Practical 2 — The Darkness Alarm and Find and Fix

Booklet 4b, pages 18 to 21. Success criteria 4.4, 4.5 and 4.7. Route: NoSyntaxSim → Duino.app: Verify → Upload → build it. Answers go in your jotter.

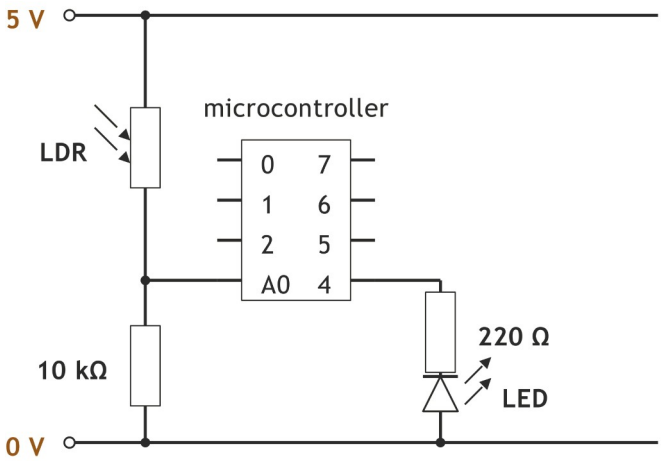
The idea being tested

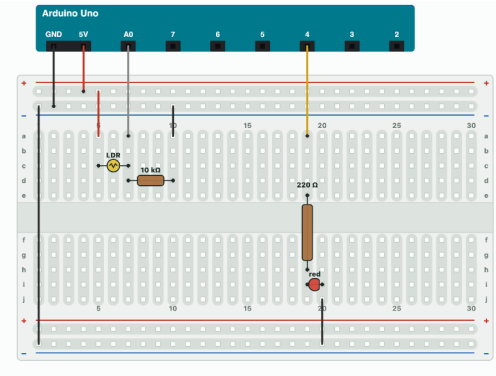
A sensor gives the Uno a number, not just on or off. A program that will not work has faults you can find, one line at a time.

Table 1 — the pins

Pin	A0	4	2	7
Part	LDR (in)	LED (out)	button (in)	buzzer (out)

1 The darkness alarm (Worked Example 3)





Booklet pins 13 and A0: we use 4 and A0.

Table 2 — flashes

Change to the code	Predict	Sim	Uno
As printed, LDR covered			
300 → 600, room light			
i < 10, LDR covered			
< → >, room light			

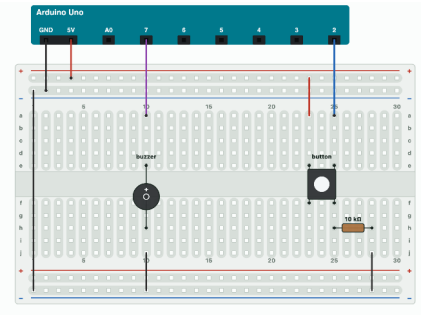
2 Find and Fix (Debug Builds 1 and 2)

Debug Build 1 — LED on 4

```
void setup() {
}
void loop() {
  digitalWrite(4, HIGH);
  delay(1);
  digitalWrite(4, LOW);
  delay(1000);
}
```

Debug Build 2 — button 2, buzzer 7

```
void setup() {
  pinMode(2, INPUT);
  pinMode(7, OUTPUT);
}
void loop() {
  if (digitalRead(2) = HIGH) {
    digitalWrite(7, HIGH);
    delay(2000);
    digitalWrite(7, LOW);
  }
```



Debug Build 2 on the board.

Table 3 — the faults

Build	Line	Fault	Fix
1			
1			
2			
2			

Questions

Q1 In the dark, does the number from analogRead(A0) go up or down? Explain using the LDR's resistance. **[2]**

Q2 for (int i = 0; i < 5; i++) — state the values i takes, and how many times the loop runs. **[2]**

Q3 Explain the difference between = and == in Arduino C. **[2]**

Q4 The exam never asks for code. Draw Debug Build 2, fixed, as a flowchart in the exam's form, with pin numbers and units. **[3]**