

Mines CSCI Auto-grader 3.0

**Client:**

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Project:

Data Structures at Mines (CSCI 262) currently uses an auto-grading system for C++ labs. The core function of the auto-grader is a web interface that allows students to submit C++ source for functions or other code solving a designated lab problem. The response page provides feedback on whether or not various errors occurred (e.g., compilation error, floating point exception, etc.); if no errors, the page shows a graph of green and red bars representing tests which passed or failed (similar to the output of JUnit and its ilk). The current system can be seen (and experienced) from on campus or through the VPN at <https://flowers.mines.edu/>.

The current system (Auto-grader 2.0) is more or less a complete rewrite of the original system. The rewrite was accomplished by a Field Session team in 2016, creating a beautiful new user interface and administrative tools. The goals of the Auto-grader 3.0 project focus on the core functions of test creation, test running, and test reporting:

- Cleaner test abstraction
 - Add capability for handling and reporting runtime errors and timeouts on individual tests without affecting remaining tests
 - Add a mechanism for simpler test definition (currently hand-written Google test (gtest) code)
 - Add support for more flexible testing, e.g., incremental testing of class features
 - Add a mechanism for automatic test generation from a template
- Extensibility
 - De-couple the test framework and test runner for additional language support
 - Add Python language support
 - Add support for multiple courses

A secondary goal is making the project ready for open-source release. This includes setting up proper version control, build tools, and documentation. Thorough security testing is also desirable.

Team size:

2-4

Skills:

C++

Ruby

Some web programming may be helpful, if user interface changes need to be made
git, etc., for secondary goals

Location:

Mines campus