

IET BBC micro:bit session

A sun exposure alarm

Sun exposure is a major cause of skin cancer, the rate doubled between 1975 & 2000. Because we can't see the light that causes the problem, you have been asked to create a device that monitors light levels and displays/sounds an alarm if a certain level is reached.

1. When a button is pressed, display the internal light sensor reading.
2. What are typical values from the light sensor? Dark, ambient, directed at a light source, with a torch.
3. Display a message if the reading is too high. (hint: *IF* block)
 - A. Optionally, display a message if the value is low. (hint: *ELSE IF*)
 - B. Optionally, display a message if value is in the middle. (hint: *ELSE*)
4. Connect the **external light sensor**, read the value in to a variable and display it. (maybe use a different button press so your internal light sensor is still available?)
5. What are the typical values from this light sensor?
6. Alter / copy code blocks that display the message to use the new values.
7. Connect the **buzzer**, add the output block so that it sounds when the high message is displayed.
8. Add an output block to reset the buzzer output. You can use a *PAUSE* to allow the buzzer to sound or use an *ELSE*.
9. To check continuously, change the check from a button press to a *FOREVER* block and add a *PAUSE* at the bottom.
 - A. Optionally, add a variable to count the number of times that the value is high, only sound the buzzer after an appropriate number of counts. (hint: whilst testing the pause & count values may be smaller than the values you would use for a real product.)
 - B. Optionally, sound the buzzer for a short time every time the light value is high. When the time count has passed, sound the buzzer continuously.