

## Displaying Text and Graphics

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## BEGINNER PROGRAMMING LESSON

# LESSON OBJECTIVES

- 1. Learn to use the Display Block to display text and images**
- 2. Understand why the Display Block can be useful in programming**

# DISPLAY TAB

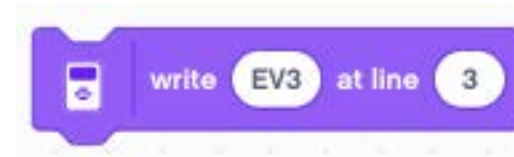
- The Display Block to show information and pictures on the screen
- You can control the location and size of text
- You can also change the color of the EV3 lights
- You can use this same block to display sensor readings and instructions



# MORE ON DISPLAY BLOCKS

## Line mode (Easier to use, only works for text mode)

- 12 lines of 10 pixels each
- Normal characters are 1 line tall
- Large characters are 2 lines tall



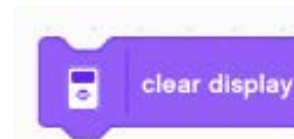
## Pixel mode (Use for displaying images or text)

- 178 pixels left and right
- 128 pixels up and down



## Notes:

- Blocks will write over each other use Clear Display block to clear screen
- The two display writes shown above are equivalent



# WRITE AT COORDINATES WITH FONT BLOCK

## Step 1:

Pick Display Text Block on right

## Step 2:

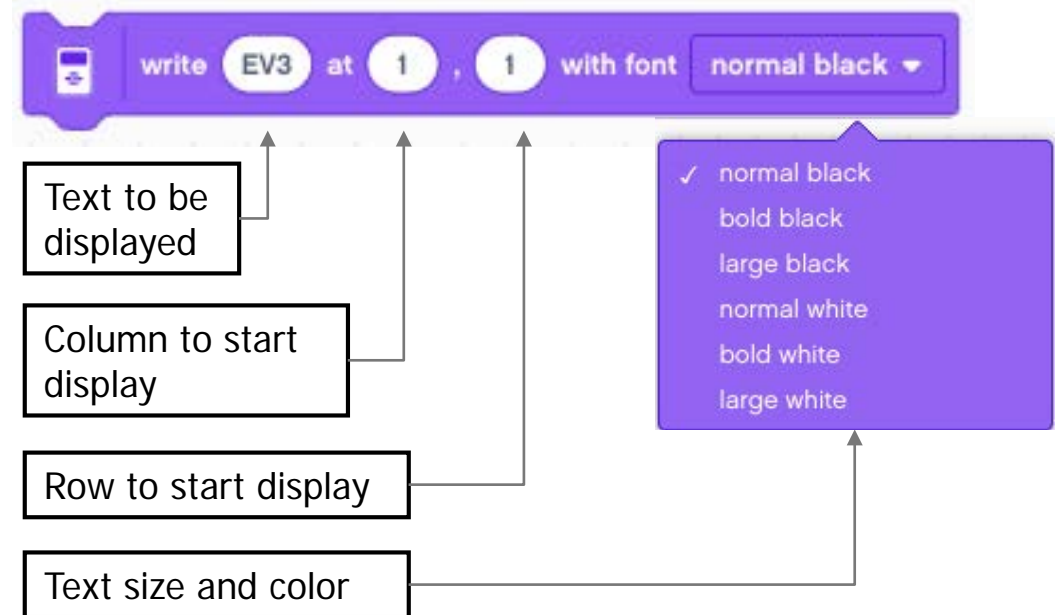
Use the box on the left to enter the text you want to display

## Step 3:

The two boxes in the middle give the x and y coordinates where the text will be drawn. The top left of the screen is (0,0).

## Step 1:

Pick the font to use



# DISPLAY BLOCK CHALLENGE 1

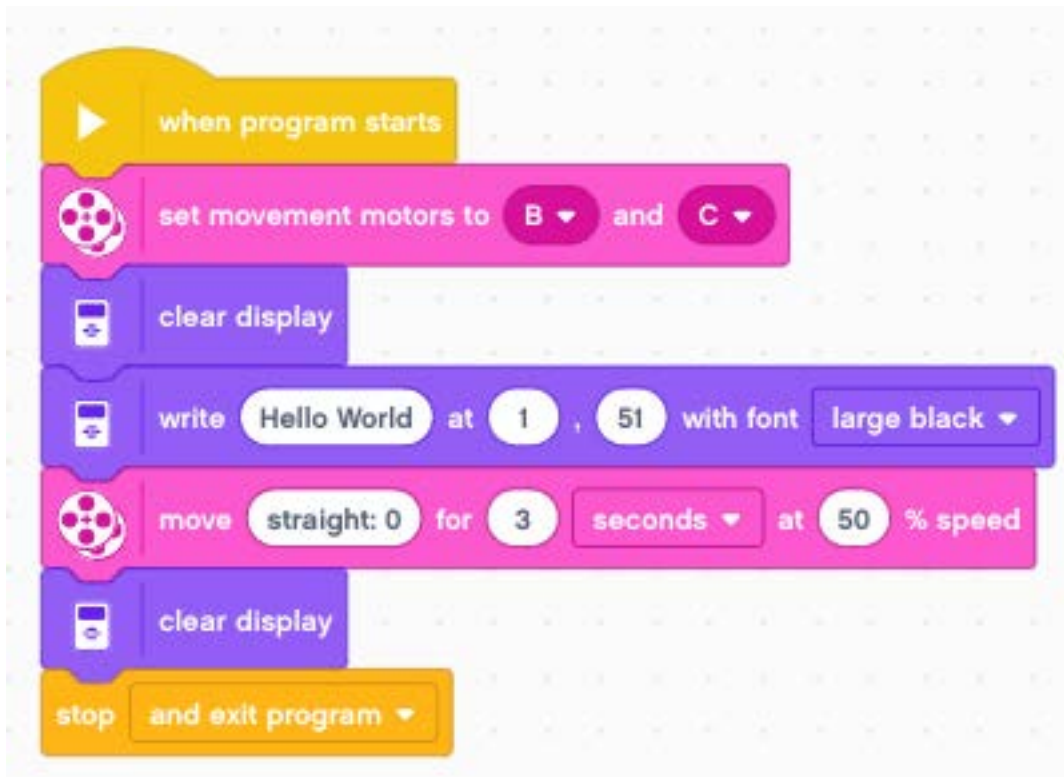
**Can you write a program to display text in the middle of the screen?**

- Display “Hello World”

**Make the display block run for 3 seconds**

**Can you also move while doing this?**

# CHALLENGE 1 SOLUTION



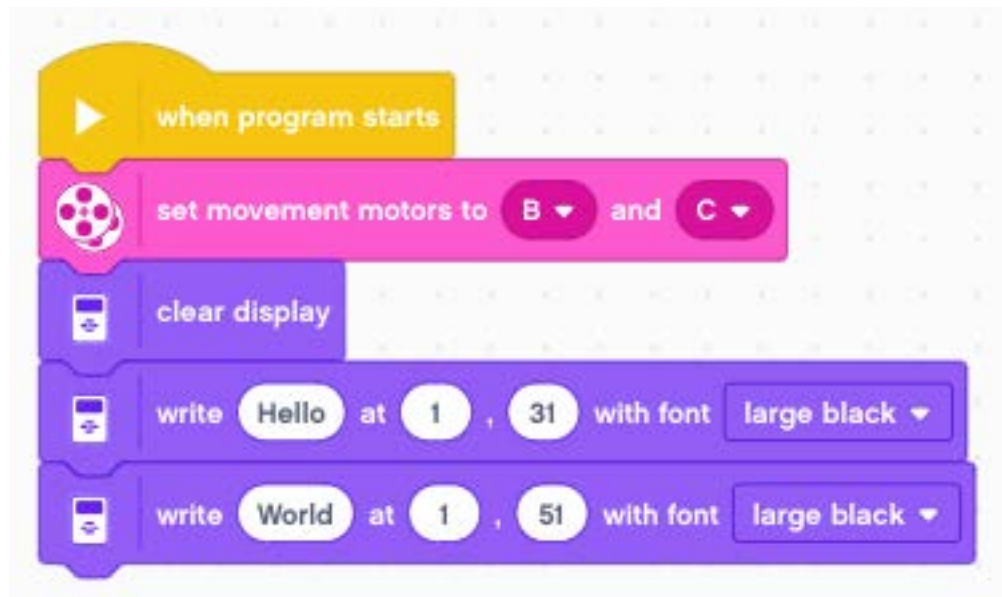
# CHALLENGE 2: TWO LINES OF TEXT

**Now what if you want “Hello” to appear on one line and “World” to appear on the next line?**

**Hint: You will use two display blocks and don’t clear the screen on the second display block otherwise the first word will disappear!**



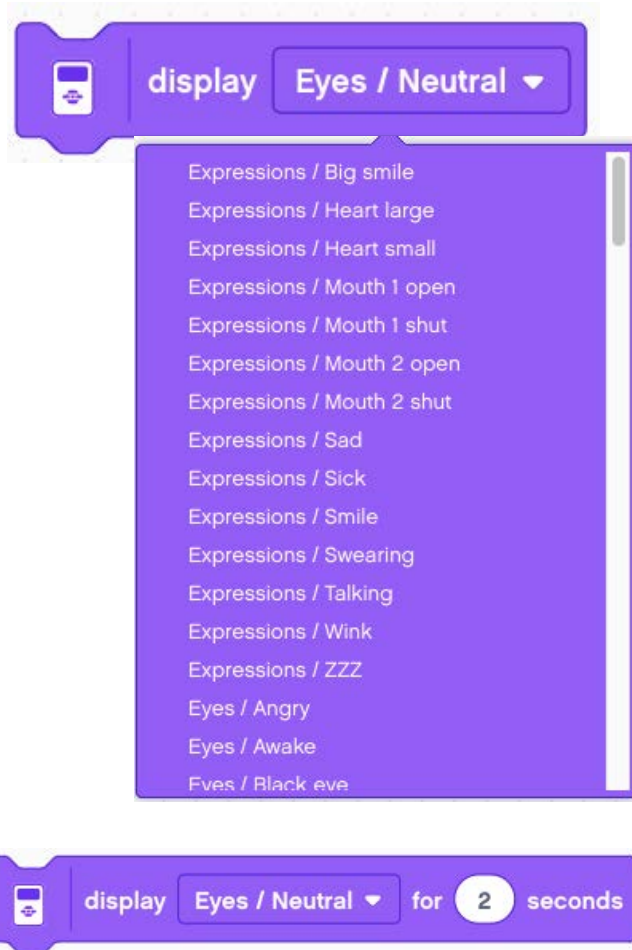
# CHALLENGE 2 SOLUTION



**Note that we don't clear the screen after the display blocks and there is no End Program block. As a result, the message will be left on the screen.**

**The Large font is 20 pixels tall. Spacing the y coordinate from 31 to 51 ensure that the characters do not overwrite each other.**

# DISPLAYING AN IMAGE



## Step 1:

Pick Display Image Block

## Step 2:

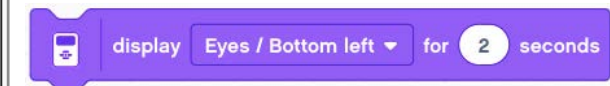
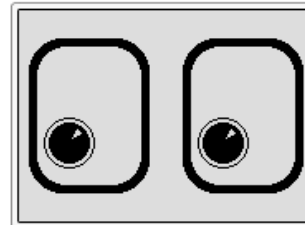
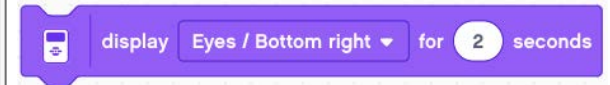
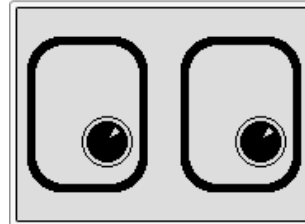
Use the entry box to pick the image you want to display

The Display Image for Seconds block will display the image for the requested seconds before moving to the next block.

# DISPLAY BLOCK CHALLENGE 3

Can you display eyes on the screen while moving? Alternate eyeballs that look left and right.

- Use the Display Image for Seconds and Motor On blocks
- Feel free to have fun with this challenge and make it yours!

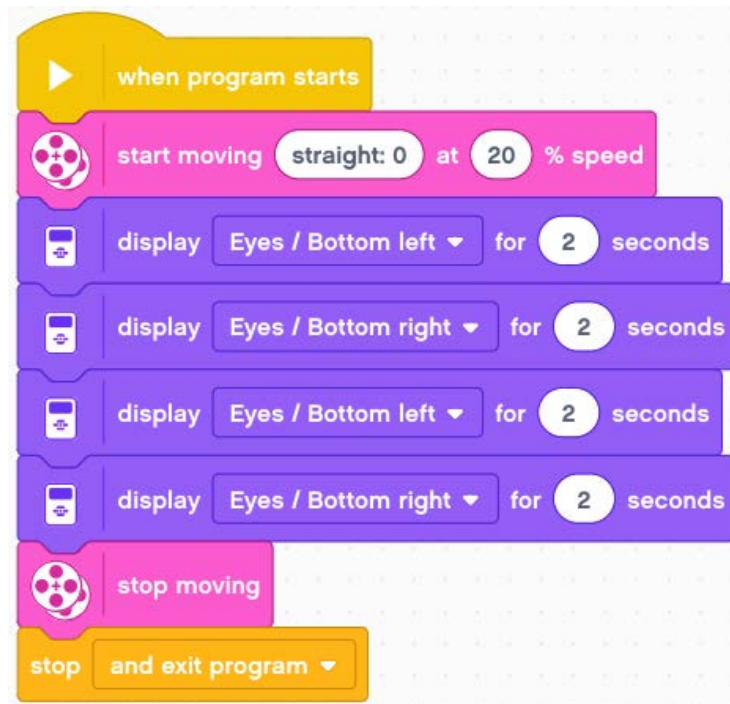


# CHALLENGE 3 SOLUTION

Motor On

Display  
Blocks

Motor Off



# DISCUSSION GUIDE

## **Why might you want to know how to use the display block?**

- You might want to know what the sensor value your robot is seeing
- You might have to program a robot to stop when the robot reaches a red line but it stops before
  - Does the robot see the same thing you see?
  - You can display the value on the screen and check

**It's a great debugging tool. You can learn more about debugging code in one of our Intermediate lessons.**

# CREDITS

- This tutorial was created by Sanjay Seshan and Arvind
- More lessons are available at [www.ev3lessons.com](http://www.ev3lessons.com)



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