

Coding sequences and debugging in Scratch

Lesson at a glance

Open with the finished Scratch demo of the cat on the L-shaped path to the yellow star and collect plain-word steps on the board. Pupils plan that sequence on the Investigation Journal with devices still closed, then watch you model a planted wrong-turn bug and fix it. In pairs they build from their plan, run, debug one block at a time, and jot the bug and fix. Close with a share of what each pair changed.

Learning objectives

- Write a Scratch sequence that makes a sprite reach a goal
- Find and fix a bug in a program and describe what was wrong

Before the bell – prep

Charge one device per pair and open Scratch. Build the IWB demo once (cat facing the first leg, star at the end of the L, working move-move-turn-right-move-move stack) and a pupil starter with green-flag hat only. No devices: rotate pairs to the IWB while the class predicts.

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

Charge and manage shared devices carefully; save projects before shutdown. No trailing cables between desks; pack devices away at the close.



Teaching moves

- **Getting Started:** Run the finished demo once only. Ask for everyday steps (go forward, turn right...) and capture three or four on the board as the L-shaped path. Keep devices away and skip any block-palette tour.
- **Sequences, bugs and debugging:** Name sequence, bug and debug from the key-concepts table. Say clearly that bugs are expected and spotting one is skilled work, not a sign they are bad at coding.
- **Plan your sequence:** Devices stay closed. Pairs turn-and-talk then write or sketch the order in plain words (e.g. move, move, turn right, move, move). Hear two volunteers; do not correct every detail yet.
- **Model the first steps:** Start a fresh stack. Plant turn left 90 degrees, run so the cat leaves the path, then think aloud: which block, change only the turn to right, run again to the star. Hide the finished correct stack; leave the plain-word path visible.
- **Build, run and debug:** Pairs open the starter: one drives, one reads the plan and watches; swap halfway. Prompt: Where did the cat go wrong? Change only one block. If the first run works, they still break-and-restore one block and jot that mini debug. Circulate for journal notes and one same-path stretch.
- **Record in your journal:** Finish the Investigation Journal: working sequence, the bug on screen, and which block they changed. If a pair has no bug note, use their break-and-restore story. Save projects before devices go away.
- **What was the bug?:** Take three or four pairs and revoice into clear language: watched the cat, found the wrong turn, changed that block, ran again. Push past 'we kept clicking' to the specific block and reason.

What it should show

Working target is roughly move, move, turn right 90°, move, move (step size matched to your screen) so the cat lands on the star. Common bugs: left instead of right, missing move, blocks in the wrong order, or step size too big/small. A pair that 'never had a bug' should still show a deliberate break-and-restore note.

Misconceptions & interventions

- **"If there's a bug, I'm bad at coding."** — Point back to the tip and your planted wrong turn: almost every program fails first time. Praise naming the bug and the single block they changed.
- **"We just kept clicking until it worked."** — Ask which block they changed and why. Revoice: good debugging changes one thing, runs again, and can say what was wrong.
- **Pupils rebuild the whole stack instead of fixing the one wrong block.** — Stop them mid-wipe. Have them point to where the cat left the path, then change only that turn or move and green-flag again.

Differentiation

Emerging	Developing	Proficient
• Give a sticky note with the plain-word order (move, move, turn right, move, move) and have them act the path with a finger on screen before matching each move to a block. • Pair at the teacher table or rotate them to the IWB while you prompt one block at a time.	• After the cat reaches the star, choose one stretch on the same path (start offset, different step size, or an extra turn) and debug it the same one-block-at-a-time way.	• Explain their bug fix to a neighbouring pair in full debug language, or deepen the stretch path and record that second bug-and-fix on the journal page.

Cross-curricular hook

Link to Maths shape and space — quarter turns (90°) and following a route in order on a grid-like path.