Finvest Holdings

Security Software & Analysis

SYSC 4810 Assignment

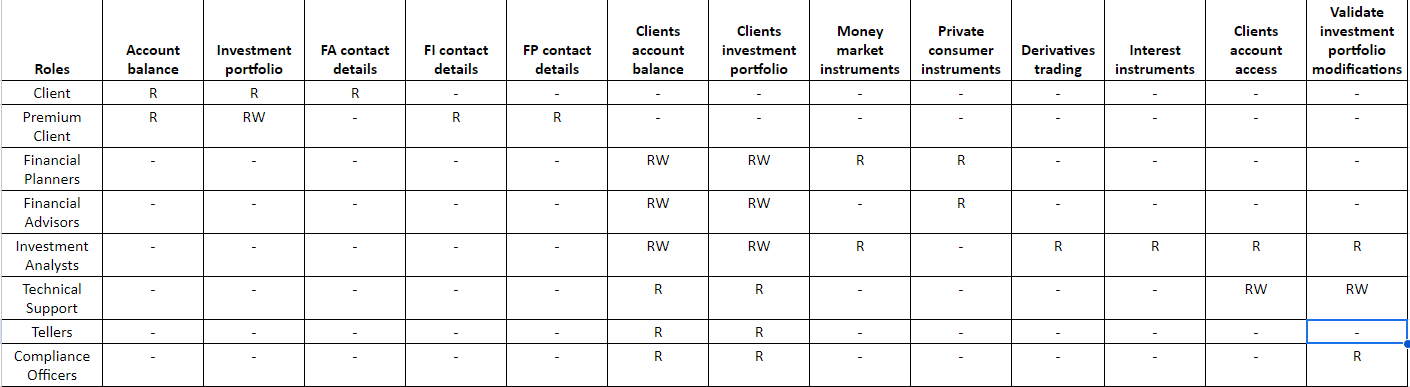
Nathan MacDiarmid

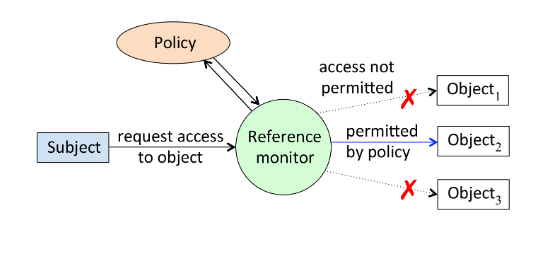
101098993

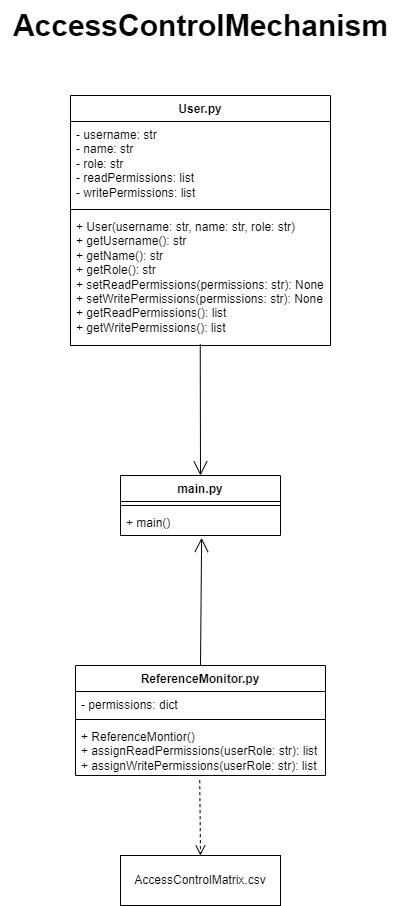
Passwords – IloveCats2!

December 4th, 2023

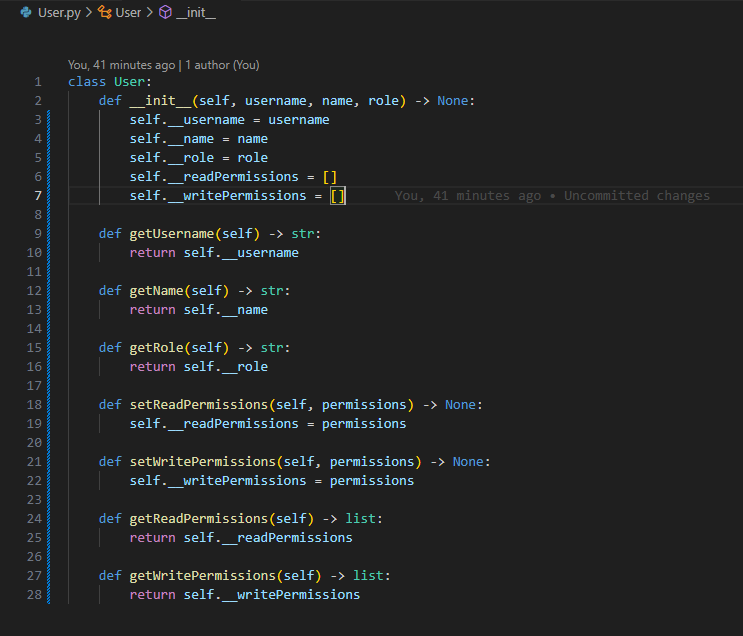
# Problem 1

1. The access control model that the Finvest Holdings security system will be the RBAC control model. This is because RBAC sets permissions based on roles which is similar to what is described in Part 1 Section 2 – Context. RBAC also allows for the expandability of permissions via additions of different roles, making it very scalable.
2. The access control representation that the Finvest Holdings security system will be is an access control matrix. This is because each of the roles have different access to various permissions and an access control matrix allows for the setting of permissions for each role separately. Furthermore, each row can be used as a capabilities list, depicting the permissions of each role, and each column can be used as an access control list, depicting how many roles have access to a selected permission.
3. 
4. The access control mechanism was implemented in an object-oriented way such that it models the example of a reference model implementation that was given in class in slides Ch5\_2[3].





As you can see, my access control mechanism has a User class that represents the Subject in the example given. In the example, the Subject requests permission access from the reference monitor. In my access control mechanism, the Each User contains a username, a name, a role, readPermissions and writePermissions. The username is a unique name only associated to that User and treated like a user ID. The name is the Users personal name, and the Users role is the permissions role such as Client, Premium Client, etc. The readPermissions and writePermissions contained the appropriate permissions that were sent back from the ReferenceMontior.



The reference monitor in the example controls

# References

1. <https://www.linkedin.com/pulse/comprehensive-overview-access-control-models-rbac-abac-jay-/>
2. <https://docs.python.org/3/library/hashlib.html>
3. https://docs.python.org/3/library/getpass.html