**CS 405 1-3 Activity: Numeric Overflow Coding**

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**Summary of the Numeric Overflow/Underflow Program**

The goal of this program was to test numeric overflow and underflow for various data types, including both signed and unsigned integers and floating-point types. The program uses templated functions to perform arithmetic operations, detect overflows and underflows, and return appropriate results or indicators when such conditions are detected.

**Development Process**

1. **Writing the Program**:  
   The program was developed using C++ with template functions add\_numbers and subtract\_numbers to handle the arithmetic operations generically for different data types. The limits for overflow and underflow were determined using std::numeric\_limits.
2. **Testing for Overflows and Underflows**:  
   Functions test\_overflow and test\_underflow were created to validate the behavior of the arithmetic functions. These tests iteratively applied increments or decrements over a number of steps to simulate potential overflow/underflow scenarios.
3. **Resolving Errors**:  
   Initially, a linker error (LNK2019: unresolved external symbol WinMain) occurred because the project was configured as a Windows application rather than a Console application. This issue was resolved by:
   * Changing the **Subsystem** to Console in the project properties:  
     Project Properties > Linker > System > Subsystem > Console (/SUBSYSTEM:CONSOLE)
   * Ensuring that main() is correctly defined as the program's entry point.
4. **Building and Running the Program**:  
   After fixing the configuration, the program was successfully compiled and executed. The console displayed the results of the numeric overflow and underflow tests for all specified data types.

**Console Output**

The program outputs the results of each test to the console, indicating whether overflow or underflow conditions occurred and the resulting values. These outputs were captured in a screenshot for documentation purposes.

A screenshot of a computer program

Description automatically generated