Term Project

Functional Spec

CS 151: Object-Oriented Design
Prof: Ahmad Yazdankhah

Team Number	07	**Section**	05
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Software Name	Password Manager		

1. Problem Statement

Computers and the Internet are being used extensively and the security of users' privacy has become a big issue. One of the oldest ways to provide security is using passwords. Choosing and storing passwords are hard tasks for the majority of the users and cause millions of breaches. Since the number of websites that we use every day is increasing, this causes most users to choose simple memorable passwords, store them improperly, or reuse them for many websites/applications that increase the risk of being cracked. The existing password managers are not reliable because there is always the risk of leaking our information to the developers of the software!

2. Functional Requirements

The password manager should have the following minimum features:

1. The application shall be multiuser.
2. The user shall log in/signup/reset the password when running the application.
3. The user's login password (aka master password) shall be reset by one security question that is set during signup.
4. The application shall store the username, password, website/application name, specified email, creation date, expiration date
5. The application shall generate a password based on the given criteria:
    - Minimum/maximum lengths of the generated password can be set to any non-zero positive integer

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- The option of including special characters (!"#$%&'()*+,-./:;<=>?@[\]^_`{|}~)
- The option of including capital letters. In this case, the user needs to specify how many capital letters are required.

6. The passwords shall be encrypted before storing and decrypted before retrieving. For security purposes, the code of encryption/decryption will be provided by the client (the professor).
7. The password shall be copied in the clipboard by a button.
8. The application shall warn the user about the expired passwords right after successful login to the system.
9. The user shall search based on the website/application name or username.
10. The user shall modify the information of the application.

- When the user updates the duration of the password, the current expiration day will not change. New duration will apply for the next time when the user updates their old password.

3. References

N/A

4. Use Cases

A. Login menu:

Use Case Name	Login
Goal	
This use case describes how a user login into the system.	
Participating Actors	
User, System.	
Glossary	
N/A	
Primary Flow of Events	
Trigger	
User runs the application and gets in login menu	

Steps	Action	System Response
1	Run the application	
2		Show the login menu
3	Enter username and passwords then press “Login”	
4		Verify username and password
5		checks if any record has an expired password
6		Search for expired passwords and warn the user about it.

Alternate Flow of Events		
Alternate Trigger		
The user enters the wrong password or username		
Steps	**Action**	**System Response**
1	Enter the wrong username or password	
2		Show the message in red “ Wrong user name or password. Please try again”
Alternate Flow of Events		

Alternate Trigger		
The user clicks on the signup button		
Steps	**Action**	**System Response**
1	Click on sign up button	
2		Redirects the user to the Signup menu

Use Case Name	Sign Up Button
Goal	
This use case describes how a user signs up new account	
Participating Actors	
User, System.	
Glossary	
N/A	
Primary Flow of Events	
Trigger	
- User runs the application - User clicks on the "Sign up" button	

Steps	**Action**	**System Response**
1	Run the application	
2		Show the login menu
3	Click on the “Sign Up” button	
4		Show the “Sign Up” menu
5	Enter username, passwords, re-enter password, security question, and answer	
6	Click “Submit” button	
7		Verifies username, passwords, re-enter password, security question, and answer
8		Show the message” Creating a new account is successfully done!”

9		Show the “Main menu”
Alternate Flow of Events		
Alternate Trigger 1		
The user enters an invalid username or password		
Steps	**Action**	**System Response**
1	Enter the invalid username or password	
2		Show the message in red “ your user name or password is invalid. Please try again”
Alternate Trigger 2		
The user enters an existing User Name		
Steps	**Action**	**System Response**
1	Enter a username that is already taken	
2		Show the message in red “ User name already exists. Please try again”.
Alternate Trigger 3		
The user clicks the “Cancel” button		
Steps	**Action**	**System Response**
1	Click “Cancel” button	
2		Show the “login” menu

Use Case Name	Reset Master Password
Goal	
This use case describes how a user reset a master password	
Participating Actors	
User, system	
Glossary	
N/A	
Primary Flow of Events	
Trigger	

- User runs the application and gets into the login menu
-User clicks on the "Forgot Password" button

Steps	Action	System Response
1		Show reset master password username menu and ask username
2	Enter username	
3	Press submit	
4		Show the menu with security question
5	Enter the answer for security question	
6		Show the menu to set new password
7	Enter a new password and re-enter password	
8	Click Submit	
9		Show the message " Success change password"
10	Click "Ok" button	
11		Return to log in menu
Alternate Flow of Events		
Alternate Trigger		
The user enters the wrong answer for security question		
Steps	**Action**	**System Response**
1	Enter the wrong answer for security question	
2		Show the message in red " Wrong answer. Please try again"
Alternate Flow of Events		
Alternate Trigger		
The user clicks the "Submit" button before filling in a new password or invalid new password		
Steps	**Action**	**System Response**
1	Click on the "Submit" button	
2		Show the red message "Invalid new password. Please try again."
Alternate Flow of Events		
Alternate Trigger		
User enters a non-existing user name		
Steps	**Action**	**System Response**

1	Enter the non-existing username in the “Password resetting username” menu, and click submit	
2		Show the alert message “User name does not exist!”

B. Setting menu

Use Case Name	Change current user’s master password
Goal	
Change current user’s master password	
Participating Actors	
User, System.	
Glossary	
N/A	
Primary Flow of Events	
Trigger	
-User logins into the System -User clicks on the "Setting" button	

Steps	**Action**	**System Response**
1		Show the Setting menu
2	Click on the “Change” button next to the “Master Password” line	
3		Show the Change Master Password menu
4	Enter Old, New, Re Enter Password and clicks on “Submit” button	
5		Verifies new password, re-enter password, and change to a new password

6		Show the message “Show the message”
Alternate Flow of Events		
Alternate Trigger		
User clicks on “Main” button in Setting menu		
Steps	**Action**	**System Response**
1	Click on “Main” button	
2		Show Main menu
Alternate Flow of Events		
Alternate Trigger		
User clicks on “Cancel” button in Change Master Password menu		
Steps	**Action**	**System Response**
1	Click on “Cancel” button	
2		Show Setting menu
Alternate Flow of Events		
Alternate Trigger		
User enters a new password and reenter password don’t match		
Steps	**Action**	**System Response**
1	New password and reenter password don’t match	
2		Show message “passwords do not match, please try again”
3		Show Change Master Password menu

Use Case Name	Change current user’s Master Security Question
Goal	
Change current user’s Master Security Question	
Participating Actors	
User, System.	
Glossary	
N/A	

Primary Flow of Events		
Trigger		
-User logins into the System -User clicks on the "Setting" button in “Main menu” - User clicks the “Change” button next to the “Question” line		
Steps	**Action**	**System Response**
1		Show the Change “Master Security Answer” menu
2	Enter new question clicks on “Submit” button	
3		Show the message “Successfully update security question”
4	Click “Ok” button	
5		Show the Main menu
Alternate Flow of Events		
Alternate Trigger		
User clicks on “Main” button in Setting menu		
Steps	**Action**	**System Response**
1	Click on “Main” button	
2		Show Main menu
Alternate Flow of Events		
Alternate Trigger		
User clicks on “Cancel” button in Change Master Security Question menu		
Steps	**Action**	**System Response**
1	Click on “Cancel” button	
2		Show Setting menu

Use Case Name	Change current user’s Master Security Answer

Goal		
Change current user’s Master Security Answer		
Participating Actors		
User, System.		
Glossary		
N/A		
Primary Flow of Events		
Trigger		
-User logins into the System -User clicks on the "Setting" button in “Main menu” - User clicks the “Change” button next to the “Answer” line		
Steps	**Action**	**System Response**
1		Show the Change “Master Security Question” menu
2	Enter new Answer	
3		Show the message “Successfully update security answer!”
4	Click “Ok” button	
5		Show the Main menu
Alternate Flow of Events		
Alternate Trigger		
User clicks on “Main” button in Setting menu		
Steps	**Action**	**System Response**
1	Click on “Main” button	
2		Show Main menu
Alternate Flow of Events		
Alternate Trigger		
User clicks on “Cancel” button in Change Master Answer menu		
Steps	**Action**	**System Response**

1	Click on “Cancel” button	
2		Show Setting menu

C. Main menu:

Use Case Name	Add new Account	
Goal		
User add new account		
Participating Actors		
User, System.		
Glossary		
N/A		
Primary Flow of Events		
Trigger		
-User logins into the system and get into the “Main menu”		
Steps	**Action**	**System Response**
1	Click on the “Add” Button	
2		Show the Add Application menu
3	Enter Application Name, User Name, Password, and Email, password duration	
4	Click on “Submit” button	
5		Verifies if an account already exists
6		Show the message “ Adding a new record is successfully done!”
7	Users click on the “Ok” button.	
8		Show the “Main menu”
Alternate Flow of Events		
Alternate Trigger		
User click cancel button		
Steps	**Action**	**System Response**
1	Click cancel button	

2		Return to “ Main menu”

Use Case Name	Log out current User
Goal	
User log out current user account	
Participating Actors	
User, System.	
Glossary	
N/A	
Primary Flow of Events	
Trigger	
-User logins into the system and get into the “Main menu” / Search Menu	

Steps	**Action**	**System Response**
1	Click on the “Log out” Button	
2		Asking for confirmation
3	Users click on the “Ok” button.	
4		Show the “Log In” page

Alternate Flow of Events		
Alternate Trigger		
User click cancel button when asking for confirmation		
Steps	**Action**	**System Response**
1	Click cancel button when asking for confirmation	
2		Stay in the same page.

D. Account Information menu

Use Case Name	User update Account information

Goal		
User update an account from account list		
Participating Actors		
User, System.		
Glossary		
N/A		
Primary Flow of Events		
Trigger		
- User logins into the System - User selected and account on Main Scene / Expired Scene/ Search Result then click edit		
Steps	**Action**	**System Response**
1		Show user the account information menu
2	Enter new information	
3	Click Submit	
4		Verify new information
5		Show Message “Successful update new information!”
6	Click the “Ok” button	
7		Return the user to the previous scene
Alternate Flow of Events		
Alternate Trigger		
User change application information, and that new Application and username information already exists in the database		
Steps	**Action**	**System Response**
1		Show message “Application and username pair already exists!”
2	Click “Ok” button	
3		Return user to editing information scene
Alternate Flow of Events		
Alternate Trigger		
User click cancel button		
Steps	**Action**	**System Response**

1	Click cancel button	
2		Return to previous scene

Use Case Name	Delete Application record	
Goal		
User can delete the application account they already created after click Edit button after click an		
Participating Actors		
User, system		
Glossary		
N/A		
Primary Flow of Events		
Trigger		
- User login - User Click “Edit” button next to an application in “Main menu” and get into “Application information menu”		
Steps	**Action**	**System Response**
1	Click to delete button	
2		Asking for confirmation
3	Click “Ok”	
4		Show the message” Deleting the record is successfully done!”
5	Click “ok”	
6		Return to previous scene
Alternate Flow of Events		
Alternate Trigger		
- Click cancel on “delete confirmation menu”		
Steps	**Action**	**System Response**
1	Click on Delete Button	
2		Asking for confirmation
3	Click cancel	

4		Return to Account information scene

E. Search menu

Use Case Name	Searching for a password of an application	
Goal		
User can search for a list of application passwords		
Participating Actors		
User, System.		
Glossary		
N/A		
Primary Flow of Events		
Trigger		
User logins into the System and get to “Main menu”		
Steps	**Action**	**System Response**
1	click the search button	
2		Show the “Search menu"
3	Fill in at least one category application or user name	
4	Click submit	
5		Show the list of application that match one of the categories.
Alternate Flow of Events		
Alternate Trigger		
User click cancel button in searching page		
Steps	**Action**	**System Response**
1	user click cancel	
2		Return to the “Main menu”

F. Copy Button in the Main menu/ Search result menu / Expired menu:

Use Case Name	Copy button	
Goal		
User can use this button to copy the password of application		
Participating Actors		
User, system		
Glossary		
N/A		
Primary Flow of Events		
Trigger		
- User Click copy button next to an application in Search Result menu/ Main menu		
Steps	**Action**	**System Response**
1	Enter the main menu/ search result menu	
2	Click copy button next to one application	
3		Copy the password to clipboard
Alternate Flow of Events		
Alternate Trigger		
N/A		
Steps	**Action**	**System Response**
1	N/A	N/A

G. Password Generation menu

Use Case Name	Password generation button
Goal	

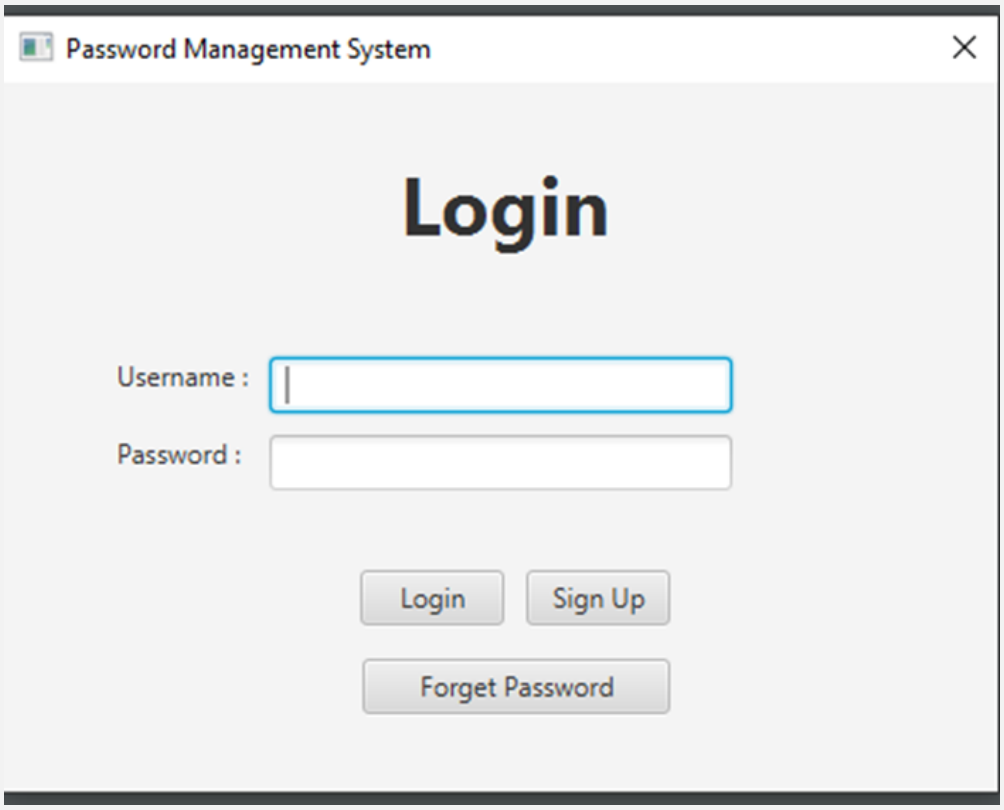
User can generate new password during the process of adding a new application or editing application information
Participating Actors
User, system
Glossary
N/A
Primary Flow of Events
Trigger
- User login - User click on “Add” button in “Main menu” - User click password generation button in “Adding Application menu”

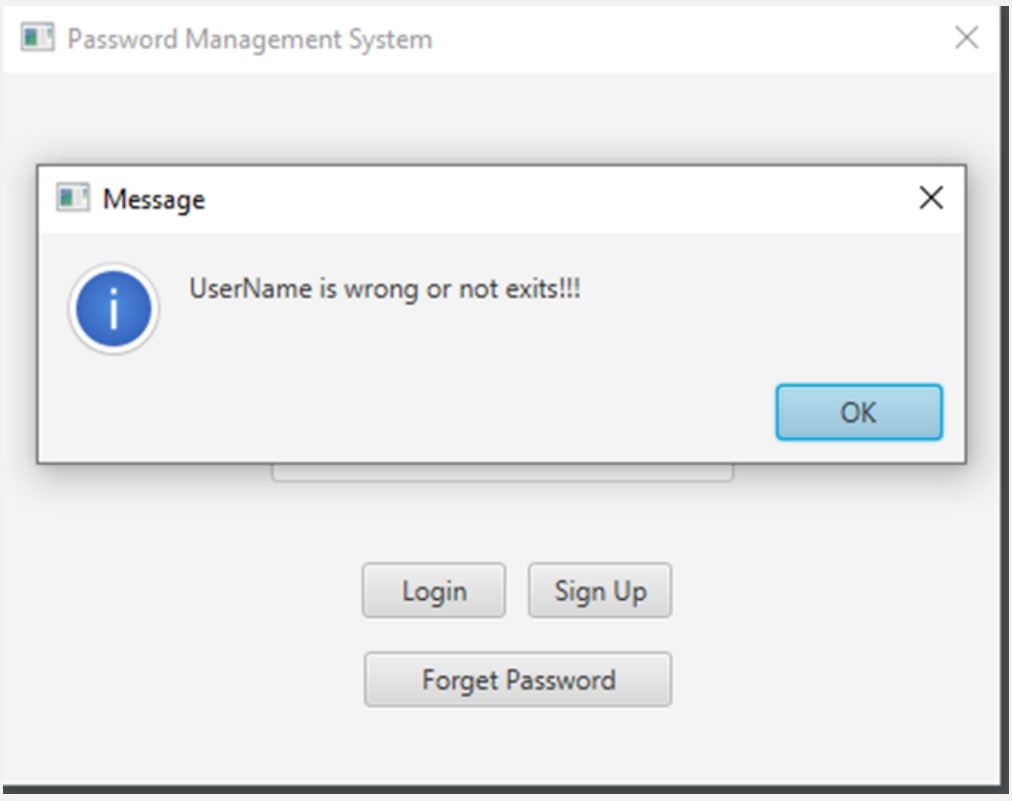
Steps	Action	System Response
1	Fill in the number of the digits box, the number of the special letterbox, the number of the upper case letterbox and the number of lowercase box.	
2	Click generate button	
3		Generate password based on user setting constraint
4	click Use button	
5		Return to previous scene
6		Fill out a password with generated password
7		Copy the generated password to clipboard

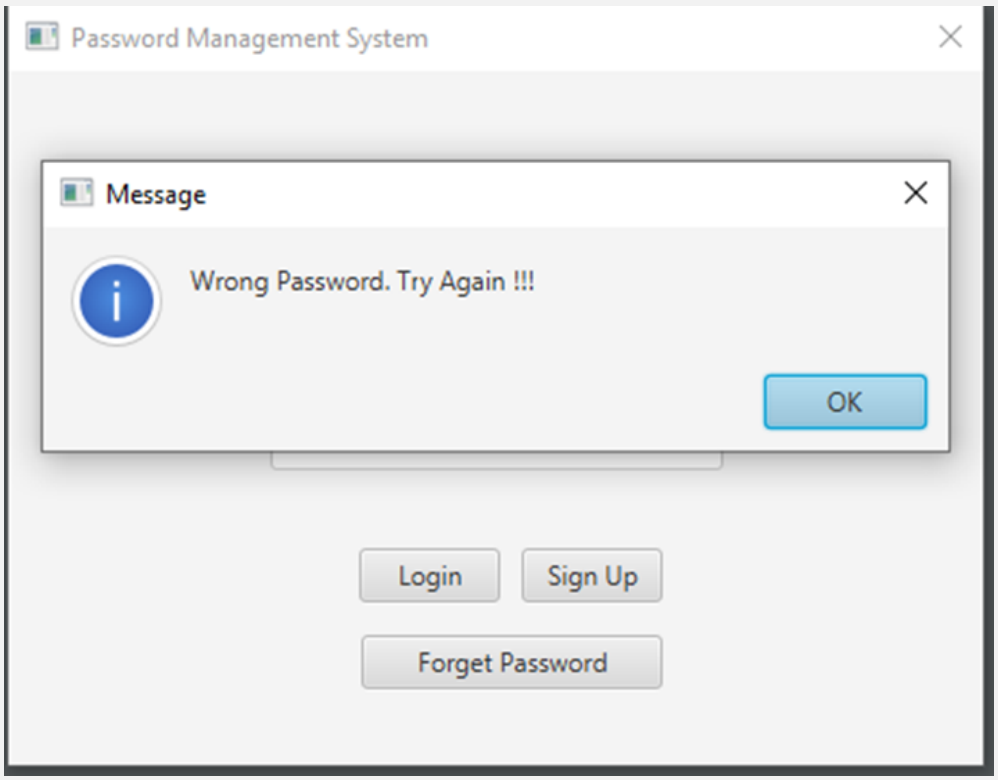
Alternate Flow of Events		
Alternate Trigger		
user clicks cancel		
Steps	**Action**	**System Response**
1	Click cancel button	
2		return to the previous page.

5. Mockup

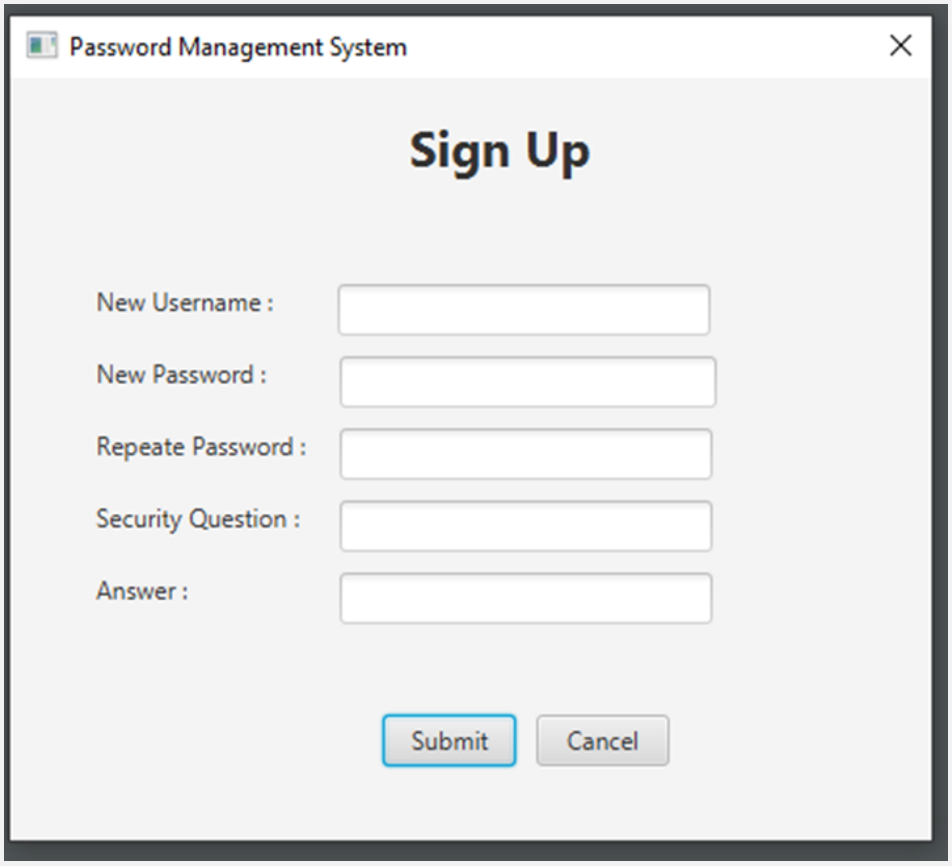
A. Login menu:

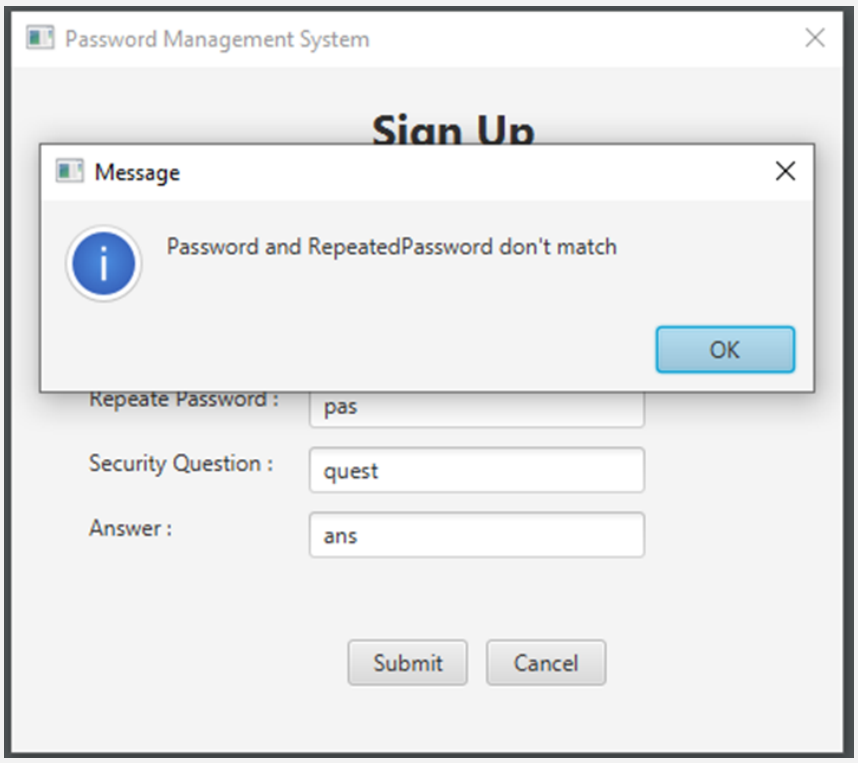

Password Management System
Login
Username :
Password :
Login
Sign Up
Forget Password

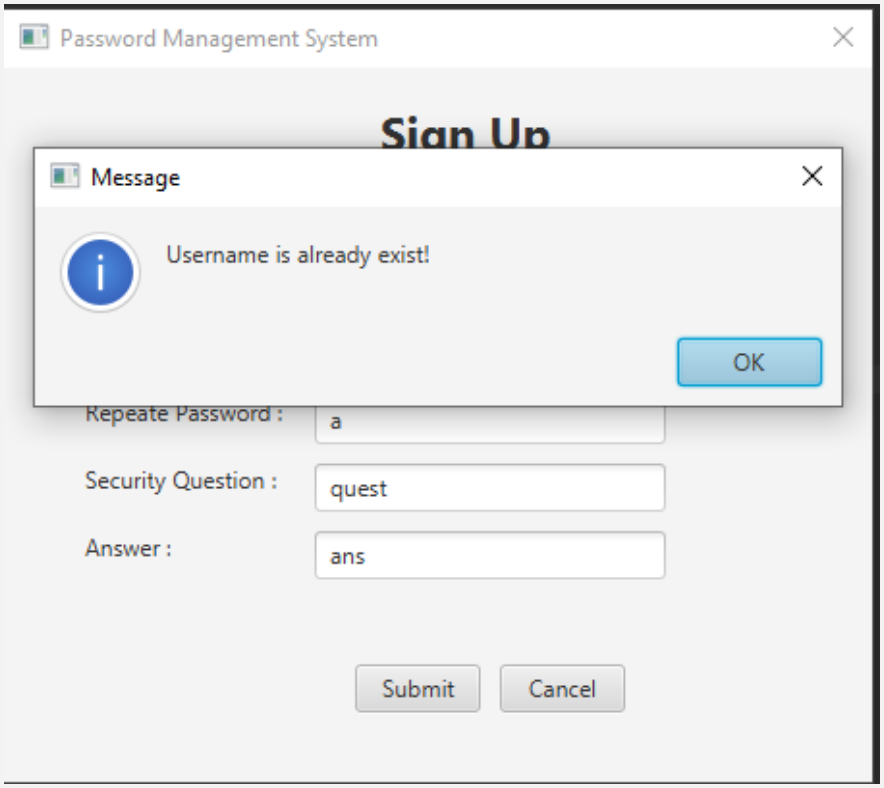

Password Management System
Message
UserName is wrong or not exits!!!
OK
Login
Sign Up
Forget Password

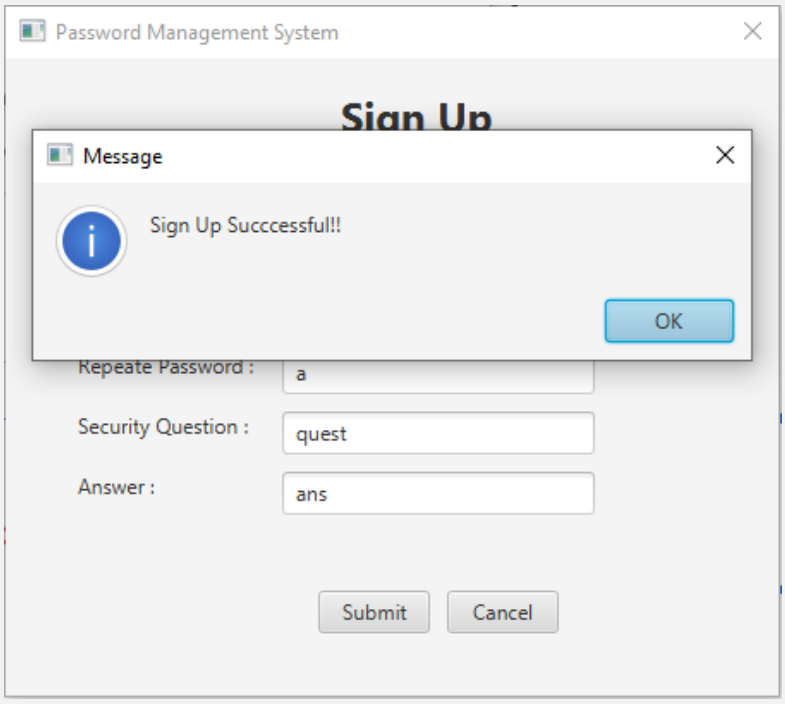

Password Management System
Message
Wrong Password. Try Again !!!
OK
Login
Sign Up
Forget Password

B. Sign Up menu

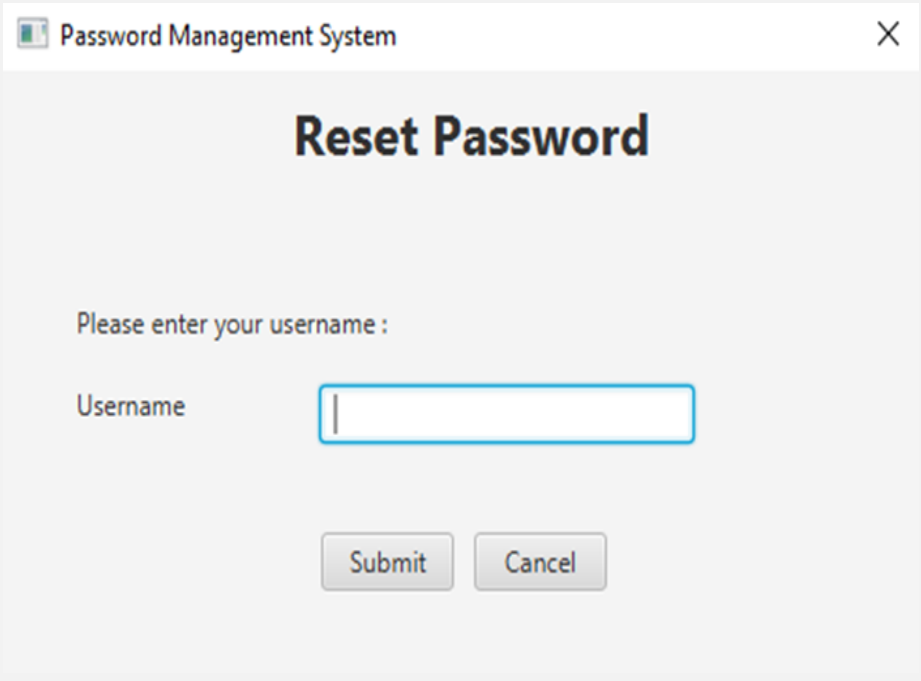


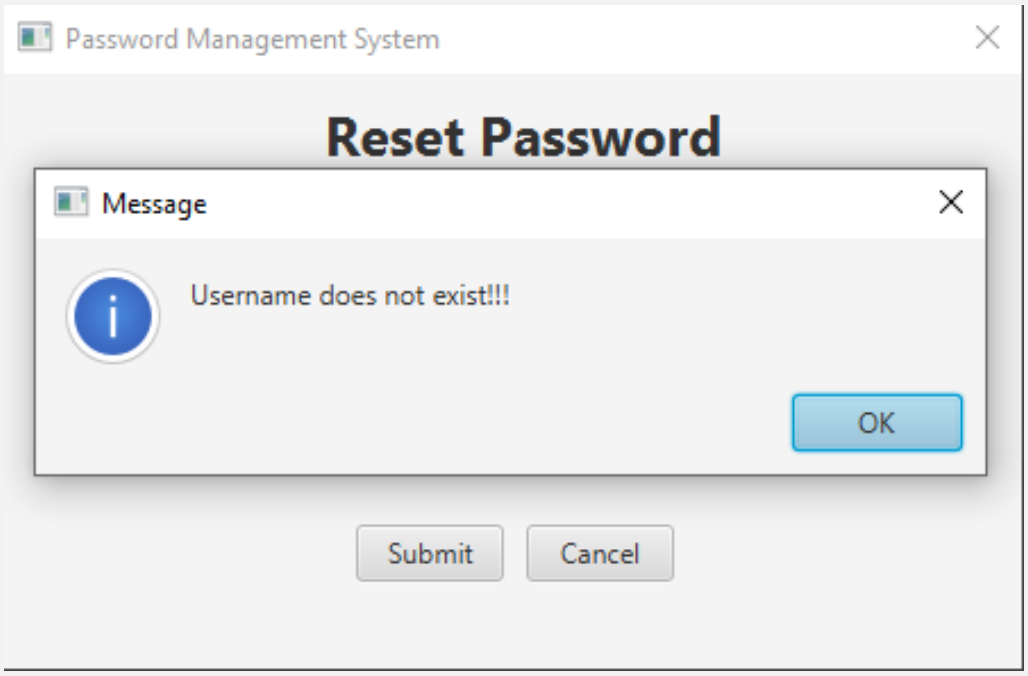

Password Management System
Sign Up
Message
Password and RepeatedPassword don't match
OK
Repeate Password :
pas
Security Question :
quest
Answer :
ans
Submit
Cancel

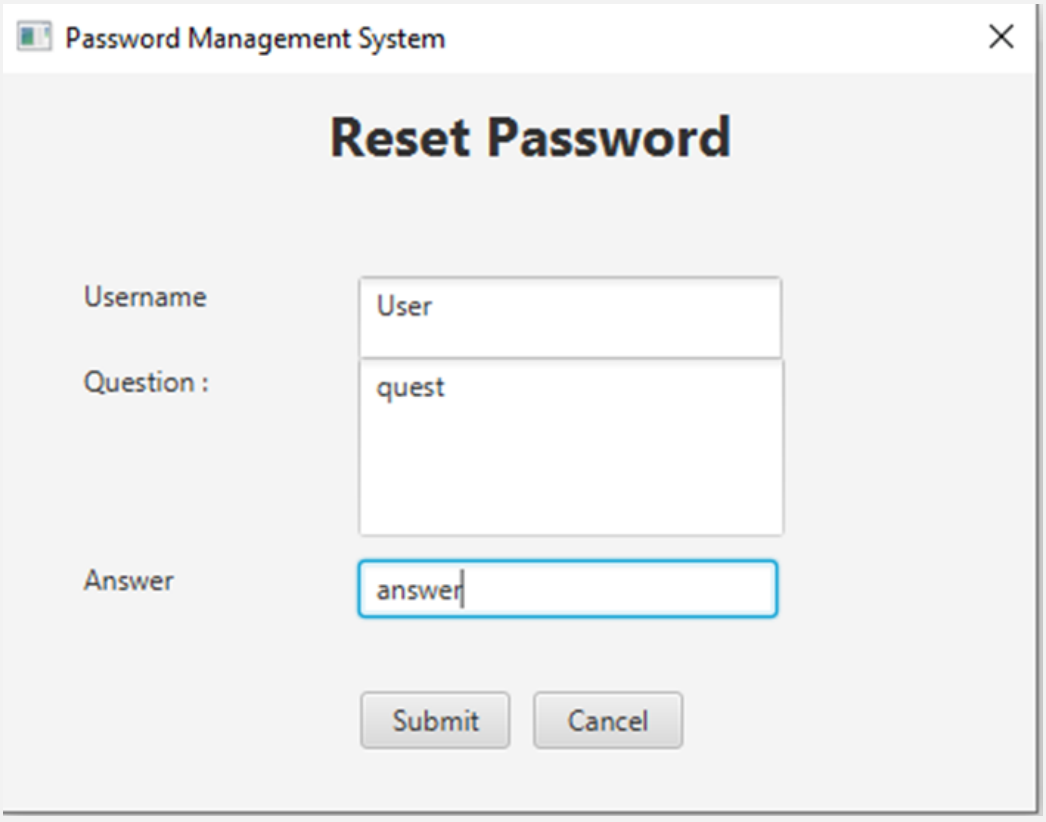

Password Management System
Sign Up
Message
Username is already exist!
OK
Repeate Password :
a
Security Question :
quest
Answer :
ans
Submit
Cancel

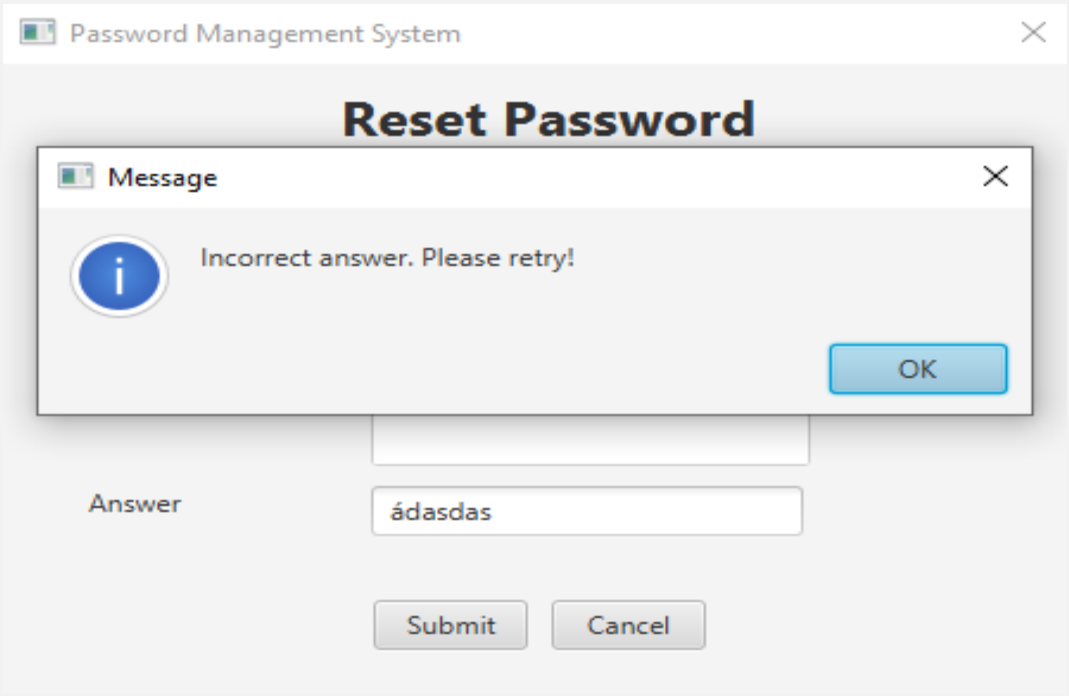


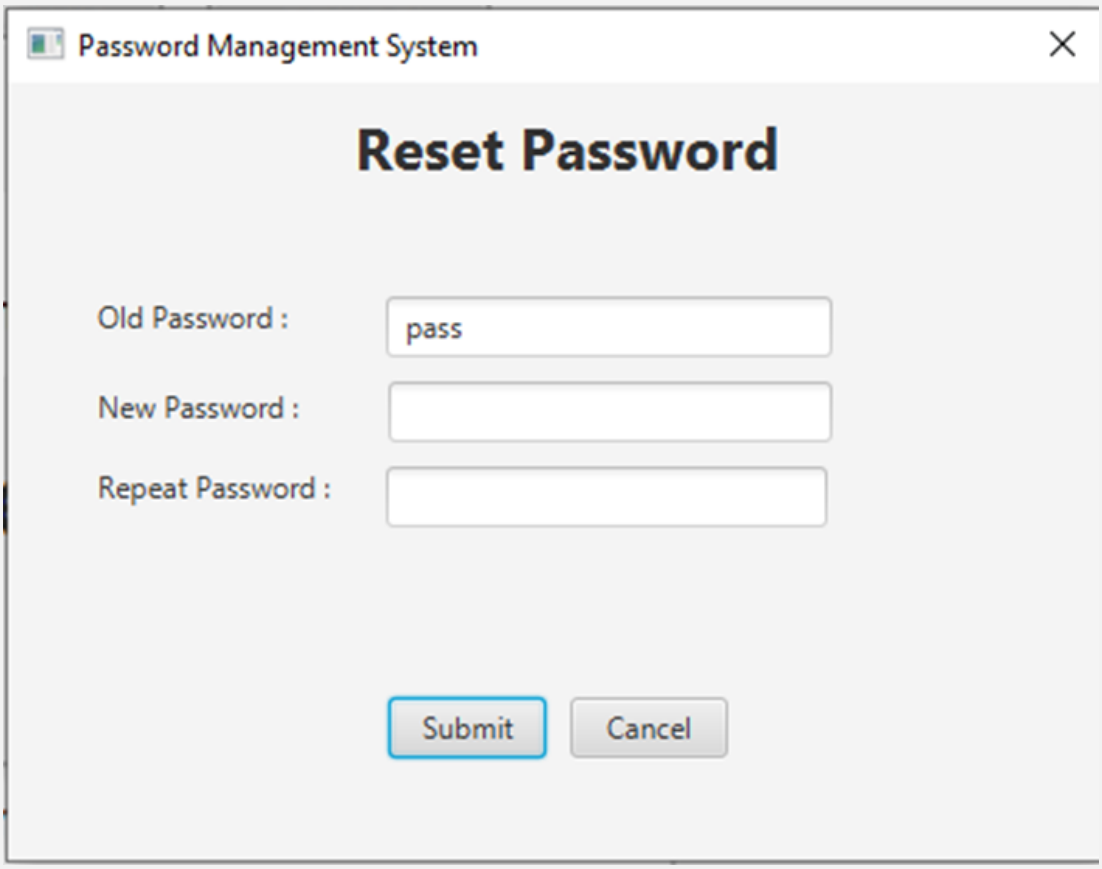
C. Reset Master Password

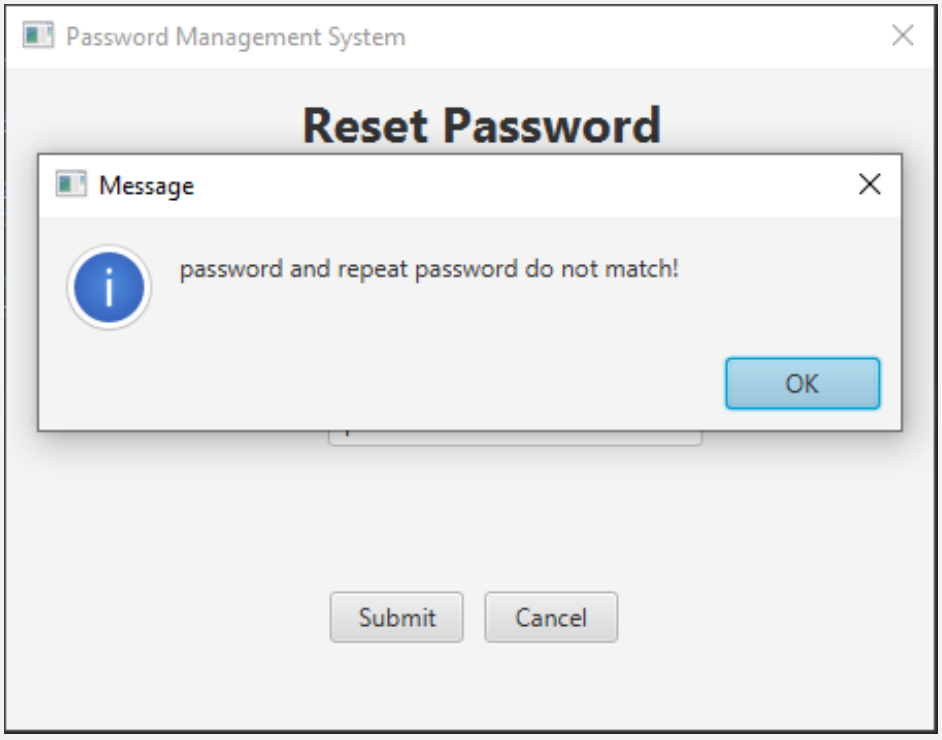



Password Management System
Reset Password
Message
Username does not exist!!!
OK
Submit
Cancel

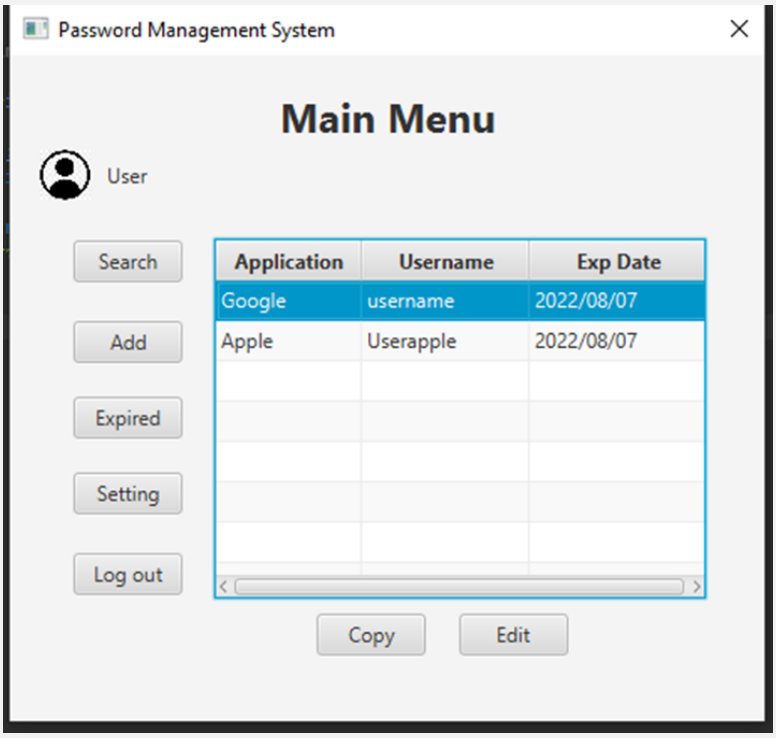

Password Management System
Reset Password
Username
User
Question :
quest
Answer
answer
Submit
Cancel


Password Management System
Reset Password
Message
Incorrect answer. Please retry!
OK
Answer
ádasdas
Submit
Cancel

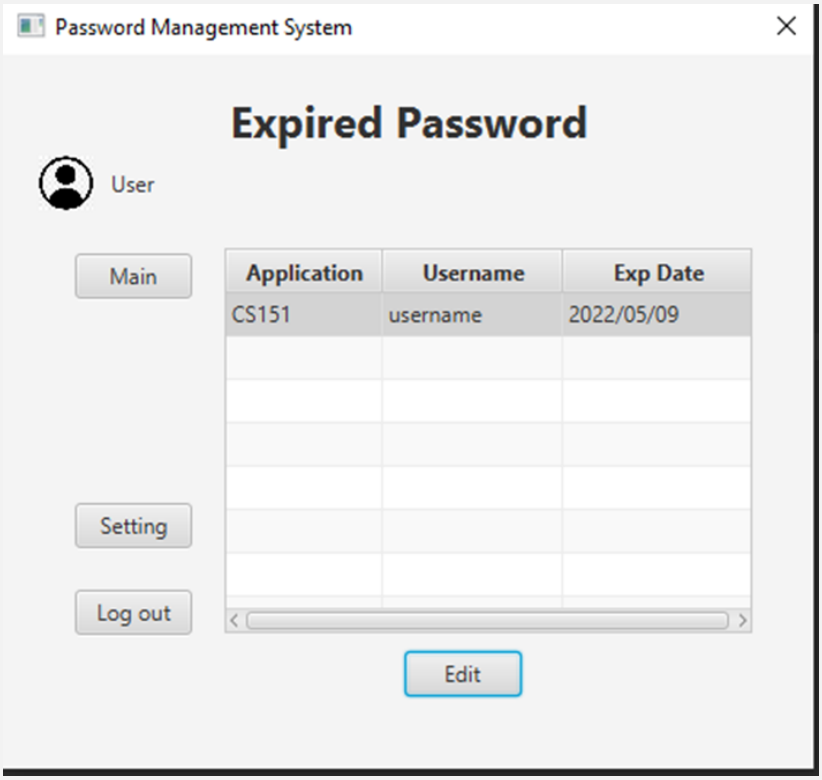

Password Management System
Reset Password
Old Password :
pass
New Password :
Repeat Password :
Submit
Cancel


Password Management System
Reset Password
Message
password and repeat password do not match!
OK
Submit
Cancel

C. Main menu:



D. Expired Password menu



E. Search menu:

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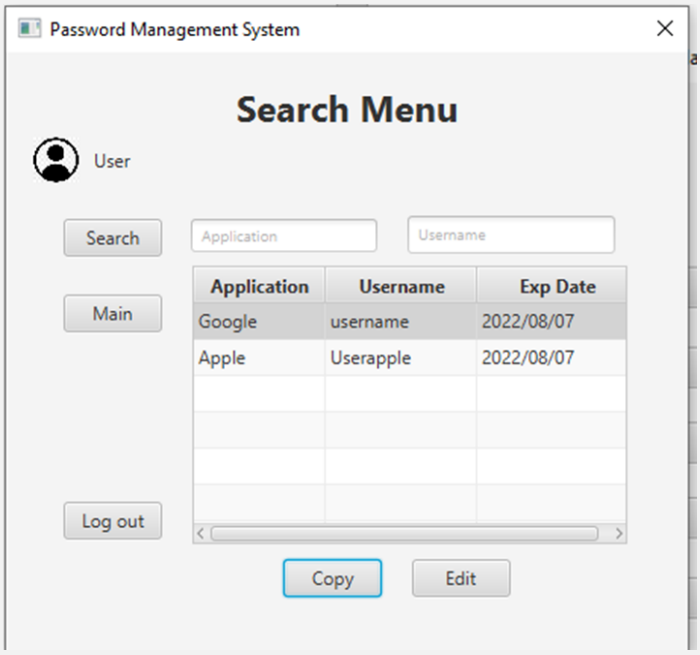
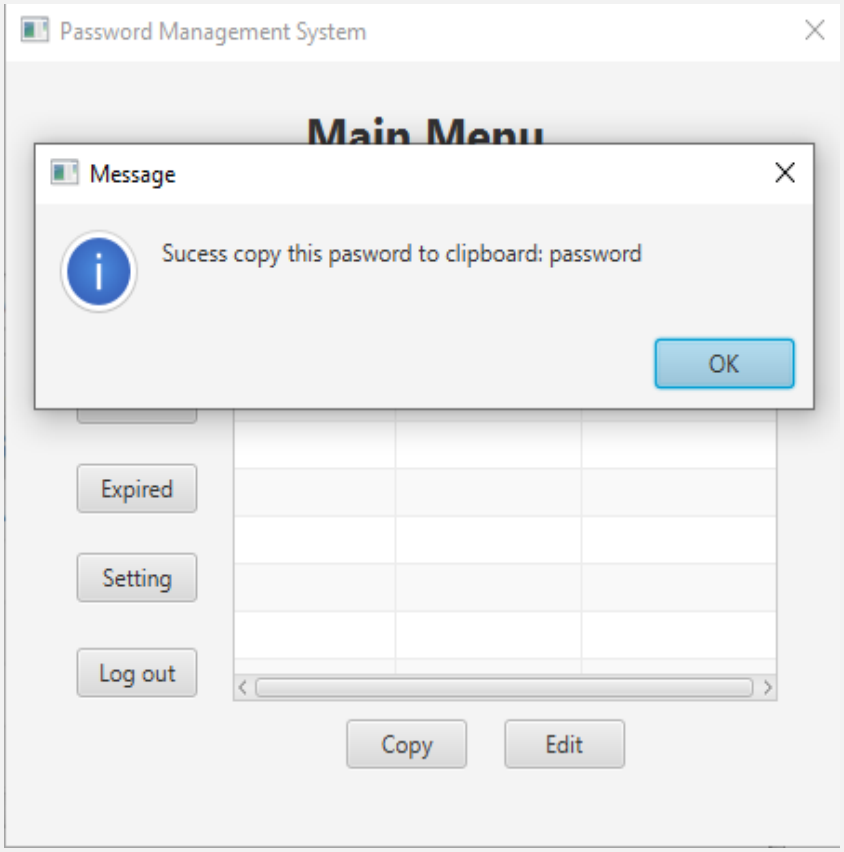
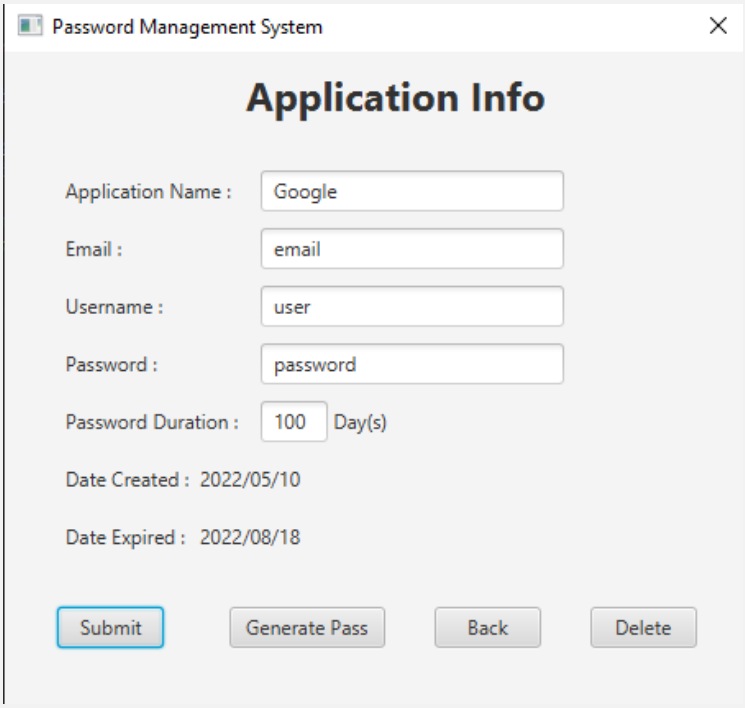
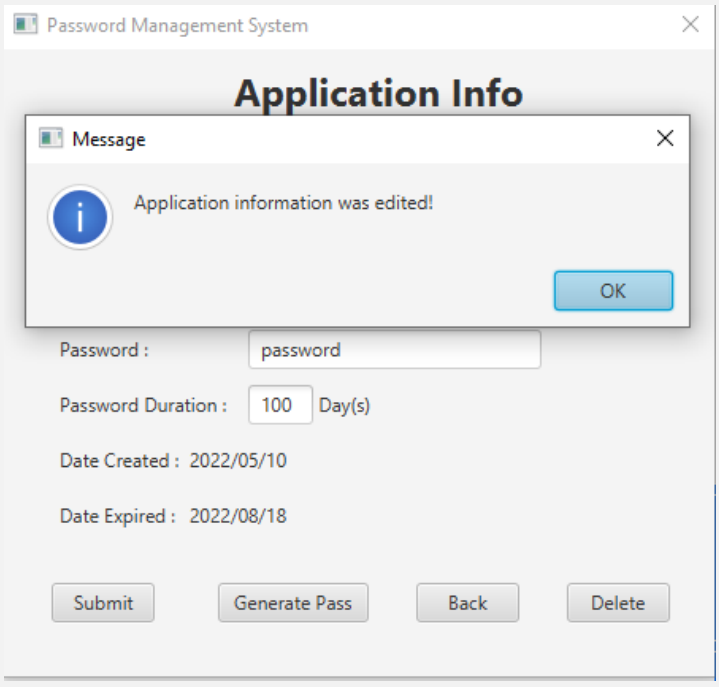
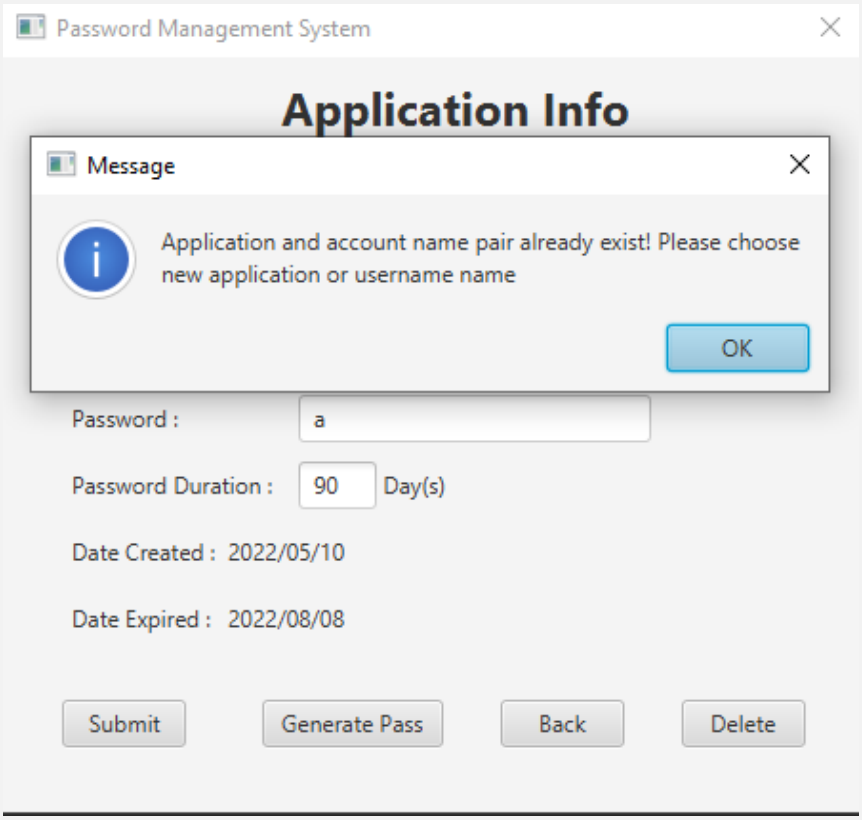


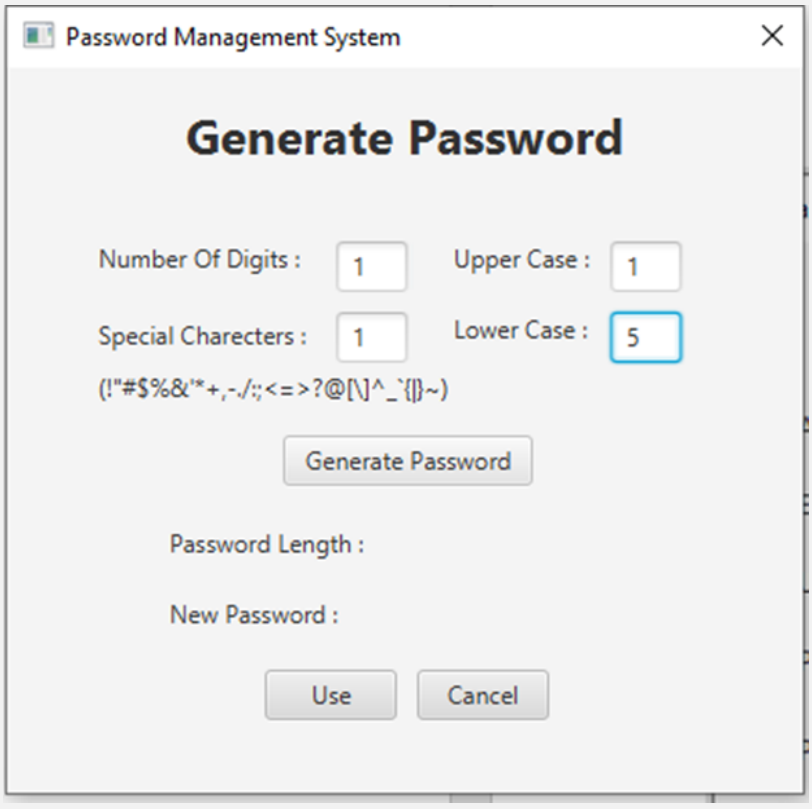


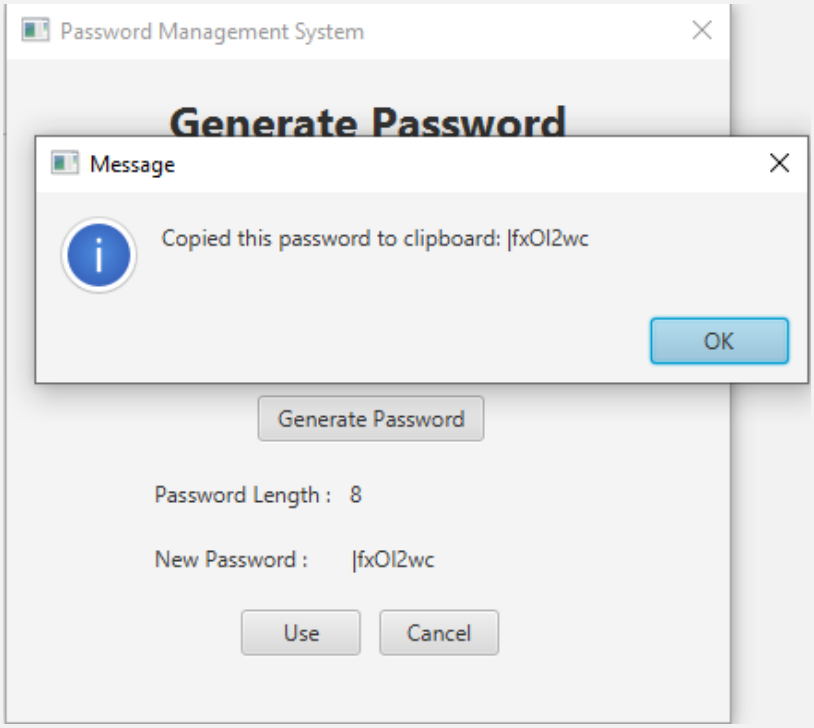
F. Application Editing menu:



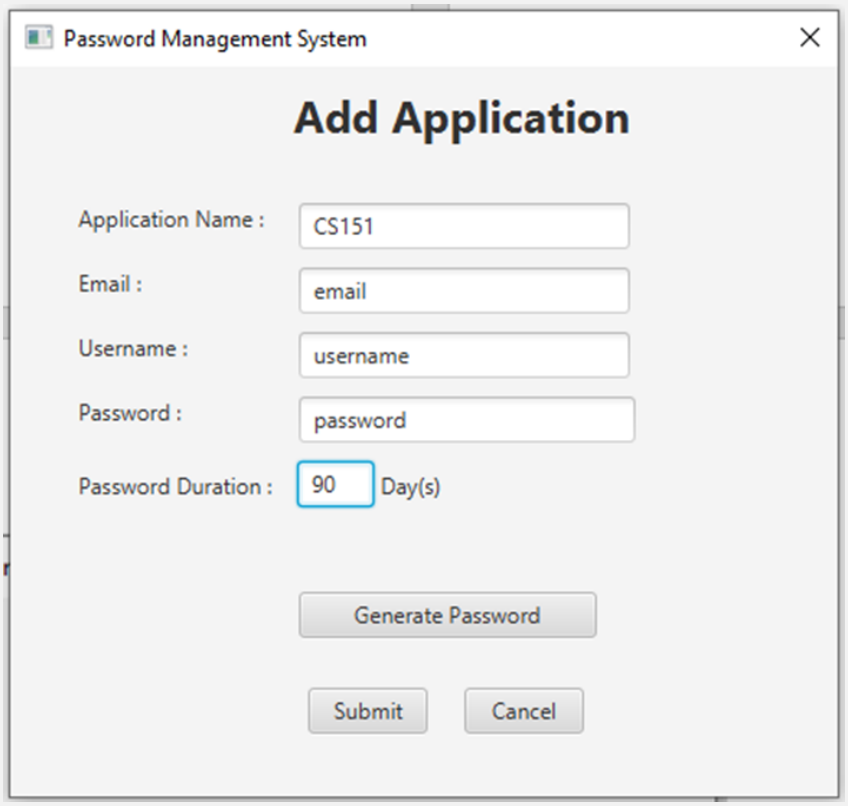


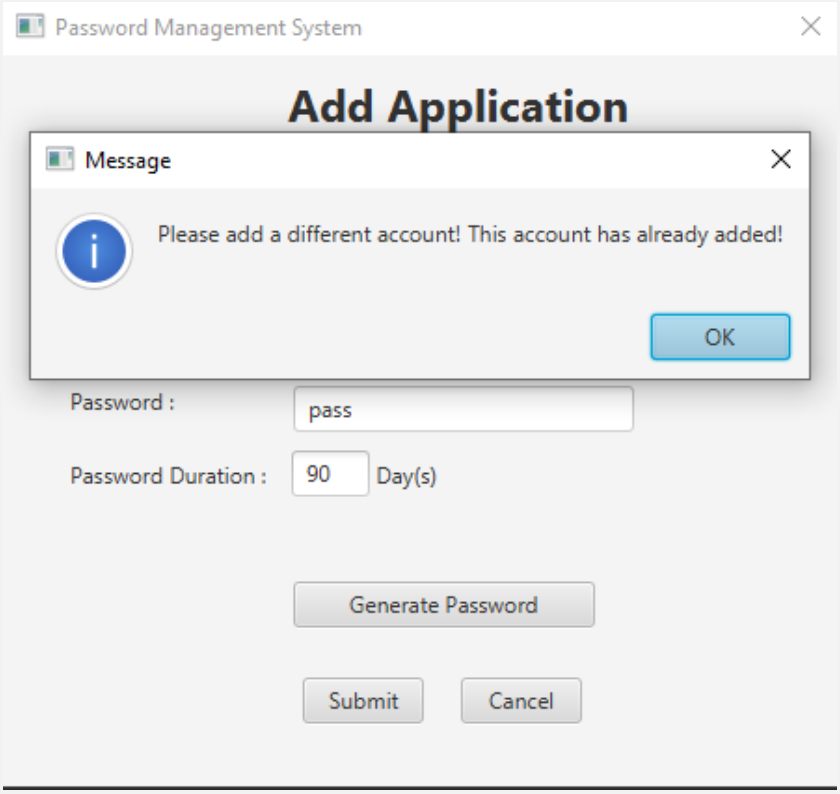

Password Management System
Application Info
Message
Application and account name pair already exist! Please choose new application or username name
OK
Password :
a
Password Duration :
90
Day(s)
Date Created : 2022/05/10
Date Expired : 2022/08/08
Submit
Generate Pass
Back
Delete

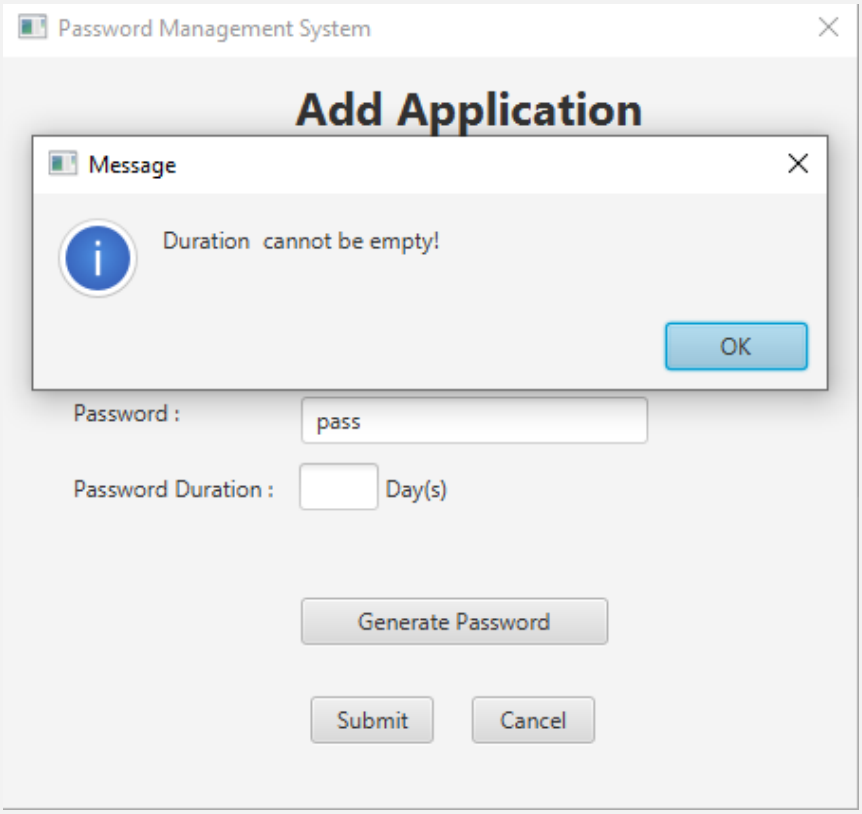

Password Management System
Generate Password
Number Of Digits :
1
Upper Case :
1
Special Charecters :
1
Lower Case :
5
(!"#$%&'*+,-./:;<=>?@[\]^_`{|}~)
Generate Password
Password Length :
New Password :
Use
Cancel

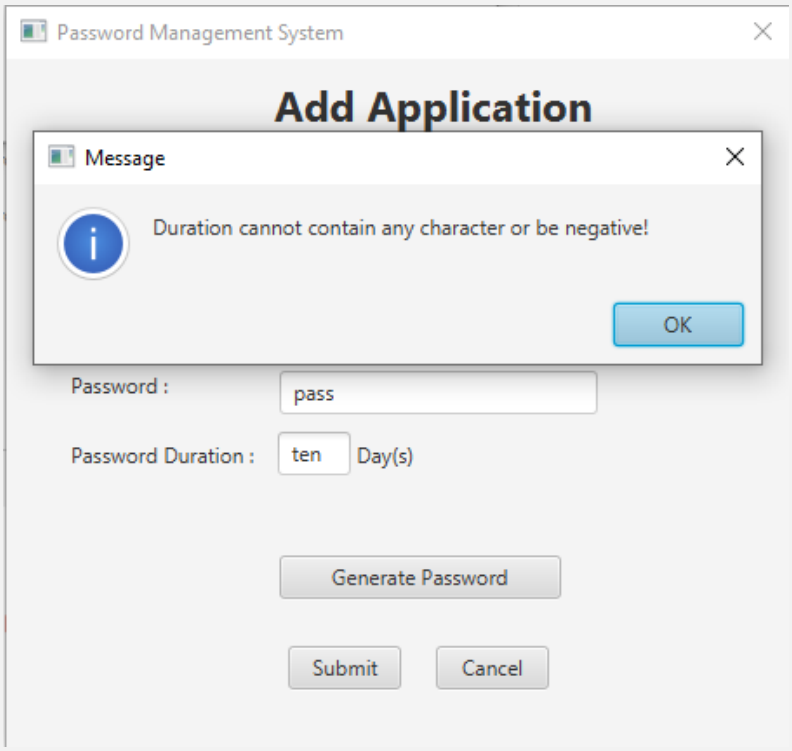


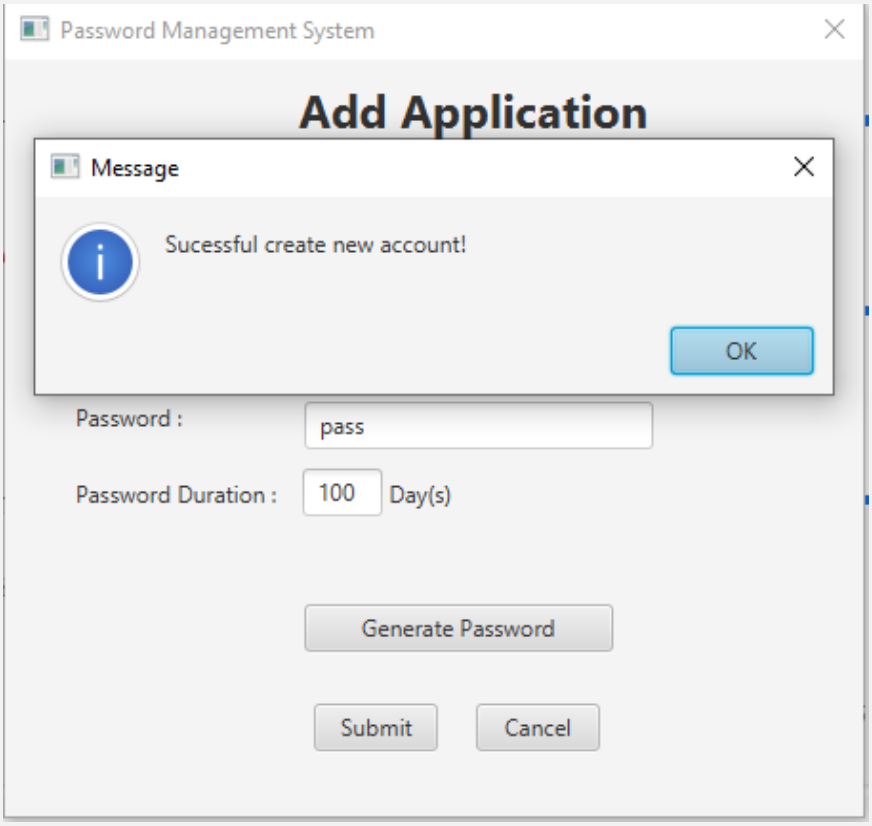
G. Add Application menu



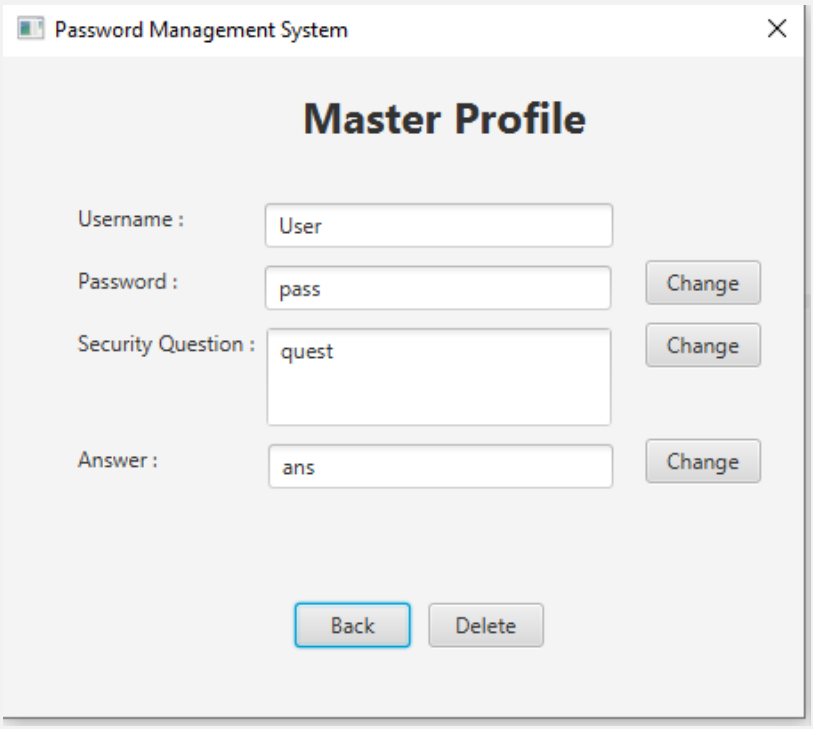

Password Management System
Add Application
Message
Please add a different account! This account has already added!
OK
Password :
pass
Password Duration :
90
Day(s)
Generate Password
Submit
Cancel

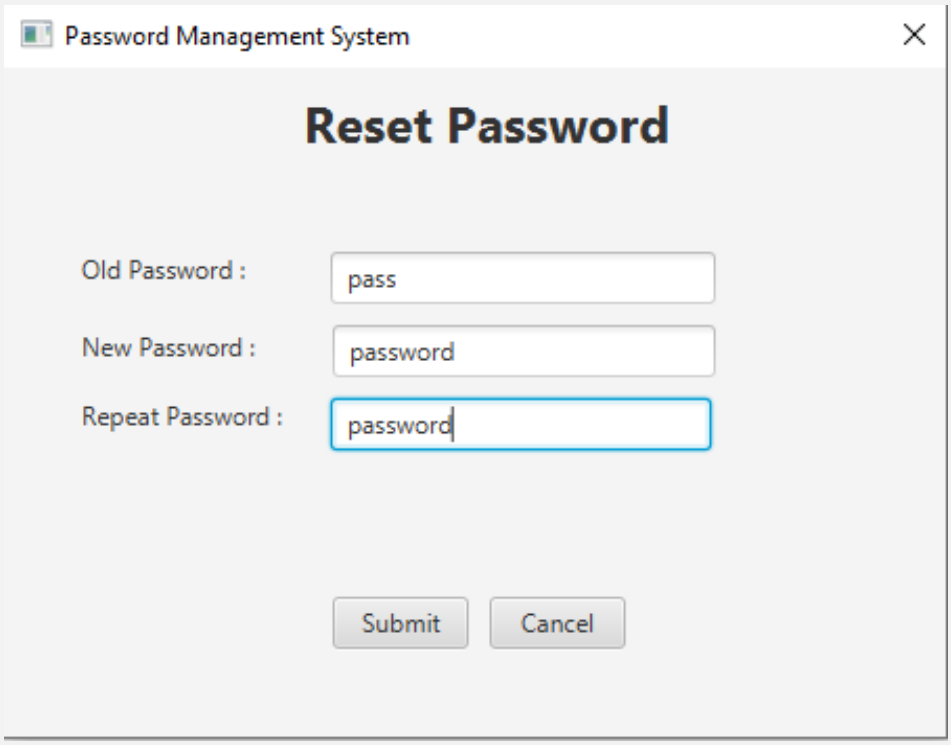

Password Management System
Add Application
Message
Duration cannot be empty!
OK
Password :
pass
Password Duration :
Day(s)
Generate Password
Submit
Cancel

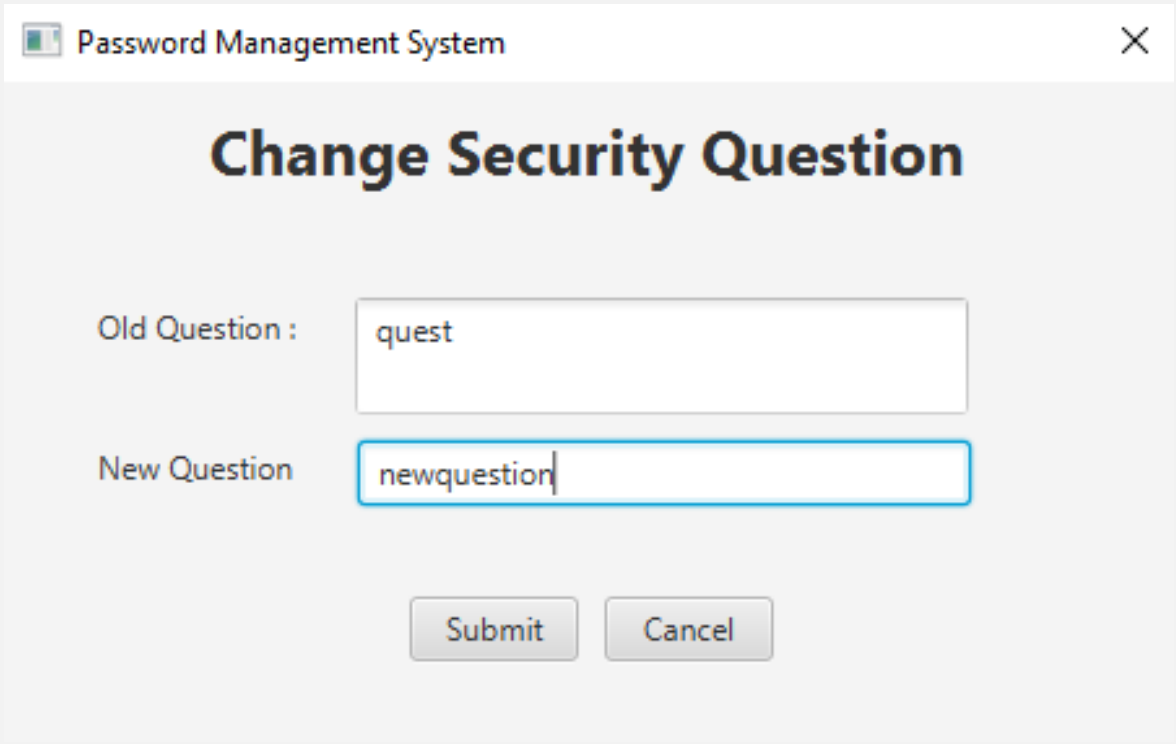

Password Management System
Add Application
Message
Duration cannot contain any character or be negative!
OK
Password :
pass
Password Duration :
ten
Day(s)
Generate Password
Submit
Cancel

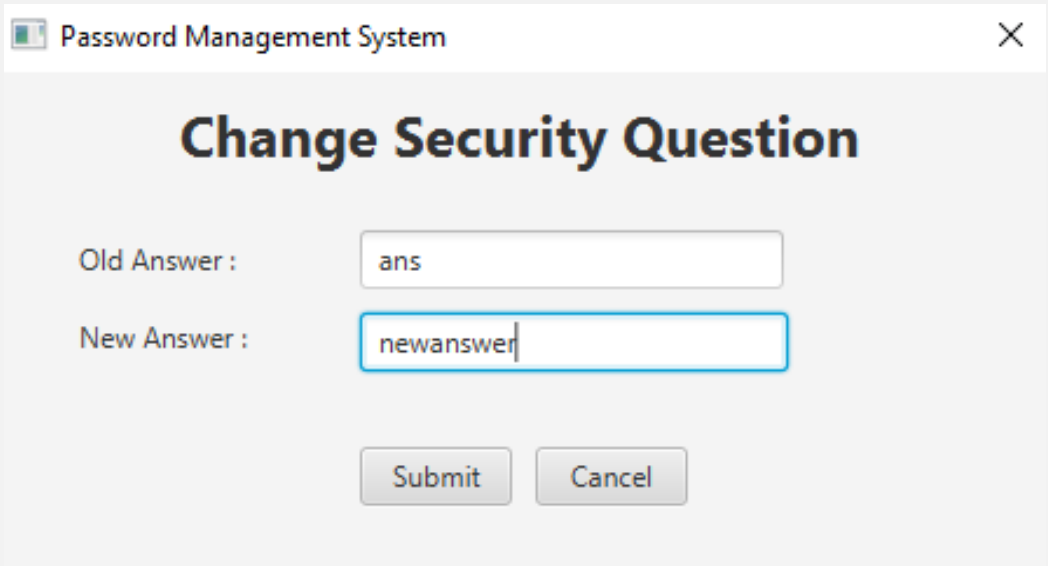

Password Management System
Add Application
Message
Sucessful create new account!
OK
Password :
pass
Password Duration :
100
Day(s)
Generate Password
Submit
Cancel

H. Setting menu:









6. Glossary

N/A