**Code conversation level 3 - Intelligent cooling fan**

**Code for the program is here:** https://tinyurl.com/2wtkdh2d

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

The intelligent cooling fan turns on if the ambient temperature is warm and the solar store is more than half full, then off if the temperature is cold or the solar store is not full enough. In addition the program puts a message on the micro:bit which says YES when the fan is on and NO when the fan is off. Buttons A and B are provided for an override that allows you to request the fan manually. B overrides and A cancels the override.

**Fill in the blanks**

| ***Line*** | ***Code*** | ***What is this line doing?*** |
| --- | --- | --- |
| 1 | from microbit import |  |
| 2 |  |  |
| 3 | CHARGED = 818/2 |  |
| 4 | DISCHARGED = 220 |  |
| 5 | HOT = 23 |  |
| 6 | COLD = 20 |  |
| 7 | override = False |  |
| 8 | temp = 0 |  |
| 9 |  |  |
| 10 | def read\_temp(): |  |
| 11 | global temp |  |
| 12 | temp = temperature() |  |
| 13 | if override: |  |
| 14 | temp = HOT |  |
| 15 |  |  |
| 16 | def fan\_needed(): |  |
| 17 | return stored >= CHARGED and temp >= HOT |  |
| 18 |  |  |
| 19 | def fan\_not\_needed(): |  |
| 20 | return stored <= DISCHARGED or temp <= COLD |  |
| 21 |  |  |
| 22 | def fan\_on(): |  |
| 23 | pin2.write\_digital(1) |  |
| 24 | display.show(Image.YES) |  |
| 25 |  |  |
| 26 | def fan\_off(): |  |
| 27 | pin2.write\_digital(0) |  |
| 28 | display.show(Image.NO) |  |
| 29 |  |  |
| 30 | # main program |  |
| 31 | while True: |  |
| 32 | # sensing |  |
| 33 | stored = pin0.read\_analog() |  |
| 34 | if button\_a.was\_pressed(): |  |
| 35 | override = True |  |
| 36 | if button\_b.was\_pressed(): |  |
| 37 | override = False |  |
| 38 | read\_temp() |  |
| 39 |  |  |
| 40 | # control |  |
| 41 | if fan\_needed(): |  |
| 42 | fan\_on() |  |
| 43 | elif fan\_not\_needed(): |  |
| 44 | fan\_off() |  |
| 45 |  |  |
| 46 | print(stored, temp) |  |
| 47 | sleep(1000) |  |
|  |  |  |