Unit 9 · Capstone Project

ANSWER KEY · FOR TEACHERS

Full marks 27

Give the marks for the points in the marking scheme; an answer in other words that says the same is right.

1 Key words

1. feasibility study
2. success criterion
3. risk register
4. walking skeleton
5. definition of done
6. rollback
7. beta
8. decision record

K · 4

Each carries 0.5 mark.

2 Multiple choice

i. **c.** A teacher takes a class of 40's attendance in under 2 minutes on a phone, without help. — U · 1

It names who, what, how much and how it will be checked. The others are hopes: what "modern", "love" or "very secure" would mean must be turned into something that can be checked.

ii. **b.** Our user may be away for the immunization campaign in week 6; we will agree a second contact now. — U · 1

A risk is something that hasn't happened yet but could, with what the team does about it now. The others are work to do now, or a bug that has already happened: issues.

iii. **b.** a could have, then a should have if it must — A · 1

That is what the priorities are for: the coulds go first, then the shoulds. Cutting a must means the product fails its user. Cutting tests or backups doesn't save time; it moves the cost to the user, later, when something breaks.

iv. **b.** that the code was written from a different reading of the criterion than the test, so check the criterion (with the user if needed) and fix whichever is wrong — A · 1

Like the empty-shelf test in this unit: the criterion said something the code's author didn't read. Go back to the specification; if it is unclear, ask the user what they need.

v. **c.** Keep a way back instead of a question: delete at once, with an Undo for a few seconds and the deleted record kept, so it is fast and mistakes can be put right. — A · 1

The user's need (speed) and the evidence (mistakes happen) are both real. Undo meets both: no extra tap, and nothing lost by a slip. Doing exactly what was asked would lose records; refusing flatly ignores a real problem.

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3 Must, should, could, won't

ANSWER U · 3

- Must: a and b. Without recording orders and the day's total, the app does nothing for the owner.
- Should: d. Could: e. (A team may argue d is a must if the owner reads only Nepali.)
- Won't: c, because taking payments is something a student team may not run, and money is too costly to get wrong; f, because the app doesn't need to know who bought what, and personal data the team doesn't hold can't leak.

MARKING SCHEME

✓ Musts: a and b.
✓ Should d and could e (or a reasoned swap).
✓ Won'ts c and f, each with its reason: payments students can't run safely or legally; personal data that isn't needed.

4 Release numbers

ANSWER A · 2

In order: **2.4.0**, then **2.4.1**, then **3.0.0**, then **3.0.1**.

MARKING SCHEME

✓ i. 2.4.0 and (ii) 2.4.1: a new feature raises the minor number and sets the patch to 0; a fix raises the patch.
✓ iii. 3.0.0 and (iv) 3.0.1: a change that breaks what worked before raises the major number.

5 Will it fit in the term?

ANSWER A · 4

i. 4 × 3 × 11 = **132 team-hours.**
ii. 55 + 40 + 30 = 125 hours: it fits, with **7 hours** to spare, if every estimate is right.
iii. With every task a quarter longer, 125 × 1.25 = **156.25 hours:** 24.25 hours over, so the plan fails. The fixed work and the musts alone take (55 + 40) × 1.25 = **118.75 hours**, which fits with **13.25 hours** to spare. So they can safely plan only the musts.
iv. Keep the shoulds in order of importance and build them one by one while time is left, so that running late means leaving out the last shoulds, not missing the deadline.

MARKING SCHEME

✓ 132 team-hours.
✓ 125 hours: fits, with 7 to spare.
✓ 156.25 hours doesn't fit; the musts alone, 118.75 hours, fit with 13.25 to spare.
✓ Plan the musts; build the shoulds in order, only while time is left.

6 Fix it now, later, or say no?

MARKING SCHEME U · 4

✓ a. Fix for 0.3: the balance is the whole point, and a wrong one misleads every warning after it.
✓ b. No: patients' names with their medicines are health data the team can't protect, and it is on the signed won't list; ask about the need, and suggest keeping follow-ups in the register.
✓ c. A later release: slow, but it works and is used once a month.
✓ d. No: it gives the users nothing and costs weeks and risk near the end.

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7 An honest evaluation

MARKING SCHEME **A · 3**

- ✓ C1 partly met: four of five loans under 30 s; the one that wasn't, 41 s, is reported, with its cause.
- ✓ C2 not met: 62.5 is below 68, said plainly, and it comes from one user only.
- ✓ Next: make adding a missing student quick (or load the full class lists) and time it again; watch the librarian at work to find what she finds hard, change it, and measure the SUS again.

8 Think

ANSWER **HA · 2**

Real products almost always fall short somewhere, so ten out of ten usually means the criteria were too easy (set after building, to fit what was built, or vague enough to pass anything), or the evidence wasn't looked at closely: only the good timings reported, the user who liked it most asked, the slow screen left out. An evaluation is believable when the criteria were set before building, with numbers, and every planned measurement is reported, the failures as clearly as the successes, with who measured it, how often and on what device; "partly met", with what to change next, is often the most honest verdict.

MARKING SCHEME

- ✓ Ten of ten usually means criteria that were too easy or set to fit, or evidence picked to look good.
- ✓ Believable: criteria set before building, every measurement reported (failures too), with honest "partly met" verdicts and what to change next.

9 Activity: Is it a capstone?

(not marked)

WHAT STUDENTS SHOULD FIND

Most first ideas fail "a real user" ("students", "farmers") or "finishable" (a whole social network, every language). Cutting an idea down usually means naming one person, watching one problem, and moving the extras to the won't list. Ideas that hold patients' records, take payments or copy a big company's service fail "safe, legal and kind" however they are cut, and are better kept as questions for later. A good team ends with one idea that passes all five, a named user who has agreed to meet them, and a first feasibility note: the time, skills and permissions it needs.

Marks by level	Knowledge	Understanding	Application	Higher ability	Total
Marks	4	9	12	2	27

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