

Case study · supported focus

Supported focus · HL

Supported scope

- Supported HL focus. First assessment 2027 target; official PDF returns 403; older acquired brief is final assessment 2026. Remaining guide, assessment and practical requirements retain their recorded holds.
- State model conditions and distinguish fictional data from measurements.

Computing Case Evidence · 1.1

Reasoning

A proposed school booking system looks efficient, but its recommendation depends on users, constraints and evidence. A plausible technical term alone is not a justified decision. Start with a prediction. State the quantities or features you would compare, then decide what evidence could distinguish two explanations.

Computing Case Evidence · 2.1

Reasoning

A case study places computational choices within a stated scenario. Identify stakeholders, requirements, available evidence and constraints before recommending an architecture or algorithm. Distinguish a scenario fact from an assumption and a prediction. Trade-offs can involve performance, reliability, accessibility, privacy, maintenance and cost.

throughput	: Completed work per unit time under a
stated workload; acceptance test	: A test of whether a specified user
requirement is met.	

Computing Case Evidence · 3.1

Reasoning

A recommendation should connect a requirement to a mechanism and an observable test. For example, a concurrency problem requires a strategy that prevents conflicting updates, plus tests demonstrating the invariant. A claim about faster response requires comparable workload measurements rather than only a complexity label. Evaluate alternatives under the same stated conditions. Use an original school-approved scenario and synthetic data. Build a matrix of claim, supporting scenario evidence, technical explanation, limitation and acceptance test. Mark missing facts explicitly and show how the recommendation would change if an assumption failed. This prepares case-based reasoning without reproducing an unavailable IB assessment case study or inventing its examination rubric.

Computing Case Evidence · 4.1

Reasoning

State the known values and their units. Choose the relation because its assumptions fit this case, then rearrange before substitution. Known: a fictional prototype processes 120 successful requests during a 30-second observation. Throughput is $120/30=4$ successful requests/s. A second prototype processes 150 in 30 seconds, or 5/s. The second has 25% greater recorded throughput, but no conclusion about latency, failure rate or performance under a larger workload follows without those measurements.

Computing Case Evidence · 4.2

Reasoning

A fictional system successfully processes 210 requests in 30 s. Calculate throughput.

Use the same sequence: known quantities $\rightarrow$ model $\rightarrow$ relation $\rightarrow$ substitution $\rightarrow$ unit and interpretation.

Computing Case Evidence · 5.1

Reasoning

Throughput is not response time. A strong recommendation states the conditions in which it is expected to work and the evidence that could disconfirm it. Current official CS case-study requirements must be checked against the applicable assessment version. Return to the original observation. Explain what the result supports, which conditions it assumes, and one way to test a competing explanation.

Computing Case Evidence · 5.2

Reasoning

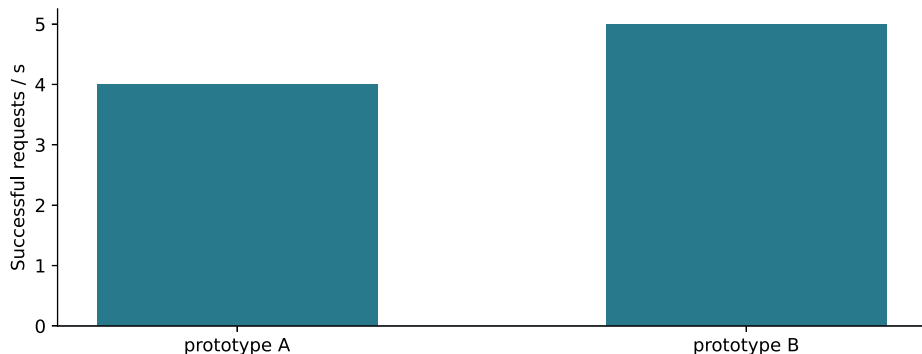
Higher observed throughput automatically proves lower response time for every request. This claim is false: Throughput is not response time. A strong recommendation states the conditions in which it is expected to work and the evidence that could disconfirm it. Current official CS case-study requirements must be checked against the applicable assessment version.

Computing Case Evidence · 5.3

Reasoning

Computing case analysis: evaluate a proposed system: A recommendation should connect a requirement to a mechanism and an observable test. For example, a concurrency problem requires a strategy that prevents conflicting updates, plus tests demonstrating the invariant. A claim about faster response requires comparable workload measurements rather than only a complexity label. Evaluate alternatives under the same stated conditions.

Computing Case Evidence · diagram



- Original teaching diagram: Computing case analysis: evaluate a proposed system
- Use the labels and the stated model together.

Computing Case Evidence · original transfer

Your turn

Fictional prototypes complete 240/300 and 270/300 requests in 30 s. Compare success throughput and failure fractions. What else is needed for a purchase decision?

Computing Case Evidence · transfer reasoning

Method and interpretation

Throughputs are 8/s and 9/s; failure fractions 20% and 10%. Compare latency distributions, workload, cost, reliability and user criteria; one workload does not prove all performance.

Computing Case Evidence · executable trace

- Trace the state changes and boundary guard.
- Run the boundary case and compare the printed output.

```
for successful, attempted, seconds in [(240, 300, 30), (270, 300, 30)]:  
    if seconds <= 0 or attempted <= 0:  
        raise ValueError("Positive exposure required")  
    throughput = successful / seconds  
    failure_fraction = (attempted - successful) / attempted  
    print(throughput, failure_fraction)
```

Check yourself

- Explain throughput using the stated model.
- Explain acceptance test using the stated model.
- Change one value in the original transfer; explain which assumption still matters.