

SYSTEM DEVELOPMENT LIFE CYCLE (SDLC)

- aabdallah Mohammed Hegazy 2205228
- Ziad Mahmmoud Abdeljwad 2205021
 - Youssef Saeed Thabet 2205064
 - Mohammed Hani Khatab 2205053

Planning:

We intend to create a system that user can access some sites via it as a website shortcut. System will have a policies that control user site access.

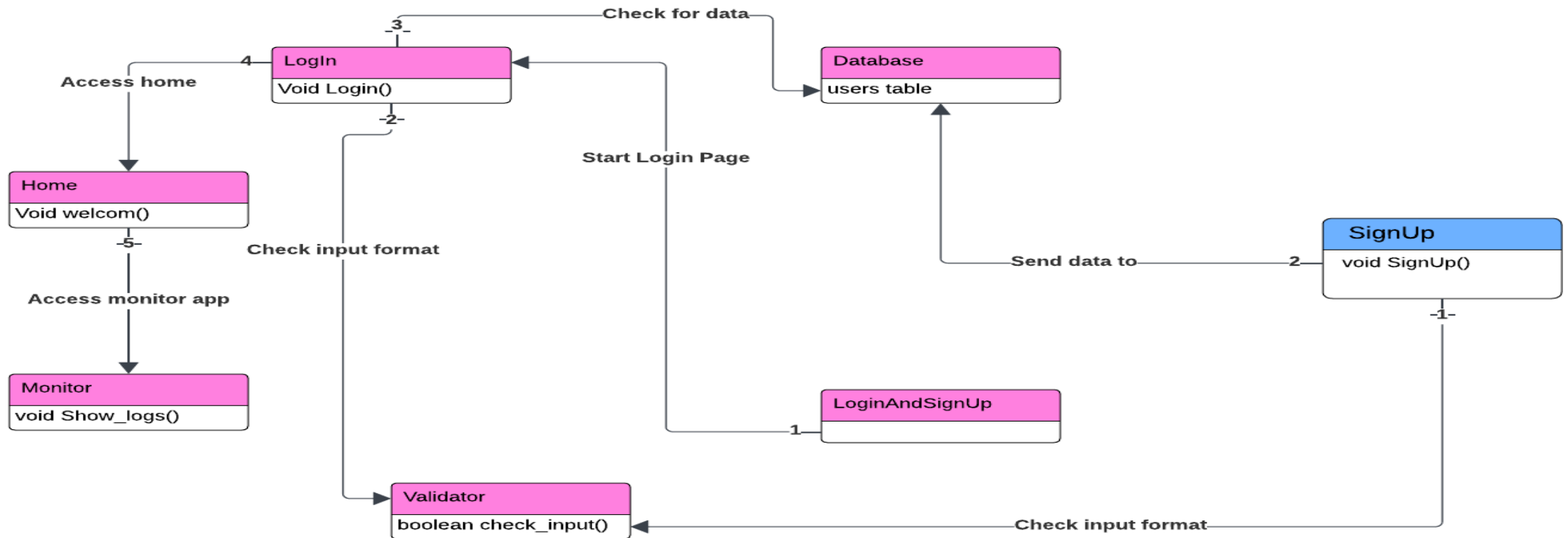
Security Features :

- 1-Using Java Security APIs and Libraries:
 - - Validator API for input validation.
- 2 -Store Password Hashes:
 - - Use a secure hashing algorithm bcrypt for storing passwords securely.
- 3- Attack Mitigation Examples:
 - - Implement protections against SQL Injection.

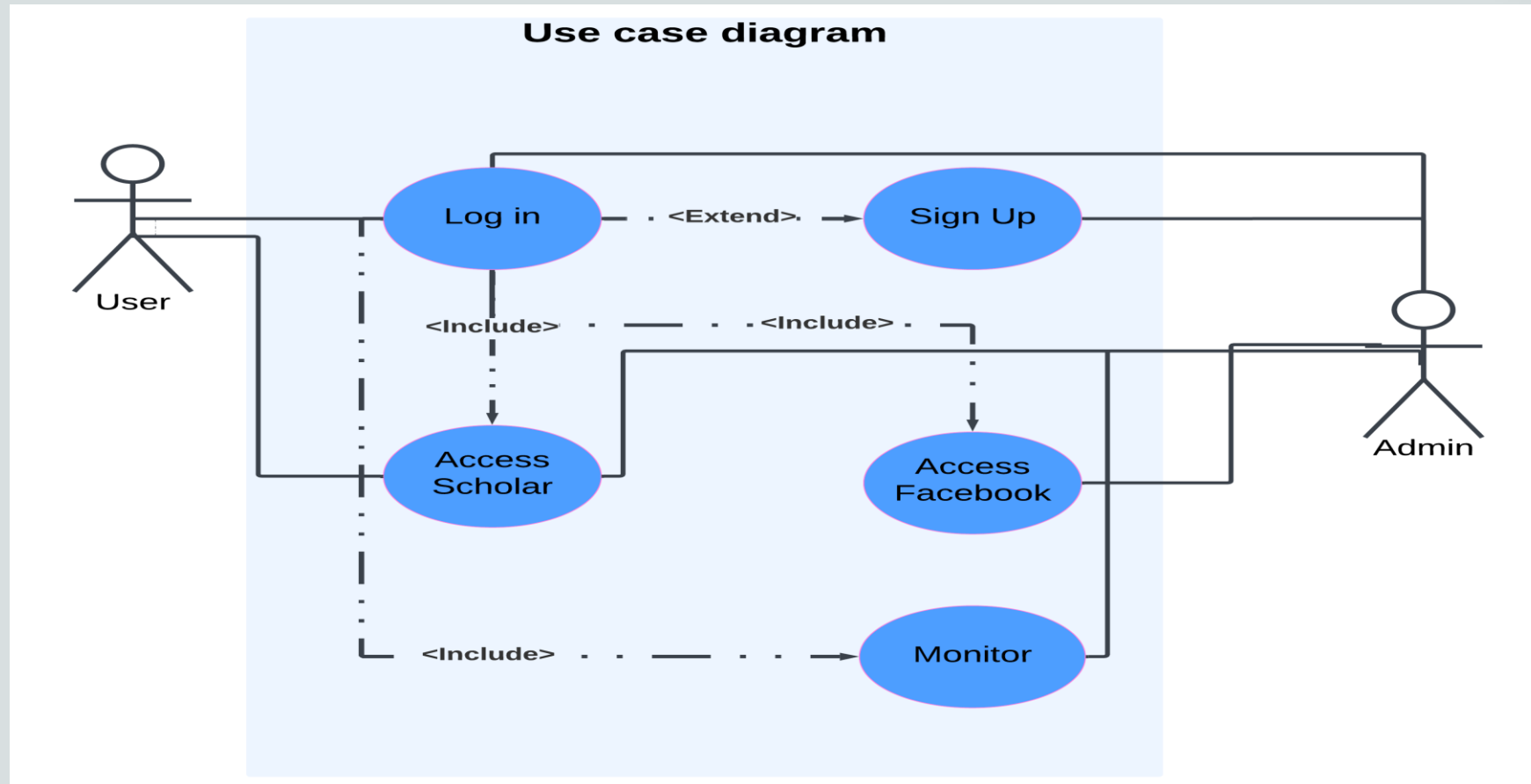
Security Features :

- 4- Multi-Factor Authentication (MFA):
 - - Add MFA to secure critical parts of the application (OTP).
- 5-Monitoring Application Security:
 - Use JDK tools and the Security Manager(JSTACK , JSTAT, JMAP, USERS)

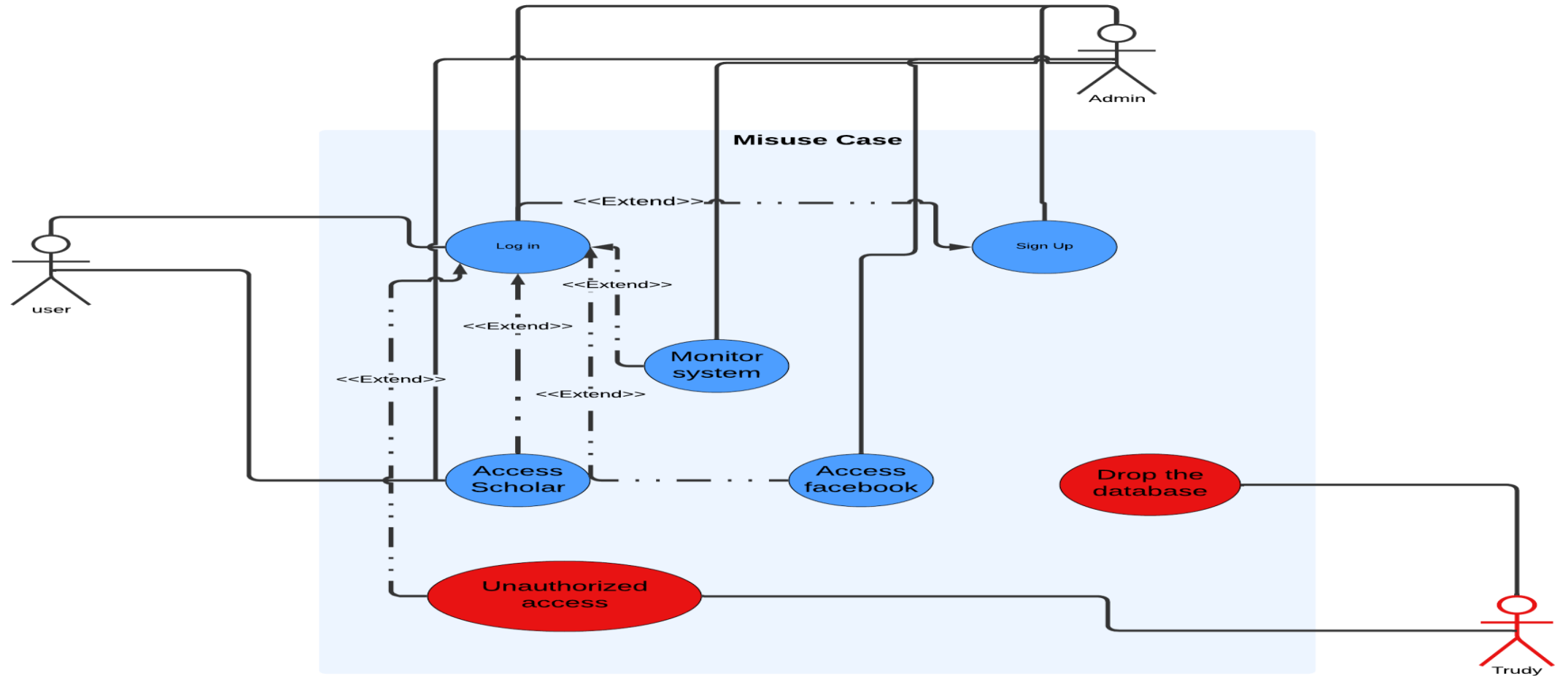
System Design



Analysis:



Misuse Diagram



Implementation:

- a) LoginAndSignUp class:
- The main class that used to run the system

b) Login class:

- User and admin used this class to access the home page. This page
- has 3 main functions:
- i. generateToken():
 - Used to generate a random number used to modify the user
 - when logging in as a MFA.
- ii. isMaliciousInput():
 - Used to check the confidentiality of the input to avoid SQL
 - injection attack.
- iii. LoginBtnActionPerformed():
 - That class is the one used to connect to the database to
 - search for email and password of the user, check for the validation
 - of the password that it must have an uppercase letter, lower case
 - letter, special character, a number, and it have to be at least 8
 - characters, and the last function is the input checker function.

c) Home class:

- The home page has 3 buttons that access another pages and
- one for log out. Till now users can only access two sites one is open
- for all and the other is open for admins only. Admin also can access
- the monitor app that stores the logs of the system.

Validator class:

- That class has all functions that used to check for input
- validation like password format, email format, and if the field is
- empty or not.

Monitor class:

- Monitor class used to:
- i. Monitor users actions (Login, SignUp)
- ii. Process Identification: depending on jps to find the correct PID for the java process.
- iii. Error handling: exceptions are logged and displayed in the output field.
- iv. UI Interaction: users can perform different operations by clicking buttons corresponding to the desired function.

SignUp class:

- Users can't sign up and add their emails, as a policy admin is
- the one that must perform it so SignUp class is isolated from the
- whole system. This class is the one that used to push data into
- database. We have 4 main information to be added as an input Name,
- Email, Password, and the Role. When admin click the sing up button,
- those data will be added to the database and user can use the system
- normally.

Maintenance:

- As a future plan to upgrade the system we intend to add
- more sites that users can access, improve our monitor
- technology, and try to solve discovered vulnerabilities