Writing frames for practical work

LEARNING INTENTION

We are learning to write clear test results, evaluations and explanations in practice tasks.

SUCCESS CRITERIA – I CAN

- ☐ write expected results in terms of a measured value
- ☐ write test results that say what each component did
- ☐ evaluate against a specification point
- ☐ suggest a modification that fixes a stated issue

USING THESE FRAMES

Use these frames in class practicals and practice tasks (P1–P8). They help you build habits. They are **not for use during the assignment**; in the assignment you write in your own words.

Before testing

FRAME 1 · EXPECTED RESULTS

When the _____ is _____, V_{in} will be _____ (above/below) _____ V, so the transistor will _____ and the _____ will _____.

When the _____ is _____, V_{in} will be _____ _____ V, so _____.

Not for use during the assignment

After testing

FRAME 2 · TEST RESULTS

When I _____, V_{in} was _____ V.

The transistor _____, the relay _____ and the _____ _____.

This matched / did not match the simulation because _____.

Not for use during the assignment

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WORKED EXAMPLE **A full test result**

1 GIVEN	2 FIND	3 FORMULA	4 SUBSTITUTE	5 ANSWER + UNIT
frost alarm: thermistor at the bottom, transistor, buzzer test: thermistor put in ice	test result	say what you did give the reading with unit say what each component did	When I put the thermistor in ice, V_{in} rose to 0.82 V. The transistor switched on and the buzzer sounded.	**action + reading + each component**

Values are examples. Your own results will be different.

SHORT CIRCUIT

× WHAT EXAMINERS SAW

Test results did not refer to the components signposted in the task (for example the relay and motor), or did not match the simulation.

✓ THE FIX

Name each signposted component and what it did. Your results must match what the simulation showed.

Course reports 2025 and 2026 (assignment testing).

Evaluating and improving

FRAME 3 · EVALUATION

Specification point: The system should _____.

Evidence: In test _____, _____ happened.

Judgement: so the specification point was / was not met.

Not for use during the assignment

FRAME 4 · MODIFICATION

The issue is _____.

I would change _____ to _____.

This fixes the issue because _____, so _____.

Not for use during the assignment

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SHORT CIRCUIT

× WHAT EXAMINERS SAW

Evaluations repeated the results without saying whether the specification was met, and modifications did not fix the stated issue.

✓ THE FIX

Quote the specification point, give the evidence, then make a judgement. A modification must fix the issue named.

Course reports 2024–2026.

Exam-style answers

FRAME 5 · EXPLAIN (CAUSE AND EFFECT)

_____ (cause), so _____ (effect).

Not for use during the assignment

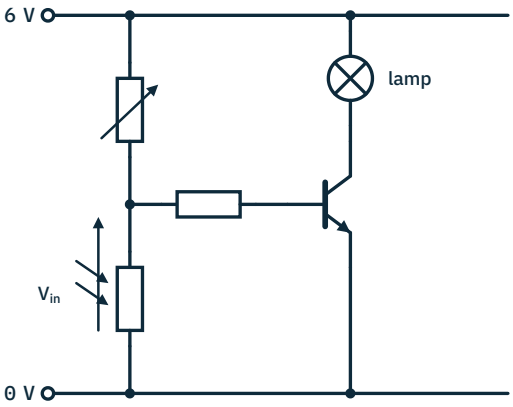
FRAME 6 · DESCRIBE THE OPERATION (SIGNAL CHAIN)

As the _____ (condition) _____, the resistance of the _____ _____.

V_{in} _____. When V_{in} reaches _____ V, the transistor switches on.

The _____ (output) _____.

Not for use during the assignment

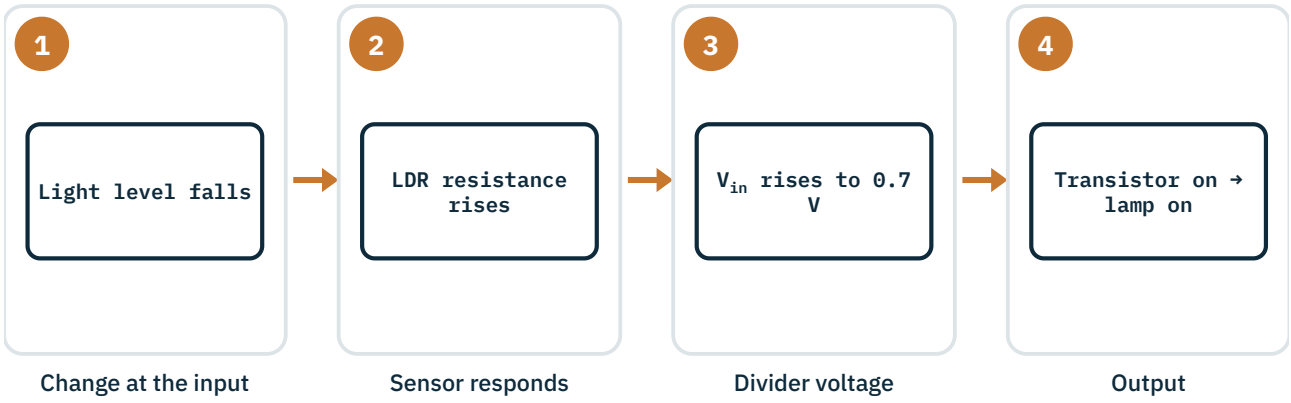


Practise Frame 6 on this night light

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Practice: describing operation

DESCRIBING OPERATION: ONE LINK PER MARK



WORKED EXAMPLE **Expected results for a fan controller**

1 GIVEN	2 FIND	3 FORMULA	4 SUBSTITUTE	5 ANSWER + UNIT
thermistor at the top of the divider fan should run when it is hot	expected results	Frame 1	When the thermistor is hot, V_{in} will be above 0.7 V, so the transistor will switch on and the fan will run. When it is cool, V_{in} will be below 0.7 V, so the fan stays off.	**Both states described**

Name the input condition, V_{in}, the transistor and the output.

WORKED EXAMPLE **Turning a weak evaluation into a strong one**

1 GIVEN	2 FIND	3 FORMULA	4 SUBSTITUTE	5 ANSWER + UNIT
Spec: 'The lamp must switch on when it gets dark.' Weak: 'It worked.'	evaluation	Frame 3: point → evidence → judgement	Spec point: the lamp must switch on when it gets dark. Evidence: when I covered the LDR, V_{in} rose to 0.8 V and the lamp lit. Judgement: so the point was met.	**Point, evidence, judgement**

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WRONG

I tested it and it worked.

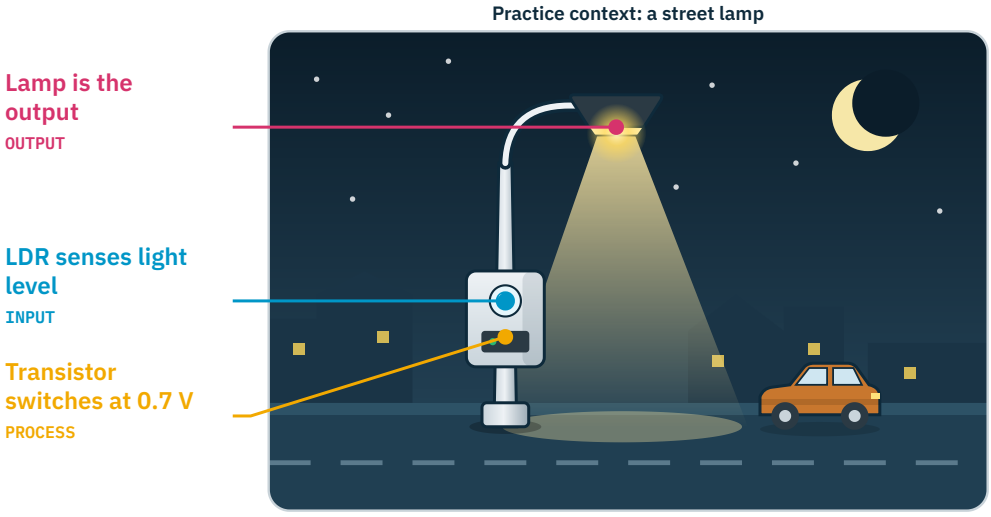
No evidence: no marks.

RIGHT

When I covered the LDR, V_{in} was 0.8 V; the transistor switched on and the lamp lit. This matched the simulation.

Action, reading, output, comparison.

Practice context: a street lamp



Not for use during the assignment. These frames are for class practicals and practice tasks only.

PROBE · QUICK CHECKS

1. What must a test result name? _____
2. Evaluation starts with... _____
3. A modification must... _____

EXAM READY · 6 MARKS

1 A night light (LDR at the bottom) should switch on when the light level falls. **Describe** the expected results in terms of V_{in}. [2]

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2 **Describe** the operation of the night light as it gets dark. **[4]**