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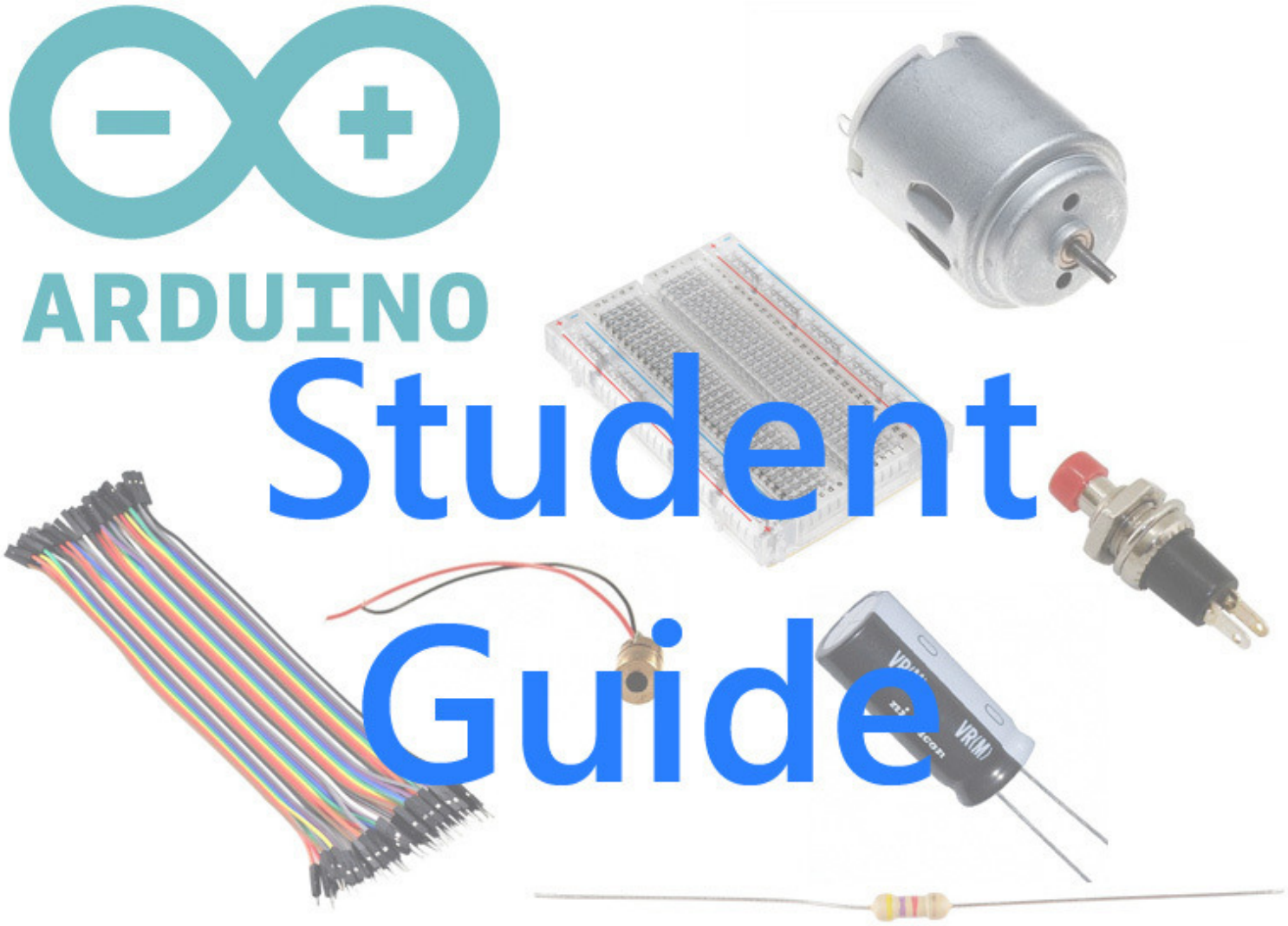
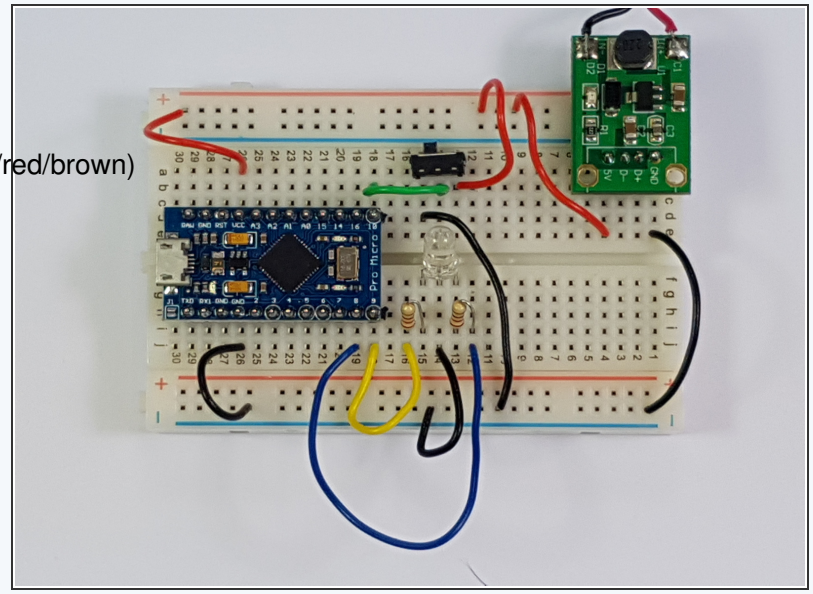
# Inventor School Session 2 - Bicolour LEDs and slide switches



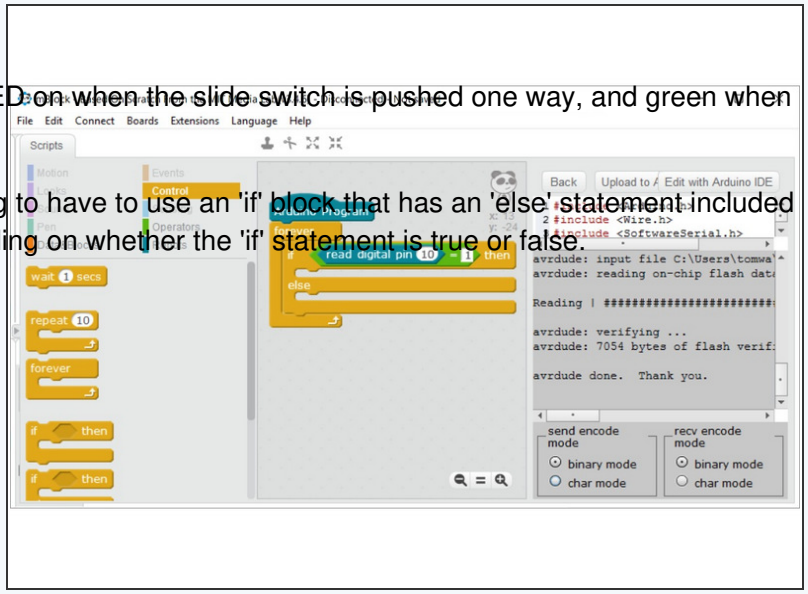

Step 1

## Step 1 — Wiring the slide switch and bicolour LED



- Wire up the circuit as shown
- Note that the resistors for the LEDs are 220 ohm (red/red/brown)
- As always, check your wiring very carefully!

## Step 2 — Writing the programme (M)



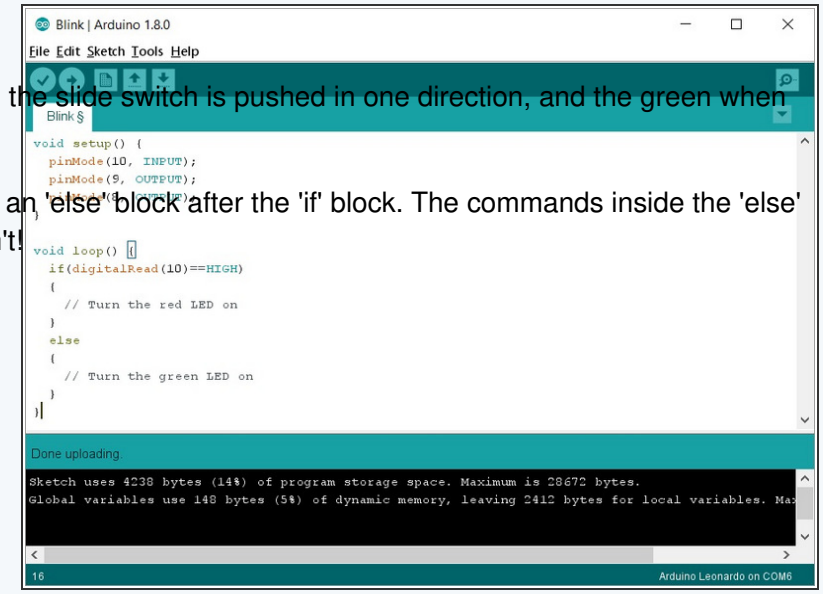

- Now you need to write a programme to turn the red LED on when the slide switch is pushed one way, and green when it's pushed the other way.
- We've started you off here - note that you're now going to have to use an 'if' block that has an 'else' statement included in it - this allows you to do two different things, depending on whether the 'if' statement is true or false.

## Step 3

Step 3

## — Writing the programme (A)

- Now write a programme that lights the red LED when the slide switch is pushed in one direction, and the green when pushed in the other.
- We've started you off here - note that you've now got an 'else' block after the 'if' block. The commands inside the 'else' block will be executed if those inside the 'if' block don't!




Step 4

## — Traffic light

- Can you write a traffic light controller? Think about the order that lights change when cars need to stop and start. Write a programme to run through this sequence of lights automatically. You can choose how fast/slow the lights change.
- Hint: You can get an effect like orange by turning on both red and green at the same time


Step 5

## Step 5

## — Faulty traffic lights

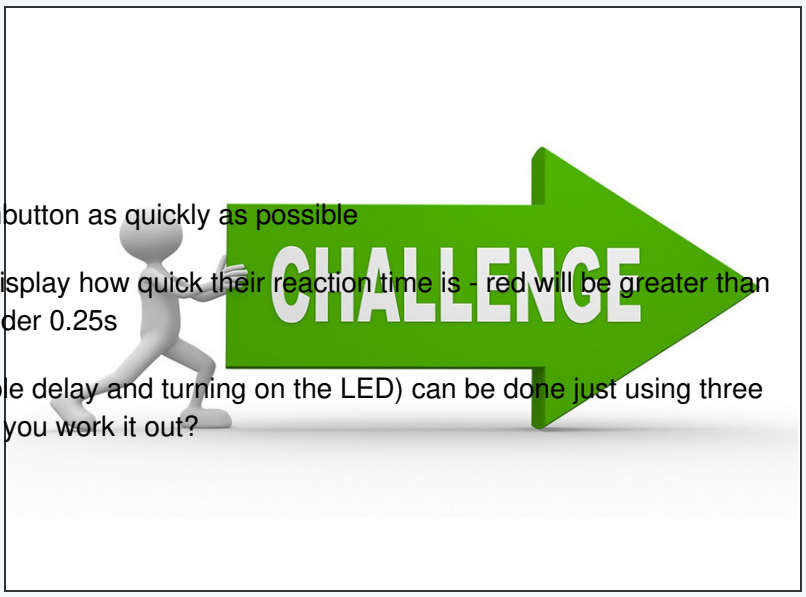
- When traffic lights aren't working, they sometimes are programmed to flash their orange lights.
- Can you write a programme that has a 'faulty' mode? When the slide switch is turned on, the lights should flash orange. When the slide switch is turned off, they should follow their normal order.


## Step 6

## — Reaction timer

- Can you make a reaction timer? It should:
  - Turn on the green LED 5 seconds after starting
  - This will tell the user that they have to press a pushbutton as quickly as possible
  - When they press the button, the LED should now display how quick their reaction time is - red will be greater than 0.5s, orange between 0.25s and 0.5s and green under 0.25s

Hint: this is tricky, but the main part of it (after the simple delay and turning on the LED) can be done just using three 'if' statements (with delays in between each one). Can you work it out?




## Step 7

## Step 7 — Extra hard reaction timer

- Can you create a reaction timer that has a switchable difficulty level? In the 'easy' mode (set by a slide switch), it should be quite easy to get a green light, but in the 'hard' mode, you have to be super quick to get a green light!