**Conditional Loops – Day 3 \*\* Save all your programs \*\***

1. a) Create a program that checks username and password.  Think carefully how you want to handle each of these (i.e., you don't want to give invalid users information they could use to hack into the system!).  Start with a single user.

b) Add one or two additional users to your system.

c) Add a security feature where there are a maximum number of failed attempts before the system locks out the login process.

1. Collatz Conjecture:  Start with any natural number, N (1, 2, 3, 4, ...).  If the number is even, divide it by 2.  If the number is odd, multiply by 3 then add 1.  If you repeat this process enough times, the number should always reach 1.  Write a program that tests this conjecture by allowing the user to enter a number, and then apply the Collatz algorithm until the number reaches 1.  Show the result of each step and how many iterations it took to get to 1.