

Robotics with LEGO® WeDo (IV)

An introduction to robotics for the young with LEGO® WeDo

By Diego Gálvez

In this part we will have a closer look at the Display Block and mathematical operations.

Display Block

This block allows you to visualise the value of an attached input block on the screen.



Let's make and run the following program.



The number will be displayed on the Display Tab. In the case of this example the number that is shown will be 10.



If you change the number you will notice that you can only display numbers up to 1000.

When dragging a Display Block onto the canvas it comes with a Number Input Block attached. This block can be detached so you can combine the Display Block with different Input Blocks, as we will see next.

The Display Block doesn't only display numbers, it can also display a word that will be visible in the Display Tab. The following are a number of things you will notice when using the Display Block with numerical values.

Maximum value

The maximum value the Display Block can show is 1000. If you write a higher value it will automatically change to 1000.

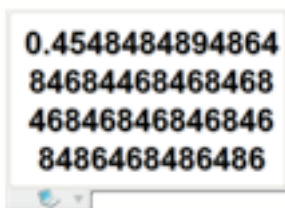
Negative values

You can also write negative values. You simply need to write a minus before the number. The highest negative value is -1000.



Decimal values

The Display Block also accepts decimals and contrary to whole numbers, the range of digits is much larger.



Random Input Block

The Display Block can also work together with the Random Input Block.



The following is an example of the use of the Random Input Block.



If you run the program several times you will notice the Display Tab never shows a number larger than 10 and never 0. This is because the Random Input Block only generates values between 1 and 10.

Mathematical operations

The WeDo software lets you do mathematical operations using four blocks: Add, Subtract, Multiply and Divide.

Add to Display Block

On the palette at the bottom of the WeDo software you can find a block named Add to Display.



This block is used to add a numerical value to the value on the display.

To see it in use let's build the following program.



If you run it you will see the following:



What if instead of adding I want to subtract, multiply or divide?

The WeDo software also incorporates blocks for these cases, but they are not normally shown on the palette. However, if you click on the Add to Display Block you will see it changes to subtract. Another click will turn it into Multiply and yet another click into Divide.

Next we will see a few specific cases that use the blocks we have mentioned so far.

Subtract from Display Block



Example:



The WeDo software recognises negative answers. To see this in action run the following program and watch the Display Tab. You will find the answer on the screen is -2.

Multiply by Display Block

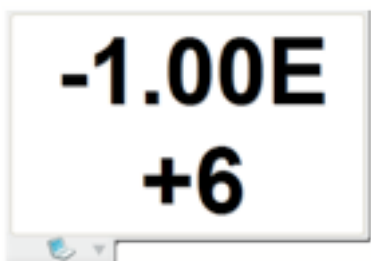


Example:



When running this example program you will see a notation you may not be familiar with.

The Display Tab will show the following:



The E means 10 and the numbers after it are the power it is elevated to. In this case it would be:

$$-1 \times 10^6 = -1000000$$

Divide by Display Block

The WeDo software recognises decimal answers. To see this in action run the following program and watch the Display Tab.



The result on the Display Tab is: 0.2

What happens if by mistake I don't define any number before using one of these blocks?

The program will use the default value of 0 as the display value.

Example:



The result on the Display Tab:



The same happens if instead of not defining a starting number you don't define a number for the operation.



The result on the Display Tab:



In the following part we will have a look at the use of the Message Blocks in order to change the linearity of the program.

On the website notjustbricks.blogspot.com you will find multimedia materials (images and videos) of the creations of the author, some of which come with building instructions. #

