

Coding in Scratch: sequences

Lesson at a glance

Hook with real Irish traffic lights and the idea that a computer runs colours in a fixed order called a sequence. Model the starter project on the IWB, then pairs add red (5 s), green (10 s) and orange blocks in order, test after each step, and wrap the stack in a forever loop so the cycle repeats. Pupils record the working sequence in the Investigation Journal and close with a display-only code talk on bugs they fixed.

Learning objectives

- Build an ordered Scratch sequence that runs a simple program end to end
- Run the program and check that the order of steps is correct
- Record the working sequence in the Investigation Journal

Before the bell – prep

Test the Scratch starter link ([projects/1052671596/editor](https://scratch.mit.edu/projects/1052671596/editor)) on class devices the day before; bookmark it. Confirm pairs can share a device and that the traffic-light sprite with three costumes loads. Have Investigation Journals ready for the final recording beat.

Materials

Item	Qty	Per	Source	Low-cost substitute
tablet or laptop with Scratch	1	pair	school devices	run the lesson on the IWB with pupils taking turns

Safety watch-point

Use school devices and the provided Scratch starter only; no pupil accounts or external sharing needed. Remind pairs to carry and unplug devices carefully when packing away.



Teaching moves

- **What we're building:** Set the scene: pupils are programming traffic lights in stages. Model on the IWB first, then pairs work. Ask 'What has to happen first before anything else?' Reassure that bugs are normal and we fix them as we go.
- **Introduction:** Read the sequence callout together and link it to a morning routine. Ask 'What would go wrong if we did the steps in the wrong order?' before any blocks appear on screen.
- **Open Starter Project:** Have every pair open the starter link and confirm the traffic-light sprite with its three costumes is visible. Circulate — the common snag is opening a blank project instead.
- **Set it to red:** Model when-green-flag, switch-costume-to-red and wait-5 on the IWB, then pairs copy. Click the flag and confirm red holds. Watch for a missing wait that makes red flash by; celebrate this step working before moving on.
- **Set it to green:** Model placing green-and-wait underneath the red blocks — stress that order matters. Ask 'Which colour should show after red?' If green shows first, drag blocks to reorder. Pairs run and watch the full red-then-green sequence.
- **Set it to orange:** Add the orange blocks under green on the IWB. Ask pairs to predict the full order before they press play, then run to check. Watch for a missing wait that makes orange invisible.
- **Make it loop!:** Model dropping the forever block first, then dragging the whole stack inside it. Common bug: blocks left outside so only orange repeats. Ask 'What does forever mean here?' and run until the cycle clearly loops.
- **Wrap Up:** Connect back to real traffic lights repeating their cycle. Prompt pairs to save the Scratch project and record the finished working sequence in the Investigation Journal. Spot-check that each program actually loops.
- **Code talk — what worked and what we'd change:** Display-only discussion — no typing. Invite a pair who hit a bug to describe what happened and how they found it; revoice that checking after each block makes bugs easier to catch.

What it should show

A working program shows red 5 s, green 10 s, orange, then repeats forever when the green flag is clicked. Surprising results usually mean blocks snapped in the wrong order, a missing wait, or the stack left outside the forever block — reorder or nest and re-run.



Misconceptions & interventions

- Pupils think block order on the page does not matter as long as all the right blocks are there. — Run a version with green above red and ask what a driver would see. Drag the blocks into red-green-orange order and re-run so they see sequence is the order the computer reads.
- Pupils drop the forever block underneath the stack instead of wrapping the stack inside it, so only the last costume repeats. — On the IWB, show blocks sitting outside the C-shape versus tucked inside. Have them drag the whole stack into the forever mouth and click the flag to watch the full cycle loop.
- Pupils leave out a wait block and think the light is broken because a colour never appears. — Pause on the costume that flashes by. Add wait back under that switch-costume block and re-run so they see the hold time is what makes each light visible.

Differentiation

Emerging	Developing	Proficient
• Build the red-only stack with the teacher table first and celebrate it running before adding green. • Provide a printed block-order checklist (red → wait → green → wait → orange → wait → forever) pairs can tick as they snap each block.	• After the loop works, ask why wait times differ and whether 5 s / 10 s feels realistic for a real junction. • Have them re-predict the full order aloud before each green-flag run.	• Challenge pairs to critique fairness of the timing — would a shorter orange help? — and adjust one wait, then re-test the loop. • In code talk, ask them to name one change they would make if rebuilding the lights for a pedestrian crossing.

Cross-curricular hook

Link to SPHE road safety — the sequence exists so drivers and pedestrians know who moves when.