TROUBLESHOOTING ESSENTIALS · COURSE TOOLKIT

Root Cause Analysis Worksheet

> **Toolkit 6 of 10** · Root Cause Analysis Worksheet · Based on Chapter 12 (§12.1–12.4, Fig 12.1) of Dr. Tahseen Al Doori's *Troubleshooting Essentials*, University Edition (2026). Worksheet layout by the course.

How to use this sheet

Use this worksheet after a problem has been resolved, or when the same problem keeps returning. A fix that addresses only the symptom will need repeating; root cause analysis finds the **deepest cause that can be acted on**, so the problem does not come back.

- Use the **5 Whys** (Part 2) when there is a single chain of cause.
- Use the **fishbone diagram** (Part 3) when several factors may contribute.
- Finish with the root cause statement and preventive measures (Parts 4 and 5).

Part 1 — Symptom, workaround, fix and root cause

Classify what has happened so far. *Terms from §12.1 of the book.*

TERM	MEANING	THIS PROBLEM
Symptom	What is observed going wrong	
Workaround	A temporary way to keep working	
Fix	Correction of the immediate fault	
Root cause	The underlying reason the fault occurs	(complete after Part 2 or 3)

How many times has the workaround been applied? _____ *If more than once, the root cause must still be found.*

Part 2 — The 5 Whys

Ask "Why?" repeatedly, usually about five times, until the answer is a cause that can be corrected. Base every answer on evidence, not opinion, and avoid stopping at a person ("user error"): ask why the process allowed the error.

Problem: _____

#	WHY?	BECAUSE	EVIDENCE
1			
2			
3			
4			
5			

Corrective action (acts on the last answer and prevents recurrence):

_____

Check: If this corrective action were in place, would the problem in the first row have happened? If yes, keep asking why.

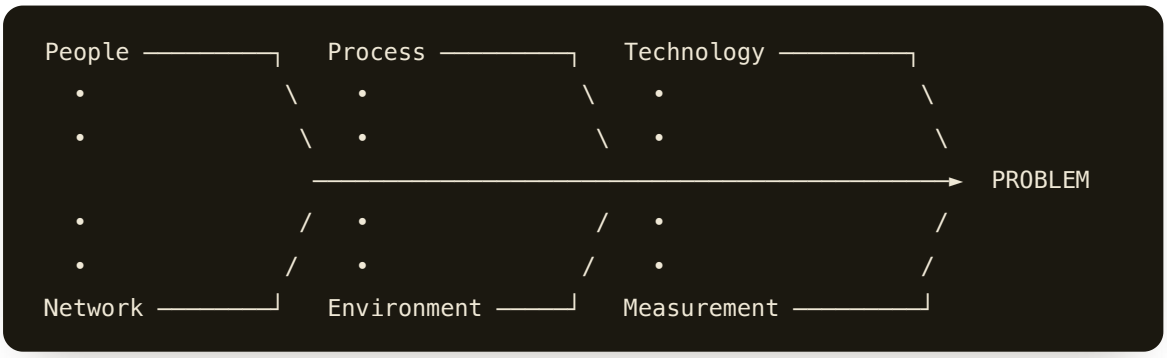
Part 3 — Fishbone (Ishikawa) diagram

Write the problem at the head. Brainstorm possible causes under each category, then mark each cause after testing: **C** confirmed, **R** ruled out, **K** contributing, **?** not yet tested. The categories below are the ones the book suggests; add or remove categories to suit the problem.

Problem (head of the fish): _____

CATEGORY	POSSIBLE CAUSE	STATUS (C / R / K / ?)	EVIDENCE OR TEST
People			
People			
Process			
Process			
Technology			
Technology			
Network			
Network			
Environment			
Environment			
Measurement			
Measurement			

Text layout of the diagram (copy your causes onto the bones):



Part 4 — Root cause statement

In no more than three sentences, state the deepest correctable cause, what triggered the fault, and why it was not detected or corrected earlier.

Part 5 — Preventive measures

Choose measures that act on the root cause, not only the symptom. The book's preventive measures are listed below for reference.

MEASURE (FROM §12.4)	PREVENTS
Scheduled, tested updates	Security incidents and known bugs
Regular, verified backups	Permanent data loss
Monitoring and alerts	Unnoticed failures such as full disks or offline services
Standard configurations	Faults caused by inconsistent settings
Change management	Faults introduced by unplanned changes
Labelled cables and documented networks	Slow diagnosis and accidental disconnection
User training and clear guides	Repeated user errors
Clean, cool, protected equipment	Heat, dust and power-related failures

My preventive measures:

MEASURE	WHAT IT PREVENTS	OWNER	HOW IT WILL BE VERIFIED	ACTS ON ROOT CAUSE, TRIGGER OR DETECTION?

Worked illustration

(Fictional scenario.) A lecture-room projector switches itself off part-way through afternoon lectures.

#	WHY?	BECAUSE
1	Why does the projector switch off?	It overheats and its thermal protection shuts it down
2	Why does it overheat?	Its air filter is clogged with dust, so cooling air cannot flow
3	Why is the filter clogged?	It has never been cleaned since installation
4	Why has it never been cleaned?	Filter cleaning is not in the room maintenance schedule
5	Why is it not in the schedule?	The schedule was written before projectors were installed and was not reviewed when they were added

Corrective action: clean the filter now (the fix), add filter cleaning to the maintenance schedule for every projector, and review the schedule whenever new equipment is installed (the root-cause fix, using change management).

Sources

- Dr. Tahseen Al Doori — *Troubleshooting Essentials*, University Edition (2026), §12.1–12.4, Fig 12.1