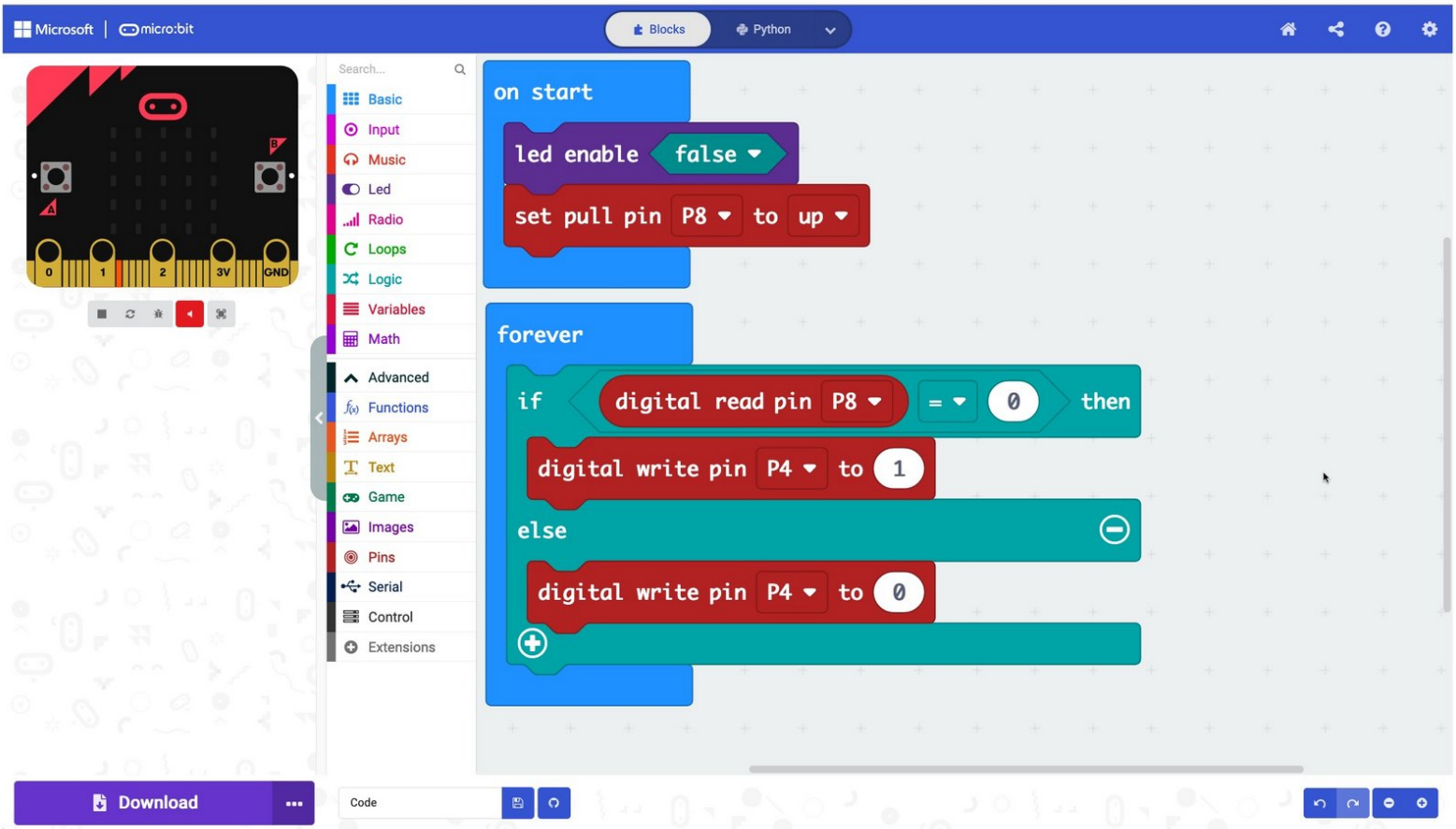
micro:bit Programming Modes in MakeCode

Microsoft MakeCode is an easy way to get started with programming! It offers both block and text editors for learners at different levels.

Written By: Pete Prodoehl



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INTRODUCTION

Microsoft MakeCode is an easy way to get started with programming! It offers both block and text editors for learners at different levels.

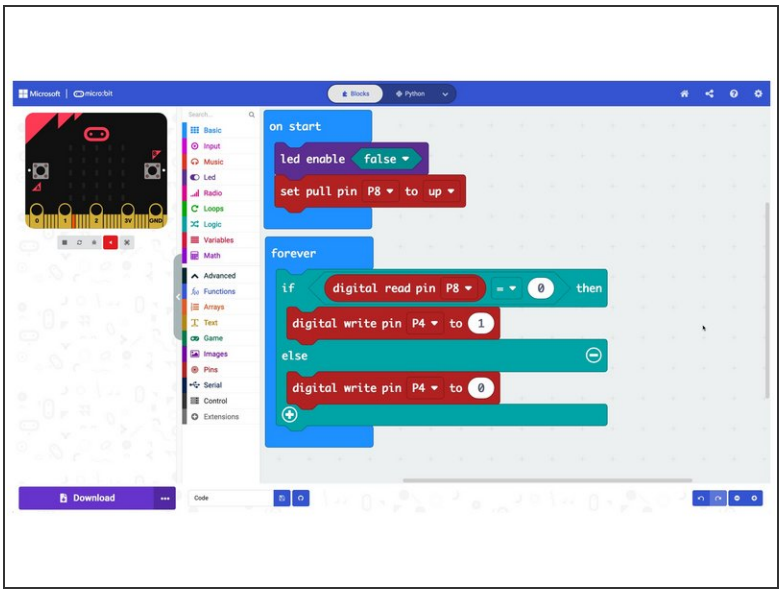
TOOLS:

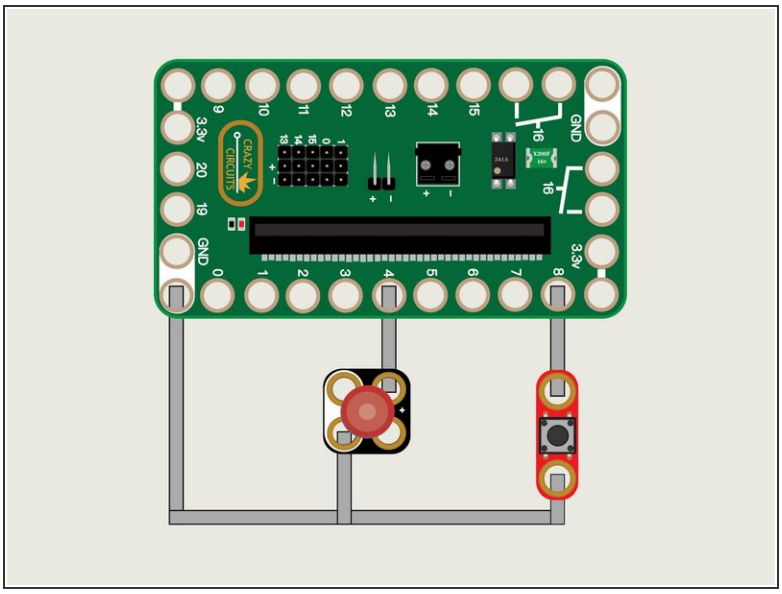
- Computer (1)
- Scissors (1)

PARTS:

- Crazy Circuits Bit Board (1)
- micro:bit (1)
- Crazy Circuits LED Chip (1)
- Standard Pushbutton Chip (1)
- Maker Tape (1)
  1/8" Wide

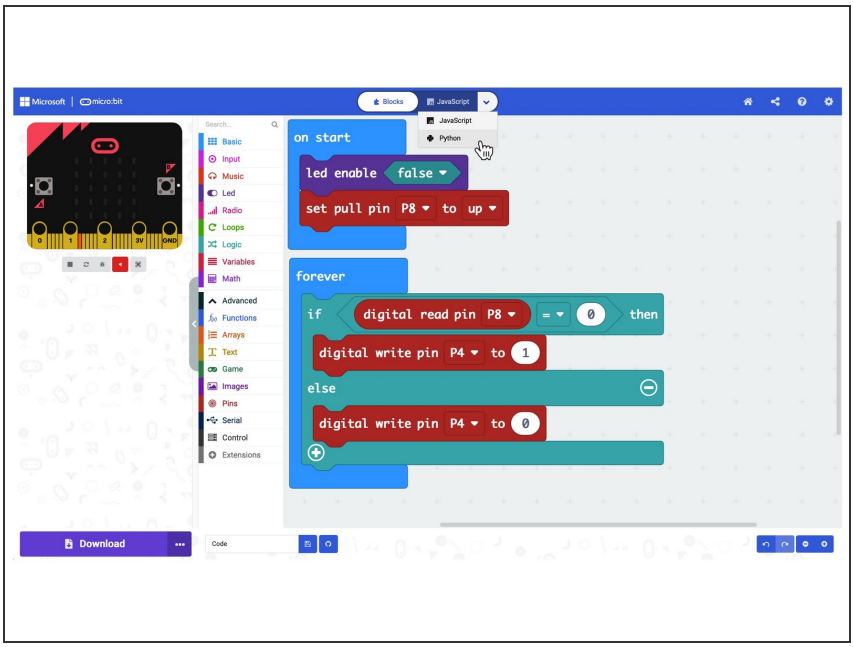
Step 1 — The MakeCode Editor





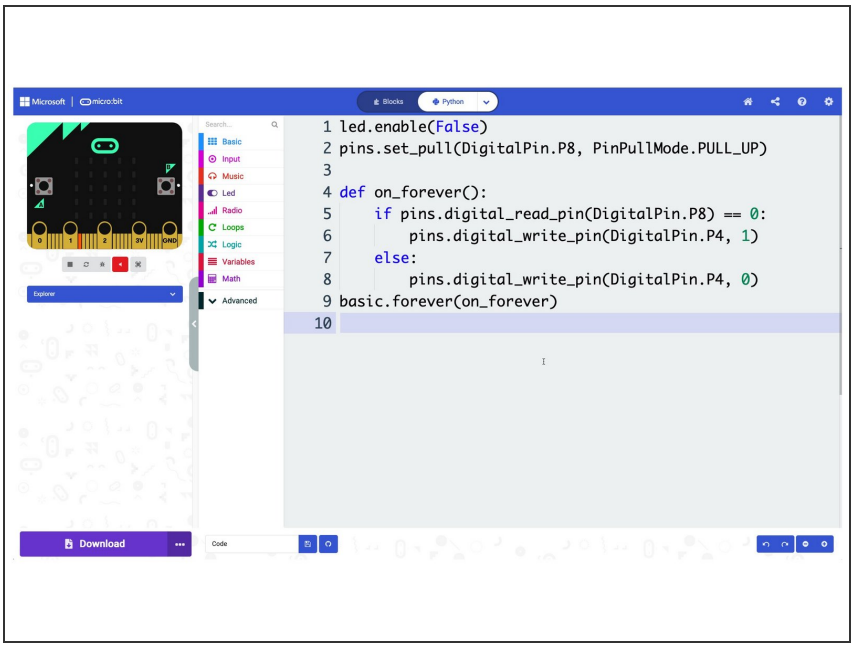
- The default mode of the MakeCode editor is **Block** mode.
- Block-based coding is the simplest way for beginners to get started! The blocks are color coded based on their function, and are different shapes depending on how they work.
- They also "fit together" so it's easy to see what goes where.
- If you're new to coding or teaching it to those just getting started block mode is a great choice for your Crazy Circuits journey.

Step 2 — Switching Modes



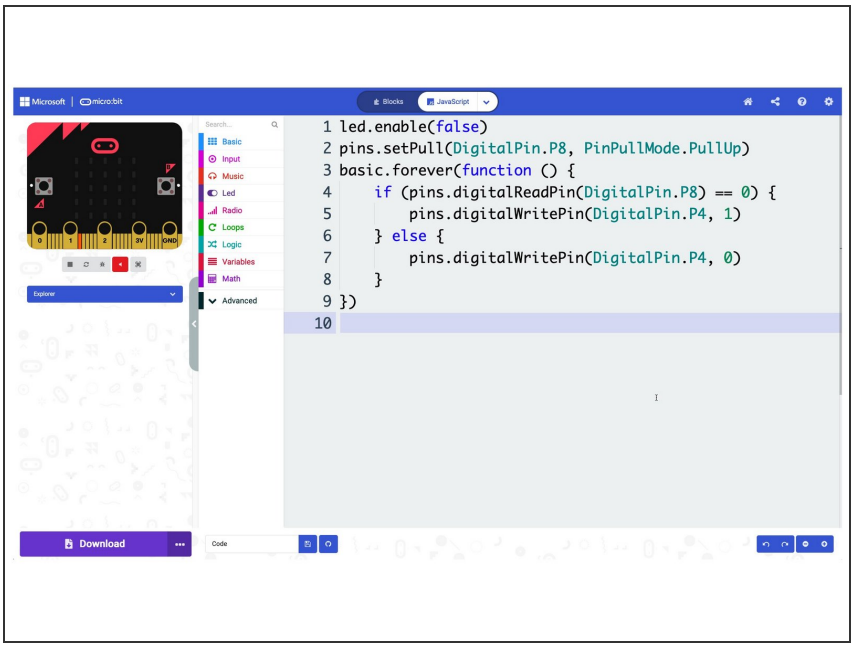
- To switch modes in MakeCode it's as simple as clicking on the drop down menu at the top of the editor.
- You have the choice of using **JavaScript** or **Python**.
- When you make the change the view of your code will change, *but don't worry*, it will still run the exact same way.

Step 3 — MakeCode Python



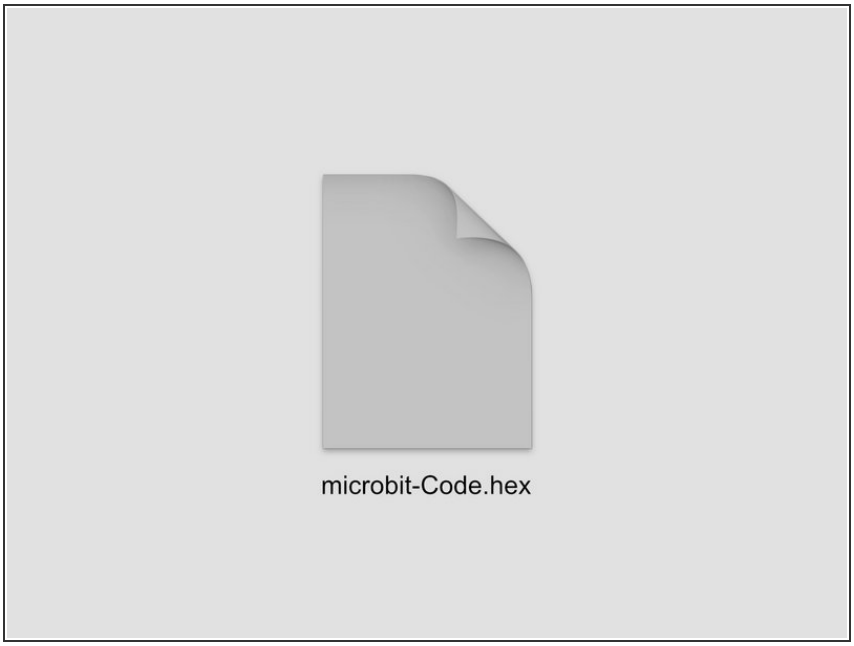
- Python has been around since the 1990s and is often targeted towards beginners due to its readability.
- The specific version of Python in MakeCode is known as **MakeCode Python**.
- You may have heard of other versions of Python such as **MicroPython** or **CircuitPython**.
- All of these version of Python are a subset of the full Python language, and are focused on working with microcontrollers.
- Want to learn more about MakeCode Python? Start here: https://makecode.microbit.org/python

Step 4 — MakeCode JavaScript



- JavaScript has been around since the mid-1990s and is one of the most commonly used scripting languages. It is used on over 1 billion web sites.
- As with Python in MakeCode, **JavaScript** is a subset of the full language that is suitable for programming a micro:bit to do specific tasks.
- Getting used to JavaScript (and Python) is a great way to dive deeper into real programming languages that are used every day.
- And you can always go back to Block mode if you get lost. Learning to program can be difficult so being able to toggle between modes is a great feature.
- Want to learn more about JavaScript in MakeCode? Start here: https://makecode.microbit.org/javascript

Step 5 — The HEX File



- Typically **Python** and **JavaScript** programs are just text file, usually ending in **.py** or **.js** to specify the language used.
- These file extensions help tell a computer what program to use to run them, and tell us humans what programming language the file is written in.
- In the end though, the MakeCode editor provides a **HEX** file for download. This is what you'll copy onto the micro:bit
- A **HEX** file is sort of like code that has been compiled into an application. Your code is in there, you just can't read it because it's been converted to code that a micro:bit can understand.
- The fact that you're created your code in **Block** mode or **Python** or **JavaScript** mode is about how *you* want to write the code. In the end the output (the HEX file) is the same no matter what mode you choose.