Practical 1 — Lamp and Traffic Lights

Booklet 4b, pages 15 to 17. Success criteria 4.3 and 4.6. Route: NoSyntaxSim → Duino.app: Verify → Upload → build it. Answers go in your jotter.

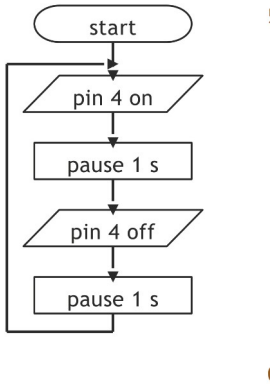
The idea being tested

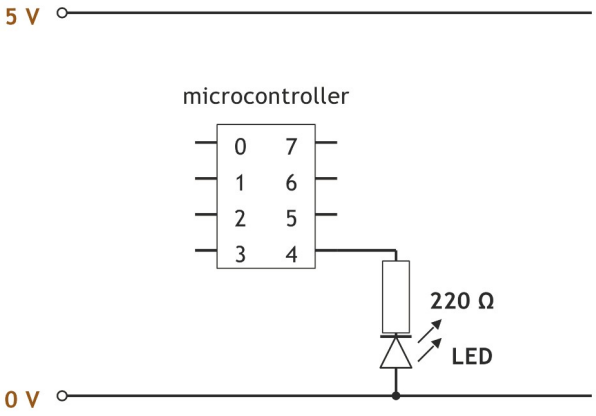
A flowchart, its Arduino C and the wires all describe the same system. The pin number has to be the same in all three, or nothing happens.

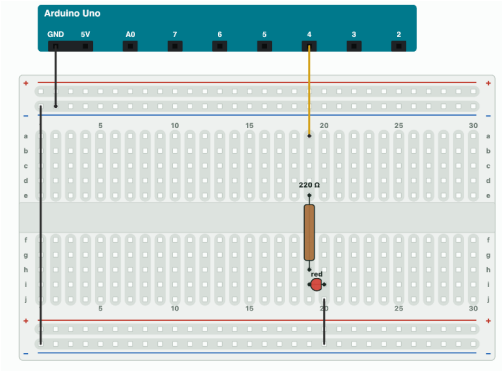
Table 1 — the pins

Pin	4	5	6
Output	red LED	amber LED	green LED

1 The flashing lamp (Worked Example 1)





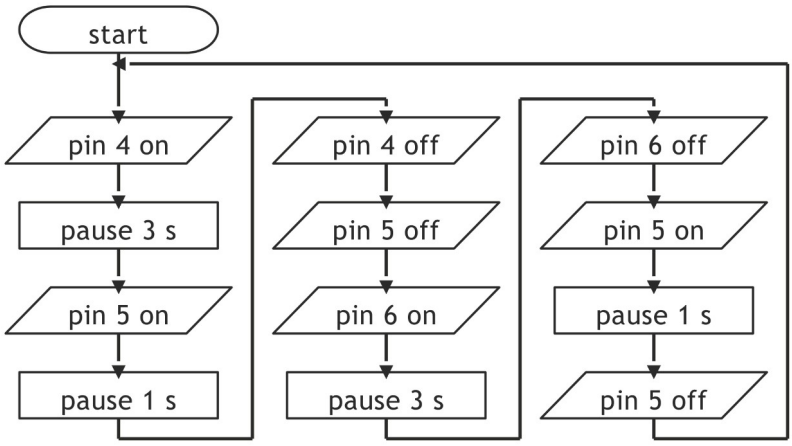


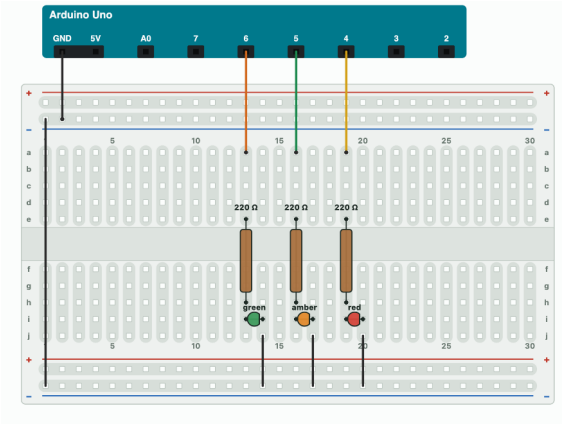
Long leg to the resistor.

Table 2 — flashes in 10 seconds

Delays (ms) on / off	Predict	Sim	Uno
1000 / 1000			
200 / 200			
100 / 900			

2 The traffic lights (Worked Example 2)





Each LED has its own 220 Ω.

Table 3 — the four stages

Stage	Pins on	Time from the code (s)	Right? Sim / Uno
1			
2			
3			
4			

Questions

Q1 Explain why the pin number must be the same in pinMode(), in digitalWrite() and in the wiring. **[2]**

Q2 Green should stay on for 6 s, not 3. Write the line of code you change, before and after. **[2]**

Q3 Predict what happens if you swap the 4 and the 6 in setup() only. Try it. Explain what you see. **[2]**

Q4 Draw a flowchart in the exam's form for a lamp on pin 6 that is on for 0.5 s and off for 1.5 s, for ever. Put a pin number in every output box and a unit on every delay. **[3]**