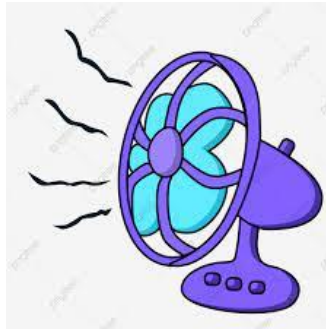


Activity:

Fan Function



Description:

Modify the temperature fan controller program by converting it to a function.

Vocabulary and Concepts:

Variable: An element, feature, or factor that is liable to change; in a programming language, a symbolic representation of some state or property of the program.

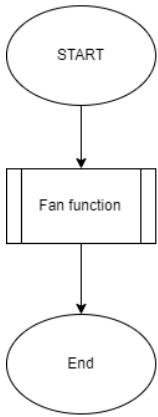
Sensor: An input device that reads or measures a physical property and converts it to a numerical value.

Temperature Sensor: a sensor that measures the temperature in degrees Celsius (scientific units)

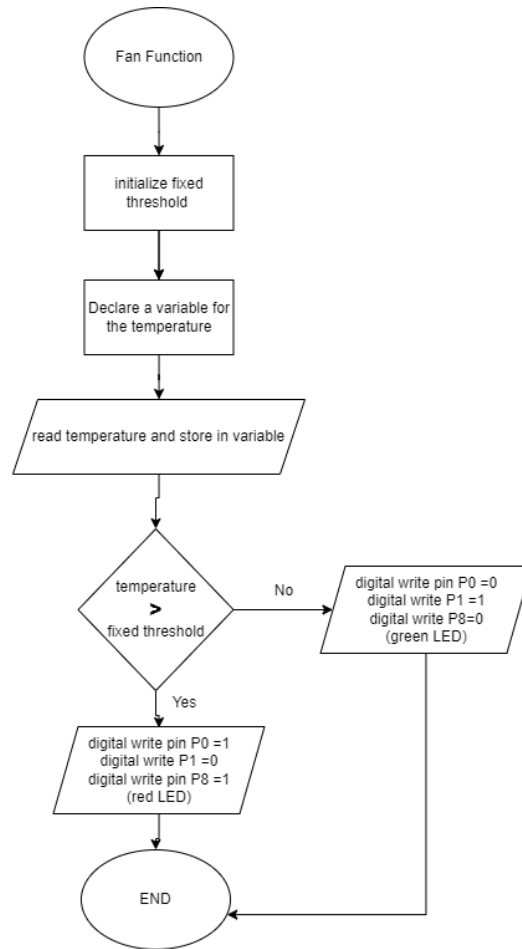
Function: A named piece of code that can be called repeatedly, sometimes called procedures or methods: a segment of code that includes the steps performed in a specified process.

Flowchart:

A flowchart is a way of representing the step-by-step process (algorithm) of you program. For this program, the flowchart is



NOTE: When Button A is pressed we start



There is always a circle informing you where the algorithm starts. The arrows walk you through to the next steps. The program should take an input pressed button. Next, output the temperature. Finally, the program should end. Since, the program contains a function, the rectangle with the lines within it represents a function.

Build the Circuit:

Materials Required:

- Edge I/O Adapter for micro:bit
- Micro:bit battery pack (**2xAA or 2xAAA**)
- Two Crocodile clip wires
- Eight jumper wires
- 5V high/low level trigger relay
- One Crocodile clips
- DC Motor
- Fan
- Two LEDs (red and green)
- Two resistors

Hardware Hookup:

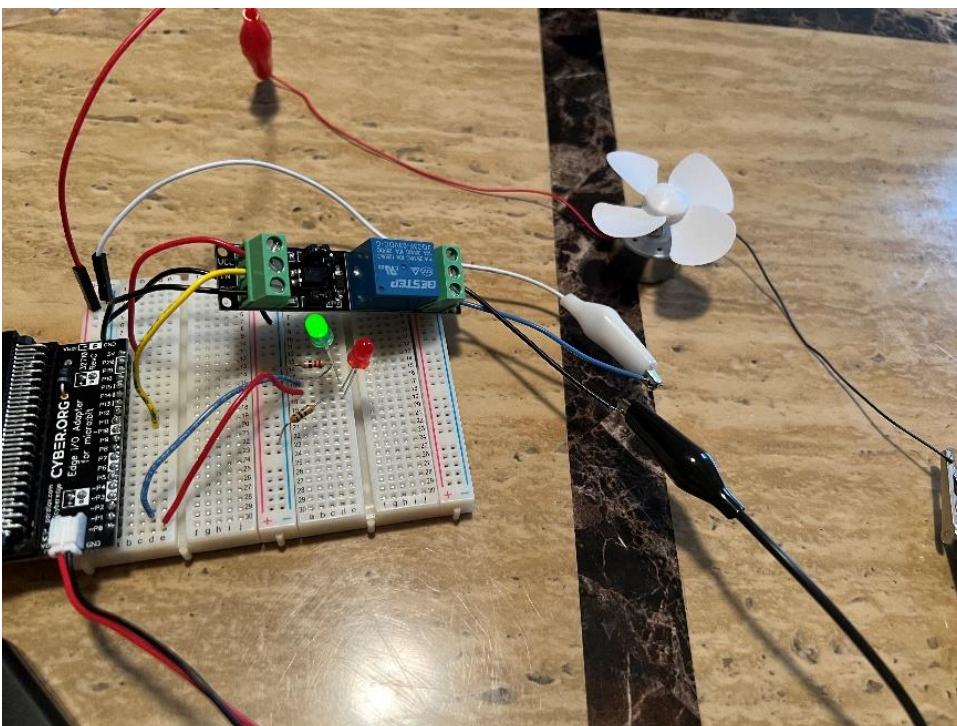
Contact from Relay	Connection to Edge I/O adapter	Jumper Wire
VCC	3V	Any color wire (ex: red)
IN	P8	Any color wire (ex: yellow)
GND	GND (blue negative line)	Any color Wire (ex: black)

Contact from Relay	Connection to fan	Jumper Wire
COM	Black crocodile clip	Any color wire (ex: black)
Black wire from COM on relay	Black wire on fan	Black crocodile clip
NO	White Crocodile clip wire	Any color wire (ex: blue)
Blue wire from NO on relay	GND (on breadboard) (blue negative line)	White crocodile clip
Not on relay (on breadboard) (red positive line)	Red wire on fan	Red crocodile clip

Contact from Edge I/O adapter	Connection to Breadboard	Connector
P0	Check instruction 1 (ex: a17)	pin wire
P1	Check instruction 2 (ex: a16)	pin wire
GND (ground)	GND (blue negative column)	pin wire
	Check instruction 3 (ex: 17e & 18e)	Red LED
	Check instruction 4 (ex: 18d & blue negative)	Resistor
	Check instruction 3 (ex: 15e & 16e)	Green LED
	Check instruction 4 (ex: 15d & blue negative)	Resistor

Instructions:

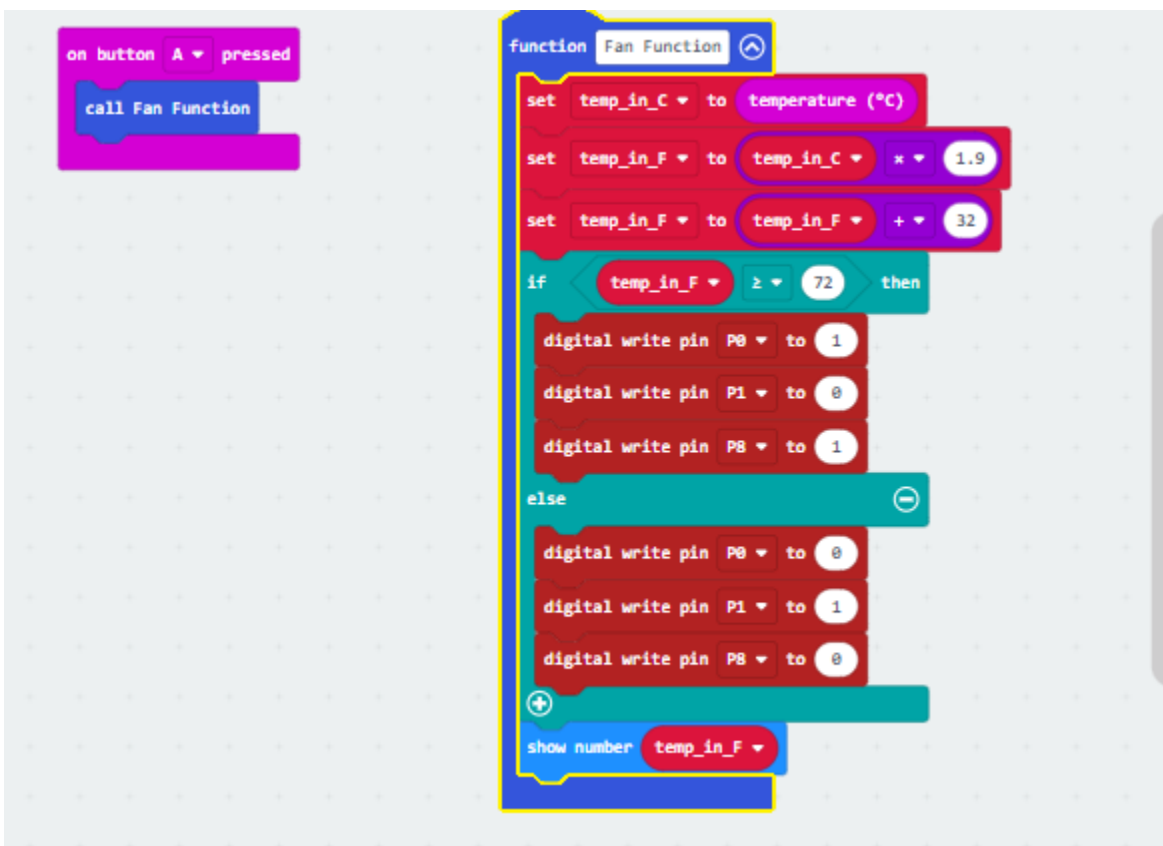
- 1) Can be placed anywhere on breadboard from column a-e and row 1-30 or use example in chart.
- 2) Can be placed anywhere on breadboard except the same row as last pin wire or use example in chart.
- 3) The **longer leg(anode)** of LED must be on the same row as the pin wire and the **shorter leg(cathode)** of LED must be the same row as the resistor or use example in chart.
- 4) Must be on blue negative column and on the same as led or use example in chart.
- 5) Connect battery pack to Edge I/O adapter



Let's Start Programming!

Step 1: Getting Started

This program basically is using the same blocks from the temperature fan controller program and placing it into a function. To do this, press the function tab to create a function and name it "Fan Function". Next, place all recent block code into the function block. Finally, click the function tab again and grab the call fan function block and place it in a on button pressed block.



Step 2: Selection Changes

Certain changes can be made within the "on button pressed" block by choosing between A, B, or A+B which means we can determine if we would like to change the temperature when button A is pressed on the microbit, button B, or Both buttons with A+B. The threshold value can also be changed by entering a number in the text box.

Step 3: Test your Program using the Emulator

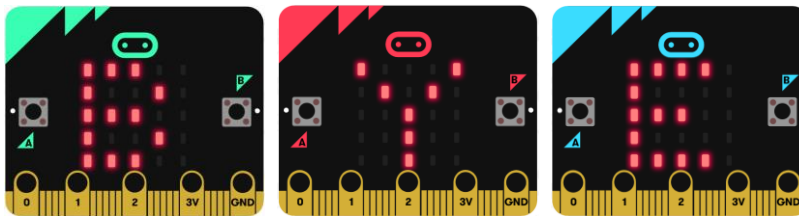
Step 4: Download the Program

Step 5: Connect to your micro:bit

Step 6: Running the Program on the micro:bit

Congratulations!

You have created your Fan function program!!



References

Flowchart tool: <https://www.draw.io/>