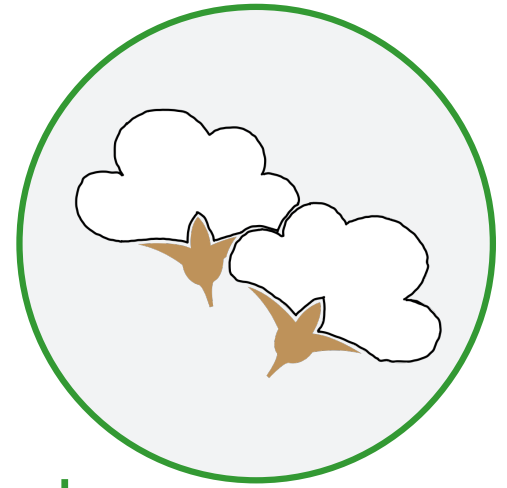




Bless your cotton socks!

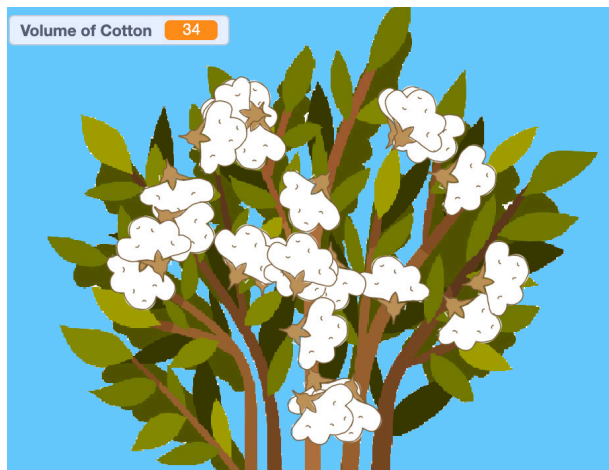


Cotton is one of the largest agricultural industries in Australia. Cotton farms produce enough cotton to clothe 500 million people.

INTRODUCTION

What you will make

You will make a game where you grow and harvest cotton in Scratch.



What you will learn

- You'll learn how to add code to detect the direction of the mouse.
- You'll learn how to broadcast a message.
- You'll learn how to run conditional branching.

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/CCAcotton

Additional notes for educators

Here is a link to the completed project
<https://scratch.mit.edu/projects/403611491/>

1. COTTON FLOWERS

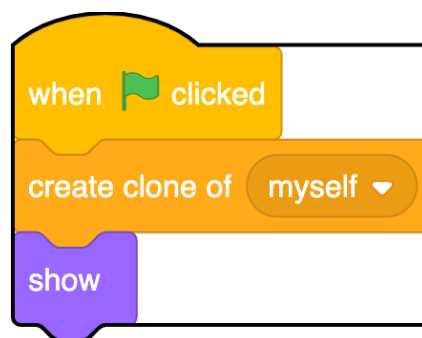
If we want to be able to harvest the cotton, first we need a cotton flower to grow.



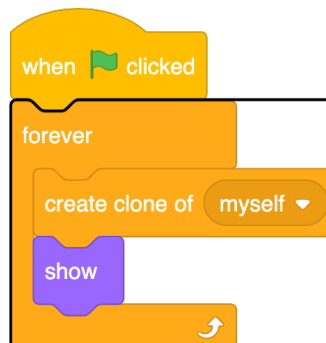
- Open the Starter code project: bit.ly/CCAacotton
- Select the **cottonflower** sprite.



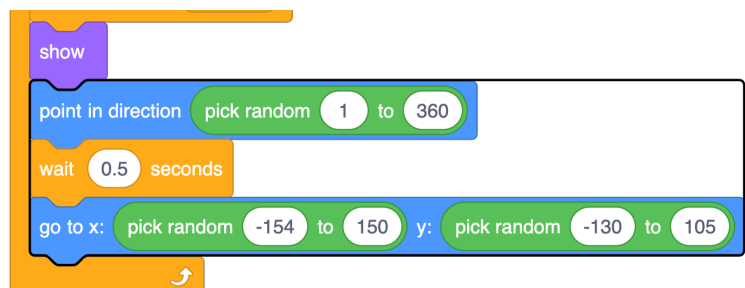
- First, we want to make the **cottonflower** sprite clone itself so we can produce more cotton.



- Next, we want the sprite to make more clones forever.
- Add the **forever** loop.



- Finally, we want the sprite to grow **randomly** around the bush and **point in random directions**.
- The **x and y coordinates** indicate the area within the bush only. We don't want our cotton appearing in mid-air.
- Add this code. Don't forget to test it.



2. WATER YOUR PLANT

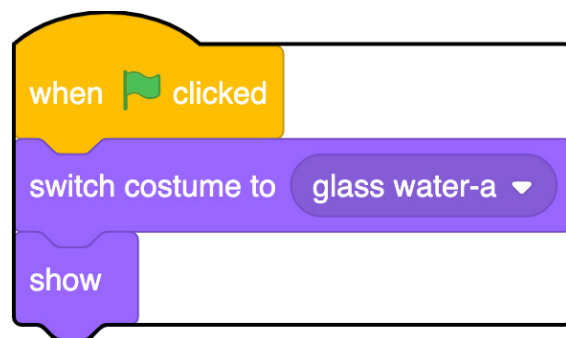
The cotton plant needs water to grow the cotton boll. Let's water the cotton plant.

- We're going to use **costumes** to animate our glass of water. You can see the different costumes in the **costume tab**.



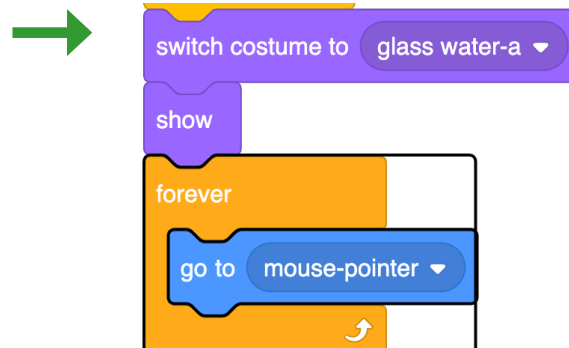
- First, click the **Glass Water** sprite.

- Add this code to the **Glass Water** sprite.



- Test your code.

- Make the **Glass Water** sprite follow the mouse pointer.

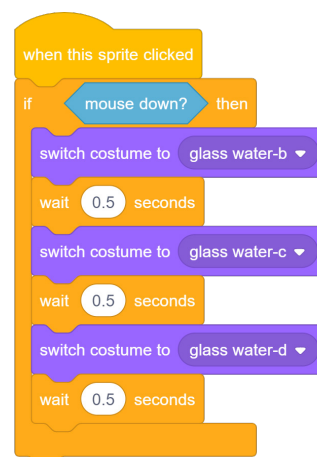


- Next, we want to water the cotton with the glass of water.

- To do this we will use multiple **costumes** to animate the glass of water.

- Add these blocks.

- Make sure to change the costume as you go.

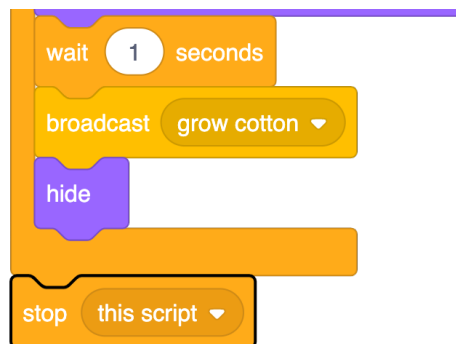




- When the plant has been watered, we want the **Glass Water sprite** to hide and broadcast a message to the **CottonBoll sprite** to grow cotton.



- Add a **broadcast** block.
- Add a new **broadcast message** by clicking the **drop down arrow** and clicking '**New message**'.
- Call your message '**grow cotton**'
- Once the message has been broadcast we need to **stop this script**.



3. HIDE THE FLOWER

Once we've watered the plant the flowers disappear and are replaced by cotton bolls.



- Select the **cottonflower sprite**.



- We need to tell the cotton flower to hide once the **Grow Cotton message** is received.



4. COTTON ON

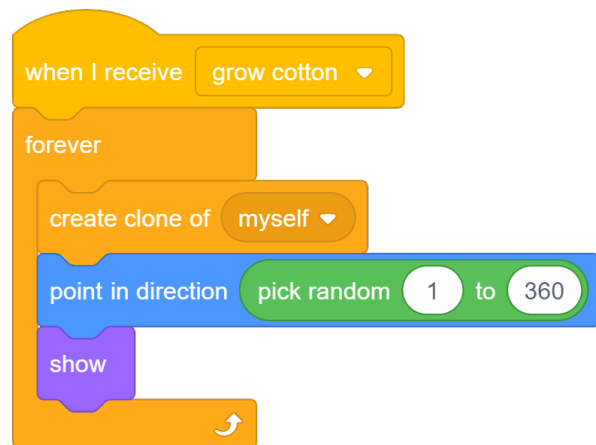
Once the plant has been watered the flowers turn into a cotton boll. The boll then dries out and becomes cotton lint.



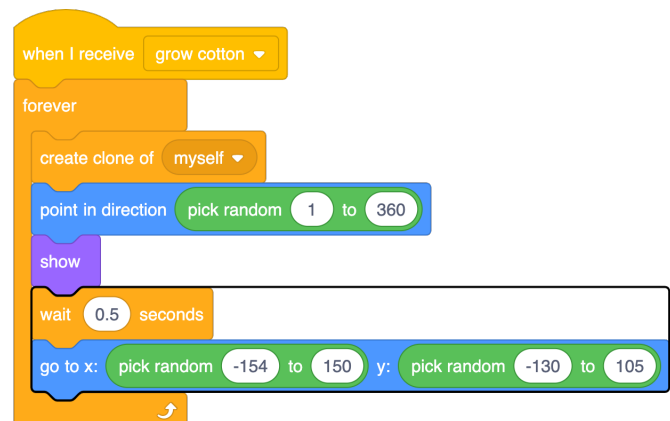
- Select the **CottonBoll** sprite.



- First, we need the **CottonBoll** sprite to clone itself.
- Add this code.
- Test your code.

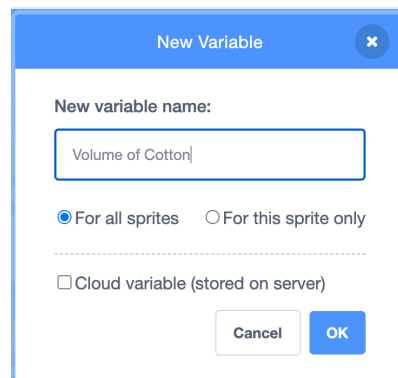
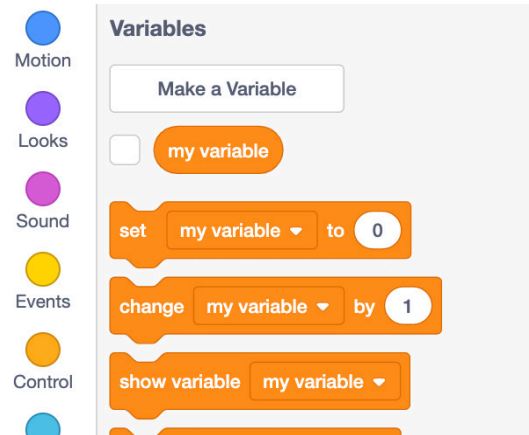


- The cottonboll is cloning in the one spot and it appears to be spinning.
- To fix this we need to add a pause after the clone block using a **wait** block.
- We also want it to **randomly** appear anywhere on the bush.
- The **x and y coordinates** indicate the area within the bush.





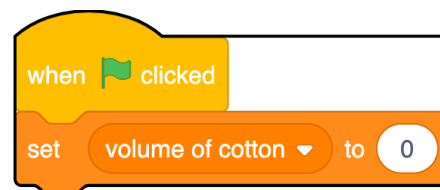
- Next, as the **CottonBoll** **sprite** clones we want to count the number that appear on the bush.
- We will create a **variable** as the counter.
- A **variable** is a container that can hold one value. In this instance we will be using the **variable** to count the number of cotton bolls.
- Click on the orange **variable** menu, click on the **Make a Variable** button.
- Then, name the variable '**volume of cotton**' and click OK.



- Finally, you need to add the **variable** to your code.
- Make sure you've selected the right variable by clicking the **drop down menu**.

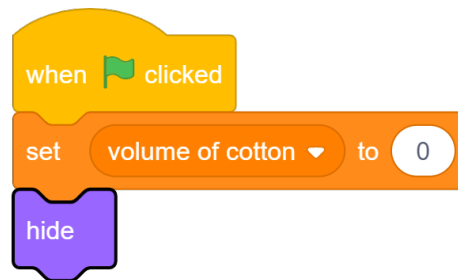


- You'll notice that if you play your game more than once the number keeps going up!
- We need to reset it to zero when we start.
- Add this code.

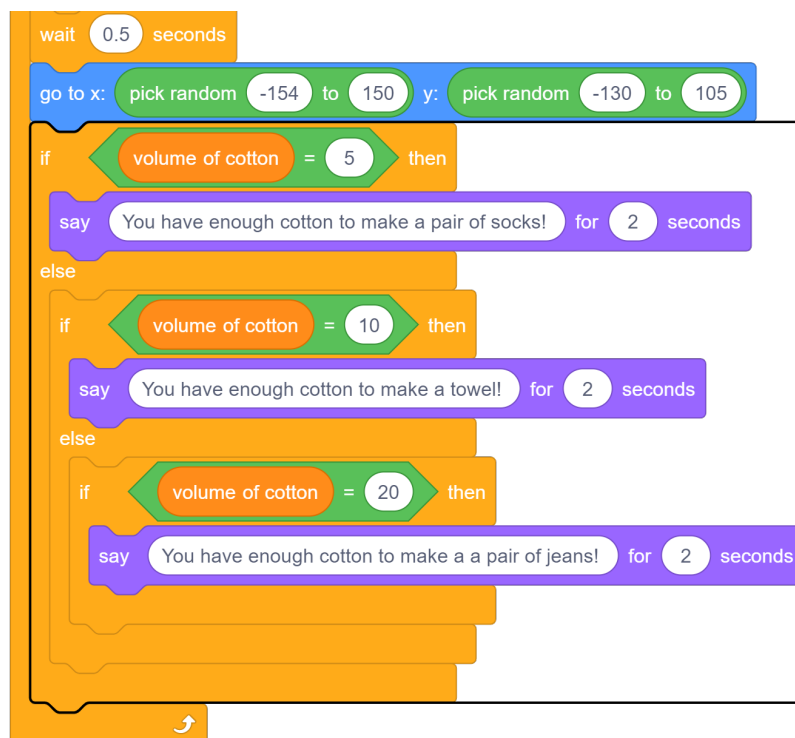




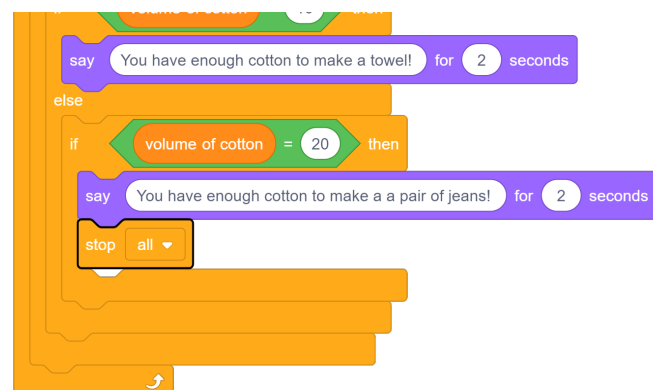
- Our **CottonBoll** is always there, we want to hide it at the beginning.
- Add this **hide** block.



- When we collect a number of bolls we want to tell the player what clothing they can make.
- Add this code.
- Make sure you check the nesting order of the loops! That means that the **if-then-else** loops are nested within each other, like Russian nesting dolls.



- When we have collected our final cotton lint let's stop our program, otherwise we'll have way too much cotton!
- Add this block.



CONGRATULATIONS

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

Challenges

Even more fibre!

Currently, we can make a t-shirt, towel and jeans. Add a prompt to tell the player when they reach 50 CottonBolls. What's something else you can make with cotton?

Hide the Cottonbolls

Can you make the Cotton Bolls disappear when they are clicked on?

Advanced challenge: Display clothing

When you click on 20 CottonBolls you can make a pair of jeans, can you make a pair of jeans appear when the player has enough cotton?

Advanced challenge: Careful of bugs!

Some bugs are good for plants and some bugs are bad. Can you create two small insect sprites that buzz around the cotton bush? Can you make it so that if the player clicks on one they lose 5 CottonBolls, but on the other they gain 5?

Find out more...

Cotton is one of the most important resources in the Australian agriculture industry. More than 12,000 people are employed on cotton farms, and it is one of the most widely produced natural fibres in the world!

Cotton is also used to make clothes, like jeans, towels and socks. And cotton seed oil, and cotton seed is used as feed for farm animals. Nothing goes to waste!

If you want to find out more about cotton head to our blog for more info -

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/