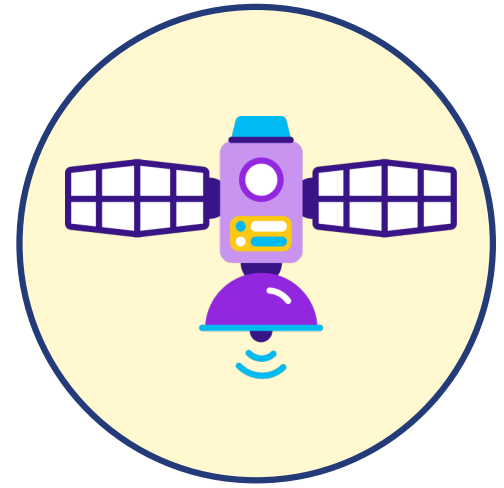


Satellites in Space

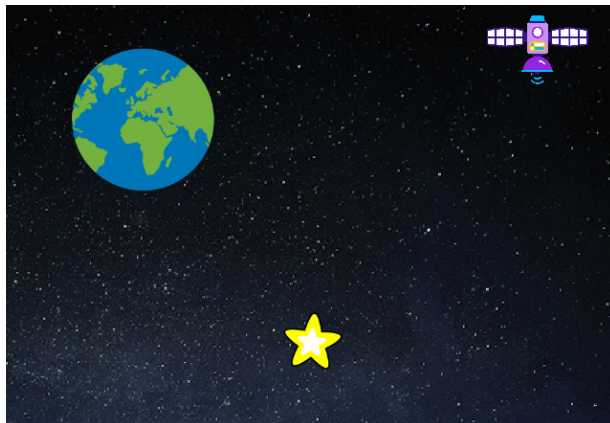


Help this satellite avoid obstacles and make it to Earth safely. Can you get the fastest time?

INTRODUCTION

What you will make

You will make a game where you race the clock to get the satellite to Earth safely.



What you will learn

- How to use the pen extension tool
- How to add a timer to your project
- How to use sensing blocks

What you will need

HARDWARE

A computer capable of running Scratch 3

SOFTWARE

Scratch 3:
either online
[rpf.io/scratchon](https://scratch.mit.edu/projects/700501295/)
or offline
[rpf.io/scratchoff](https://scratch.mit.edu/projects/700501295/)

DOWNLOADS

Offline starter project
<https://scratch.mit.edu/projects/700501295/>

Additional notes for educators

Here is a link to the completed project
<https://scratch.mit.edu/projects/696103009/>

Check out our blog post for this project with tips, curriculum and supporting material at medium.com/@codeclubau

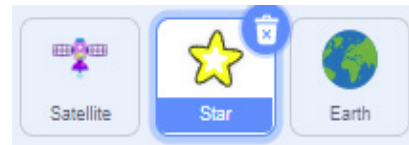
Code Club Australia acknowledges the Traditional Owners of Country throughout Australia and their continuing connection to land, sea and community. We pay our respects to First Nations people and their living cultures and to Elders past and present.

STEP 1 - OBSTACLES

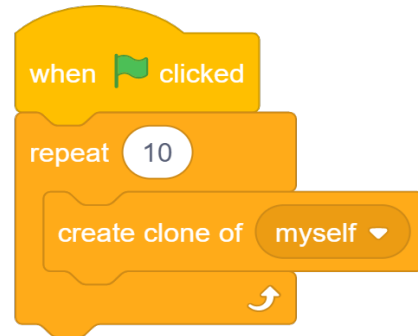
Set up code to create obstacles in the game.



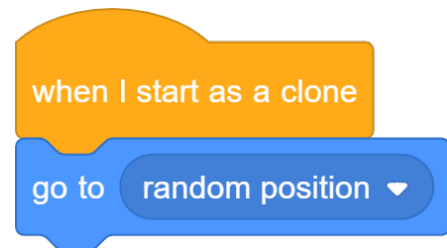
Select the star sprite.



The first algorithm starts **when the flag is clicked**. Add a **repeat** block and inside it add a **create clone of myself** block.



Add a new control block of **when I start as a clone**. Add a motion block of **go to a random position**.



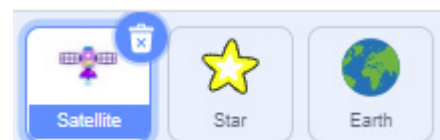
Test your code. You should have 11 stars on your game - the original plus the 10 clones.

STEP 2 - CONTROLLING THE SATELLITE

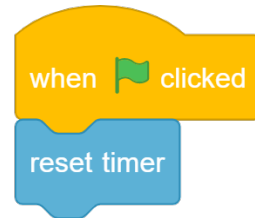
Players will use their mouse to navigate the satellite through the stars to reach Earth.



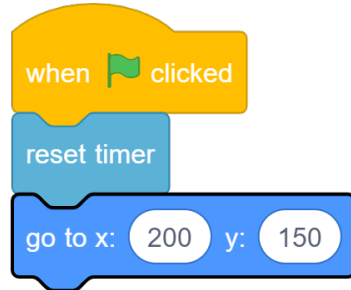
Select the satellite sprite.



Start an event **when the green flag is clicked**. Add the sensing block that **resets the timer**.



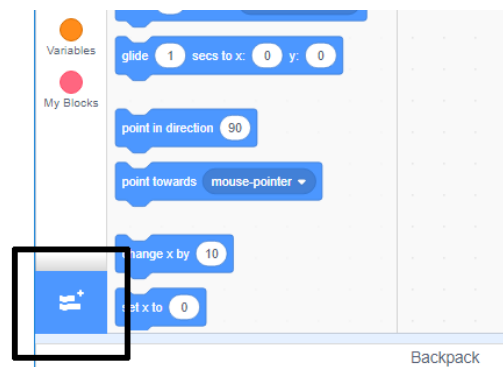
Add a **motion** block. Make sure you change the coordinates.



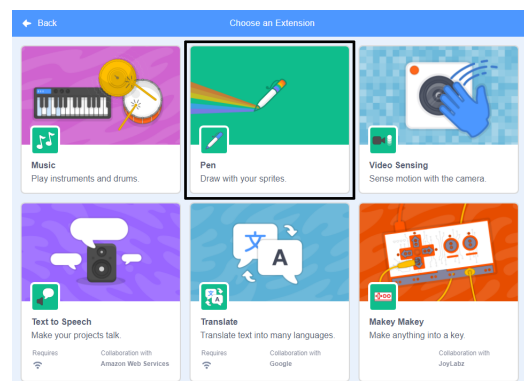
ADDING THE PEN EXTENSION

To use the drawing tool in Scratch you need to add the Pen Extension.

In the bottom left of your screen, click on the Add Extension button.



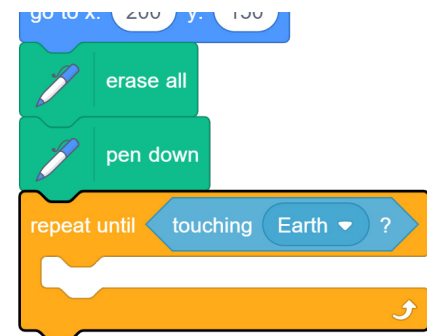
Select the Pen box to add this tool to your screen. You will notice a new set of blocks are now ready to use.



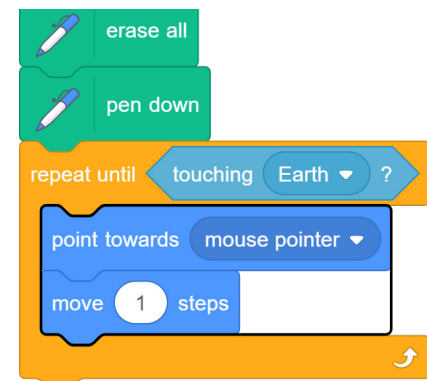
1 Add a pen block to **erase all** prior markings and then put the **pen down**.



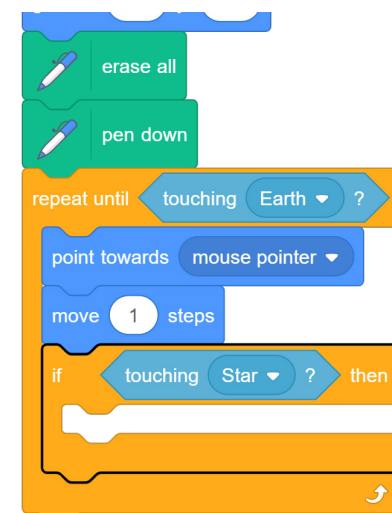
2 Let's create code to make the satellite follow the mouse.
Add a **repeat until** control block.
Inside this add a sensing block for **touching an object**. In the drop down menu choose Earth.



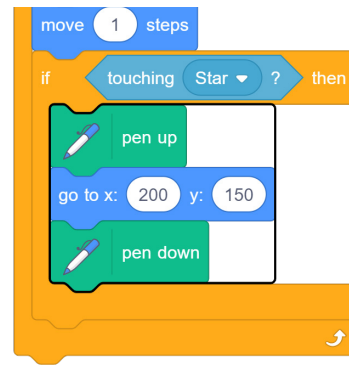
3 Inside this block add in 2 motion blocks. Add in **point towards** and make sure mouse pointer is selected. Then add **move 1 step**.



4 Let's code the satellite to return to home if it touches a star.
Add an **if...then** control under move 1 step. Insert the sensing block for **touching**, and in the drop down menu select Star.



- Inside the if..then block add a **pen up** block. Then add the block **go to x 200 y 150** and put the **pen down** again.

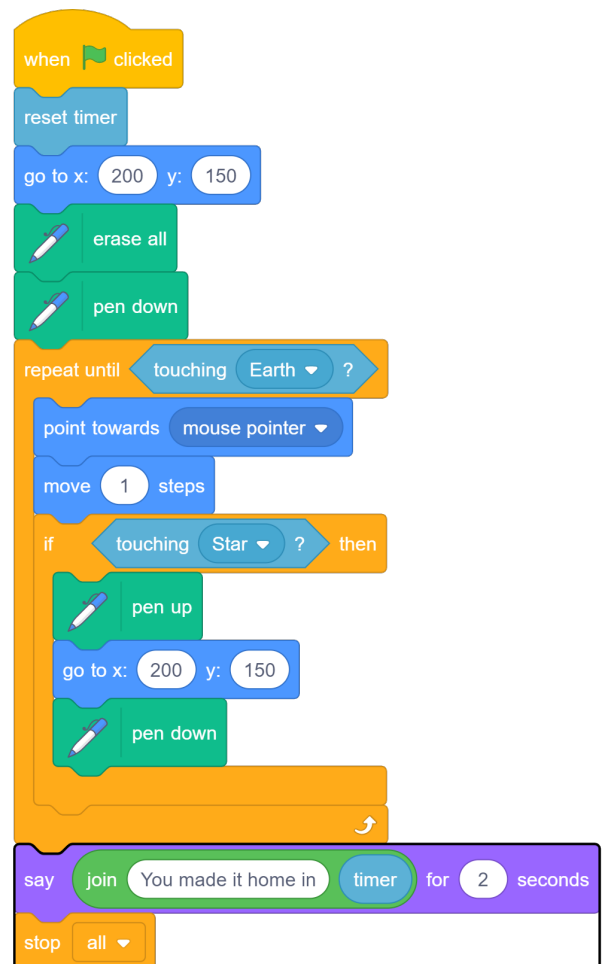


- Let's finish the game by coding what happens when the satellite reaches Earth.

Underneath all of the blocks add a **say** block. Inside this add an **operator** block that joins two parts.

Where it says apple, type the words 'You made it home in ' and where it says banana replace with the sensing block called **timer**.

To finish it add the control block of **stop all**.



- Test your code. Your game should run successfully by moving your mouse to guide the satellite. If your satellite starts on a star, just click the flag again to reset it.

Challenges:

Increase Difficulty

The stars are the component of the game to avoid. Can you make the game more difficult by

- creating a random number of stars
- creating random sizes of stars
- creating moving stars

Improve the Satellite

The satellite moves slowly so that the player can accurately make it to Earth. Can you make the satellite move differently to increase the difficulty?

Advanced Challenge

Many games work by progressing to a new level if you reach a set criteria. This game could advance to a new level if the player reaches Earth successfully or gets to Earth in a certain amount of time. Remember to make each level more difficult.

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

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

