µC++ Extension
Verification and Validation

Group 27

Fei Lin

Kevin Song

Abdur Javaid

Kevin Pierce

University of Waterloo

SE 491

April 2025

The verification and validation process for our project was centered on ensuring the correct functionality of newly implemented features while preventing regressions in existing behavior. This was achieved through a combination of automated testing using the LLVM test suite and targeted manual exploratory testing.

LLVM Test Suite

We utilized the LLVM test suite to verify the integration and correctness of our modifications within the existing LLVM framework. This comprehensive suite includes unit, regression, and integration tests that cover a wide range of compiler functionalities. By running these tests, we were able to confirm that our implementation and new features did not introduce regressions in previous behaviour. As of our latest release, all relevant tests passed without errors

Manual Testing

In addition to automated testing, we conducted targeted manual testing to validate specific use cases and custom behaviors introduced by our project. The manual testing process primarily involved running and using test uC++ programs and analyzing their generated output. Manual testing allowed us to explore aspects not fully covered by automated tests, especially the new uC++ features, and refine our system based on practical usage scenarios such as real assignment files.