

Part 1: Analysis

Use Case 1: Login Process

Precondition: The program has begun execution.

Description:

- The user is given two options: (1) login, and (2) quit.
- If they choose (1), they will be presented with a login screen in which they will separately input their username and password and enter the terminal.
- If they choose (2), the program will be terminated.
- If they choose anything besides (1) or (2), they will be told that their input is invalid and will be told to choose a valid input.

Postcondition:

- If (1) was chosen and the user logged in as a system administrator, they will have been brought to the system administration main menu.
- If (1) was chosen and the user logged in as a branch staff member, they will have been brought to the system administration main menu.
- If (2) was chosen, the user will have been given an exist message and the program will have been terminated.

Use Case 2: System Administration Main Menu

Precondition: The user has logged in as an administrator.

Description:

- The user is brought to the system administration main menu.
- The user is given six options: (1) client and account management, (2) add a branch staff member, (3) delete a branch staff member, (4) display branch staff, (5) change password, and (6) exit.
- If they choose (1), then they will be brought to a client and account management menu where they can change client and account information.
- If they choose (2), then they will be prompted to enter in a new username and password for a new branch staff member.
- If they choose (3), then they will be prompted to enter in an existing username to delete a user.
- If they choose (4), then a list of all existing branch staff members will be displayed.
- If they choose (5), then they will be prompted to enter a new password to replace their current password.
- If they choose (6), then they will be brought back to the login screen.
- If they choose any other value, then they will be told that their input is invalid and will be told to choose a valid input.

Postcondition:

- If (1) was chosen, the user will have been brought to the client and account management menu.
- If (2) was chosen, the user will have been prompted to enter a new username and password for a new user.
- If (3) was chosen, the user will have successfully deleted a user (if they existed).
- If (4) was chosen, a list of all branch staff members will have been displayed.
- If (5) was chosen, the user will have been prompted to enter a new password.
- If (6) was chosen, the user will have been brought back to the login screen.
- If any other value was chosen, the user will have been returned to the same menu.

Use Case 3: Branch Staff Main Menu

Precondition: The user has logged in as a branch staff member.

Description:

- The user is brought to the branch staff main menu.
- The user is given three options: (1) client and account management, (2) change password, and (3) exit.
- If they choose (1), then they will be brought to a client and account management menu where they can change client and account information.
- If they choose (2), then they will be prompted to enter a new password to replace their current password.
- If they choose (3), then they will be brought back to the login screen.
- If they choose any other value, then they will be told that their input is invalid and will be told to choose a valid input.

Postcondition:

- If (1) was chosen, the user will have been brought to the client and account management menu.
- If (2) was chosen, the user will have been prompted to enter a new password.
- If (3) was chosen, the user will have been brought back to the login screen.
- If any other value was chosen, the user will have been returned to the same menu.

Use Case 4: Client and Account Management Menu

Precondition: The user chose (1) at either the system administration main menu or the branch staff main menu.

Description:

- The user will be brought to the client and account management menu.
- The user is given six options: (1) add a client, (2) add an account, (3) edit client information, (4) manage an account, (5) save client and account information, and (6) exit.
- If they choose (1), they will be prompted to enter the client's information, including name, address, SSN, employer, and annual income.
- If they choose (2), they will be prompted to give the name of a client and will then be able to set up an account for that client.
- If they choose (3), they will be prompted to give the name of a client and will then be able to edit their information.
- If they choose (4), they will be prompted to input the account number that they'd like to manage.
- If they choose (5), they will receive a message stating that client-info and account-info files have been updated according to what changes were previously made.
- If they choose (6), then the program will be brought back to either the system administration main menu or the branch staff main menu (depending on the role of the user).
- If they choose any other value, then they will be told that their input is invalid and will be told to choose a valid input.

Postcondition:

- If (1) was chosen, the user will have been prompted to enter the client's information.
- If (2) was chosen, the user will have been prompted to give the client's name in order to set up an account.
- If (3) was chosen, the user will have been prompted to give the client's name in order to edit their information
- If (4) was chosen, the user will have been prompted to enter an account number.
- If (5) was chosen, the user will have received a message stating that the files have been updated.
- If (6) was chosen, the user will have been brought back to either the system administration main menu or the branch staff main menu (depending on their role).
- If any other value was chosen, the user will have been returned to the same menu.

Part 2: Design

Class 1: FileTracker

The FileTracker class keeps track of the three text files (client-info, account-info, and staff) and their associated arrays. Any functions related to searching or changing arrays, as well as reading from or writing to files, are located here. The FileTracker class does not use any other classes in its functions.

Class 2: Staff

The Staff class performs all of the necessary actions of a regular branch staff. It uses the Client and Account structures to manage or change client and account information and send them to the corresponding lists in the FileTracker class.

Class 3: Admin

The Admin class performs special actions that the Staff class cannot. It inherits from the Staff class so that it can use all of its standard members, but it also adds functionality regarding the editing of staff information. Similarly to Staff, it sends information (User information this time, rather than Client or Account information) to the FileTracker class.

Class 4: Menu

The Menu class deals with all of the menus and other associated functions of the program. It contains functions for the login process, the administration and regular branch staff main menus, the client management menu, and other related processes. Because so many other functions must be called from the Menu class, this class uses elements of the FileTracker, Staff, and Admin classes in many of its functions.

Structure 1: Client

The Client structure is used to hold information about an individual client, and this information is sent to the FileTracker class to be stored in a list of clients. Its members include name, address, social security number, employer, and income.

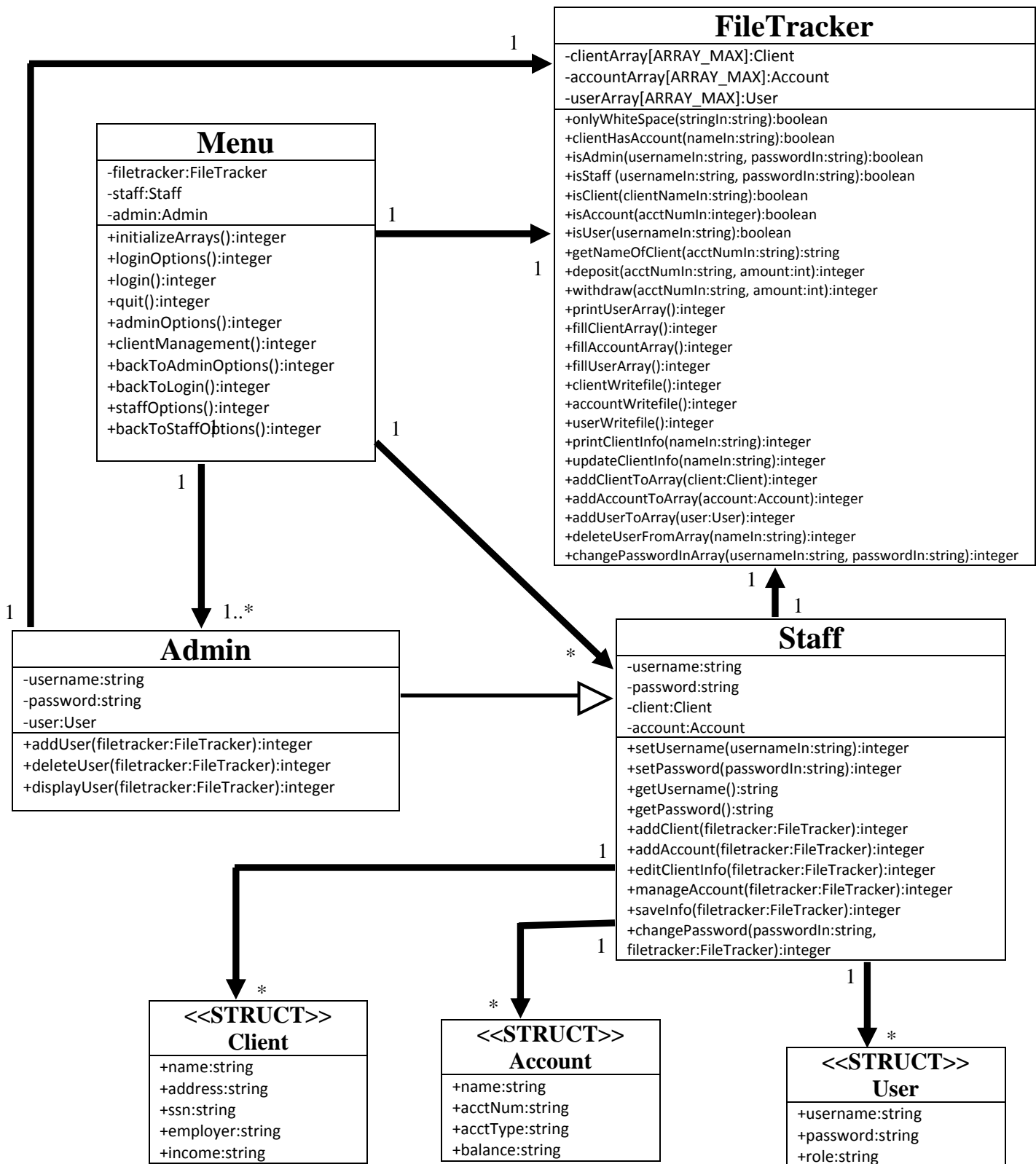
Structure 2: Account

The Account structure is used to hold information about an individual account, and this information is sent to the FileTracker class to be stored in a list of accounts. Its members include name, account number, account type, and balance.

Structure 3: User

The User structure is used to hold an individual user's information, and this information is sent to the FileTracker class to be stored in a list of users. Its members include username, password, and role.

Part 2: UML Class Diagram



Part 3: Testing

Test Case 1: Login Process Test

This is a test for the initial login process that the user encounters when they start the program. It has a test for selecting login, a test for selecting quit, and a test for an invalid input. It also has a test for correct login information and a test for incorrect login information.

Test Case 2: System Administration Main Menu Test

This is a test for the system administration main menu. It has a test for client and account management, a test for adding a branch staff member, a test for deleting a branch staff member, a test for displaying branch staff, a test for changing the password, a test for exiting, and a test for an invalid input.

Test Case 3: Branch Staff Main Menu

This is a test for the branch staff main menu. It has a test for client and account management, a test for changing the password, a test for exiting, and a test for an invalid input.

Test Case 4: Client and Account Management Menu Test

This is a test for the client and account management menu. There is a test for adding a client, a test for adding an account, a test for editing client information, a test for managing an account, a test for saving client and account information, a test for exiting, and a test for an invalid input.