Case study

IB DP Computer Science case study: method and a practice case

Why a case study?

> Learn the method now; apply it to the case your teacher gives you.

- The IB publishes a case study months before the exams; some questions are based on it.
- Prerequisites: Themes A and B. A case can draw on any part of the course.

What a case study describes

A correct definition that never mentions the scenario earns little.

- A few pages about one real-world use of computing.
- Questions test whether you can apply course knowledge to that scenario.

Six stages of study

> Each stage produces something you can revise from.

- You have months, not hours: work in stages.
- Keep everything in one notebook or document.

Definition or case knowledge?

A definition

Edge computing: processing data near where it is collected.

Case knowledge

Each locker checks QR codes itself, so it works when the 4G link is down.

The practice case: smart lockers

> App, cloud server, lockers over 4G, and staff who fill them.

- A fictional library with eight branches installs lockers outside each one.
- Members collect reserved books at any hour with a QR code.

Four challenges

> Plan an answer for each challenge before the exam.

- Every challenge is a likely exam question.
- Research a solution, its advantages, disadvantages and alternatives.

Stakeholders

Stakeholder	Wants	Conflict
members	easy, private collection	privacy vs predictions
staff	fewer wasted trips	new work filling lockers
managers	more loans, fair cost	cost of lockers and 4G
council	fair service everywhere	bias between branches

Linking the case to the course

Case feature	Theme	Terms to use
locker, scanner, doors	A1	sensor, actuator
4G link, app, server	A2	protocol, latency
members, books, loans	A3	primary key
demand prediction	A4	training data, bias
QR codes, code list	B1, B2	validation, hashing

Command terms

Term	Asks for	Good answer
outline	a brief account	two or three linked points
describe	a detailed account	the features, in order
explain	with reasons	point, because, so
discuss	a balanced review	for, against, conclusion
evaluate	strengths, limits	both sides, a judgement

Worked: an explain question

1. **Point** If 4G fails, the locker cannot ask the server about a code.
2. **Because** Coverage can drop; challenge 1 says lockers must keep working.
3. **So** With a local list, the locker checks the code itself and opens.
4. **Link** When 4G returns, it sends its log, so the loans update.

Decision

Four linked ideas, each tied to the case: four marks.

Worked: a discuss question

For

Shows what each branch borrows, so predictions improve and members wait less.

Against

Personal and sensitive; a breach or misuse would harm members.

Common weaknesses

Generic

Encryption keeps data safe.

Tied to the case

Encrypt members' loan records on the cloud server, so a breach does not expose what they read.

Practice

Your turn

Try these:

A. Two stakeholders and what each wants.
B. Why should each QR code change per reservation?
C. How could busy-branch training data be unfair?
D. Card instead of QR code: discuss.

Check yourself

Name something from the case in every answer

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Read the **command term** first

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Explain: reasons. Discuss, evaluate: both sides and a conclusion

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Add no facts the case does not state