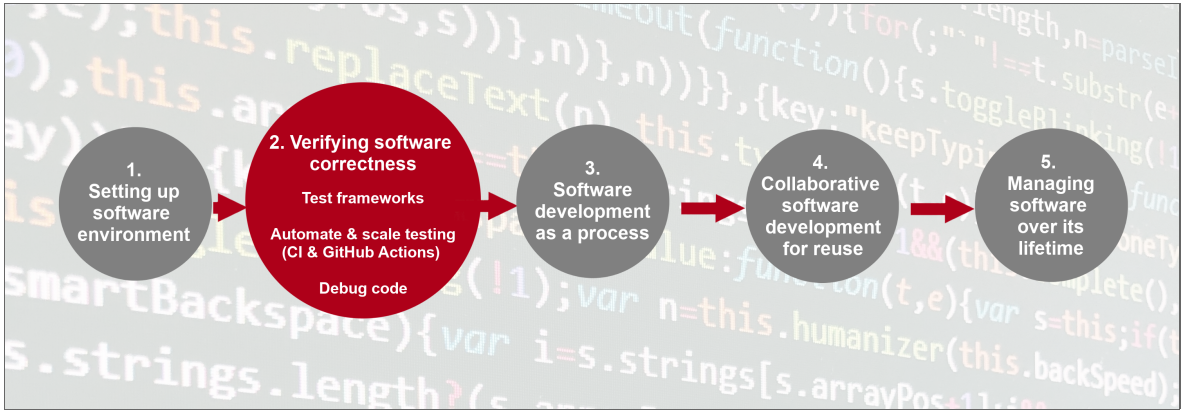
Section 2: Ensuring Correctness of Software at Scale



Automatically Testing your Software

- Big questions: how can we be sure the code we have written is correct, produces accurate results, and is of good quality?

> ***testing:*** *The process of operating a system or component under specified conditions, observing or recording the results, and making an evaluation of some aspect of the system or component — IEEE Standard Glossary of Software Engineering*

Types of Testing

- Types of testing
    - Manual testing
    - Automated testing
        - Unit tests
        - Funcitonal or integration tests
        - Regression tests

Breakout Exercise: ✏ Set Up a New Feature Branch for Writing Tests

Start from this section heading and go to the end of the page.

☕ 5 Minute Break ☕

Scaling Up Unit Testing

1. Parameterise our tests to reduce repetition
2. Check the test coverage of our code

Breakout Exercise: ✏ Parameterising Our Unit Tests

Go through the whole content of this page starting from this section heading. In the last 5-7 minutes, please think about the question:
Where can and might the input data and corresponding expected results come from for your code?
Record answers in the shared document. Feel free to discuss with your peers.

☕ 5 Minute Break ☕

Continuous Integration for Automated Testing

How do we know our tests—and code in general—will work on other people's machines?

Breakout Exercise: ✏ Continuous Integration with GitHub Actions

Follow along from this section heading to the bottom of the page.

☕ 15 Minute Break ☕

Diagnosing Issues and Improving Robustness

Breakout Exercise: ✎ Setting the Scene (for Debugging)

Follow along from this section heading to the bottom of the page.

🕓 End of Section 2 🕓

Please fill out the end-of-section survey!