Faculty of Engineering

Ain Shams University

CSE225: Software Testing, Validation, and Verification

Final Project: Online Banking

Team Members	
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Submitted to:

Prof. Dr. Islam El-Maddah

ONLINE BANKING:

Our project consists of 5 main sections:

1- Pre GUI code with testing.
2- GUI code with GUI testing.
3- Errors and fixing.
4- GUI code after Fixing Errors.
5- Performance Testing.

Codes included in the files attached with the report.

This report includes GUI testing with scenarios and testcases, Errors & Fixing, and performance testing.

REPOSITORY of Project:

https://github.com/Mennah-Ashraf/Testing-Project.git

Aim of GUI Testing

Graphical User Interface (GUI) is the interface of the program that the user will see and interact with. GUI can be in the form of a web page or a program, the latter is the case for our online banking app.

GUI top layer is responsible for dealing with user events and redirects these events and activities to the correct block of code responsible for the meant request using method calls.

Testing Methodology

Our code was developed by 2 of our team members, while the rest were concerned about testing. In the case of GUI testing in this section, we are conducting a ***black-box*** approach. I -the tester- am testing the software without looking at the code, since I'm concerned with what the end-user will be dealing with.

The acceptance test will be conducted using ***Manual-Based Testing***, we will be testing the states and actions of the system using previous experience of dealing with such software systems. Another reason why we choose manual testing is that the software size is relatively small and there is a small number of states possible in the system, so the overhead of introducing test drivers or bots is not justifiable.

The coverage model of the test will be based on the State-Based model; All states of the GUI will be tested at least once. The test will be conducted using Finite State Machine (FSM) where each state is a window of the program, and the states change based on user events.

List of Scenarios:

1. Scenario 1: Customer application to the system.
2. Scenario 2: Admin login and functionalities.
3. Scenario 3: Customer login and functionalities.
4. Scenario 4: Exercising Application form and Check Request Status.

Scenario 1: Application

Please Zoom-in to fully see the diagram.

Figure 1: GUI Application - Scenario 1

Scenario 1 Description

The user in this scenario tries to apply to our online banking system. A user is required to fill a form then apply the application. The application will be approved or rejected later by one of the system admins.

Scenario 1 Table

Current State	Event	Next State	Errors Detected
S1	Click on “Apply Right Away”	S2	A warning windows was shown that an end-user shouldn’t see.
S2	Click on “Ok”	S3	This state should not exist.
S3	Fill Form	S4	None.
S4	Click on “Apply”	S5	None.
S5	Click on “Ok”	S6	None.
S6	Click on “Ok”	S7	None.
S7	Click on “Ok”	-	None.

Scenario 2: Admin Login and Functions

Please Zoom-in to fully see the diagram.

Figure 2: Admin GUI - Scenario 2

Scenario 2 Description

The admin in this scenario logs in then redirected to the admin functionalities screen. An admin can collect all customers data or manage applications.

Scenario 2 Table

Current State	Event	Next State	Errors Detected
S1	Fill incorrect data + click “Administrator”	S1’	None. The user should see an error upon entering incorrect credentials
S1	Fill correct data + click “Administrator”	S2	None.
S1’	Click on “Ok”	S1	None.
S2	Click on “Collect All Customers Data”	S2.1	Error window appears that the admin shouldn’t see. The admin should be able to see the customers data which we know they already exist from scenario 1 (this test case is exercised after the customer is already approved).
S2	Click on “Manage Requests”	S2.2	None.
S2.1	Click on “OK”	S2	This state should not exist in this way. This is a bug that the developers must address.
S2.2	Fill Application Number	S2.2.1	None.
S2.2	Click on “Show Applications Requests”	S2.2.2	None.
S2.2.1	Click on “Approve / DisApprove”	S2.2.1.1	None.
S2.2.1.1	Click on “Ok”	S2.2.1	None.
S2.2.2	-	-	None

Scenario 3: Customer Login and Functions

Please Zoom-in to fully see the diagram.

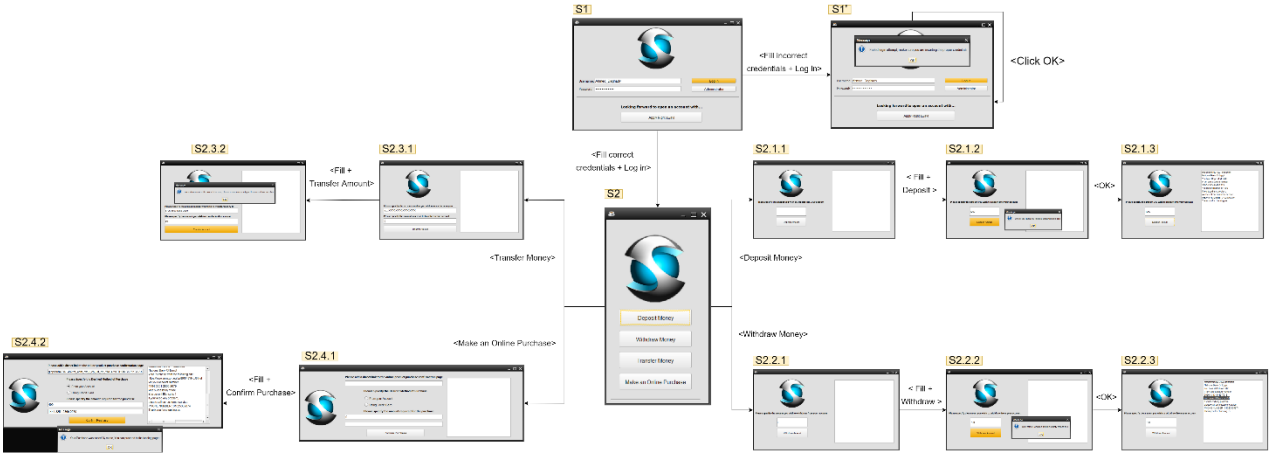


Figure 3: Customer GUI - Scenario 3

Scenario 3 Description

The user in this scenario logs in then redirected to the user functionalities screen. A customer can deposit, withdraw, transfer money, and make online purchases.

Scenario 3 Table

Current State	Event	Next State	Errors Detected
S1	Fill incorrect data + click "Log in"	S1'	None. The user should see an error upon entering incorrect credentials
S1	Fill correct data + click "Log in"	S2	None.
S1'	Click on "Ok"	S1	Infinite Loop, the user can't escape from this state. This fatal bug should be addressed by the developers as soon as possible.
S2	Click on "Deposit Money"	S2.1.1	None.
S2	Click on "Withdraw Money"	S2.2.1	None.
S2	Click on "Transfer Money"	S2.3.1	None.
S2	Click on "Make an Online Purchase"	S2.4.1	None.
S2.1.1	Fill + Deposit	S2.1.2	A warning message that the customer shouldn't see.
S2.1.2	Click "OK"	S2.1.3	None
S2.1.3	-	-	None
S2.2.1	Fill + Withdraw	S2.2.2	A warning message that the customer shouldn't see.
S2.2.2	Click "OK"	S2.2.3	None.
S2.2.3	-	-	None.
S2.3.1	Fill + Transfer Amount	S2.3.2	Operation failure. The account number belongs to another account in the system that we know it exists, but the operation was rejected. This bug is a result of another bug discovered in scenario 4 where creating new accounts removes other customers details.
S2.3.2	-	-	This State should not exist
S2.4.1	Fill [From Account] + Confirm Purchase	S2.4.2	None.
S2.4.2	-	-	None.

Scenario 4: Exercising Application form and Check Request Status

Please Zoom-in to fully see the diagram.

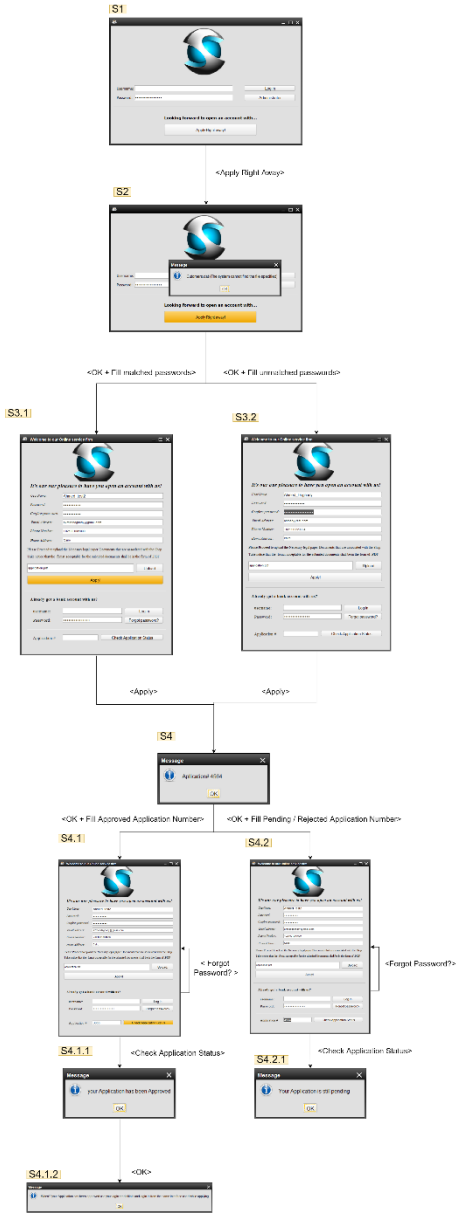


Figure 2: Form GUI - Scenario 4

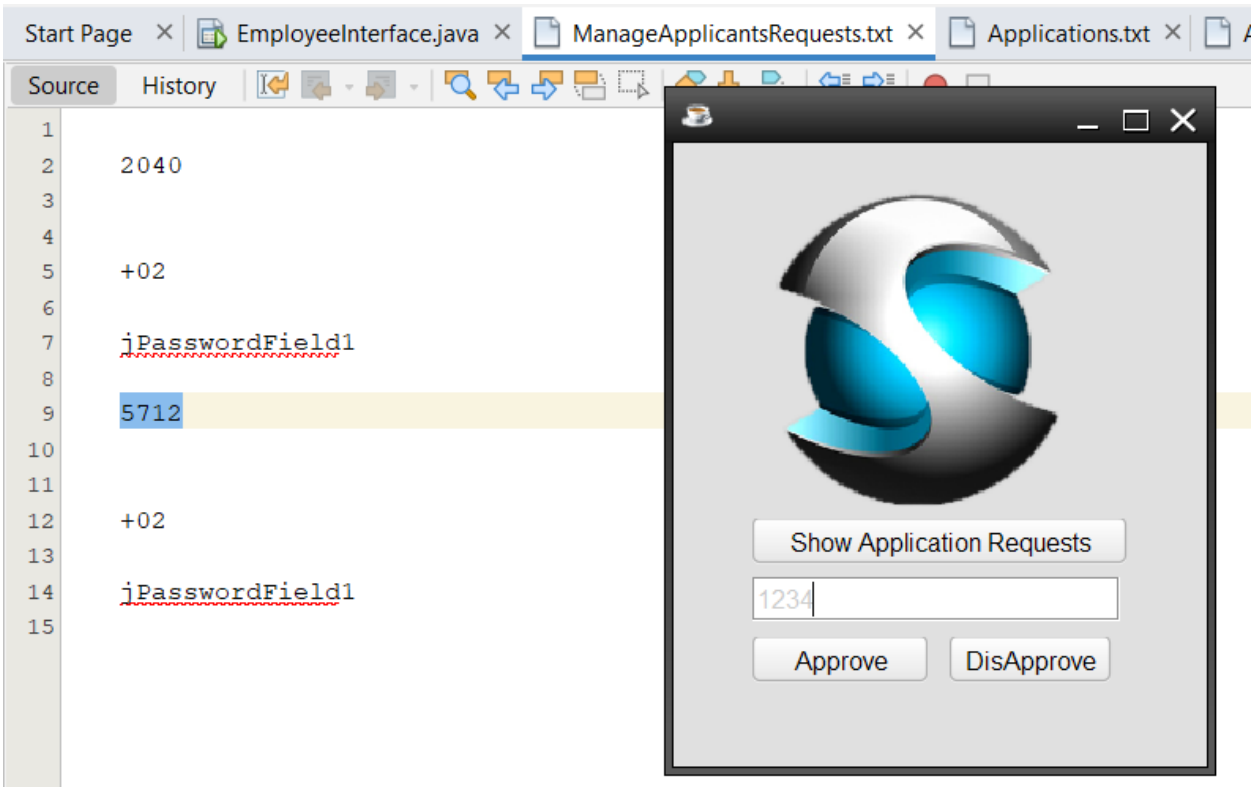
Scenario 4 Description

The user in this scenario exercises the rest of the options in the application form and checks for application request numbers to see if they are approved, rejected, or pending.

Scenario 3 Table

Current State	Event	Next State	Errors Detected
S1	Apply Right Away	S2	A warning windows was shown that an end-user shouldn't see.
S2	OK + Fill matched Passwords	S2.3.1	None.
S2	OK + Fill unmatched Passwords	S2.3.2	None.
S3.1	Apply	S4	None
S3.2	Apply	S4	User should see error message rejecting the application since the passwords are unmatched. Instead, the form was submitted successfully.
S4	OK + Fill Approved Application Number	S2.4.1	None.
S4	OK + Fill Pending / Rejected Application Number	S2.4.2	None.
S4.1	Check Application Status	S4.1.1	None.
S4.1.1	OK	S4.1.2	None.
S4.1.2	-	S4.1	None.
S4.1	Forgot Password?	S4.1	Another window was expected to open in order to reset the password, but nothing has appeared. The button has no functionality attached to it.
S4.2	Forgot Password?	S4.2	Another window was expected to open in order to reset the password, but nothing has appeared. The button has no functionality attached to it.
S4.2	Check Application Status	S4.2.1	None.
S4.2.1	-	S4.2	None.

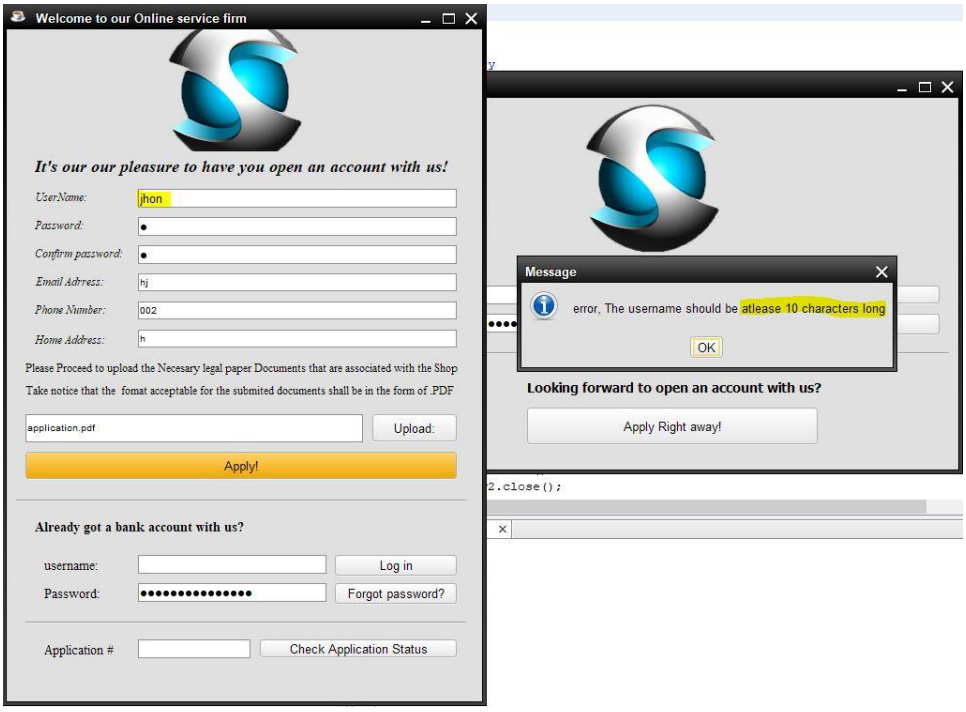
Non-GUI Testcases

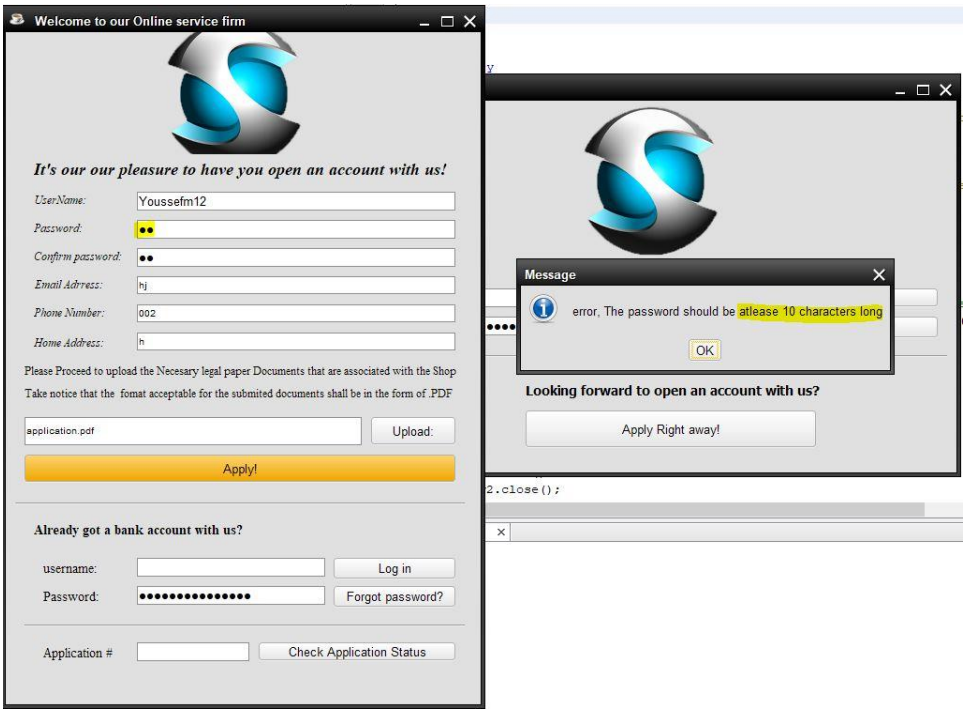


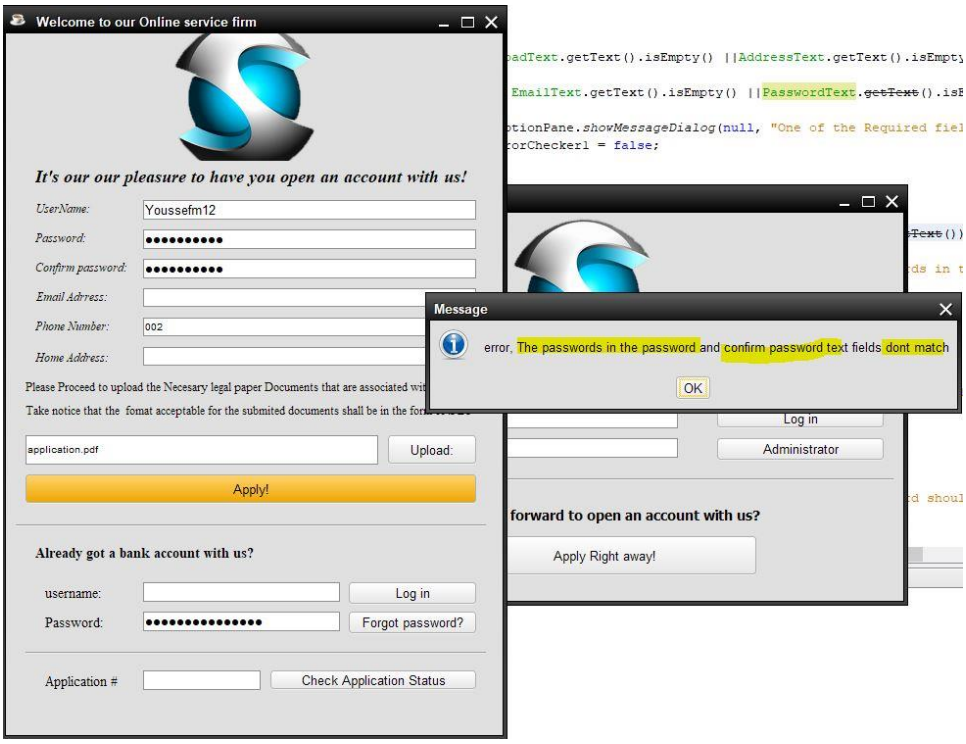
Program accepts/rejects application request numbers that does not even exist.

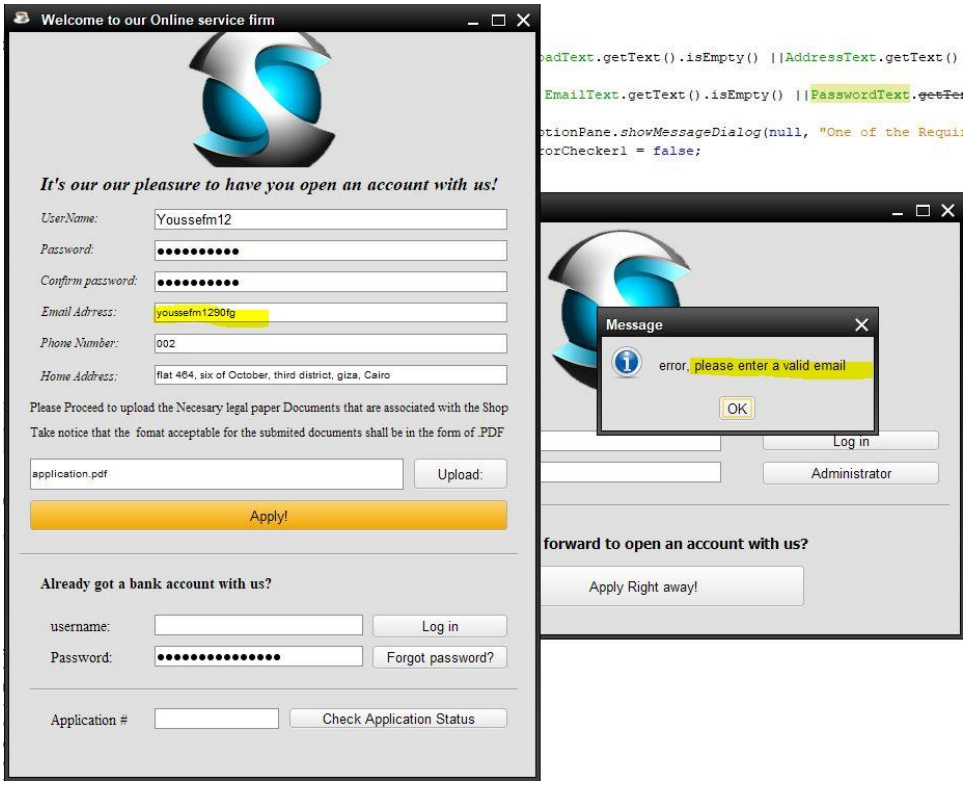
When you create a new account, all previous accounts' data are erased and they cannot do any operations on their accounts, but they only can still login (even after clicking login the app shows an error message, it still redirects to the main functionalities section).

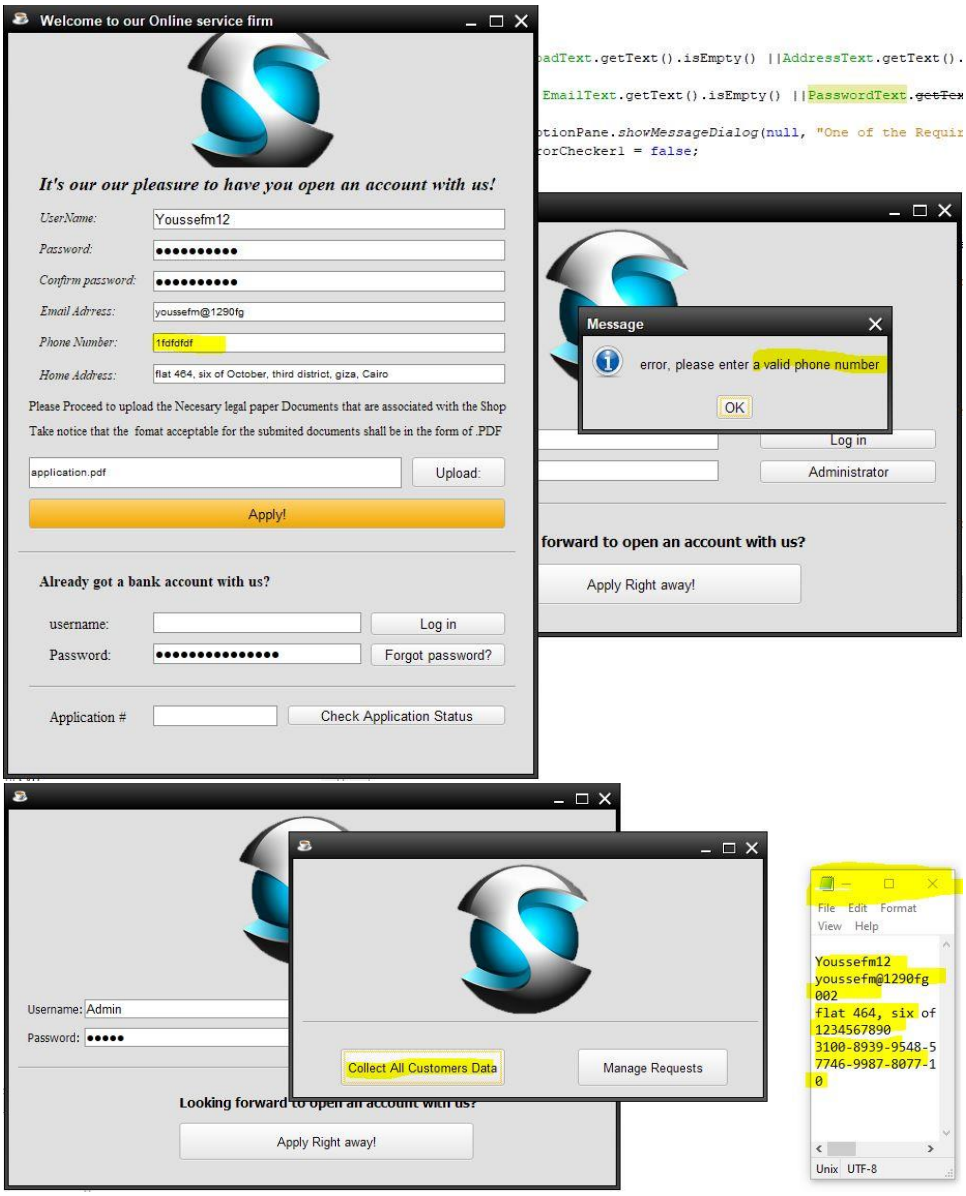
ERROR FIXING:

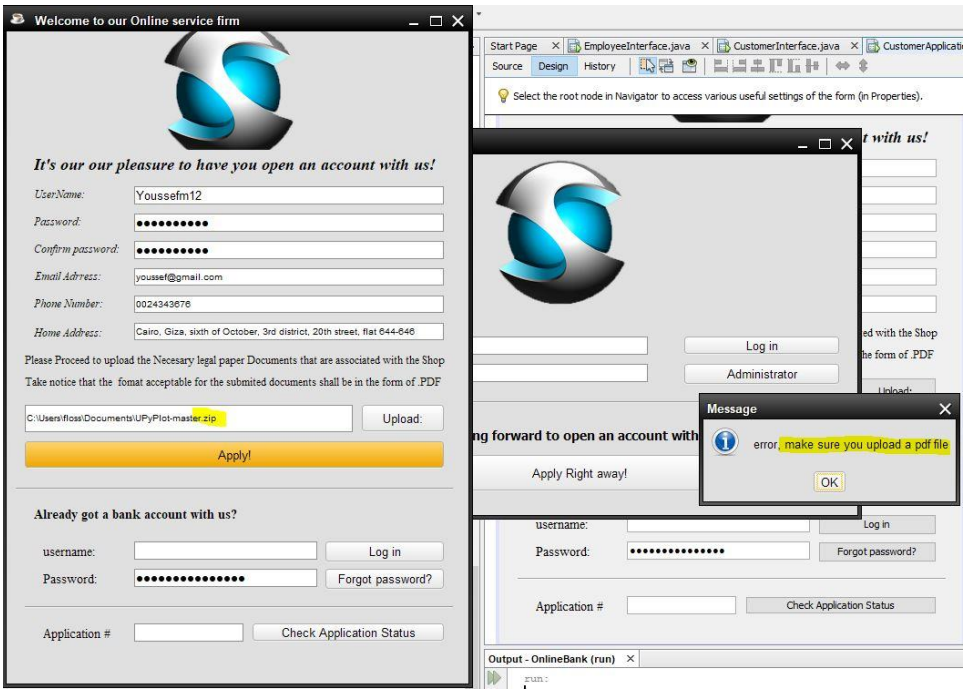


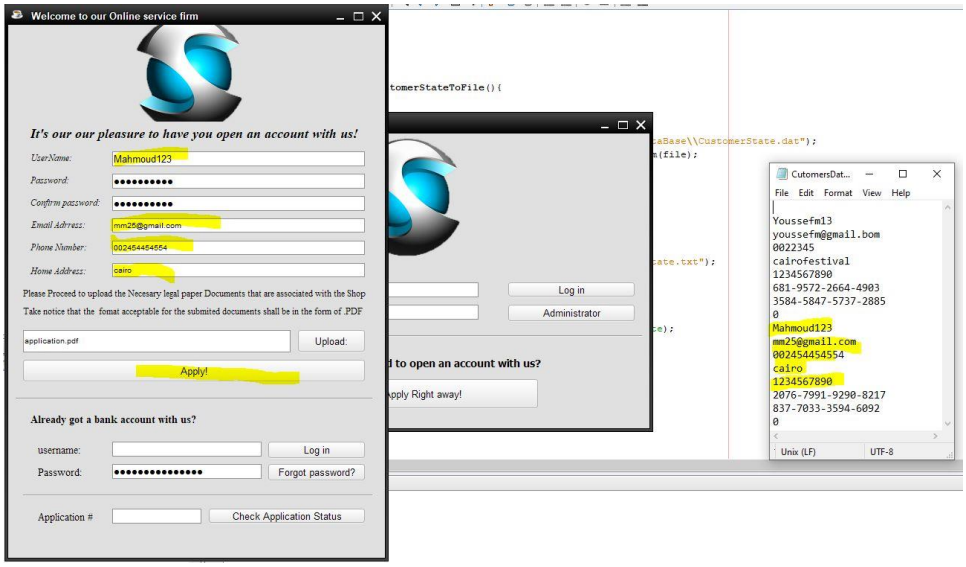



Welcome to our Online service firm
It's our our pleasure to have you open an account with us!
UserName:
Youssefm12
Password:
Confirm password:
Email Adress:
Phone Number:
002
Home Address:
Please Proceed to upload the Necesary legal paper Documents that are associated wit
Take notice that the fomat acceptable for the submited documents shall be in the for
application.pdf
Upload:
Apply!
Already got a bank account with us?
username:
Log in
Password:
Forgot password?
Application #
Check Application Status
Message
error, The passwords in the password and confirm password text fields dont match
OK
Log in
Administrator
forward to open an account with us?
Apply Right away!


Welcome to our Online service firm
It's our our pleasure to have you open an account with us!
UserName:
Youssefm12
Password:
Confirm password:
Email Adress:
youssefm1290fg
Phone Number:
002
Home Address:
flat 464, six of October, third district, giza, Cairo
Please Proceed to upload the Necesary legal paper Documents that are associated with the Shop
Take notice that the fomat acceptable for the submited documents shall be in the form of .PDF
application.pdf
Upload:
Apply!
Already got a bank account with us?
username:
Log in
Password:
Forgot password?
Application #
Check Application Status
Message
error, please enter a valid email
OK
Log in
Administrator
forward to open an account with us?
Apply Right away!


Welcome to our Online service firm
It's our our pleasure to have you open an account with us!
UserName:
Youssefm12
Password:
Confirm password:
Email Adress:
youssefm@1290fg
Phone Number:
1fdfdfdf
Home Address:
flat 464, six of October, third district, giza, Cairo
Please Proceed to upload the Necesary legal paper Documents that are associated with the Shop
Take notice that the fomat acceptable for the submited documents shall be in the form of .PDF
application.pdf
Upload:
Apply!
Already got a bank account with us?
username:
Log in
Password:
Forgot password?
Application #
Check Application Status
Message
error, please enter a valid phone number
OK
Log in
Administrator
forward to open an account with us?
Apply Right away!
Username: Admin
Password:
Collect All Customers Data
Manage Requests
Looking forward to open an account with us?
Apply Right away!
File Edit Format
View Help
Youssefm12
youssefm@1290fg
002
flat 464, six of
1234567890
3100-8939-9548-5
7746-9987-8077-1
0
Unix UTF-8


Welcome to our Online service firm
It's our our pleasure to have you open an account with us!
UserName: Youssefm12
Password:
Confirm password:
Email Adress: youssef@gmail.com
Phone Number: 0024343676
Home Address: Cairo, Giza, sixth of October, 3rd district, 20th street, flat 644-646
Please Proceed to upload the Necesary legal paper Documents that are associated with the Shop
Take notice that the fomat acceptable for the submited documents shall be in the form of .PDF
C:\Users\floss\Documents\UPyPlot-master.zip
Upload:
Apply!
Already got a bank account with us?
username:
Log in
Password:
Forgot password?
Application #
Check Application Status
Start Page
EmployeeInterface.java
CustomerInterface.java
Source
Design
History
Select the root node in Navigator to access various useful settings of the form (in Properties).
Log in
Administrator
Apply Right away!
Message
error, make sure you upload a pdf file
OK
Output - OnlineBank (run)
run:


Welcome to our Online service firm
It's our our pleasure to have you open an account with us!
UserName: Mahmoud123
Password:
Confirm password:
Email Adress: mm25@gmail.com
Phone Number: 002454454554
Home Address: cairo
Please Proceed to upload the Necesary legal paper Documents that are associated with the Shop
Take notice that the fomat acceptable for the submited documents shall be in the form of .PDF
application.pdf
Upload:
Apply!
Already got a bank account with us?
username:
Log in
Password:
Forgot password?
Application #
Check Application Status
Log in
Administrator
Apply Right away!
CutomersDat...
File Edit Format View Help
Youssefm13
youssefm@gmail.bom
0022345
cairofestival
1234567890
681-9572-2664-4903
3584-5847-5737-2885
0
Mahmoud123
mm25@gmail.com
002454454554
cairo
1234567890
2076-7991-9290-8217
837-7033-3594-6092
0
Unix (LF)
UTF-8

PERFORMANCE TESTING:

Determining response time between each action , when the benchmark is small number that's means we have higher performance.

So, the performance of our project is high.