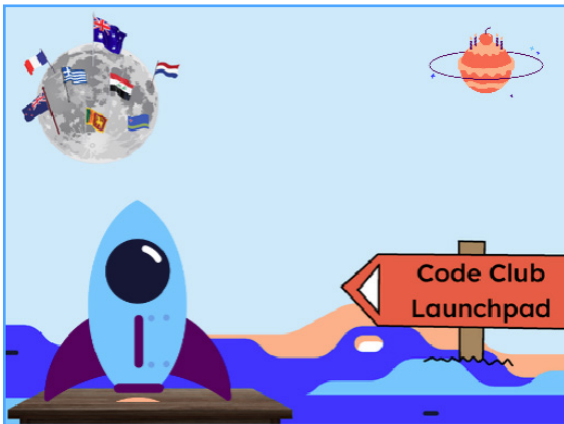


Birthday Blast Off



In this animation, create a countdown to blast off into space for our birthday celebration.

INTRODUCTION



What you will need

HARDWARE

A computer capable of running Scratch 3

SOFTWARE

Scratch 3:
either online
[rpf.io/scratchon](https://scratch.mit.edu)
or offline
[rpf.io/scratchoff](https://scratch.mit.edu)

What you will learn

- How to use **control blocks**
- How to use **motion blocks**
- How to use recorded **voices**

Additional notes for educators

Read our blog that explores the creation of this project and the coding aspects behind it. Meet the young people from around the world who's voices feature!

Project Links

Starter project

<https://scratch.mit.edu/projects/1193096292/>

Completed project

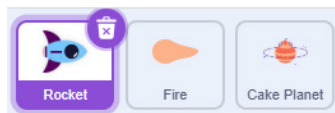
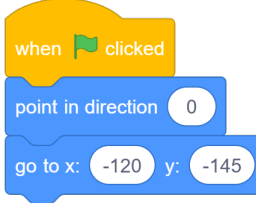
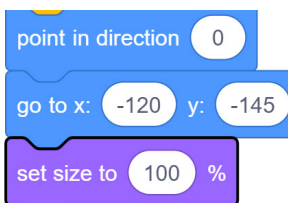
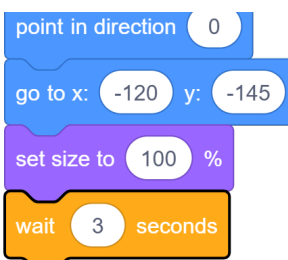
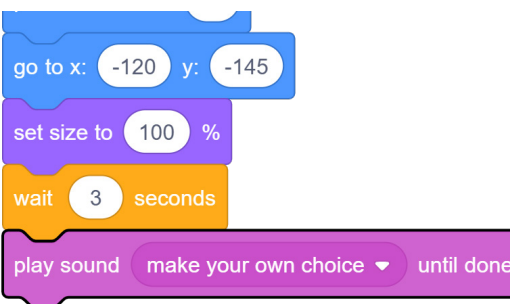
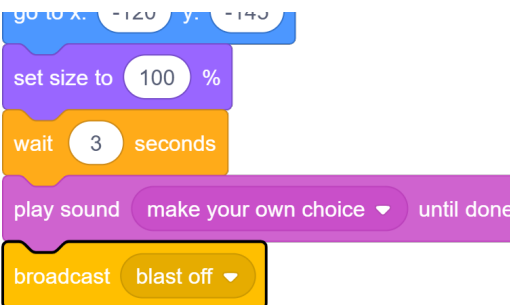
<https://scratch.mit.edu/projects/1193096804/>

Moonhack Certificate

Finished the project? Download a certificate of completion [here](#).

STEP 1 - ANIMATING THE ROCKET

Start by opening the starter project - <https://scratch.mit.edu/projects/1193096292>/The rocket needs to have a countdown created, before it blasts off to the cake planet.

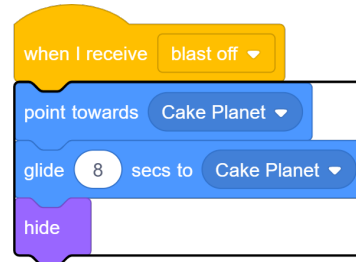
	Select the Rocket sprite	→	
	Start an algorithm with the event when green flag clicked . Add a motion block to point in the right direction. Add another motion block to set its starting location .	→	
	Add a looks block to set the size to 100%. This is important at the start as later in the project the rocket will shrink in size.	→	
	Add a control block to wait 3 seconds. This will give time for the fire sprite to start its animation.	→	
	Add a play sound button. There are 9 sound bites to choose from! Code Club members from around the world have recorded each one. Choose the countdown that you want in your project.	→	
	Next, create a new broadcast and call it blast off. This broadcast will be used by both the rocket and the fire sprites.	→	



Start a new algorithm with the event **when I receive blast off**



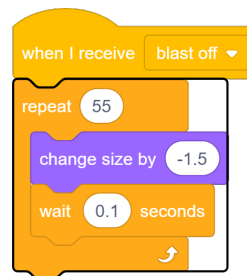
Add motion blocks to **point towards** the Cake Planet and then **glide** for 8 seconds towards it. Then add a **hide** block. This will make it look like the rocket has landed on the planet.



Create a new algorithm that starts with the event **when I receive blast off**. We need this code to happen at the same time as the other code.

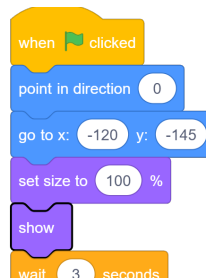


Add a **repeat** loop. Inside it add a looks block to **change the size** and a control block to **wait**. This will slowly shrink the size of the rocket as it travels to the Cake Planet.



Test your code. You should hear your countdown take place and then watch the rocket fly towards the cake while slowly getting smaller. Click to animate the rocket again. Do you notice a problem?

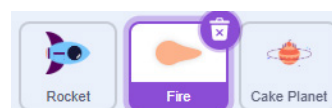
Go to your original algorithm. Add in a **show** button that happens when the green flag is clicked. Now try your project again.



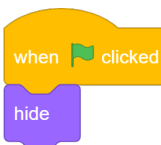
STEP 2 - ROCKET FIRE



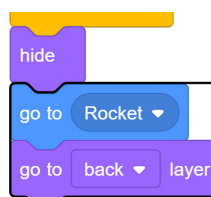
Select the Fire sprite



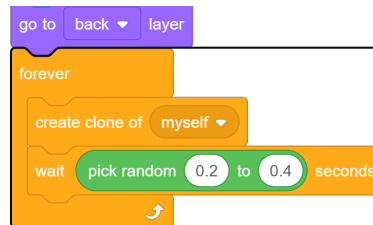
Start the algorithm with the **green flag** event. Add a looks block to **hide** the sprite.



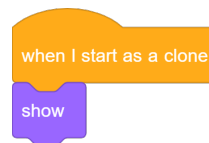
Add blocks to **go to** the Rocket sprite and to go to the **back layer**. (The original block shows front layer) This makes sure it will go behind the rocket sprite.



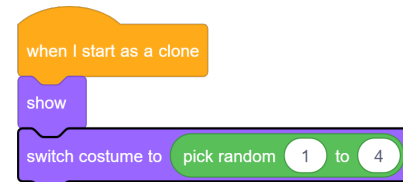
Finish the algorithm with a **forever** control block. Add another control block to **create a clone** of itself. Add a **wait** block and use an operator to select a **random** wait time.



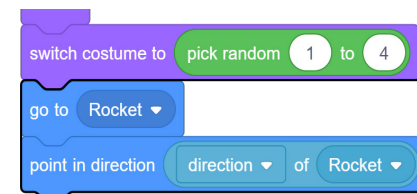
Start a new algorithm with the control **when I start as a clone**. This algorithm will let each clone know what to do. Add a looks block to **show** the sprite on screen.



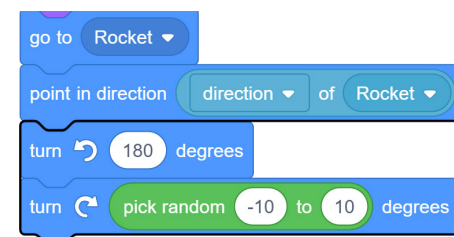
This sprite has 4 costumes, each a different colour. Add a looks block to **switch costume** and use an operator to choose a **random** costume.



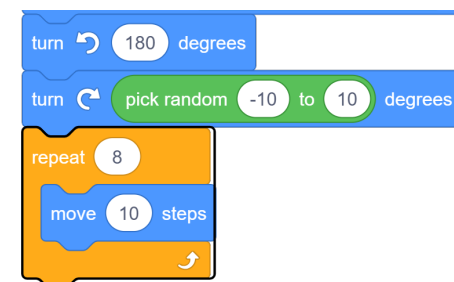
Add a motion block for the sprite to **go to the Rocket**. Then add a **point in direction** block. From the sensing menu choose the **backdrop# of Stage** block. Change stage to rocket. Now you can select direction.



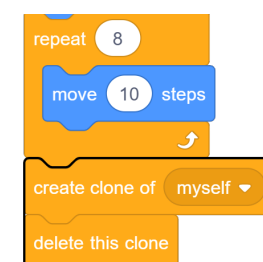
We want each clone to move in a slightly different direction so it looks like flames coming out of the rocket. Add a **turn 180 degree** block so the sprite faces away from the rocket. Add a **turn right block** using an operator to turn a **random** degrees to create a variety of lines of fire.



Add a **repeat** block and inside add a **move** block.



Finally add a control block to **create another clone** and then a block to **delete this clone**. This will allow the clone to move away like fire and delete itself, while placing a new clone back at the bottom of the rocket.





Test your animation. Oh no! The rocket has made it to the planet and disappeared (landed) but the flames are still running! Let's fix this.



Start a new algorithm with the event **when I receive blast off**. Add a **wait** block and then a **stop all** block.



Test your animation again. Much better this time! Your project is now finished.

Challenges:

Choosing a language

There are many languages available for the blast-off message. How could you code the program so that the user can select the language that is played.

Extend the animation

What happens when the rocket reaches the planet? Can you code the next steps? Extending the animation could be anything - the party starting in the rocket, the party on the planet, the rocket moves on to another location, or the rocket visits many planets and uses all of the blast-off sound bites.

Gamify the animation

Can you change this animation into a game? There are so many options for turning this into a fun game to play. What ideas do you have?

Congratulations! You're a Moonhack changemaker. You can try one of our other projects or try one of the challenges above.

Don't forget to talk to an adult about registering your participation and downloading your certificate at moonhack.com

