CS 405

Buffer Overflow Assignment

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Picture of Code:

A screenshot of a computer program

Description automatically generated

Entering Safe number of characters:

A screenshot of a computer

Description automatically generated

Entering Unsafe number of characters:

A screenshot of a computer

Description automatically generated

Explanation:

I started by defining a constant variable (MAX\_INPUT) to specify the maximum allowable length for user input, ensuring the code is maintainable and avoids hardcoding the value. This constant includes space for the null terminator to ensure safe string handling.

To safely limit user input, I replaced the std::cin operation with std::cin.getline(). This method ensures that input does not exceed the buffer size by reading a maximum of MAX\_INPUT characters, including the null terminator.

Next, I added a condition to check the state of the input stream using !std::cin. If the input fails due to exceeding the buffer size or encountering invalid characters I clear the input stream's error state using std::cin.clear() and discard any remaining invalid input using std::cin.ignore() to ensure the program remains in a valid state.

If the input operation succeeds, the program outputs the user-entered value alongside the constant account\_number. This ensures that secure coding practices are followed while providing appropriate feedback to the user.