**Code conversation full solution - whisp-o-meter**

**Code for program is here (called shoutometer)**

**https://github.com/monkmakes/micro\_bit\_kit**

**Describe what the whole program is doing in a couple of sentences:**

If you make a noise near the microphone section of the MonkMakes Sensor Board the LEDs on the micro:bit light to show the volume. The louder the noise, the more LEDs will be lit. The program defines a function called bargraph which firstly clears the LED display then produces a bar graph representing the volume of received sound waves on the LED display.

**Fill in the blanks**

|  |  |
| --- | --- |
| ***Code*** | ***What is this line doing?*** |
| from microbit import \* | imports the micro:bit module to give you access to all the hardware that is built-in into your board |
| This function will determine the bargraph display on the micro:bit |  |
| def bargraph(a): | defines a Python function called bargraph () passing parameter ‘a’ - a number between 0 and 4 |
| display.clear() | calls the micro:bit display.clear() function which sets the brightness of all of the LEDs to 0, i.e. off. It clears the LED display screen |
| for y in range(0, 5): | starts a for loop. Iterating through from 0 to 4.  for y in range (5) does the same thing. |
| if a > y: | If a is greater than y then... |
| for x in range(0, 5): | for x within range 0 to 4.... |
| display.set\_pixel(x, 4-y, 9)\*\* | ...call the inbuilt function display.set\_pixel() so that the ‘for x’ loop lights up all the LEDs in the current row. |
| while True: | Loop forever |
| sound\_level = (pin0.read\_analog() - 511) / 100\* | The function pin0.read\_analog gives a number between 0 and 1023 depending on the voltage at pin0. 511 is then subtracted from it and the result divided by 100. The maximum sound\_level would then be interpreted as 5.12. |
| bargraph(sound\_level) | The value for sound\_level is now passed back as a parameter to the function bargraph. |

\*Since pin0 is connected to the microphone, the signal will vary between 0 and 1023 as the sound wave oscillates. 511 is subtracted from the reading to get a midpoint of the signal. This means that sometimes the result to be displayed by the plot bar graph blocks will be negative, but that doesn’t matter as the bar graph plotter will just ignore those values.

\*\*display.set\_pixel(x,y,value) - this inbuilt function sets the brightness of the LED at row x and column y to value, which has to be an integer between 0 and 9. In this case the brightness is always set to the maximum 9.