TROUBLESHOOTING ESSENTIALS · COURSE TOOLKIT

Case-Study Exercise Sheets

> **Toolkit 8 of 10** · Case-Study Exercise Sheets · Four new practice cases written for this course, applying the seven-step methodology from Chapter 3 and the case-study approach of Chapter 14 of Dr. Tahseen Al Doori's *Troubleshooting Essentials*, University Edition (2026). All cases are fictional.

How to use these sheets

Each case gives you a short brief and a set of **facts available on request**. In a real investigation you would only learn these facts by asking the right questions or running the right test, so try this:

1. Read the brief only. Write down the 5W1H questions you would ask and the tests you would run.
2. Then read the facts available on request, one at a time, and decide what each tells you.
3. Complete the blank seven-step grid. Every row must contain something, even if it is "Escalate because...".
4. Answer the reflection questions.

You can work alone or in pairs, with one person playing the user and holding the facts. There is no single correct wording, but a strong answer has a specific problem statement, ranked theories, small safe tests, a plan with rollback, a verification that includes the user, and a record someone else could use.

Case A — The silent microphone

Brief. *(Fictional scenario.)* A postgraduate student, Aisha, says that in online meetings nobody can hear her, although she can hear everyone. She uses a USB headset with her university laptop. "It's the meeting software. It's always been rubbish."

Facts available on request

IF YOU ASK OR TEST...	YOU LEARN...
When did it start?	Yesterday afternoon. It worked in a meeting on Monday morning
What changed?	She installed a different video-calling app for a job interview on Monday afternoon
Does it happen in every app?	The new app works; the university's meeting software does not
Is the headset muted?	The headset's mute switch is off
Operating system sound settings	The headset microphone is selected and shows input levels when she speaks
Meeting software audio settings	Microphone is set to "Default"
Privacy settings for the microphone	Microphone access is switched off for the university's meeting software; on for the new app
Headset on another laptop	Works normally

Seven-step grid

STEP	YOUR ENTRY
1 Identify (problem statement)	
2 Theories (ranked, simplest first)	
3 Tests and results	
4 Plan (including rollback)	
5 Implement or escalate	
6 Verify (including the user)	
7 Document (what to record, and where)	

Reflection. Which bias does Aisha's opening remark invite? Which isolation technique did the "headset on another laptop" test use, and which half of the problem did it rule out?

Case B — The phone that will not join the network

Brief. *(Fictional scenario.)* A member of staff, Mr Brennan, returns from a two-week conference abroad. His phone connects to his home Wi-Fi but will not connect to the campus Wi-Fi, showing "Unable to join network". His colleagues' phones connect normally in the same office.

Facts available on request

IF YOU ASK OR TEST...	YOU LEARN...
Is Wi-Fi on; is airplane mode off?	Wi-Fi on; airplane mode off
Is he selecting the correct network?	Yes, the staff network
What changed?	While abroad he changed his university password through the self-service portal, as the expiry reminder asked
Has the phone been updated?	A system update installed while he was away
Storage and battery	Normal
Does his laptop connect to the staff network?	Yes, after he typed the new password when prompted
What does the phone have saved for the staff network?	The network is saved with the old password from before his trip
Restart and airplane-mode toggle	No change

Seven-step grid

STEP	YOUR ENTRY
1 Identify (problem statement)	
2 Theories (ranked, simplest first)	
3 Tests and results	
4 Plan (including rollback)	
5 Implement or escalate	
6 Verify (including the user)	
7 Document (what to record, and where)	

Reflection. There are two changes in this case. How did you decide which one to test first? What would you add to the password-change guidance so that this does not recur for other staff? You must not ask Mr Brennan to tell you his password: how do you complete the fix without it?

Case C — The spreadsheet that adds up wrongly

Brief. *(Fictional scenario.)* The finance office of a small charity uses a shared spreadsheet to total monthly donations. Since the start of this month the totals have been lower than the bank statements by varying amounts. The treasurer suspects "a virus in the file".

Facts available on request

IF YOU ASK OR TEST...	YOU LEARN...
When did it start?	With the first report this month; last month's file totals correctly
Who is affected?	Everyone who opens this month's file; last month's file is fine on the same computers
What changed?	A volunteer created this month's file from a new template that adds a "Gift Aid" column
Security scan of the file and computers	Clean
Compare this month's file with last month's	The total formula in the new template covers rows 2 to 200; this month has 236 donation rows
Are any rows excluded?	Rows 201 to 236 are not included in the total
Who maintains the template?	Nobody is named as owner; the volunteer built it from an online example

Seven-step grid

STEP	YOUR ENTRY
1 Identify (problem statement)	
2 Theories (ranked, simplest first)	
3 Tests and results	
4 Plan (including rollback)	
5 Implement or escalate	
6 Verify (including the user)	
7 Document (what to record, and where)	

Reflection. Which isolation technique exposed the fault? Apply the 5 Whys briefly: what is the root cause, and which preventive measure from Module 12 would you recommend? Why should the treasurer's "virus" theory still be tested rather than dismissed?

Case D — The lunchtime queue (non-technical)

Brief. *(Fictional scenario.)* A university canteen's average lunchtime queue has risen from about 6 minutes to about 14 minutes since the start of term, three weeks ago. Student complaints are rising. The catering manager thinks the new staff are "too slow".

Facts available on request

IF YOU ASK OR TEST...	YOU LEARN...
What changed at the start of term?	Two new staff joined; a new card-only payment terminal replaced the old till; a new hot-food counter opened
Is it every day?	Monday to Thursday; Fridays are normal
Timetable data	A large first-year lecture finishes at 12:50 from Monday to Thursday
Timing observations (one week)	Serving time per customer is unchanged; payment time per customer has roughly doubled
Payment terminal records	Many card payments retried after "Connection timeout"; retries cluster between 12:50 and 13:20
Staff with the old till on Fridays?	The terminal is used every day; Fridays have far fewer customers
Who supports the terminal?	The payment provider, under a support contract

Seven-step grid

STEP	YOUR ENTRY
1 Identify (problem statement)	
2 Theories (ranked, simplest first)	
3 Tests and results	
4 Plan (including rollback)	
5 Implement or escalate	
6 Verify (including the user)	
7 Document (what to record, and where)	

Reflection. Which cognitive bias is the catering manager showing? Who should the problem be escalated to, and which escalation trigger applies? What would count as verification in a non-technical problem like this one?

Sources

- Dr. Tahseen Al Doori — *Troubleshooting Essentials*, University Edition (2026), Chapter 3 (seven steps), §2.3 and §2.5 (what changed; biases), §4.1 (5W1H), §6.2–6.3 (substitution, comparison), §10.4 (passwords and security reminder), §11.2 and §11.5 (mobile devices, audio), §12.2 and §12.4 (5 Whys, preventive measures), §13.1–13.2 (escalation), Chapter 14 (case studies, including Case Study 4)