**Vector Class Unit Testing - Process Summary**

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**Process Summary**

**1. Implementation Overview**

* Successfully completed 13 required vector class unit tests
* Built upon provided test framework
* Added identifying comments "// Code created by Vudeh" for required todo.

**2. Test Results**

* **Total Tests:** 16
  + 15 Passing Tests
  + 1 Intentionally Failing Test (AlwaysFail)
* **Execution Time:** 1.3 seconds
* **Warnings:** 0
* **Errors:** 0

**3. Test Categories Implemented**

* **Basic Vector Operations:**
  + Empty state verification
  + Element addition
  + Size/capacity checks
* **Memory Management:**
  + Reserve operations
  + Clear functionality
  + Resize behaviors
* **Error Handling:**
  + Out of range access
  + Invalid memory allocation

**4. Testing Methodology**

* Used ASSERT\_\* for critical test conditions
* Used EXPECT\_\* for non-critical validations
* Implemented both positive and negative test cases
* Followed Google Test best practices

**5. Issues and Resolutions**

* **Challenge:** Implementing negative tests without causing crashes
* **Solution:** Used std::out\_of\_range and std::length\_error exceptions
* Maintained AlwaysFail test as intended failing test
* Ensured all other tests pass successfully

**6. Key Achievements**

* All functional tests passing successfully
* Clean test execution with no warnings
* Proper exception handling
* Comprehensive vector functionality coverage
* Clear and maintainable test code

Test execution verified in Visual Studio 2022 Test Explorer with expected outcomes achieved.

**Conclusion**

The implementation successfully meets all project requirements, demonstrating proper unit testing practices and comprehensive testing of the vector class functionality. The test suite provides good coverage of both normal operations and error conditions, while maintaining code quality and testing standards.

**Testing Summary Screenshot**

