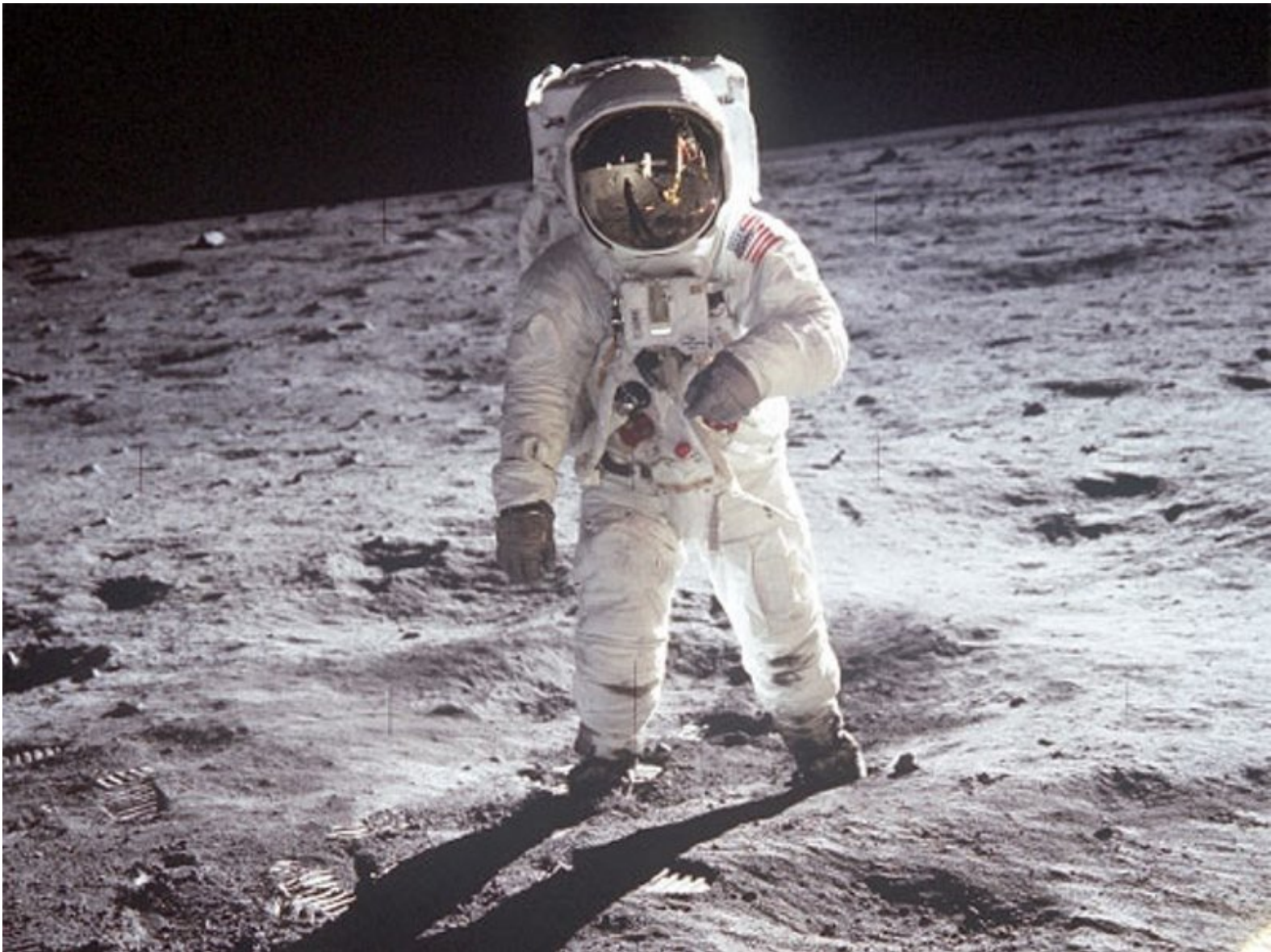


A - Save the Astronaut!

You are the chief programmer for a mission to Mars that has crash landed, and one of your crew is stranded on the other side of the planet!



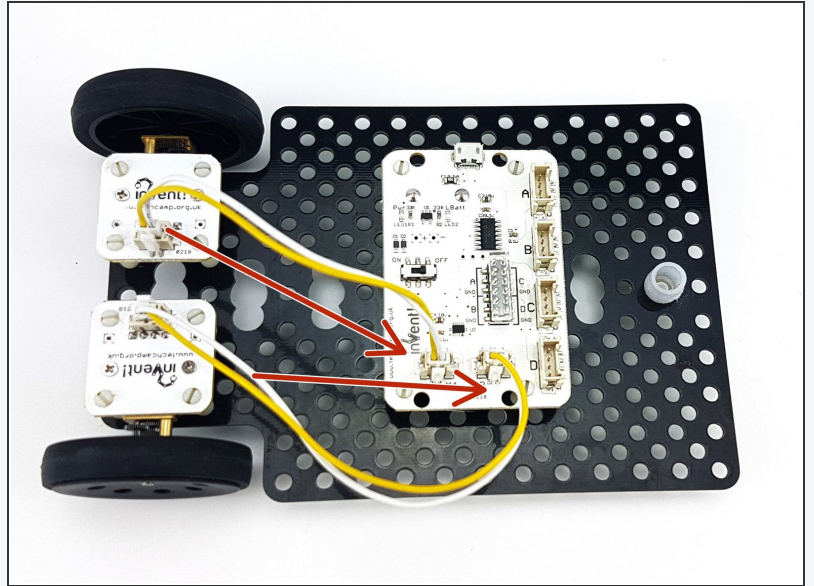
INTRODUCTION

You are the chief programmer for a mission to Mars that has crash landed, and one of your crew is stranded on the other side of the planet! Let's learn how to make our robot move so we can save them.

Step 1

Assemble your robot!

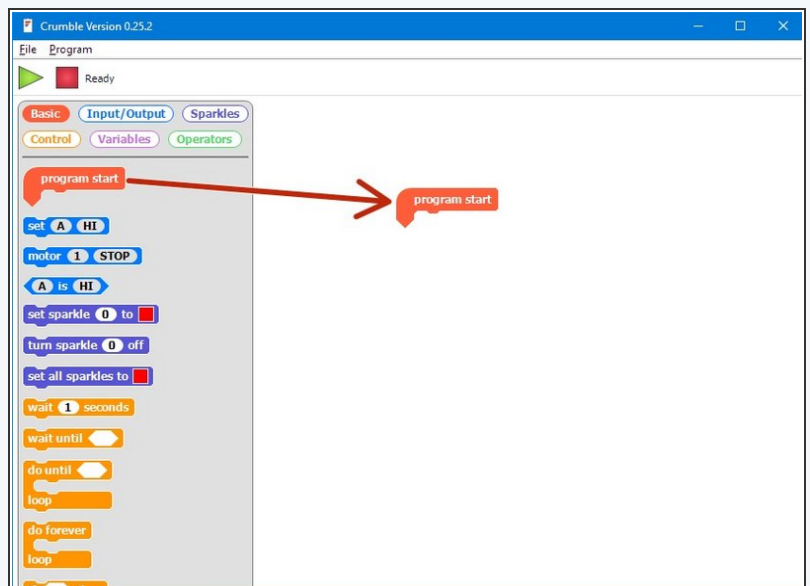
- Let's assemble our robot so we can **save the stranded astronaut!**
 - Carefully put together your robot **exactly** like the picture.
- ⚠ Make sure you plug the **left** motor into the **left** socket (M1) and the **right** motor into M2!



Step 2

Program Start

- Every program must know where to start!
- Drag a **Program Start** block into the white area.

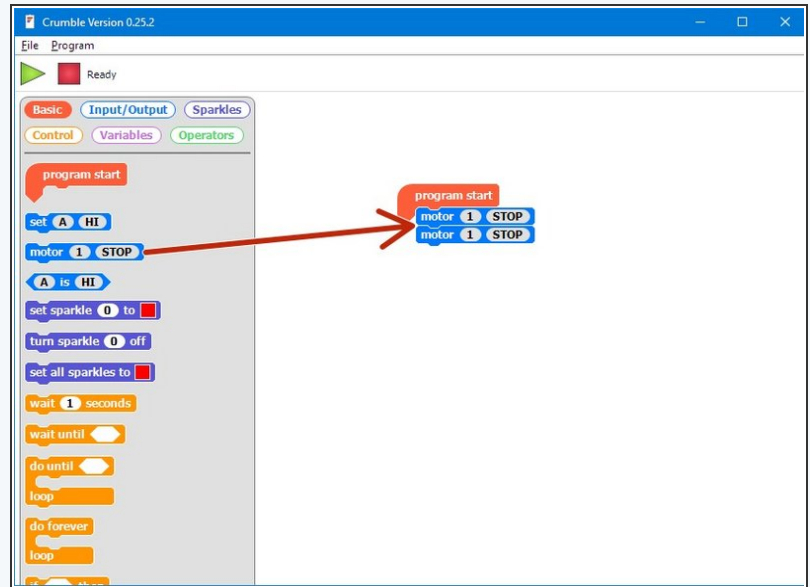


Step 3

Motor Blocks

- To make the motors move, we need to use a **Motor** block.
- We have two motors, so drag **two** motor blocks into your program from the menu.

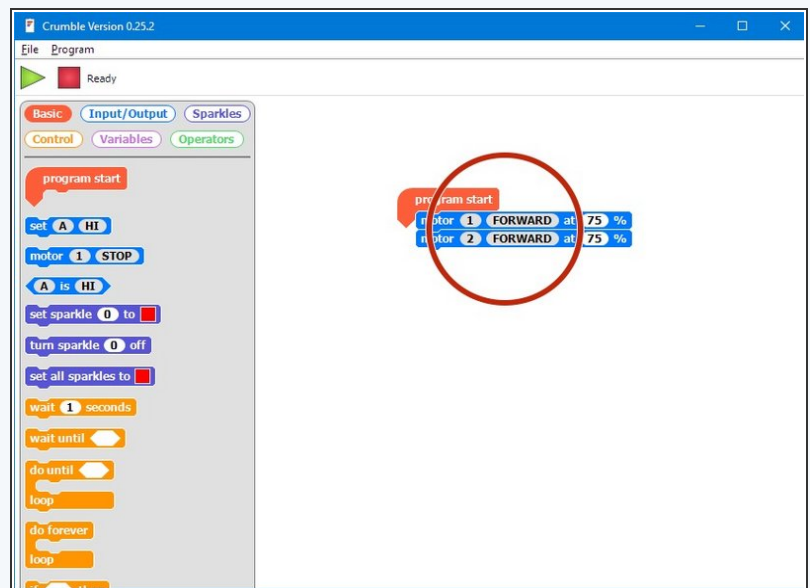
⚠ Make sure they snap in underneath your **Program Start!**



Step 4

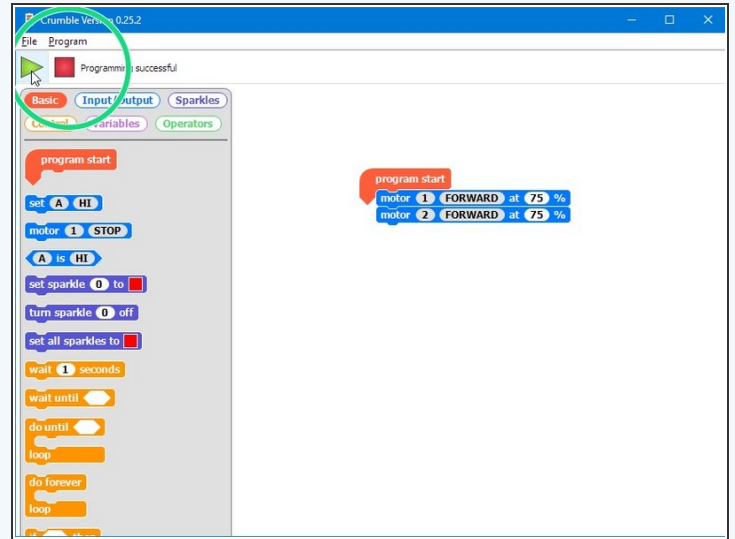
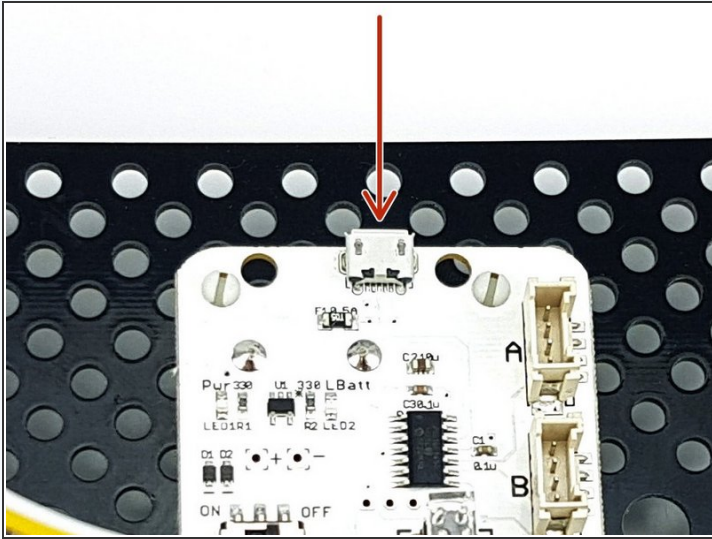
Changing Motor Blocks

- You can make changes to most blocks to change what they do!
- We need to change the motor blocks to make both motor 1 **and** motor 2 move **forwards**
- **Click** on the grey areas inside the motor blocks to change them - change the blocks so that both motor 1 and motor 2 are moving **forwards**.
- To make motors reverse, just **click** until it says reverse!



Step 5

Test it!

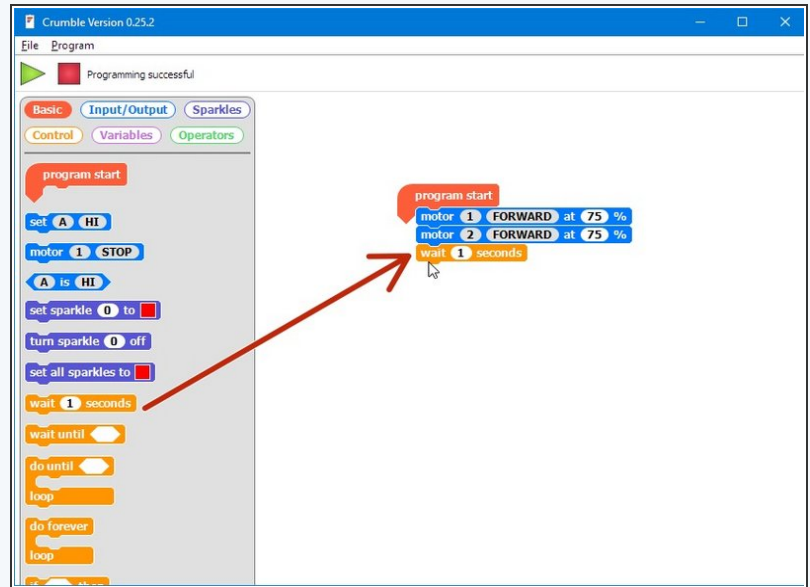


- Let's **test** our program so far to make sure everything is connected properly.
 - First, plug in your USB cable to the main board!
 - Then click the green play button in the top left - it should say **"Programming Successful!"**
- ⚠ After you unplug the USB cable and turn your robot on, it should drive forward forever - **make sure it doesn't fall off the table!**

Step 6

Waiting!

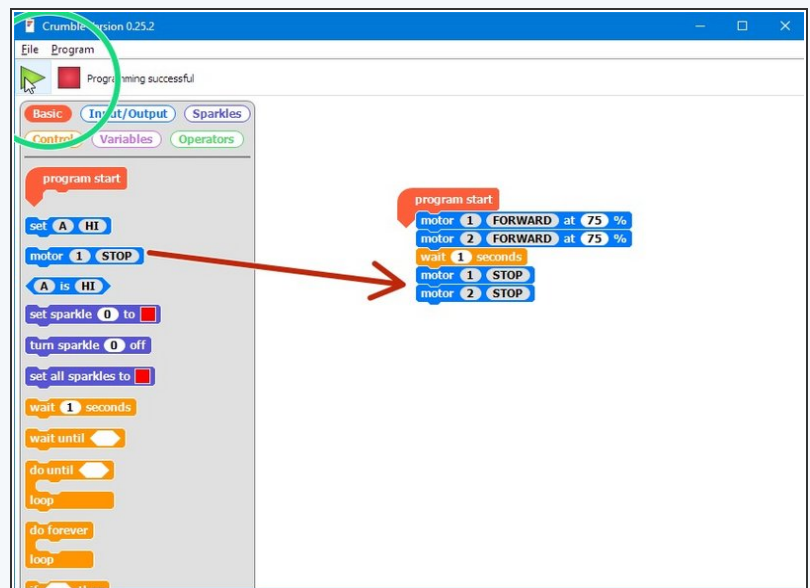
- Hopefully your robot now drives forwards forever - great work!
- However, to rescue the stranded astronaut we need to know how to make the robot stop.
- First, drag in a **Wait** block to make your robot wait for 1 second after it starts driving forwards.



Step 7

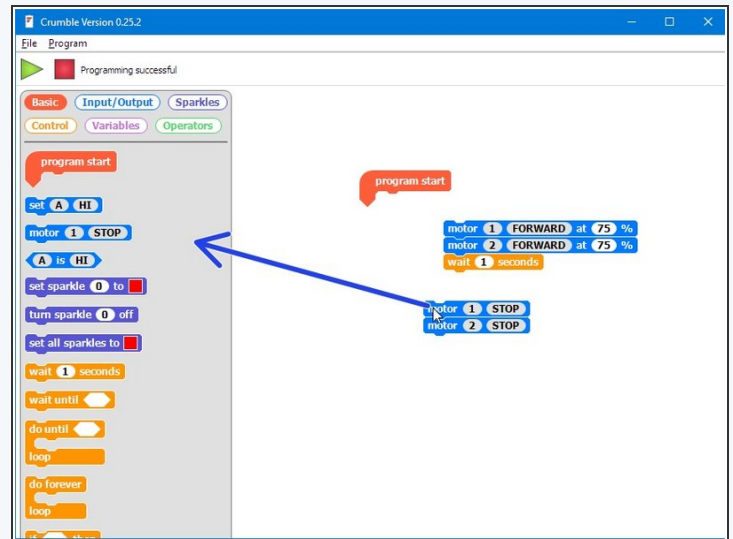
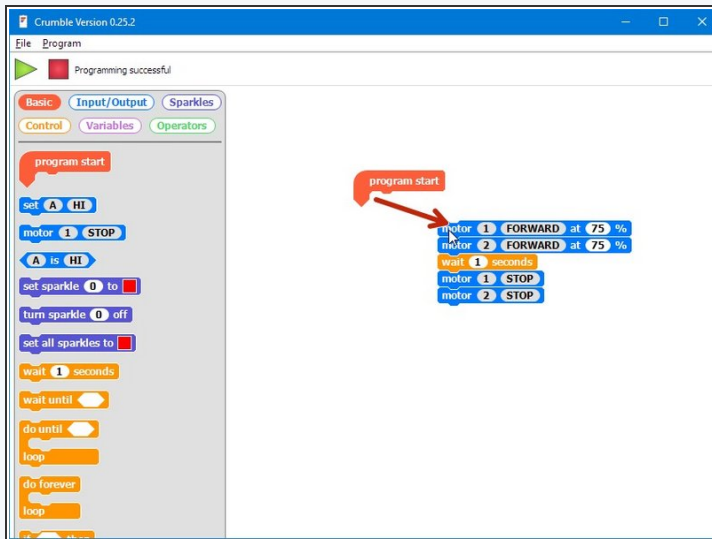
Driving and Stopping

- Now let's make a **sequence** to get the robot to stop after driving forwards for 1 second.
- Drag in **two more motor blocks** and change them so that both motors stop.
- Click the **green play button** again to upload your code - your robot should drive forwards and then stop! If it doesn't, look at your code and **try to fix it if you can**.



Step 8

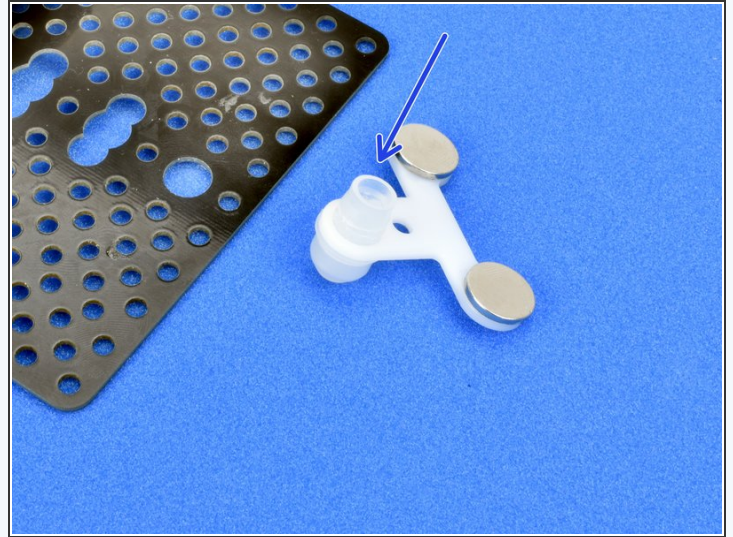
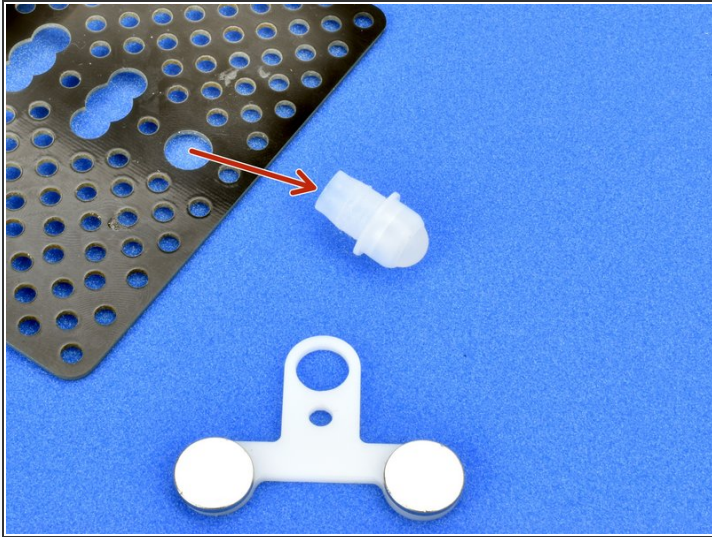
Changing your Program



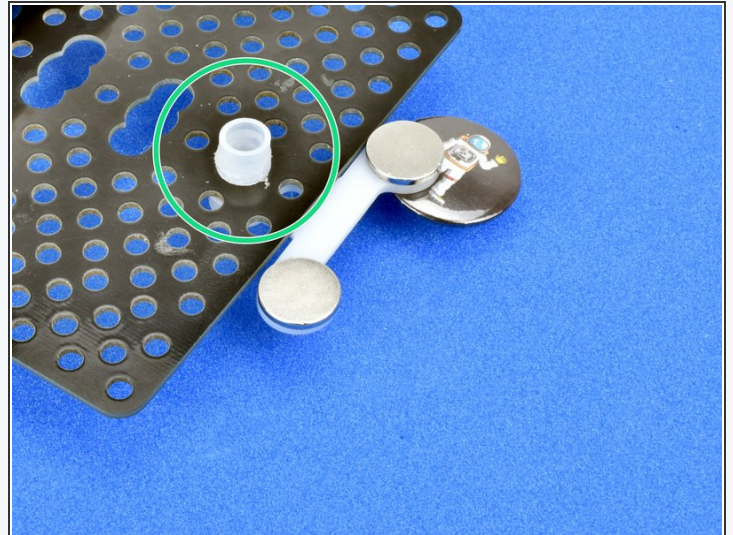
- It's easy to change your program by dragging the blocks around!
- **Click and drag** the **first** motor block to move everything underneath it away from the program start.
- You can also **delete** things you don't want anymore! Try dragging some blocks back into the menu area on the left to delete them.

Step 9

Setup the Magnets

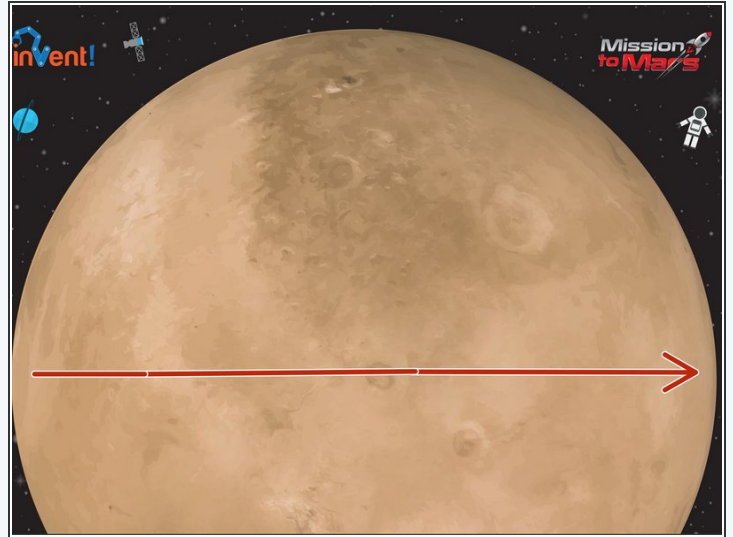


- To save the astronaut, we need to attach the **magnet module** to the robot so we can pickup the magnetic astronaut.
- Remove the white **trackball** from the front of the robot - if you have a brand new kit it might be quite hard to get out, so ask your teacher for help if it is too difficult.
- Slot the **magnet module** over the top of the trackball, with the magnets facing **upwards** like in the picture.
- Finally **put the trackball back into the robot** like the picture. You should now be able to pickup an astronaut!



Rescue Your Astronaut!

Challenge!



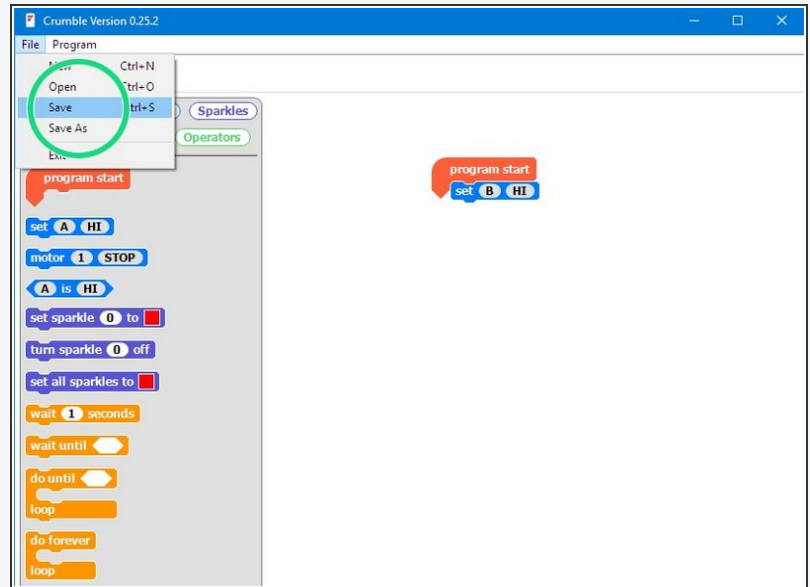
- Now you have mastered all of the things you need to save the stranded astronaut!
- On the front of your robot there are **two magnets** - if they get close enough to the astronaut, they will pick them up.
- Write a program to make your robot **drive forwards** across the planet and **pick up the astronaut**. You will need to **change the wait time** so it drives forwards the right amount!

⚠ Don't forget to get your challenge **checked off** when you've completed the mission.

Step 11

Save Your Work

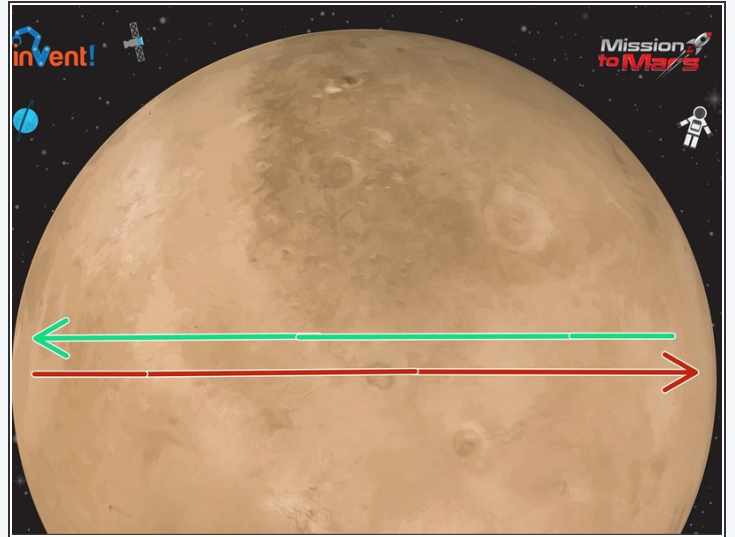
⚠ After each challenge, make sure to **save your work** - you might need it later!



Step 12

Bring them Back

Extension Challenge!



- For this **extension challenge**, add some blocks so your **sequence** makes the robot:
 - Drive **forward**
 - **Stop** and **pickup** the astronaut
 - **Reverse** back to the other side of the planet.

⚠ Don't forget to **save your work!**