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DE Intro to Discrete Structures and Object-Oriented Programming

This program is a testbed for several features I may expand upon later, working as a semi-secure login and account management system. It takes user input through a compact GUI JFrame to ask for user input, allowing the user to choose between logging into an existing account and creating a new one. Usernames and the hash codes of passwords are stored internally in a BootlegArrayList, which is used to replicate resizable array functionality without using any existing list-type structures. This list is saved to a text file when the program closes and retrieved on the next startup, loading the values back into the BootlegArrayList. Account creation uses a username, password, and confirm password feature similar to many existing login systems, to ensure that the user does not create an inaccessible account. The GUI is built using a custom border system which uses 2D java graphics to create a set of rectangles to force Swing layouts to add appropriate margins when they otherwise would not. Each field uses tooltips for directions, and action assignments were used instead of custom action listeners to allow for submitting information with the enter key as well as the dedicated buttons. The hash algorithm is a simple arithmetic function which takes the ascii values of the characters and multiplies them relative to their position in the overall string to create an irreversible function with reasonably low collision frequency.