Systematic Reviews – A Practical Guide for Beginners

1. What it is
A *systematic review* is a structured study that collects, evaluates, and synthesizes existing research on a focused topic or question. Its goal is to summarize what is known (and not yet known) using a transparent, repeatable process.

2. Application in your studies
Used when you want to understand all the existing evidence on a software engineering topic (e.g., testing tools, fairness metrics, developer productivity). It helps define what has already been studied and where gaps remain.

3. Main steps

1. Define clear research questions.
2. Plan search strategy and inclusion criteria.
3. Search databases systematically (e.g., IEEE, ACM, Google Scholar).
4. Screen papers and extract key data.
5. Analyze and synthesize findings (qualitative or quantitative).
6. Report results clearly, showing how evidence leads to conclusions.

4. What to do / What not to do
✅ Be systematic, transparent, and replicable.
✅ Keep detailed records of how you searched and selected papers.
❌ Don't just summarize papers one by one ("A found X, B found Y…").
❌ Don't skip explaining how you judged quality or relevance.

5. General tips for starters

- Begin with a protocol: plan before searching.
- Use diagrams to show your selection process.
- Work with a partner to check inclusion and coding consistency.
- Present results visually (tables, charts, frameworks).
- Aim to provide insight, not just summaries—show *patterns* and *gaps*.