

Codebug Scrolling Name Badge

TechResort Mini Makers Session #1102

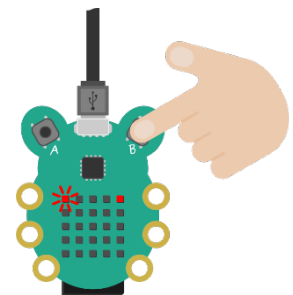


What do I need?

- A laptop with internet access
- A Codebug microcontroller
- A USB cable
- A 3-volt coin cell battery (optional)

What is a Codebug?

A Codebug is a simple type of electronics board called a microcontroller. The Codebug can be used to perform tasks like flashing lights and displaying messages.



How are we going to be using the Codebug?

In this session you will learn how to use your PC to program the Codebug to display messages.

By the end of the session you will have learned how to make the Codebug scroll your name across the display!

**If you get stuck, does someone around you have the answer?
If they don't, then please ask an Elf.**

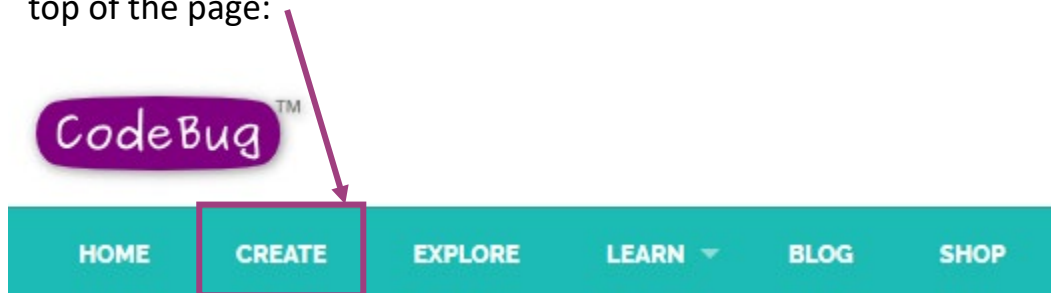
Once you have finished reading this page, please turn over to learn more!

Loading the Codebug Webpage

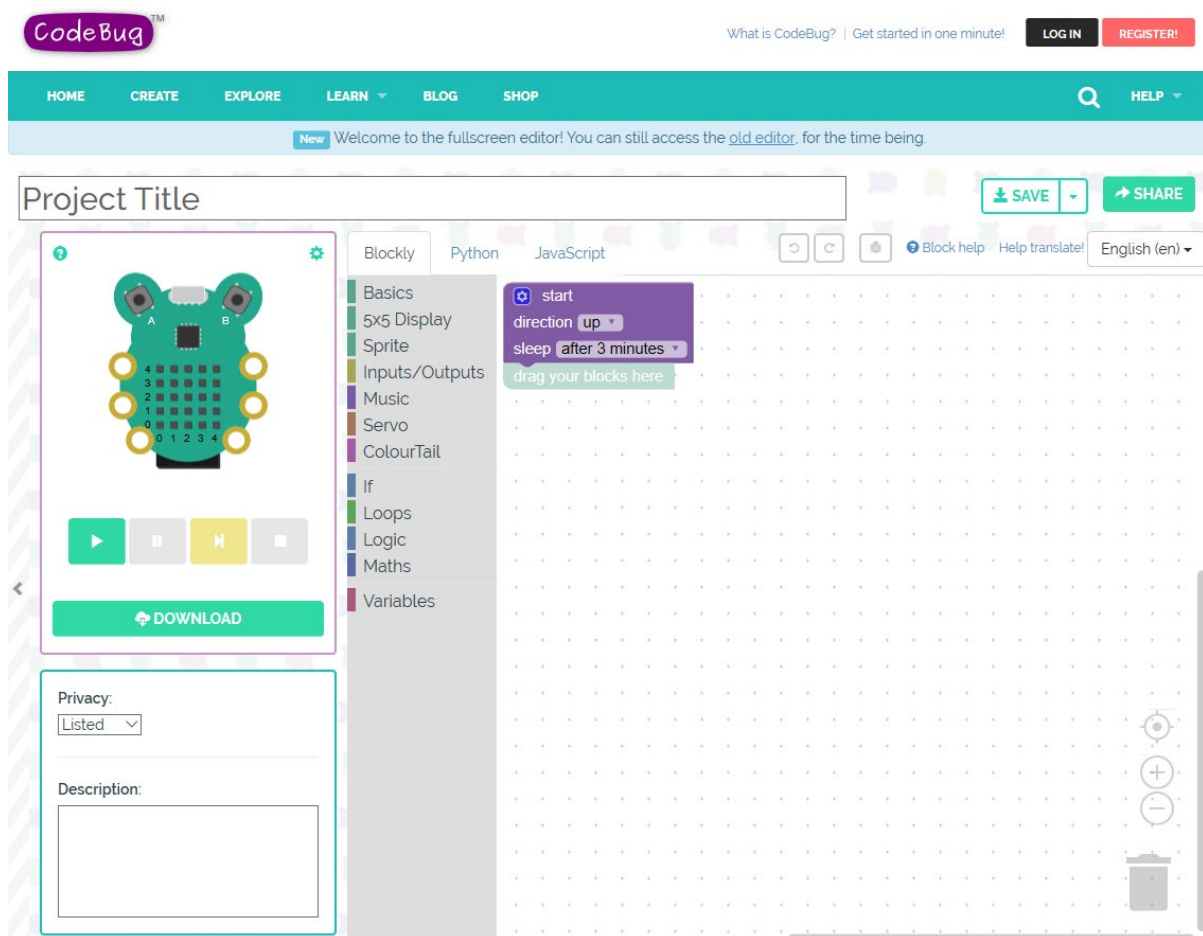
- If you haven't already got a web browser open on your laptop, then start one up (such as Edge, Chrome or Firefox) and navigate to:

www.codebug.org.uk

- No need to touch the Codebug just yet – click on the “Create” link at the top of the page:



- Your starting screen should look like this:



- On the left of your screen is a picture of your Codebug, which will allow you to test your code before running it on the Codebug itself.

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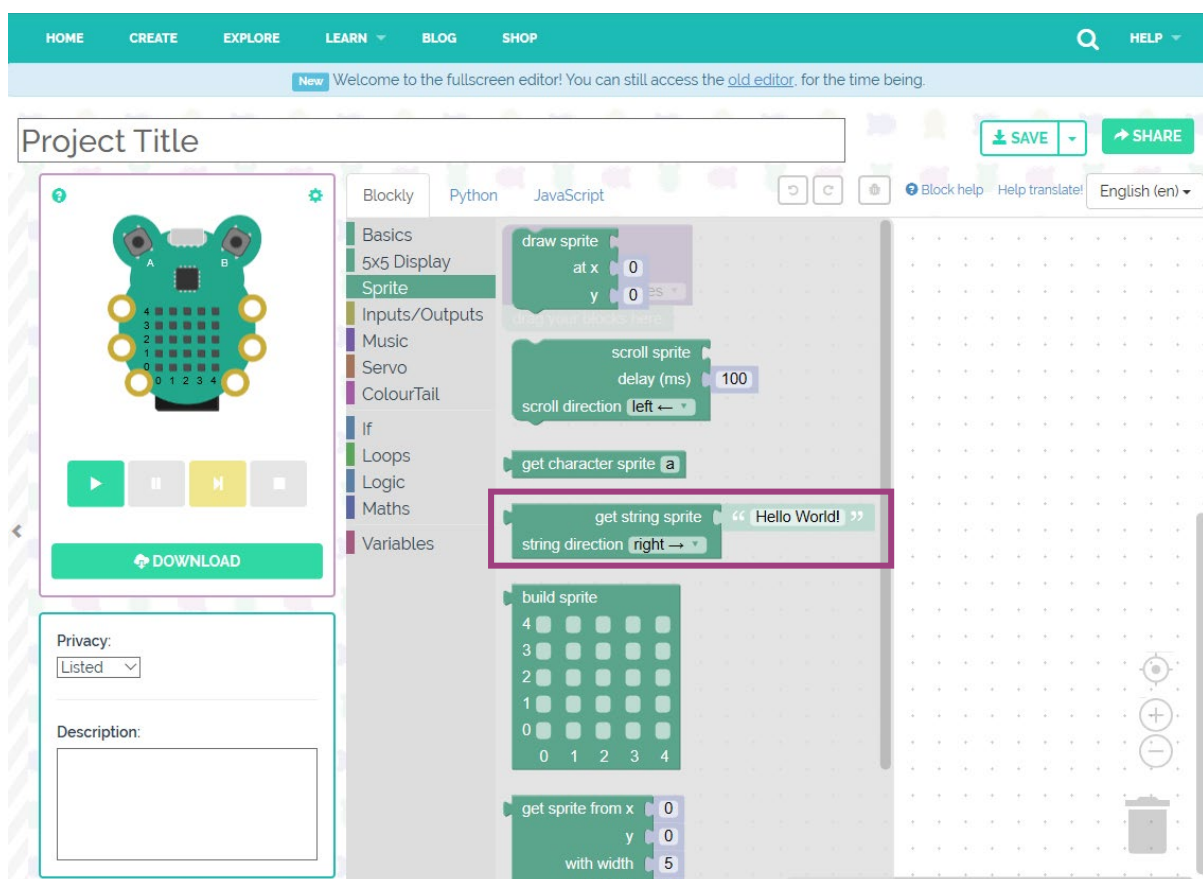
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If you've used Scratch or Blockly to do coding before, then this programming language will seem very familiar!

- To create code, we select blocks by clicking on the groups in the grey panel next to the image of the Codebug. Then we drag the block we want onto the workspace.
- Blocks click together like Lego.
- If your code doesn't appear to work, first make sure the blocks have clicked together!

Creating your First Codebug Program

- In the 'Sprite' set of blocks, are blocks which tell the Codebug what to display:

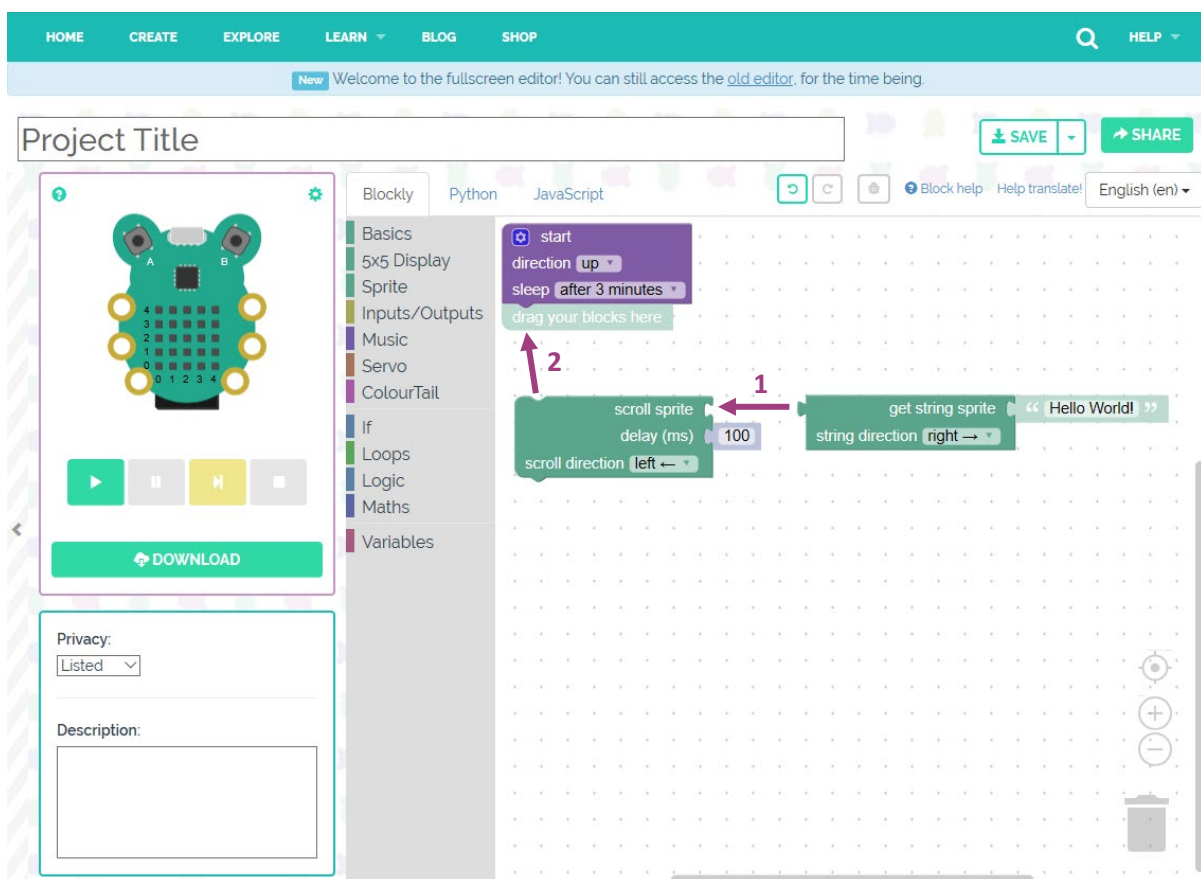


- The block we've shown above will display scrolling text on the LEDs on the Codebug.
 - Drag it onto the workspace.

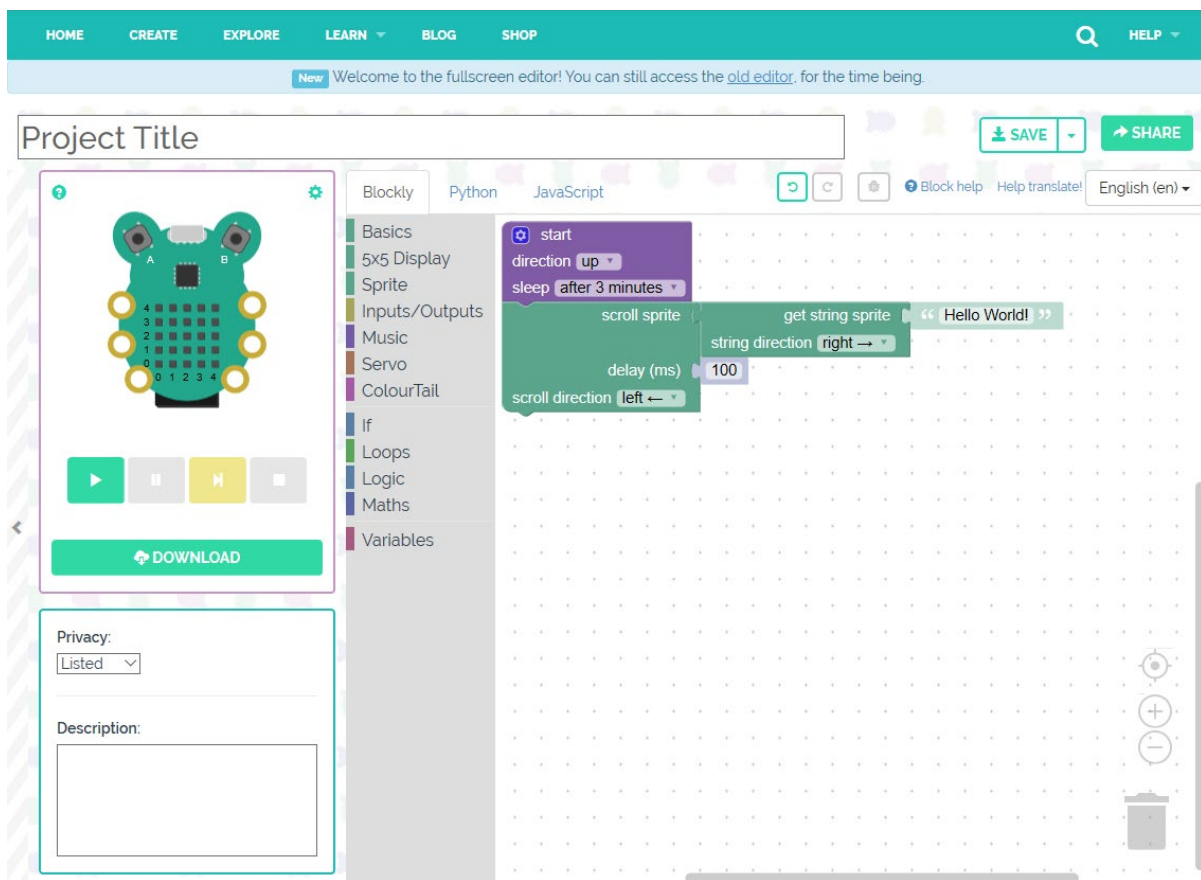
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- This block doesn't make the display work. For that we need another instruction.
- Choose the block that says *"scroll sprite"* and drag that onto the workspace too.
- Next, you'll see little notches that the blocks fit into, so:
 1. Move the *"get string sprite"* block towards the *"scroll sprite"* block... Until they click together!
 2. Then drag the *"scroll sprite"* block up towards the starting (purple) block until they also click together!




Your code should now look like this:




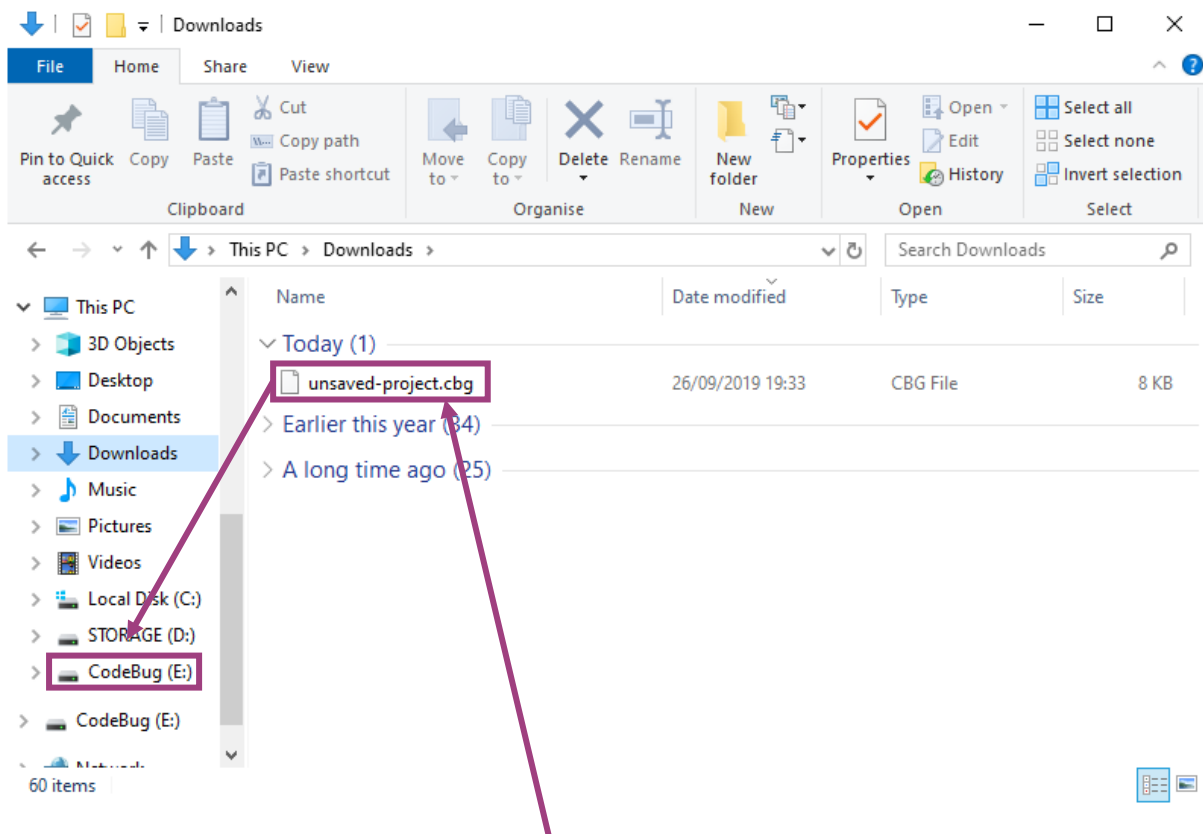
- To test your code, click on the 'play' button  underneath the Codebug on your screen.
- Does it work? If not, see if someone around you can fix it! If they can't, then you can always ask an Elf!
- See if you can make it display your name now!

Now to Download your Code!

To run your code on your Codebug, you will need to first download your code to your laptop.

- Click on the green "Download" button  **DOWNLOAD** After a short delay a box with the title "One moment..." will pop up.
- Press "Close" on the box, and the file will either begin downloading, or you will be asked whether you want to open or save the file. We want to **save**.

- To get the Codebug ready to accept the program, you need to plug the USB cable into the Codebug.
- **Before you plug the Codebug into your PC** – press and hold button A, then plug the other end of the USB cable into your PC **whilst still holding button A**.
- Once you've plugged it in, a light should come on. When the light starts flashing, it is telling you that the Codebug is ready to receive a program.
- Open the File Manager program  and select "Downloads". You should see something like this:

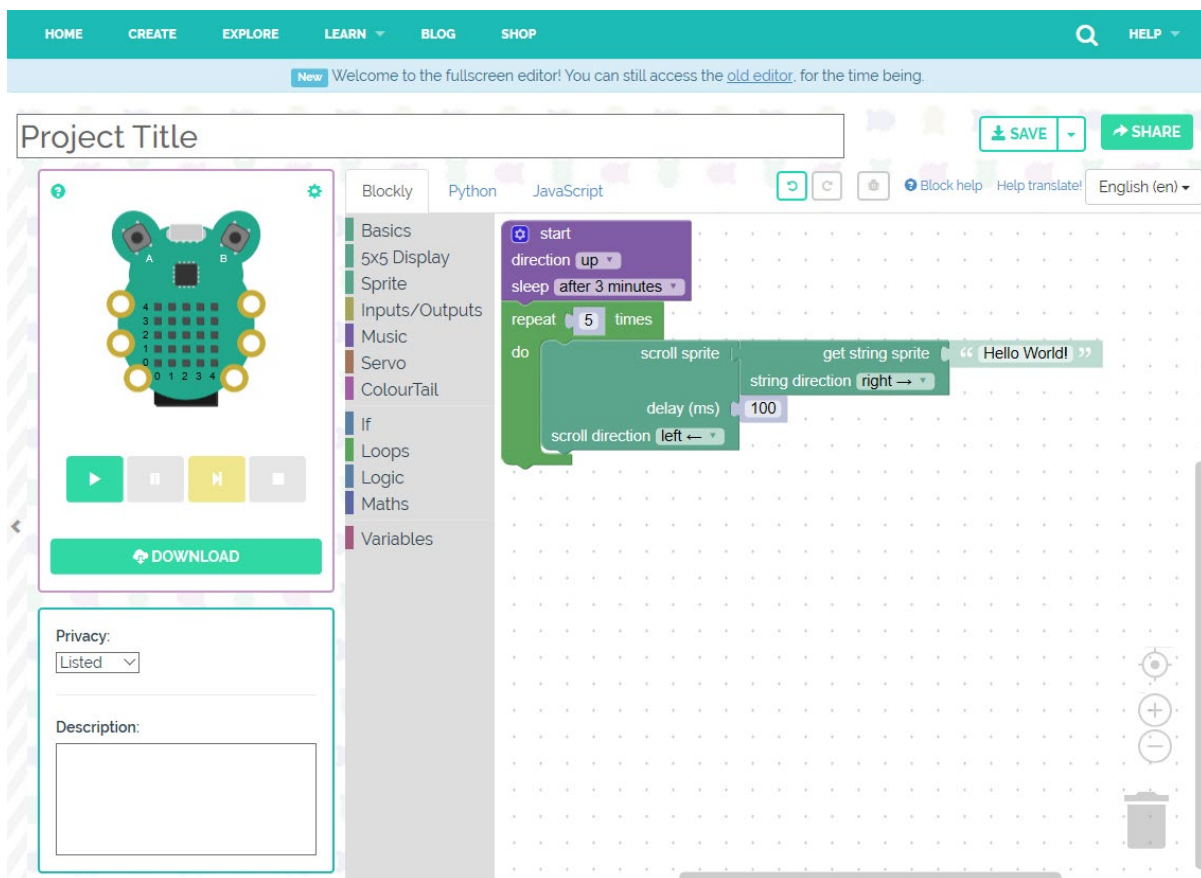


- Drag and drop the Codebug file onto the Codebug on the left. Another light should appear to tell you that it has received the program.
- Press B on your Codebug to run the program.

Improving your Codebug Program

You'll have noticed that the Codebug displays your message once, then turns itself off. Wouldn't it be great if you could display the message more than once?

- Look in the “**Loops**” blocks.
- Can you make some code that looks like the code below?



- Run the code on the test Codebug on screen.
- When you're happy with how it runs, follow the download instructions again.

Hint: your code may now be called 'unsaved-project(1).cbg' or something similar.

- Run the code on the Codebug.

Challenges

Now you're an experienced Codebug programmer, see if you can complete these challenges by yourself!

- Can you make your message run faster or slower?
- Can you make it scroll in another direction?
- Can you find a loop block that will repeat your message forever?
- Instead of scrolling a text sprite, can you make a pattern on the grid and scroll that? Or even change between two patterns?
- Unplug the Codebug from your computer and place a battery in the holder on the back. What happens?