



## ASTRO PI

MISSION ZERO

Brighten up the daily routine of the astronauts on the International Space Station by showing them a message and the relative humidity on board using the Astro Pi computer's Sense HAT.

## DISPLAY A MESSAGE

- 1 Go to [trinket.io/mission-zero](http://trinket.io/mission-zero)

You will see that three lines of Python have been added for you automatically:

```
trinket Run
main.py
1 from sense_hat import SenseHat
2 sense = SenseHat()
3 sense.set_rotation(270)
4
```

- 2 Add this line below the other coding instructions:

```
sense.show_message("Astro Pi")
```

- 3 Press the Run button and watch as the message 'Astro Pi' scrolls across the LED display of the animated Astro Pi on the right. This is what your message to the astronauts on the real-life Astro Pi will look like! To display a different message, you can write anything you like between the quotation marks ("").

- 4 If you'd like to vote to choose the names of the new Astro Pi computers, start your message with the words "My name should be" and then add in your selection. For example, if you'd like to vote for Ada Lovelace, your code would look like this:

```
sense.show_message("My name should be Ada Lovelace")
```

For step-by-step instructions, and our name suggestions, visit [rpf.io/mzproject](http://rpf.io/mzproject)

## CHALLENGE

Can you change the message and make it more colourful?

```
sense.show_message("Hello", text_colour=(255,0,0), back_colour=(0,255,0))
```

The three numbers in brackets represent the amount of red, green, and blue in the colour produced by the LEDs.

## CHALLENGE

- Red would be (255, 0, 0)
- Blue would be (0, 0, 255)
- Green would be (0, 255, 0)
- Yellow would be (255, 255, 0)

You can use any number between 0 and 255.

Can you change the speed of your message? Try this instruction:

```
sense.show_message("Hello", scroll_speed=0.5)
```

## MEASURE THE HUMIDITY

- 5 Add this line to take a humidity reading:

```
humidity = round( sense.get_humidity(), 1 )
```

This will make the Astro Pi measure the current relative humidity and store the measured value in the sensibly named variable humidity. The humidity value returned by the function has a large number of decimal places, so round() is added so that the measurement gets stored with one decimal place.

- 6 To display the stored relative humidity value as a scrolling message on the display, add this instruction as well:

```
sense.show_message( "Relative humidity= " + str(humidity) + "%" )
```

## SUBMIT YOUR ENTRY

There are a few rules your program needs to follow so that you can submit it to be run in space for the astronauts:

- 1 Take a humidity reading
- 2 Light up the LEDs
- 3 No errors

You can see these rules below where your program is. If your program follows the rules, they will light up in green when you run the program.

Before you finish, make sure your program also meets the following criteria:

- 1 It runs for 30 seconds or less
- 2 There isn't anything unsuitable in your message, such as rudeness

Once the rules are all green, you are ready to submit!

Ask your teacher or mentor for your classroom code, and enter this code in the box at the bottom. Then click on **Continue To Form**. In the form, enter your team's name and the names of your team's members. Finally, click the **Submit** button to send off your program. Your teacher or mentor will then get an email to confirm your entry.

