John Carroll
Software Construction

Source code Listing and Instructions to Compile using g++

Source code listing

```
/*
Program 1:      hw1
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Description: This program will continually prompt for the user name, group name and then
prompt for multiple lines of text messages. (The user name and group name consists of
only one word each.) The text message entry is terminated when in a new line, the user
enters "$$" and the enter key, i.e. a line with only the string "$$".
*/

#include <iostream>
#include <string>

using namespace std;

// Function:    Main
// Description:  Runs the program in the command window.
int main()
{
            string inputUserName;                               // user name that will be entered by user
            string userName;
            // user name placed into cout in the end
            string groupName;
                        // group name placed into cout in the end
            string inputGroupName;
            // group name that will be entered by user
            string message;
                        // message placed into cout in the end
            string inputMessage;                                // message that the user enters
            string inputYesOrNo = "yes";                        // yes or no variable that continues or ends the program
            string message_buffer;
            // string that the user names and messages are stored in for output later
            size_t first_char;

            cout << "============================================================\n";
            cout << "|          Welcome to the Auburn Messaging System!         |\n";
            cout << "============================================================\n\n\n";

            // if user inputs yes for "Any more users?" then the while loop will continue until no is entered.
            while (inputYesOrNo == "yes")
            {
                        string newMessage;
                                    // placed into the scope for each new entry

                        cout << "Enter user name> ";
                        cin >> inputUserName;
                        newMessage += "|<" + inputUserName;

                        cout << "Enter group name> ";
                        cin >> inputGroupName;
                        newMessage += "::" + inputGroupName + ">|";

                        cout << "Enter the message> ";

                        // while loop will continue until user enters $$ and enter key on a single line.
                        while (inputMessage != "$$")
                        {
                                    getline(cin, inputMessage);

                                    // If message = $$ then the user is through entering input and the if-statement will not execute
                                    // This condition is important because we do not want to add "$$" to the message_buffer
                                    if (inputMessage != "$$")
                                    {
                                                // If the message string is empty then it will not add anything to the message_buffer.
                                                if (inputMessage != "")
                                                {
                                                            newMessage += inputMessage + "\n";
                                                }
                                    }
                        }
                        message_buffer = newMessage + message_buffer;
                        do{
                                    inputMessage = "";
                                    cout << "\nAny more users? > ";
                                    getline(cin, inputYesOrNo);
                                    cout << "\n";

                                    // transforms the users answer to the question "Any more users?" to lower case.
                                    //std::transform(inputYesOrNo.begin(), inputYesOrNo.end(), inputYesOrNo.begin(), ::tolower);
                        } while (inputYesOrNo != "yes" && inputYesOrNo != "no");
            }

            cout << "The current messages are:\n\n";

            // This while loop prints out the user names and their messages. As the code executes we remove the part of message_buffer
            // that we no longer need until we reach the end of the string.
            while (message_buffer.size() > 0)
            {
                        first_char = message_buffer.find("|<");                                  // Move message_buffer to first entry
                        message_buffer = message_buffer.substr(first_char + 2);                  // Move message_buffer
                        userName = message_buffer.substr(0, message_buffer.find("::"));          // Get userName

                        message_buffer = message_buffer.substr(message_buffer.find("::") + 2);   // Move message_buffer
                        groupName = "(" + message_buffer.substr(0, message_buffer.find(">|")) + ")>>\n";   // Get groupName

                        message_buffer = message_buffer.substr(message_buffer.find(">|") + 2);   // Move message_buffer
                        // Find either the next beginning of the next entry or everything left in the buffer
                        message = message_buffer.substr(0, message_buffer.find("|<"));           // Get message
                        message_buffer = message_buffer.substr(message.size() - 2);              // Move message_buffer

                        message_buffer = message_buffer.substr(message_buffer.find("\n") + 1);   // Move message_buffer

                        cout << userName << groupName << message << "\n";                        // Pipe to console out
            }
            cout << "";      // Pipe nothing when done
}
```

Instructions to compile:

1) Change current directory to correct directory which contains the .cpp using command: "cd"
2) /* To compile:
    a. type "g++ hw1.cpp -o hw1" in a terminal window to create hw1 executable file; re-executing this will update the hw1 file
    b. type "g++ hw1.cpp" to create and update the a.out with the latest code
    c. type "./a.out" or "./hw1" to run the program */