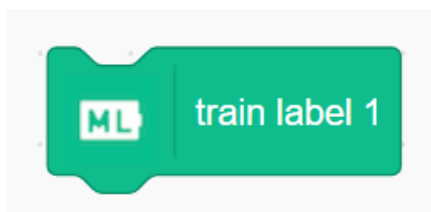

Hold Goldie up to the camera. They will be added to the friends list and board the ship!
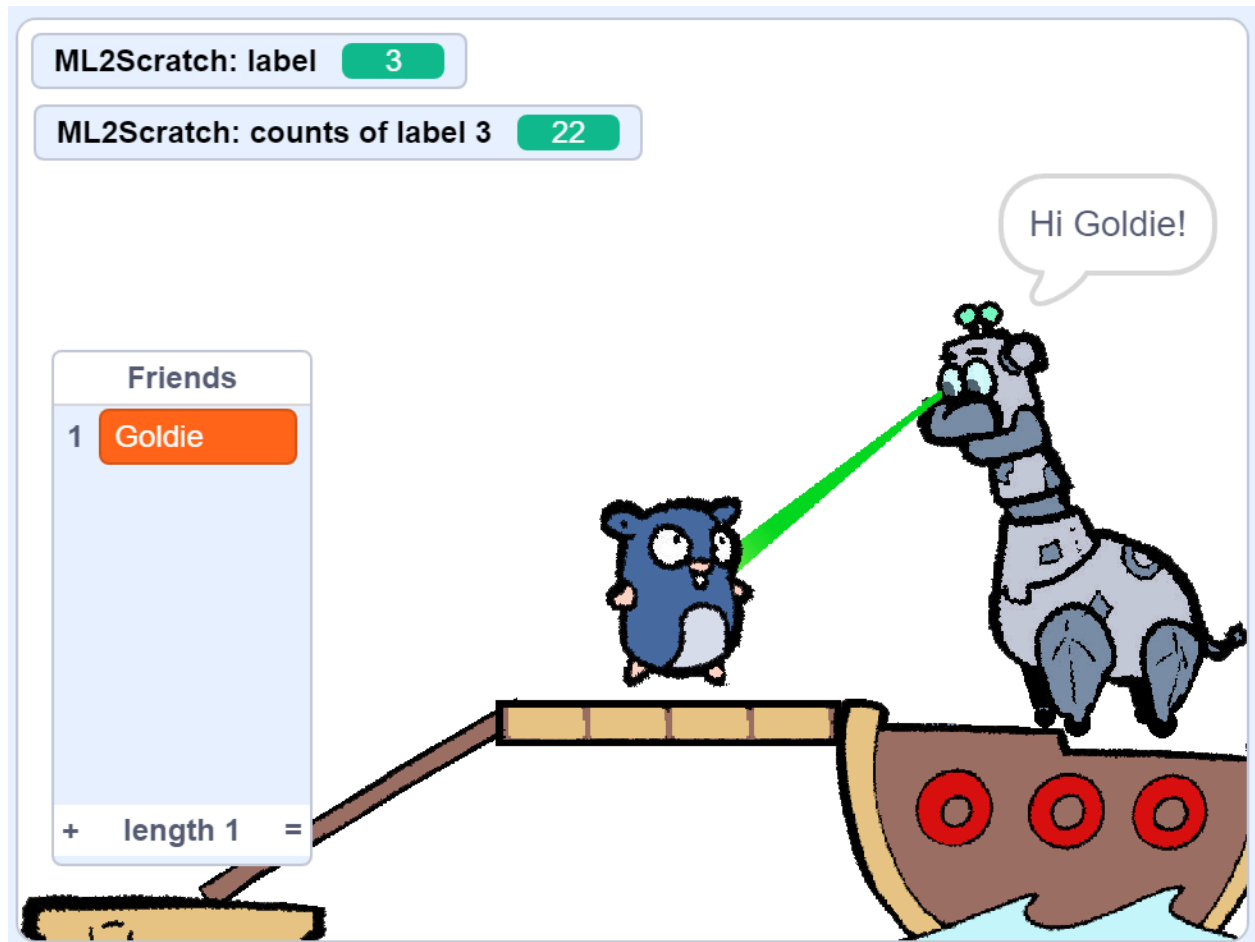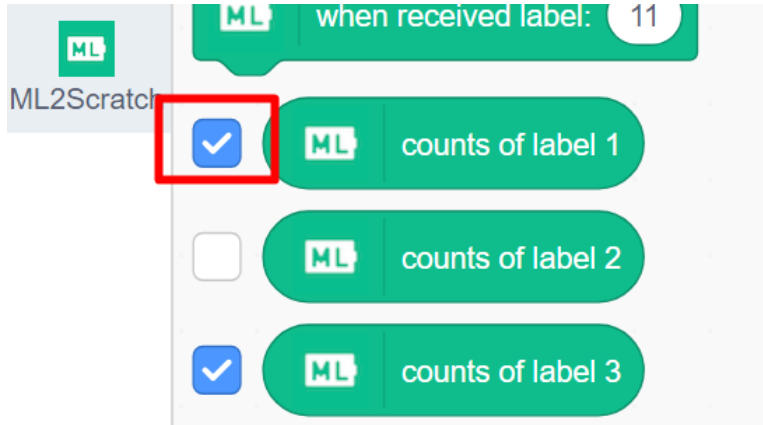
8. Goldie keeps running even when the book is not held up to the camera. We need to create training data so that the AI algorithm knows when there are no friends to scan.
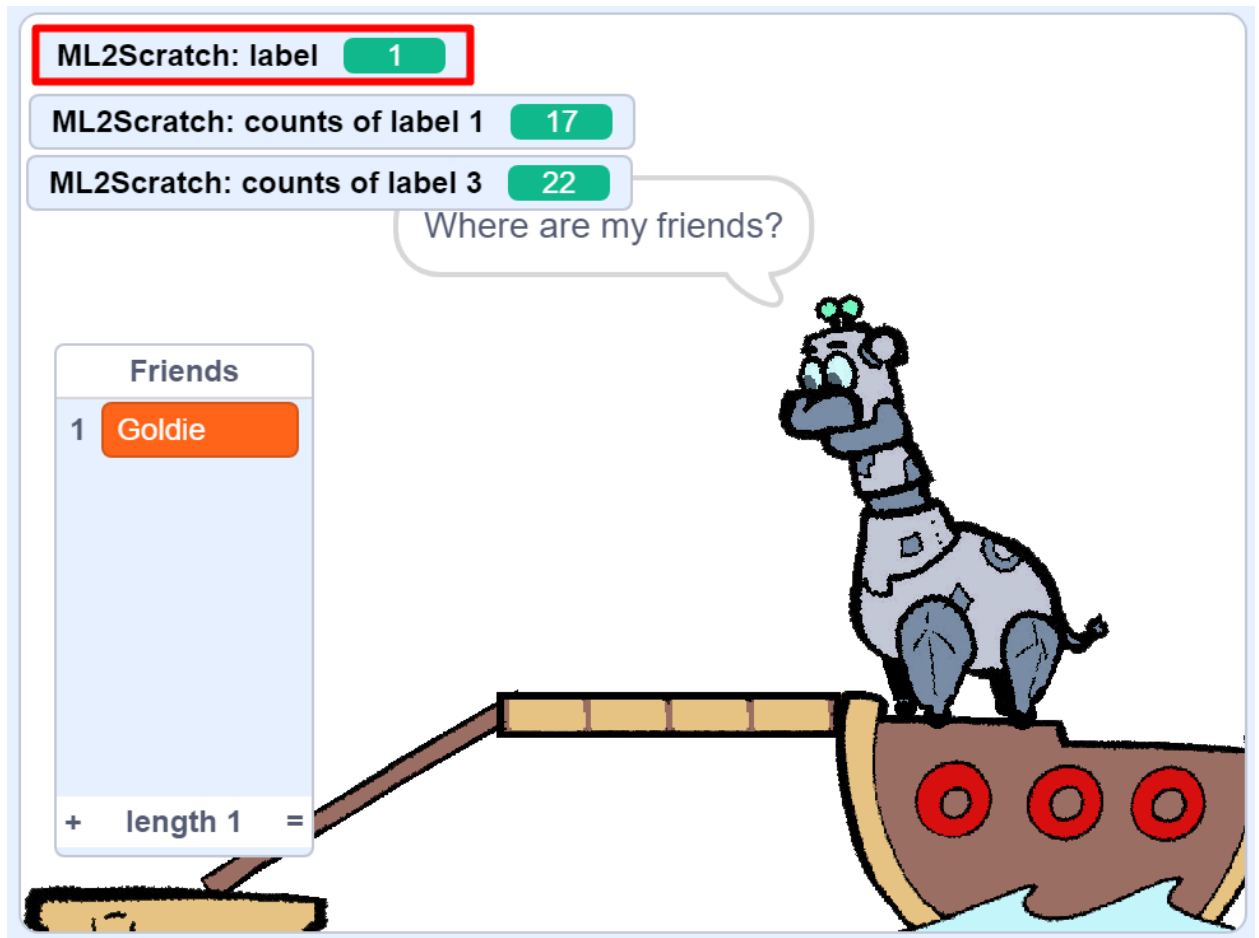
Find the "train label 1" block and drag it in.

9. You can check the "`counts of label 1`" box so that you know how many times you have taken image data.

10. Click on "`train label 1`" about 20 times without holding the book up. Try taking pictures while you are in front of the camera, and away from the camera, so the model gets more data.

Now the AI model is comparing your video to label 1 and label 3. When the book is not held up, the video is closer to label 1 so Goldie won't board the ship.
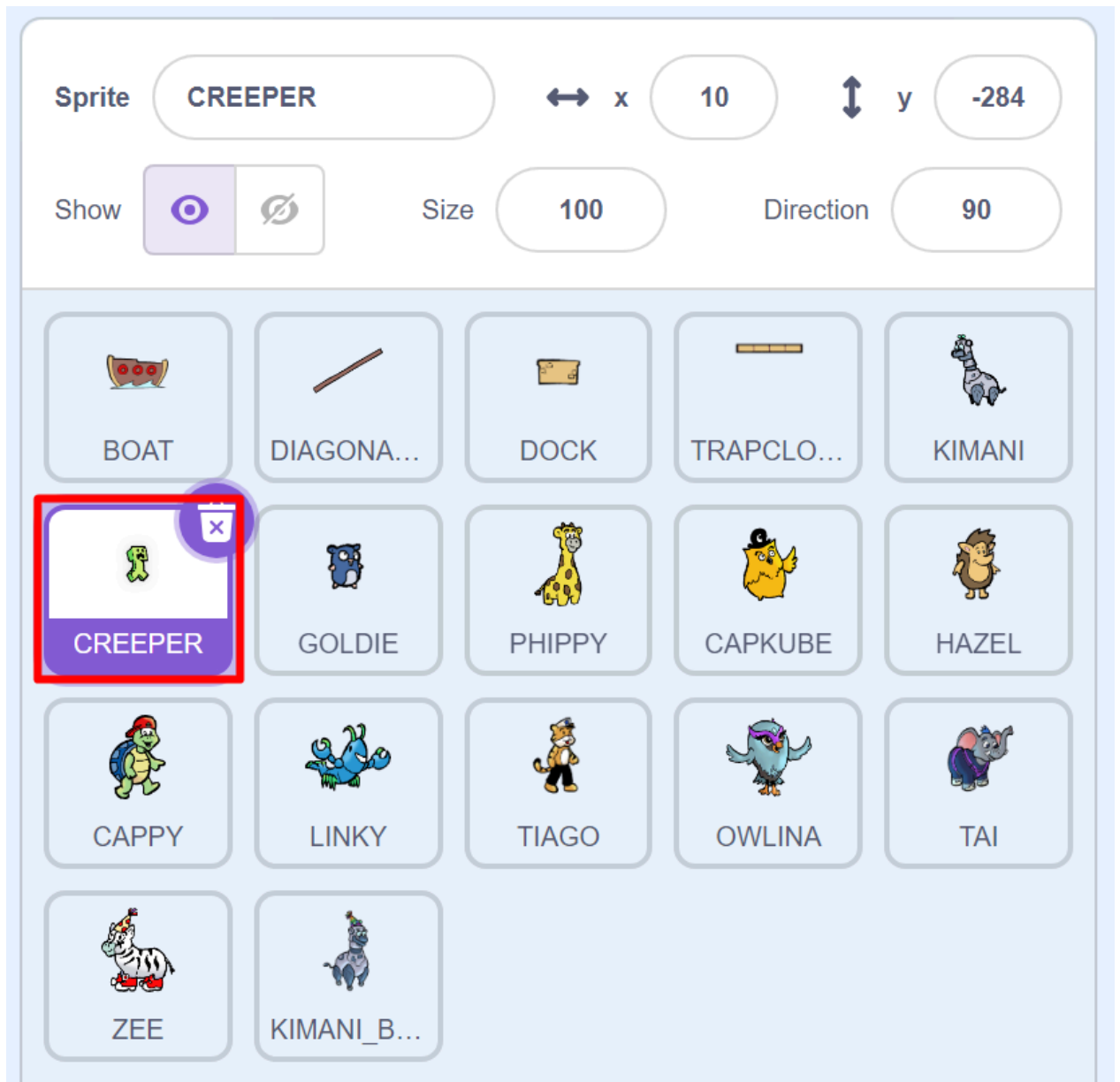
11. Try holding Goldie from the book up to the camera. Goldie will board the ship, but only while the book is held up.

12. Remember to save your work! Click on the "File" drop down. Then click "Save to your computer".
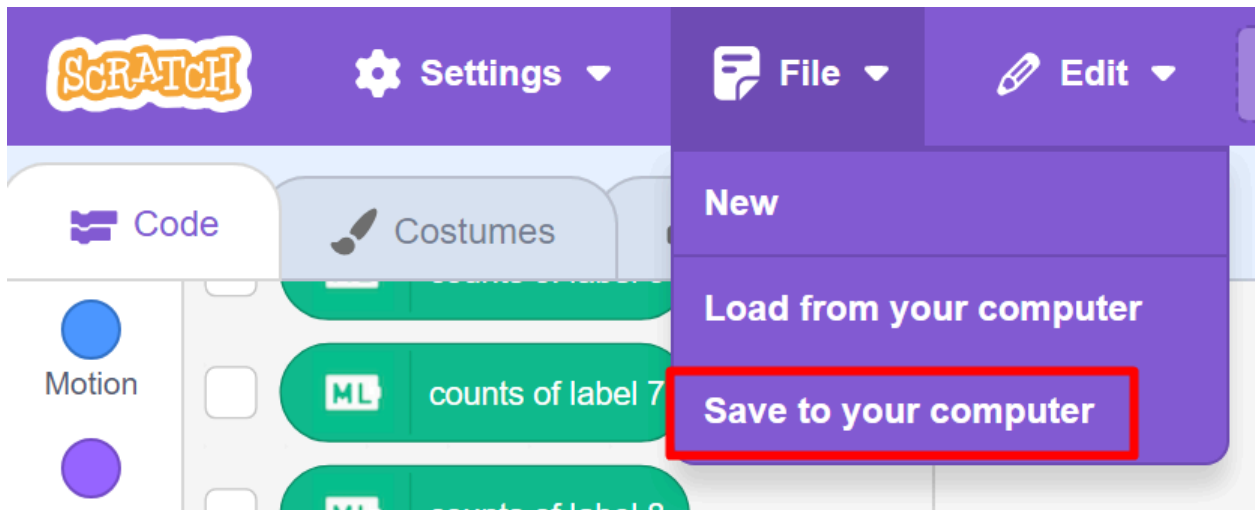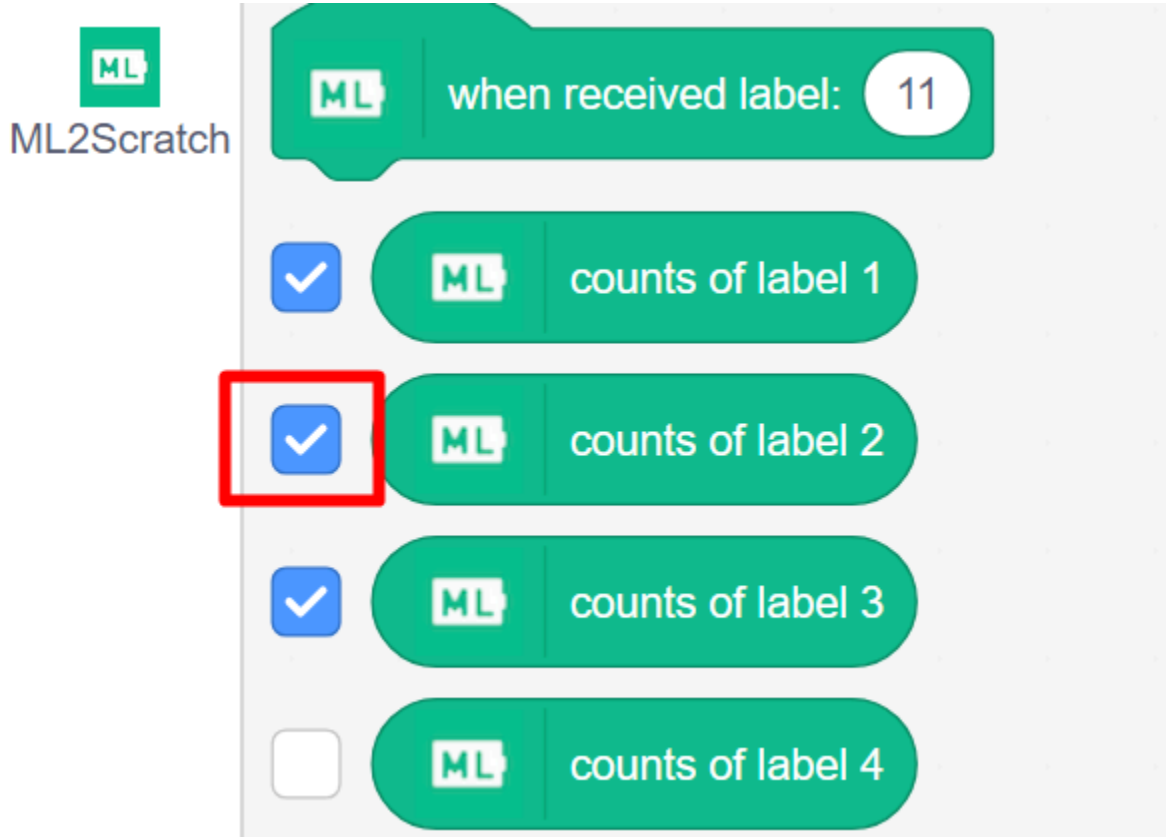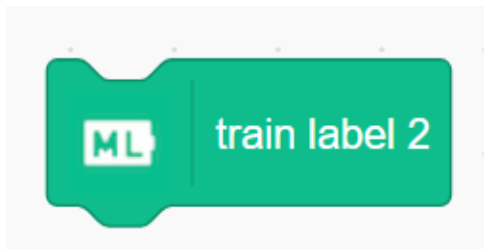
Part 2: Train Kimani to Scan the Creeper

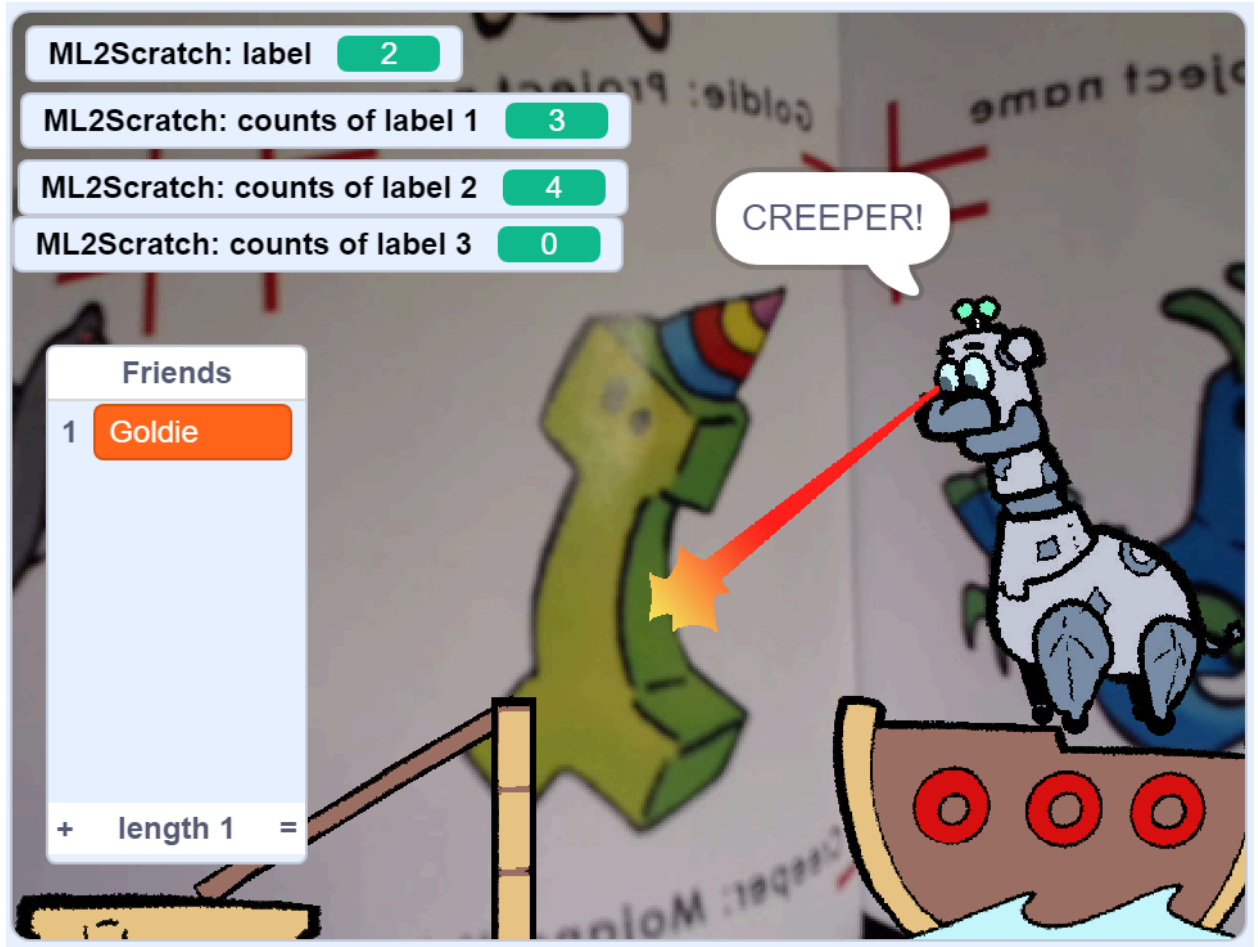1. Find the creeper and click on their sprite.

2. Check the "`counts of label 2`" box. The label, "`ML2Scratch: counts of label 2`" should appear in the top left corner of your game.
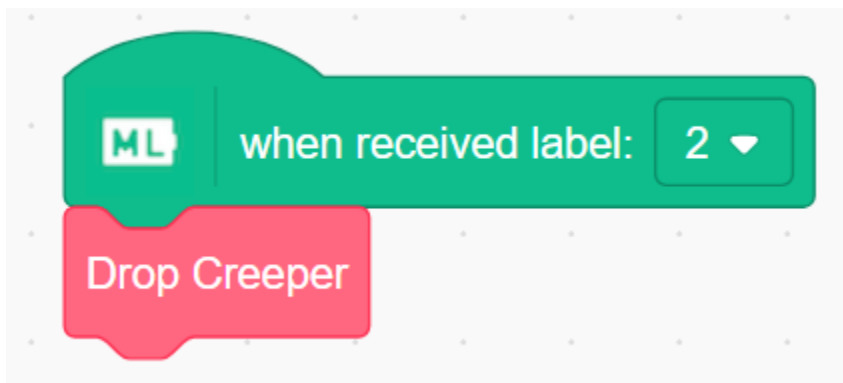

3. Find the "`train label 2`" block and drag it in.

4. Find the creeper on the characters page and hold it up to the camera. Click on "`train label 2`" about 20 times.
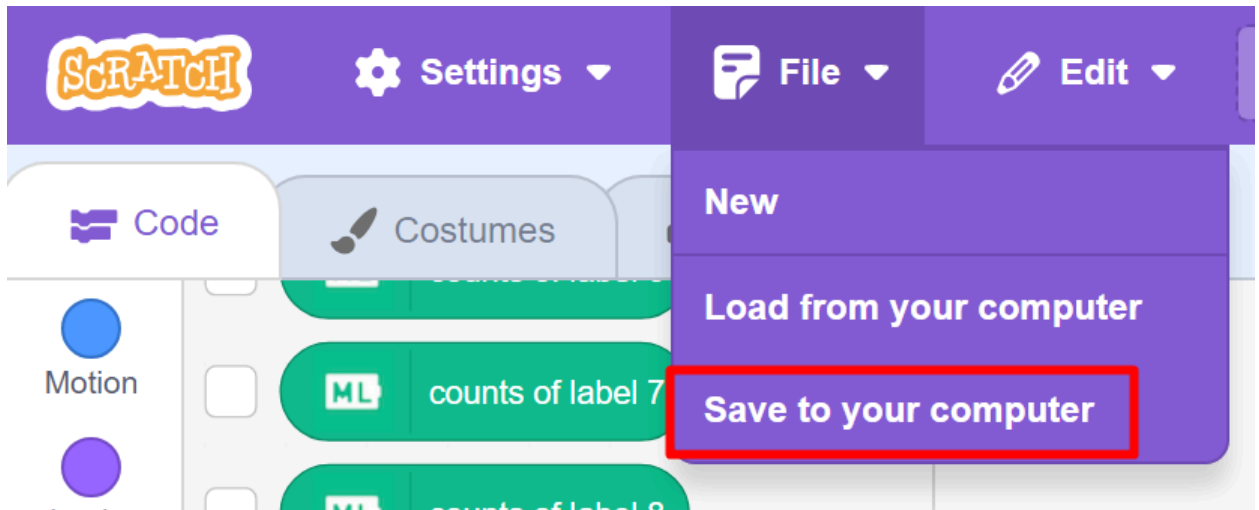
5. The creeper won't appear unless we tell it to. Set when received label to 2, and attach the "Drop Creeper" block.
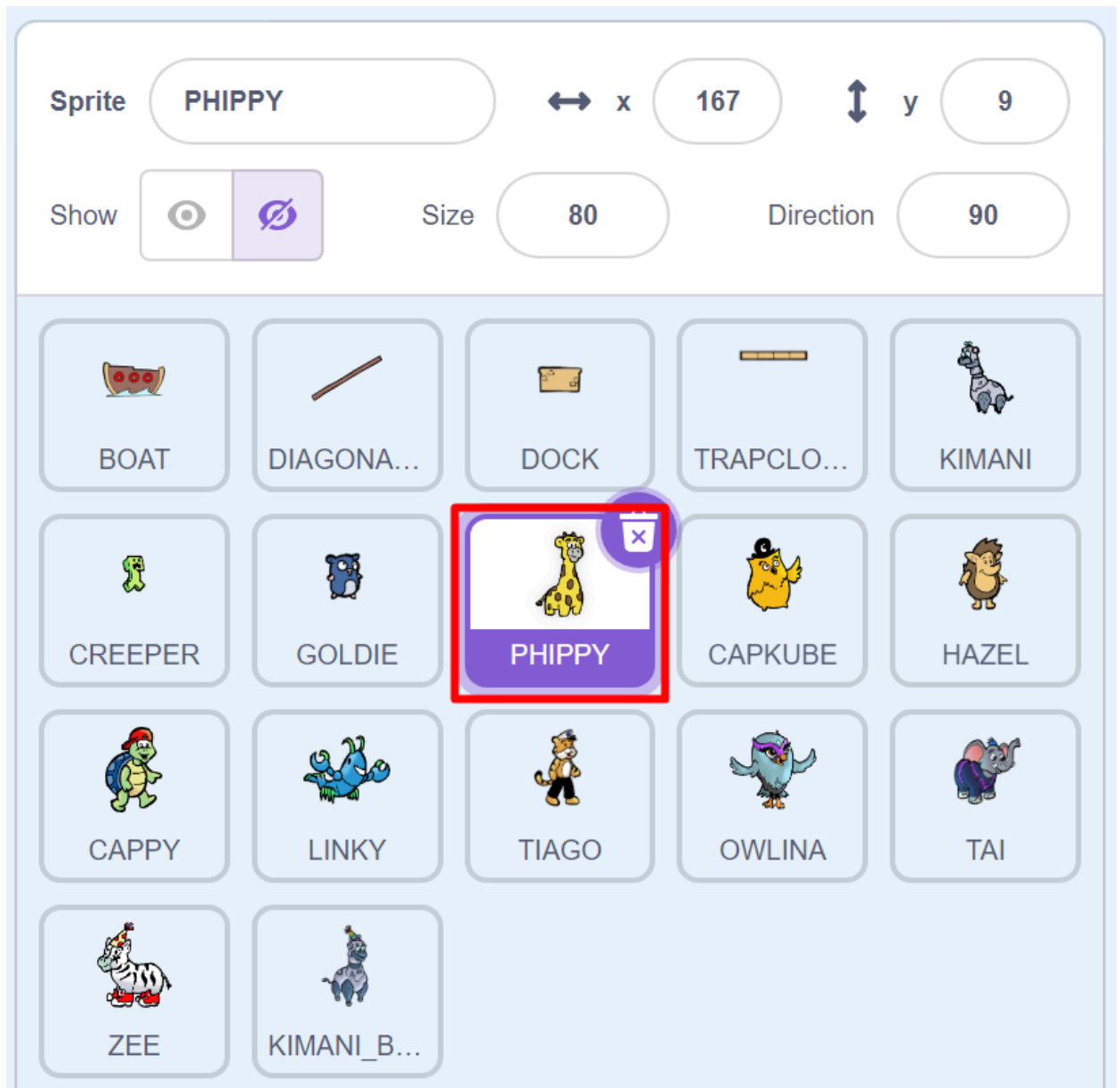

6. Hold up the creeper from the book again, and the creeper should gracefully fall into the water!
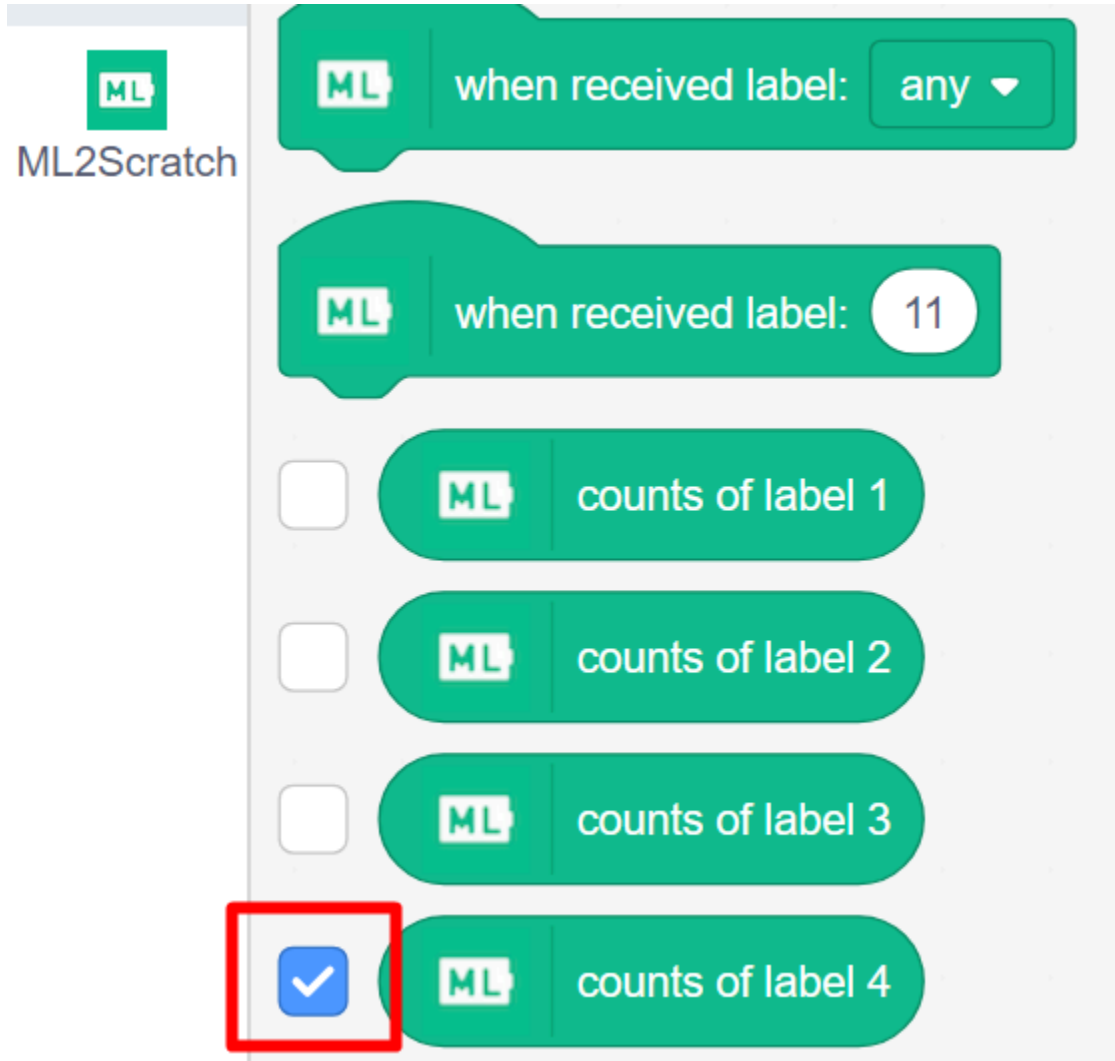
7. Save your work!

Part 3: Inviting Phippy to the Party

1. Let's invite Phippy next! Click on Phippy's sprite to get to her code.

2. Check "`counts of label 4`", and feel free to uncheck 1, 2, and 3 if you feel like they take too much space on screen.

ML2Scratch

| | when received label: | any ▼ |

| | when received label: | 11 |

☐ ML counts of label 1

☐ ML counts of label 2

☐ ML counts of label 3

☑ ML counts of label 4

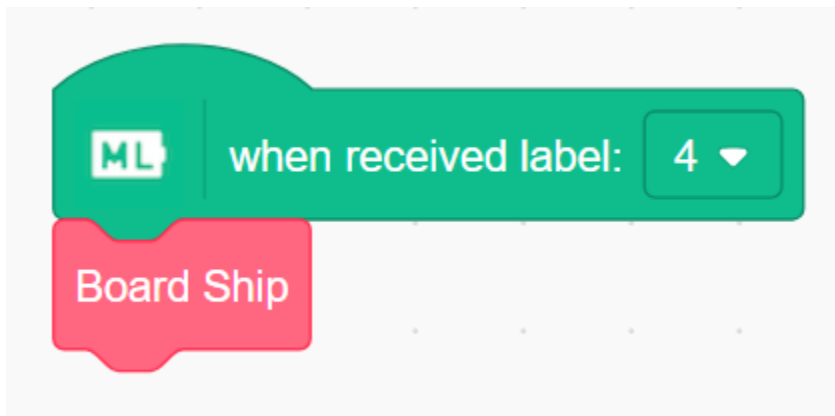3. Find "`train label`" with a dropdown and place it down. Then select 4 from the dropdown menu.
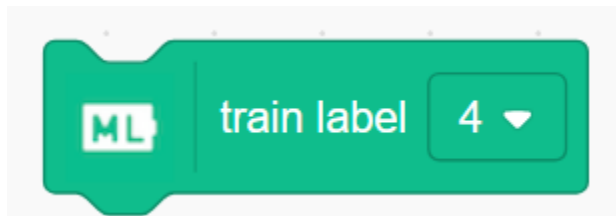

ML train label 4 ▼

4. Find Phippy in the book and train the AI model on her. Click "`train label 4`" about 20 times.
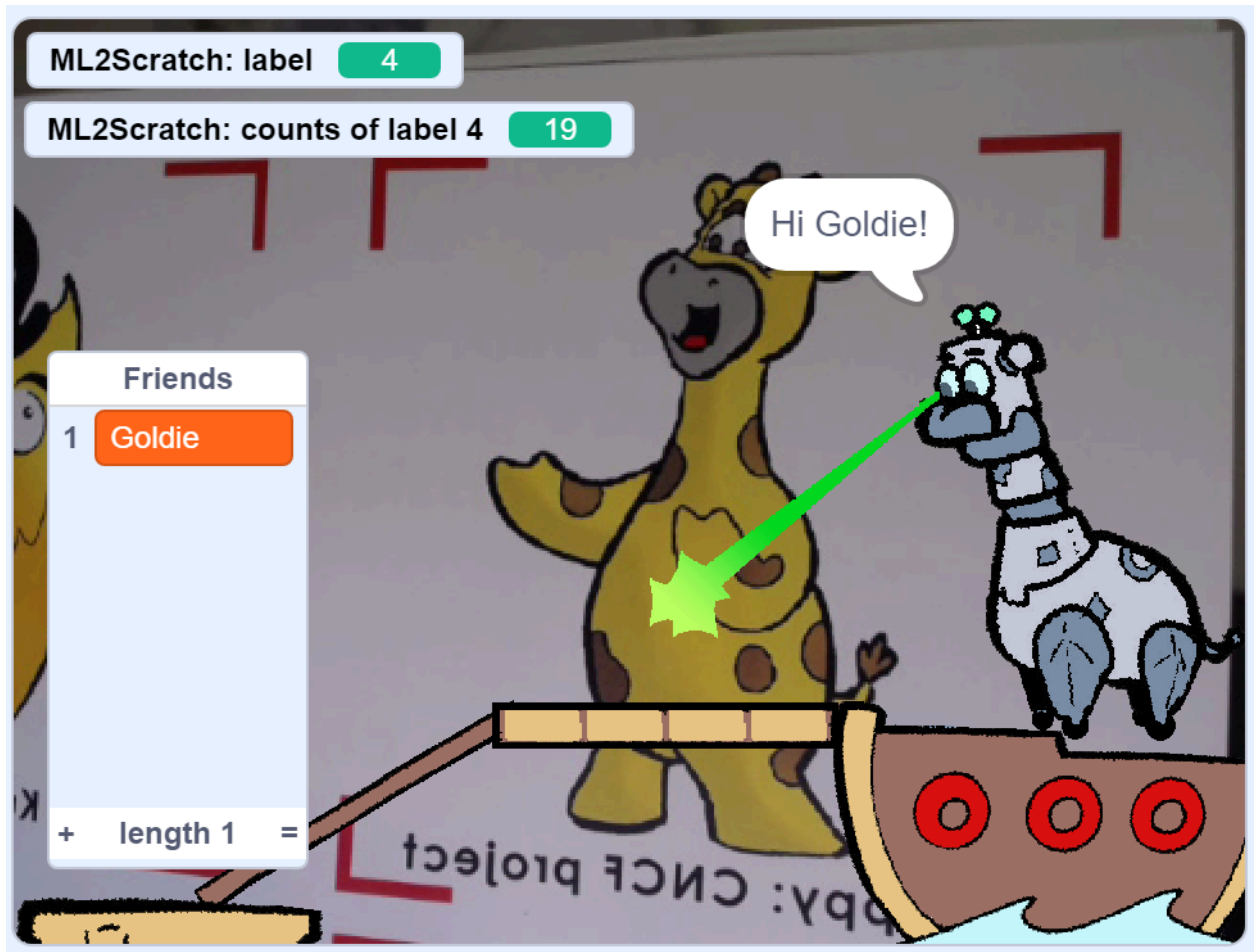
5. We need to tell Phippy to board the ship when label 4 is detected. Find these blocks and drag them in.

6. Hold up Phippy and watch her board the ship. But we still have a problem. Kimani is saying "Hi Goldie!" to Phippy and Phippy is not getting added to the Friends list.

7. Click on Kimani's sprite. We need to program how they react when they see Phippy board the ship.
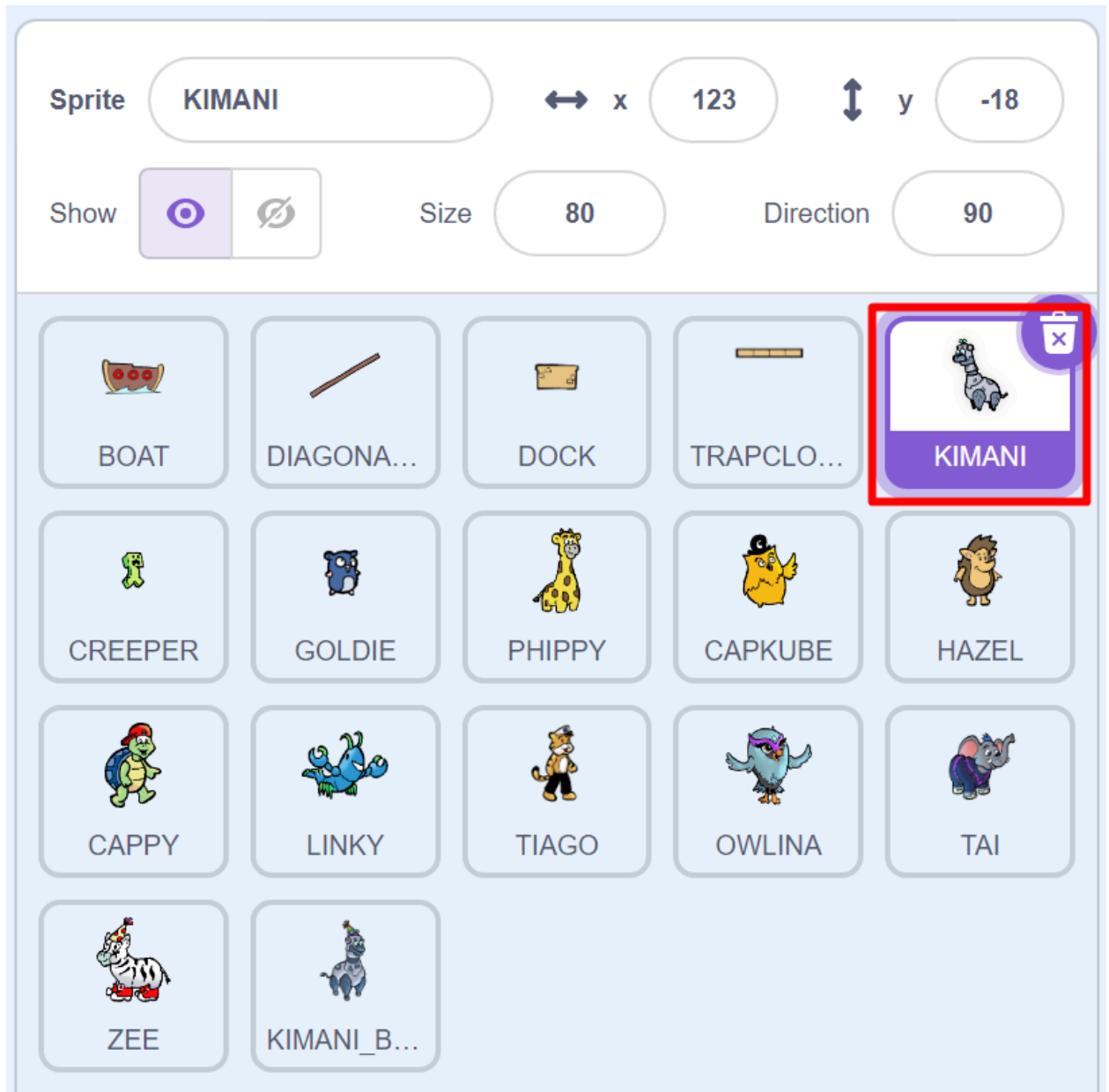
8. There is a lot of code blocks in Kimani's sprite but don't worry about it. We will put our code next to it. Feel free to hold up Phippy in between each step to see how the program has changed!

   Search under the `ML2Scratch` blocks and find "`when received label`" with a dropdown. Drag it over and choose 4 from the dropdown.

   ML when received label: 4 ▼
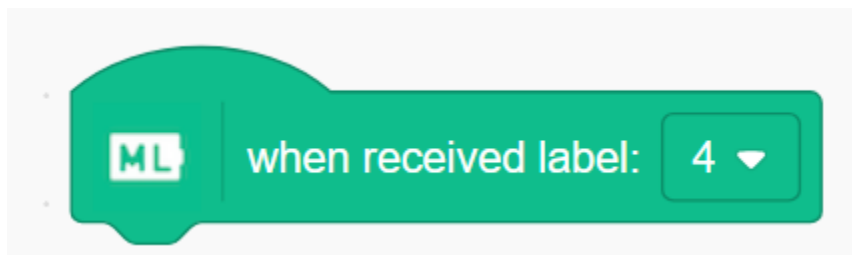
9. Find the "`say`" block and put it under the "`when received label`" block. Change the text so that Kimani greets Phippy. You can write whatever you want here.

   ML when received label: 4 ▼
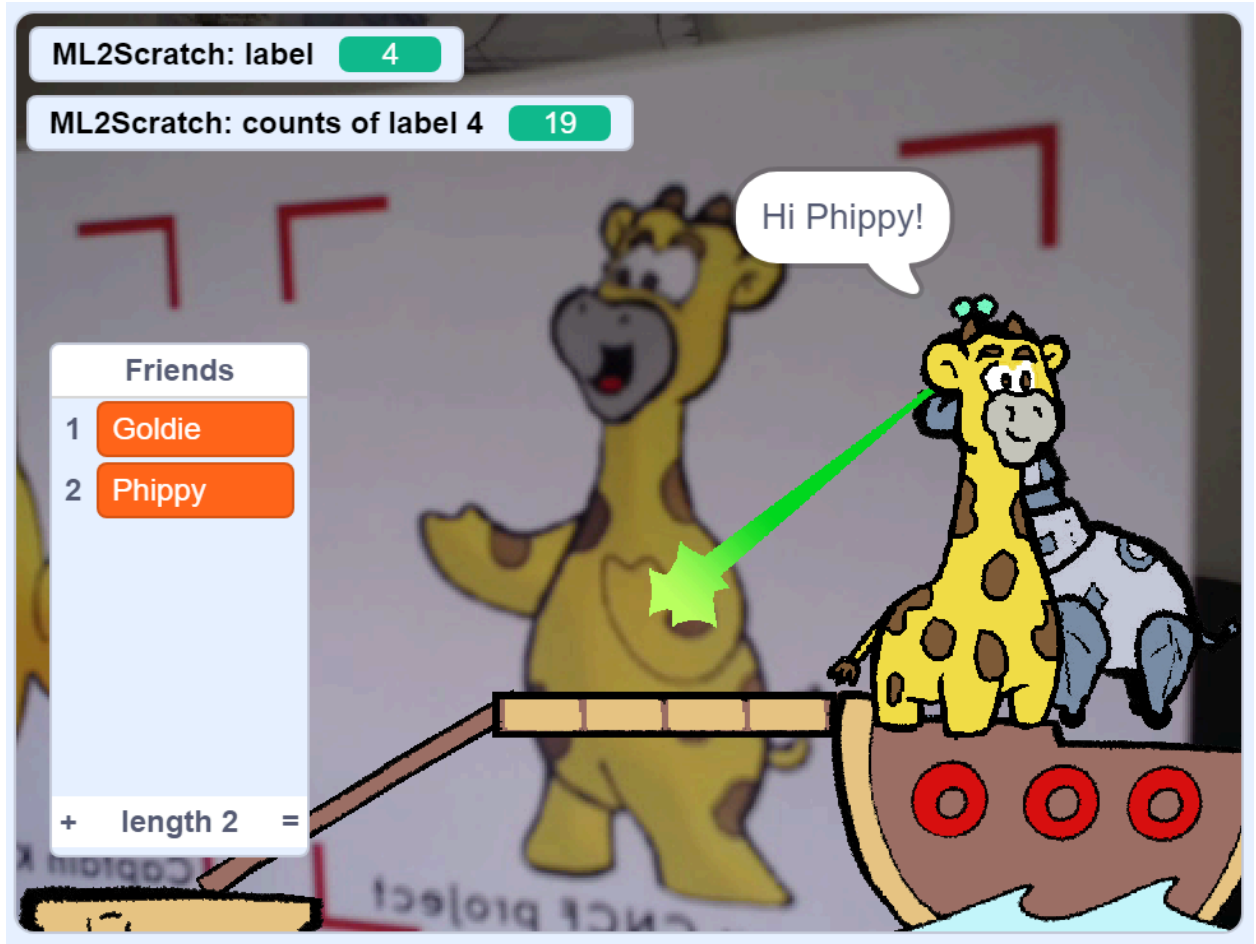   say Hi Phippy!
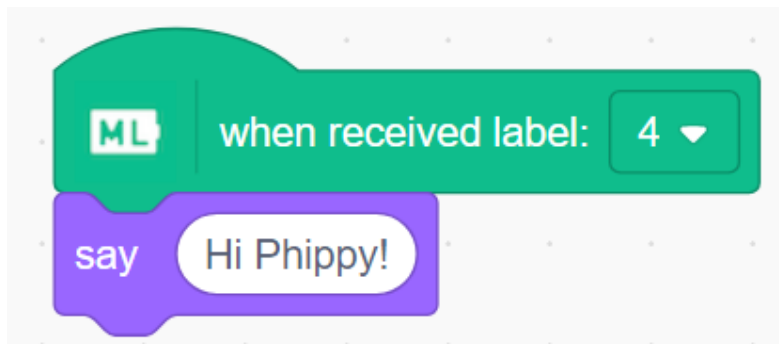
10. To add Phippy to the Friends list, we need to add an "`Invite Friend`" block. Type in "Phippy" for the friend you invite.
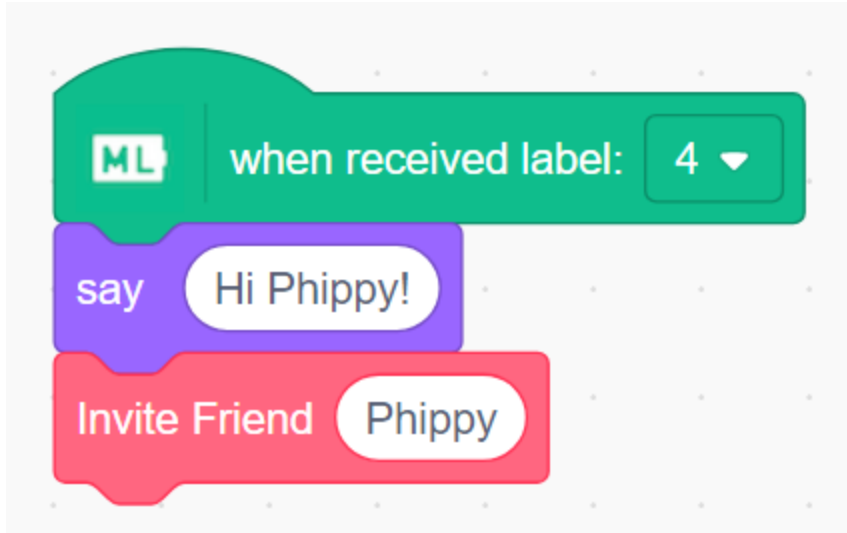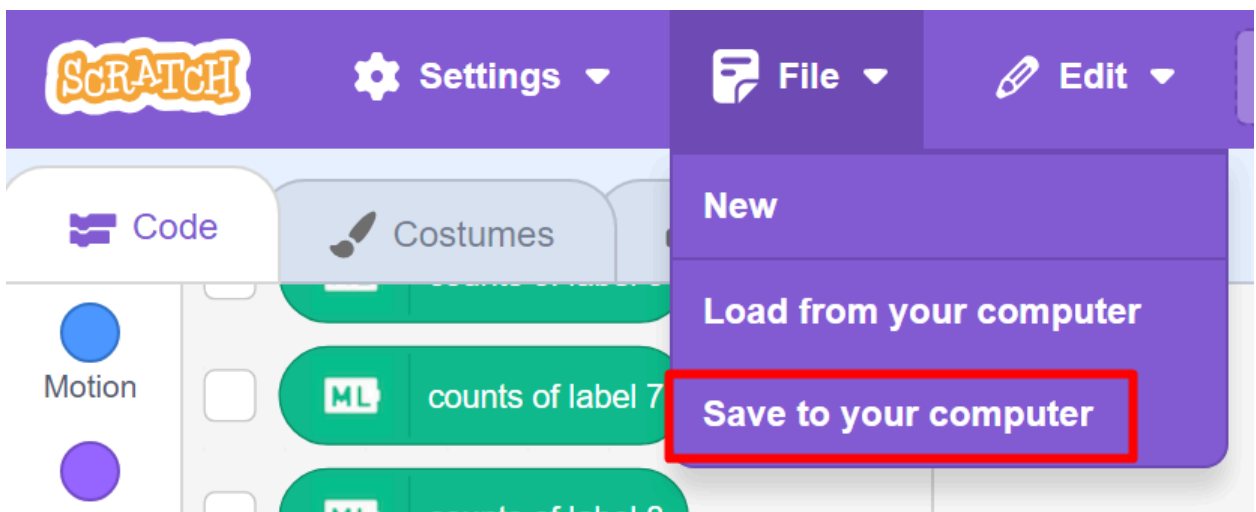
11. Kimani won't fire their scanning beam unless we tell them to change their costume. Find the "`switch costume to`" block and set it to "Kimani Scanning".
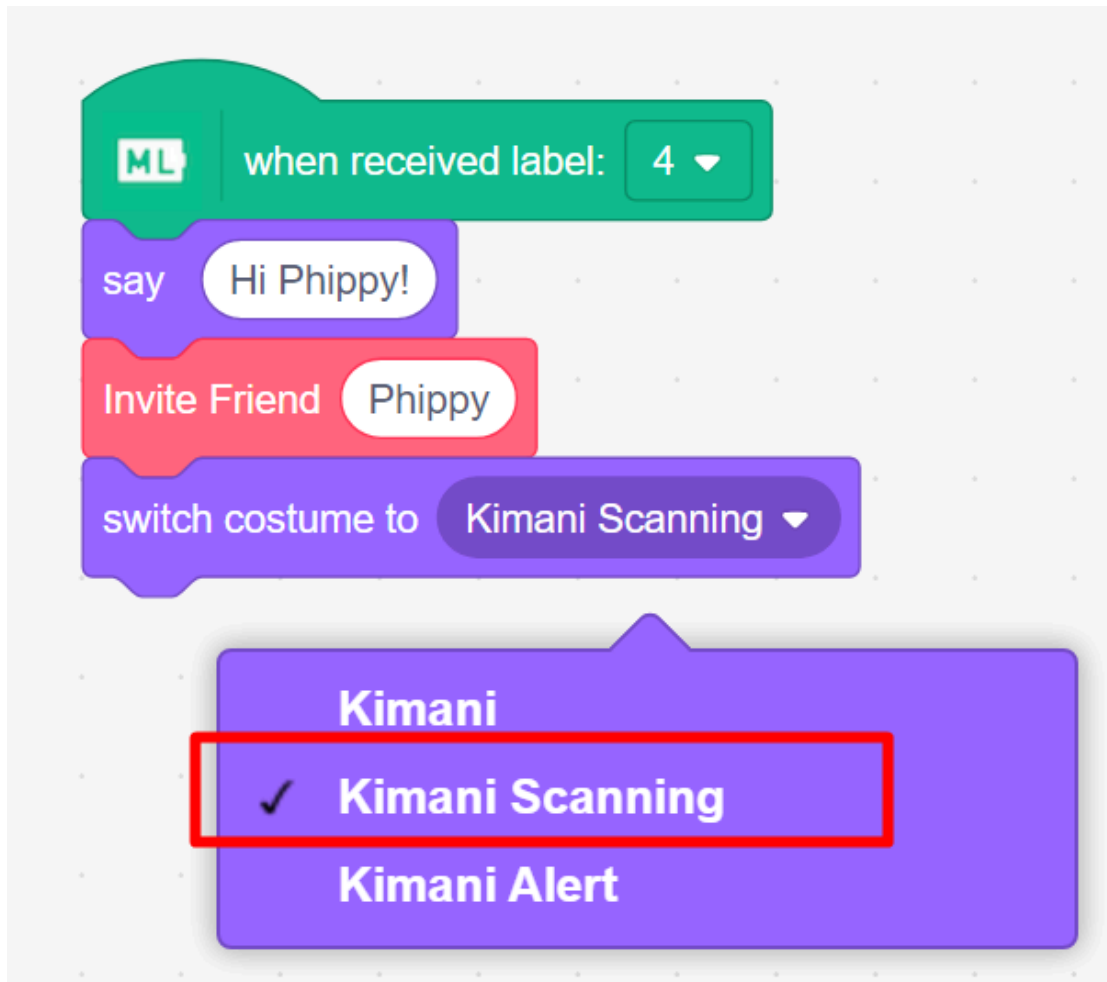
12. Try holding up Phippy again. Phippy should get added to the friends list!

13. Save your work!

Part 4: Inviting All the Friends

If you invite all the friends, there is a special surprise at the end!

To invite more friends to the party, repeat *Part 3* for each friend. Just make sure to use a unique label for each friend.
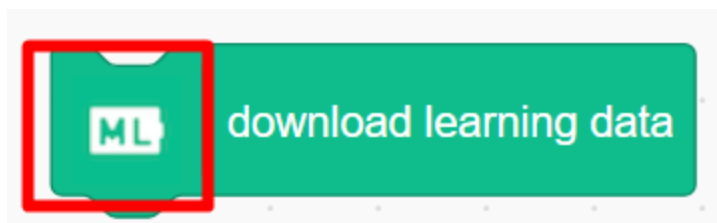
These are all the inviteable friends:
- Goldie
- Phippy
- Captain Kube
- Hazel
- Cappy
- Linky
- Tiago
- Goldie
- Owlina
- Tai

Remember to Save Your Work!

1. Save your Scratch blocks. Click on the "`File`" drop down. Then click "`Save to your computer`".
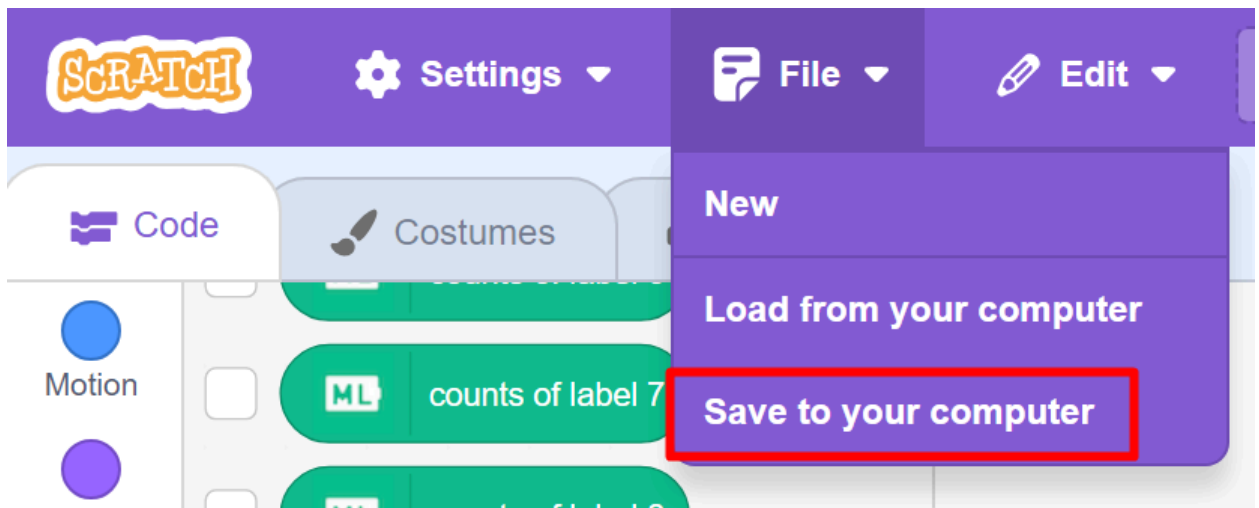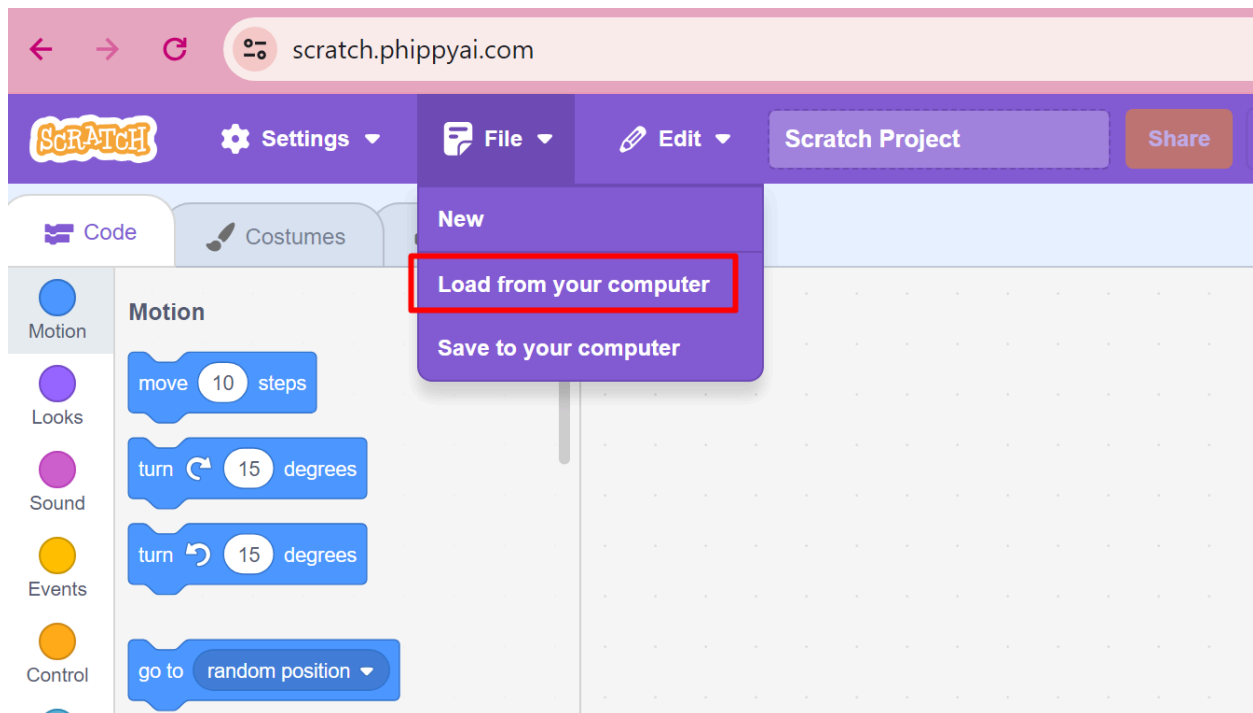

2. Save your AI/ML training data. Find the "download learning data" block. Click on it and it will download a json file.
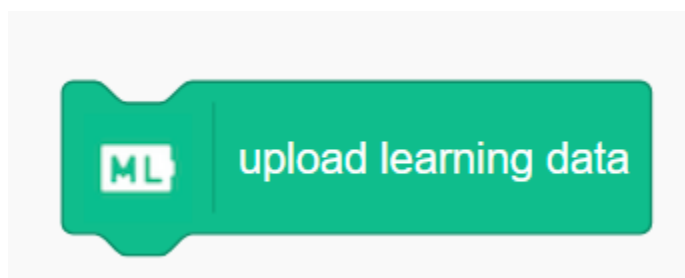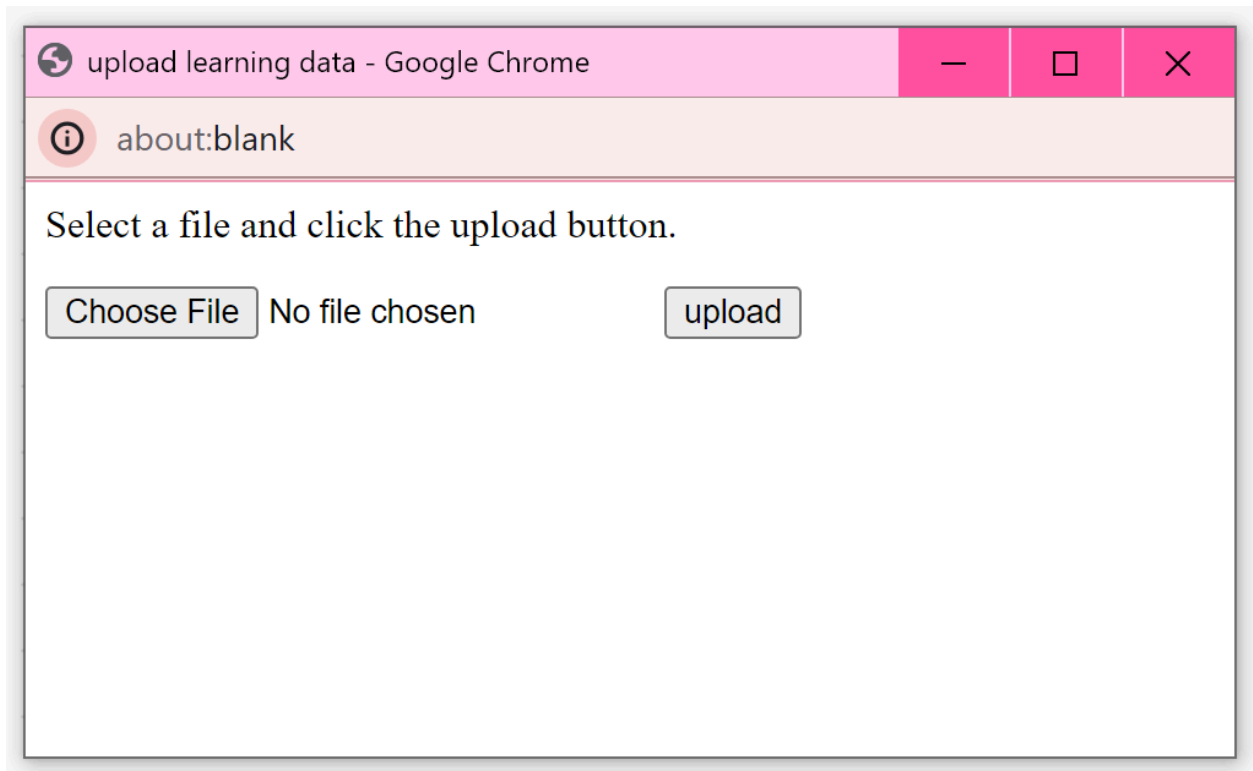
How to Load Your Work

1. Load your Scratch blocks. Click "Load from your computer" and choose the file you saved last time. By default it is called `phippy-ai-template.sb3`.

2. Upload your AI/ML training data. Find the "`upload learning data`" block and click on it.

3. Click "`Choose File`" and find your json file with all your learning data. Then click "`upload`".

upload learning data - Google Chrome

about:blank

Select a file and click the upload button.

Choose File | No file chosen   upload

Once all the friends are at Zee's birthday party, you have completed the workshop. Congratulations!