



/ AUSTRALIA
POWERED BY
TELSTRA FOUNDATION

Make it rain!



The drought is ending at the farm!
Collect rain to fill your water tank.

INTRODUCTION

What you will make

You will make a game that controls a bucket to catch falling rain for your farm.



What you will learn

- You'll learn how to add and change costumes.
- You'll learn how to create and use variable messages.
- You'll learn how to create a scoring system.

Code Club Australia recognises the Traditional Custodians of the land across Australia and their continuing connection to land, cultures, and communities. Australia's traditional owners are the world's first innovators.

What you will need

HARDWARE

A computer capable of running
Scratch 3

SOFTWARE

Scratch 3:
either online
<http://rpf.io/scratchon>
or offline
<http://rpf.io/scratchoff>

DOWNLOADS

Offline starter project
bit.ly/CCArain

Additional notes for educators

Here is a link to the completed project
<https://scratch.mit.edu/projects/409272400/>

1. MAKE THE BUCKET MOVE

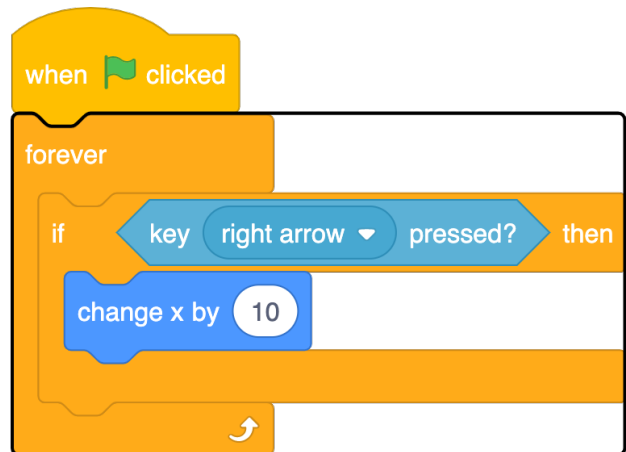
We need to set up our bucket to move left and right along the x axis.



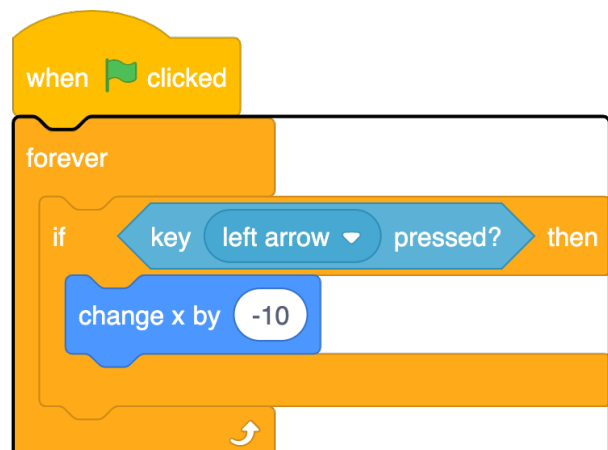
- Open the starter project here bit.ly/CCArain
- Be sure to select the **bucket** sprite.



- First, we want to control the **movement** of the bucket.
- Add this code to control right movement throughout the entire game.

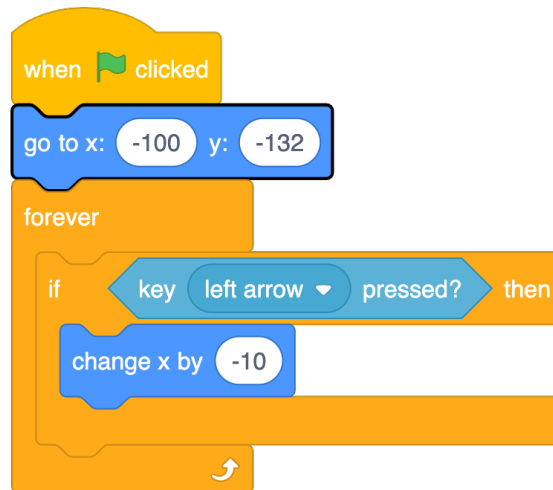


- Next, we want to program the left arrow to move the bucket left.
- Add this code.
- Hint: You can also duplicate the code by right clicking what you've already made and changing the **sensing** and **motion** blocks.





- Finally, when you click the flag you want the bucket to start in the same spot every time.
- Add this code.

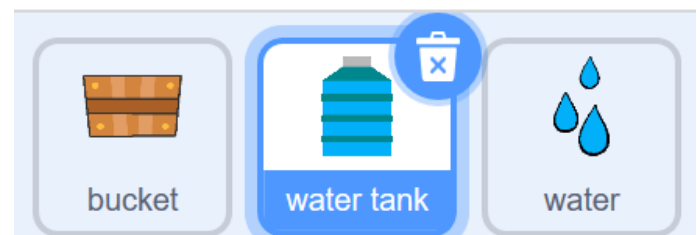


2. BROADCAST AND RECEIVE MESSAGES

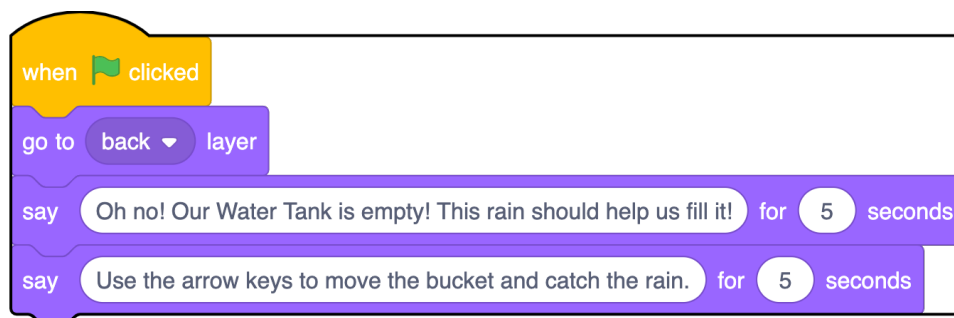
The tank needs to broadcast a message to the rain. Let's set up the tank.



- First, select the **water tank** sprite.

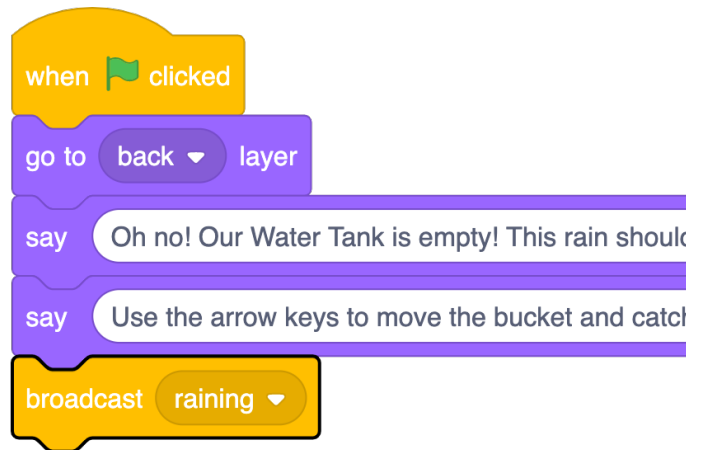


- The water tank will display instructions to the player on how to play the game.
- Add this code. Don't forget to change the text.
- You can simplify the text instructions if you to.





- Now we need to add a **broadcast** block and a new **message** called raining.
- Change the message by clicking the **drop down menu**, and then writing a new message.
- Call the new message **raining**.
- We'll use the message later to tell our rain drops to fall.

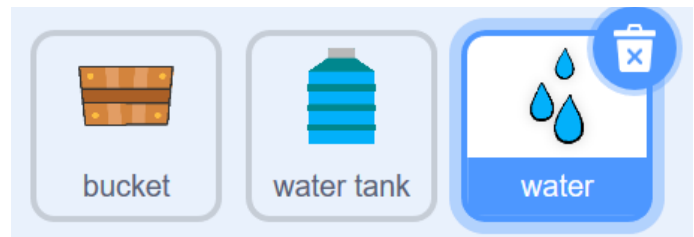


3. MAKE IT RAIN!

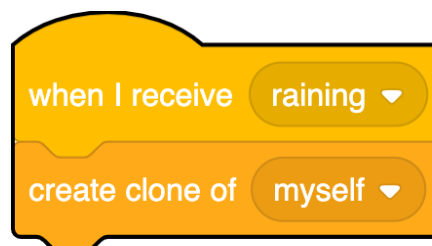
Now, we can make the rain fall from the sky (if only it was that easy!)



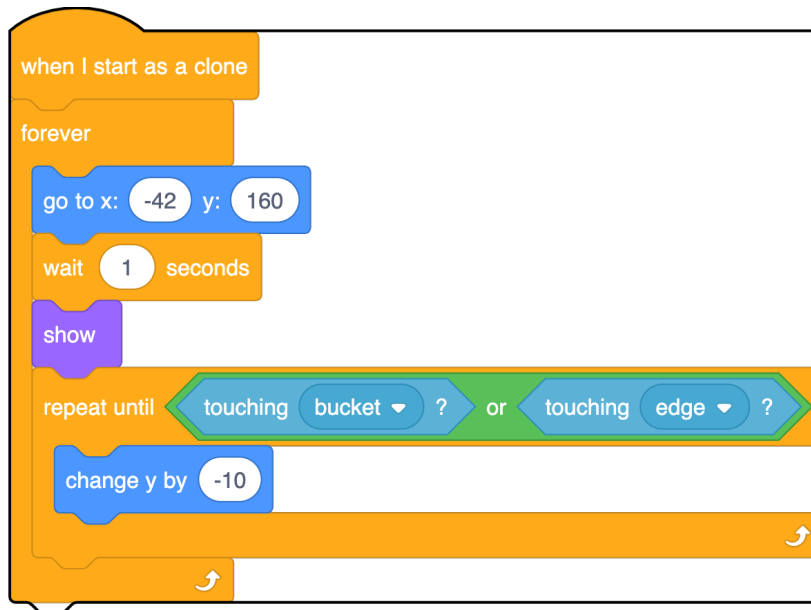
- First, select the **water sprite**.



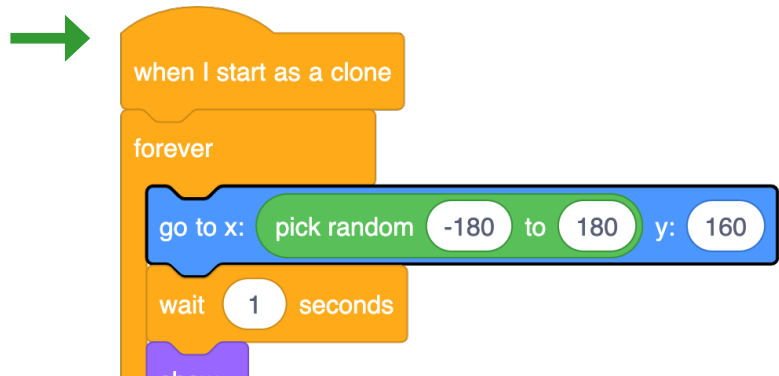
- Next, we need to create **clones** of our water sprite.
- When the **water sprite** receives the raining **broadcast** message it creates a **clone** of itself.



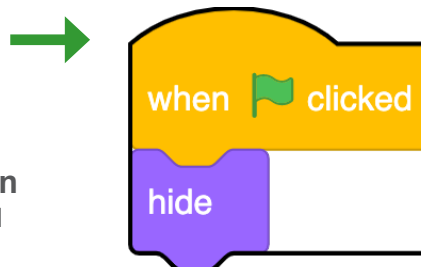
- On the water sprite, add this new chain of code. This will make the clones continually fall from the sky like rain. Then they'll stop when they reach the bucket or the edge of the screen.



- The rain only falls from one spot!
- Add this code.
- This will make the rain appear at the top on the same spot on the **y axis**, but at a different random spot on the **x axis**.



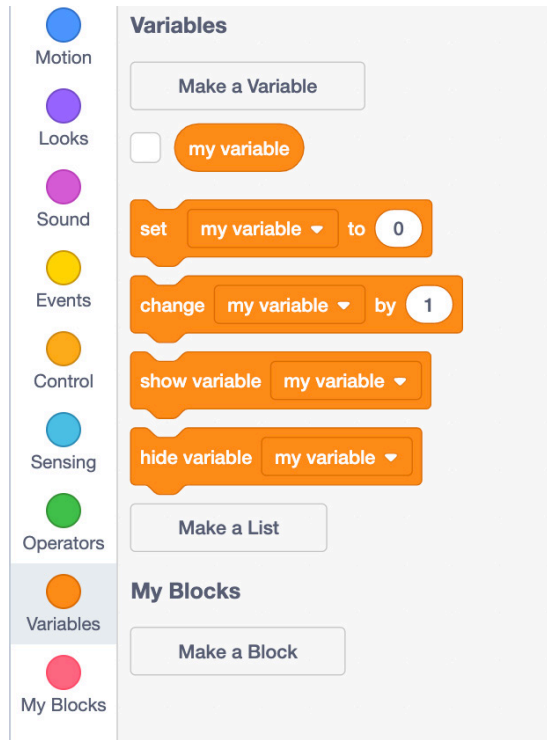
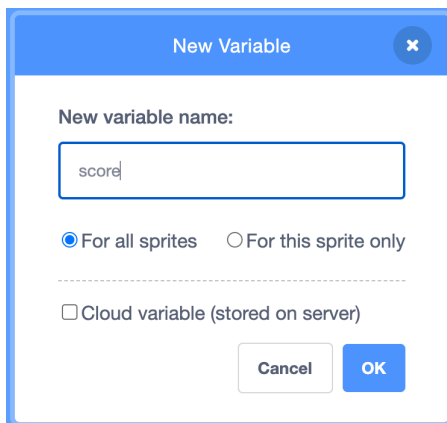
- Your original water sprite doesn't disappear!
- Add this code
- When you **click on the green flag** the original water sprite will **hide** so only clones appear.



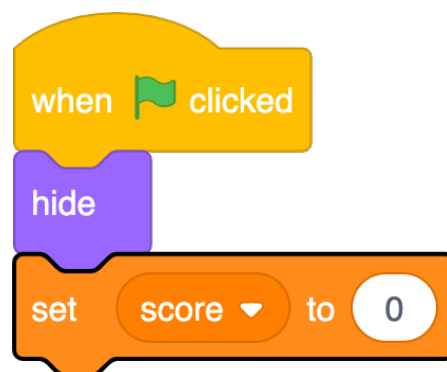
4. SCORING

Add a score to your game so we can track how much rain we've collected.

- To set up scoring we need to create a **variable** called **score** to store the value.
- Click **Make a Variable**.
- Call your variable **score**.

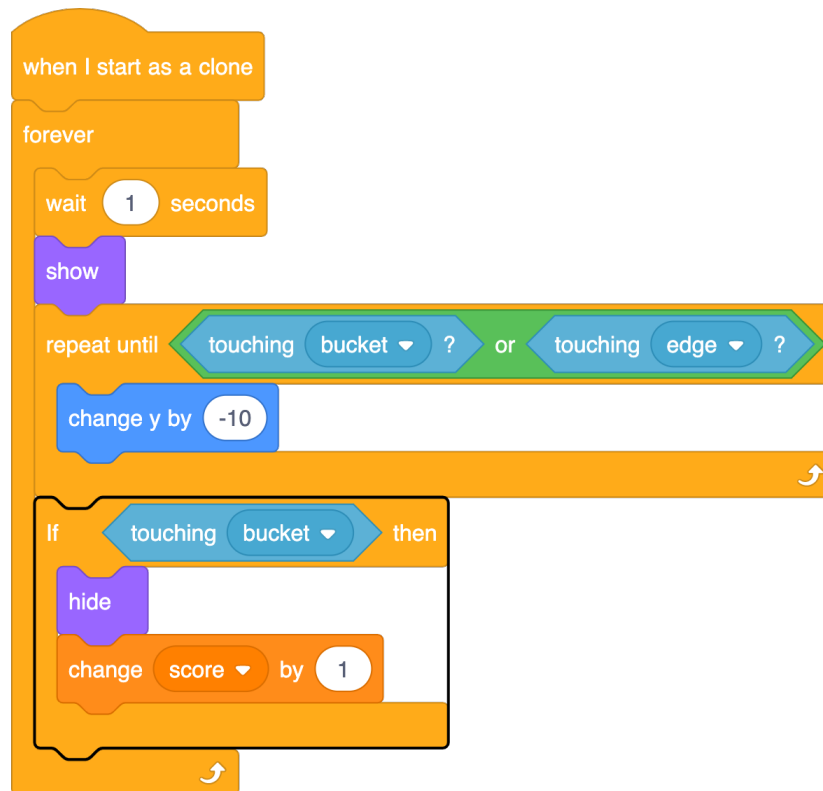


- We want our game to start with a **score of 0**.
- Add this block.





- The **score** should increase when the raindrop **touches** the bucket.

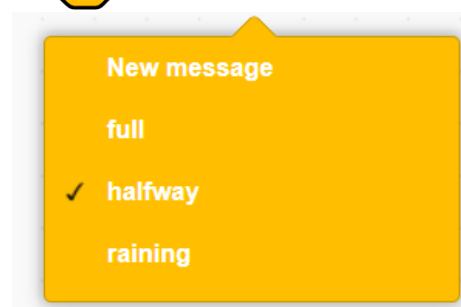
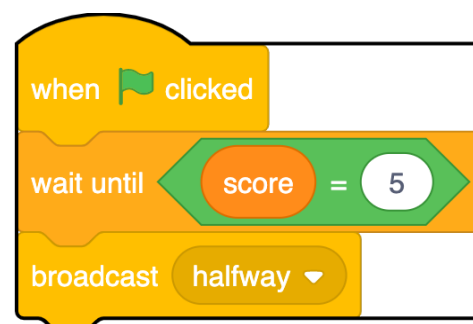


5. DO WE HAVE ENOUGH WATER?

The player will win when we have enough water in the tank.

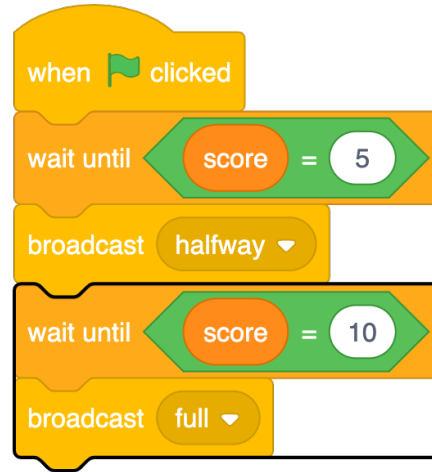


- First, we need to set a condition to wait until the **score is equal to 5**.
- This is indicated by the **broadcast message** 'halfway'.
- Add the new message - 'halfway'.
- Select the 'halfway' message in the dropdown menu.





- Next, we need to set a condition for when the tank water is full.
- This will happen when 10 water droplets have been caught.
- Add a new message “full”.

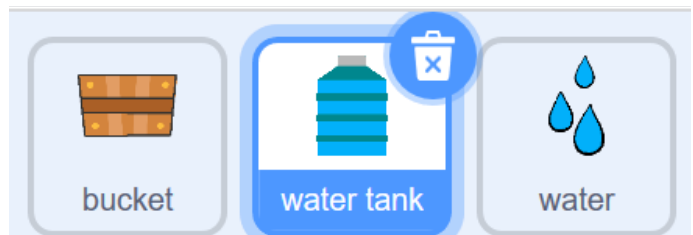


6. ANIMATE THE WATER RISING

Our tank should change costume as it's filling with water.



- First, select the watertank sprite.



- When the tank receives the halfway message, it should change the **costume**.

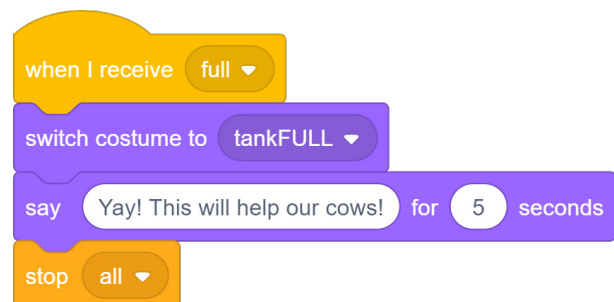


- Add these blocks.

- Remember to change the seconds.



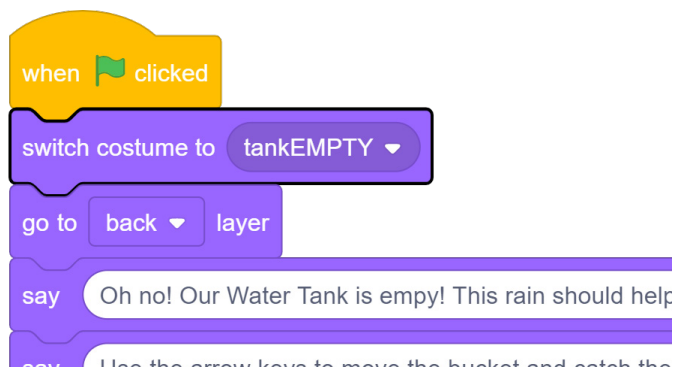
- When the tank receives the full message, it should change the **costume** and then **stop**.



- Add this chain of code.



- Our tank always starts full! Let's add this block to reset our costume.
- Test your code!



CONGRATULATIONS

You've finished this project! Try one of the challenges below, or maybe add your own?

Challenges:

End screen celebration

Can you let the player know that they've finished the game?

(Hint: The player will finish the game when they reach the maximum score)

Mid way success

We celebrate at halfway and when the tank is full. There are also quarter and three-quarter full marks on the tank. Can you add these markers to our code?

Advanced Challenge: Water trough

Currently, the tank fills after the score reaches 10 and the stop all block ends the game. Can you create a new sprite for a water trough that fills after the tank, or a cow drinking the water?

Find out more...

Water is the most valuable resource that we have!

Australian's are the highest consumers of water, despite living on the driest continent! Each of us uses 100,000 litres of water a year, not including the water that is used to grow our food products.

Head to our blog post for more information on reducing your water usage and other fun agriculture information - medium.com/code-club-australia

And don't miss the other coding resources available on our website. There are videos, interview and more lessons all about Agriculture and other topics!

codeclubau.org/projects/topics/agriculture/