Distributed and Mobile Systems Sem 1 2019

Zeting Luo: 16938158

My Phu Nguyen: 16933824

Contents

Technologies and Why

Languages: Java, xml

IDE: Netbeans 8.2

Web Service Server: Java Web Services deployed on GlassFish

Client Side Application: Java Web Applications

Messaging: JMS with GlassFish is JMS provider

The reasons we choose above technologies are varies. Firstly GlasshFish and Netbean are both free and go together. As AUT students we are familiar with them. Secondly, Netbean can provide part of generated xsd file for our objects so we do not have to 100% manually code wdsl and xsd files for SOAP web services. Finally ,with respect to JMS service, it is easy to configure in GlassFish . We can create Queue and Topic without having to create Maven Dependencies and downloading other Jar files from other JMS providers. It make the project less heavy.

System Design

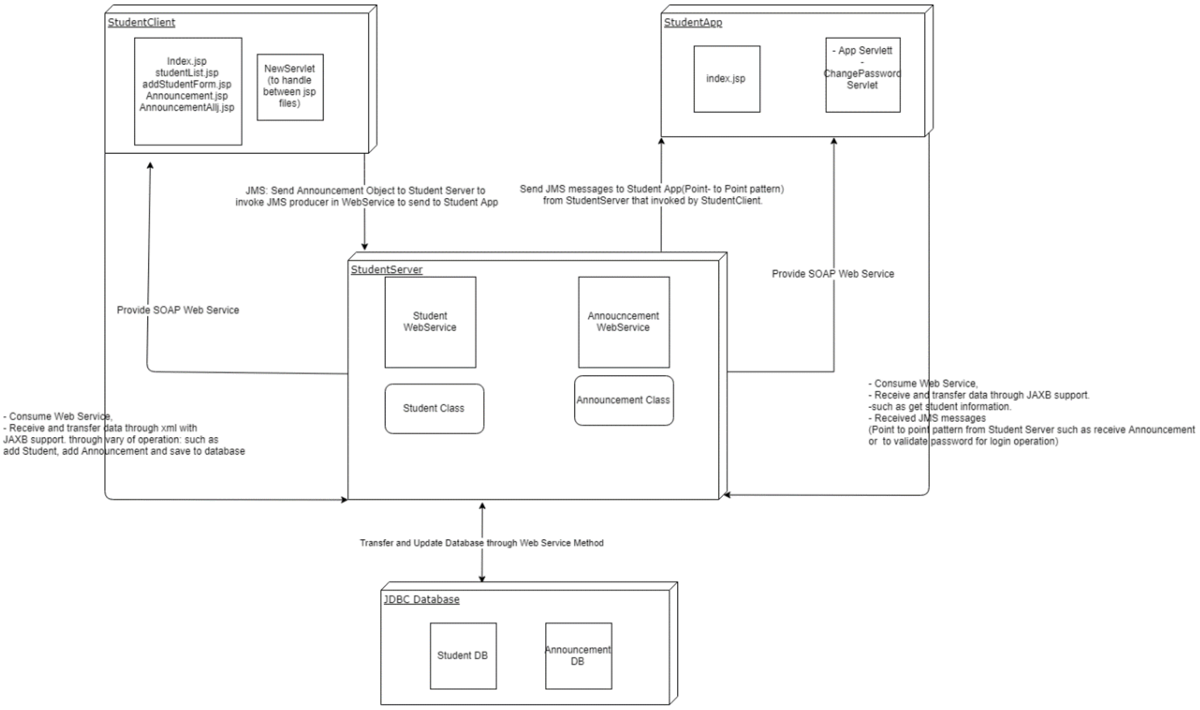
Overall Design

The system present an Announcement System for Students. We have 1 Server (StudentServer which provide SOAP Web Services to 2 Applications . 2 Applications are StudentClient and StudentApp which consume the Web Services functions to operate. Objects are serialised passed between Sever and Clients using SOAP with JAXB support.

StudentClient act like an Admin System for Student. It can add Student, view Student, and provide Announcement to Students. When StudentClient provide Announcement, it invoke Web Service method to produce JMS message that send Announcement object to StudentClient.

StudentClient provide login page for Student, receive JMS message from server to password validation and receive JMS Announcement object from WebServer
JMS messages between StudentServer and StudentApp are Point-to-Point message pattern. The messages are sent to the queue and can be received by specific client.

System components and used (please zoom in if you do not see the picture clear)


StudentClient
Index.jsp
studentList.jsp
addStudentForm.jsp
Announcement.jsp
AnnouncementAllj.jsp
NewServlet (to handle between jsp files)
StudentApp
index.jsp
- App Servlett
- ChangePassword Servlet
JMS: Send Announcement Object to Student Server to invoke JMS producer in WebService to send to Student App
Send JMS messages to Student App(Point- to Point pattern) from StudentServer that invoked by StudentClient.
Provide SOAP Web Service
Provide SOAP Web Service
StudentServer
Student WebService
Annoucncement WebService
Student Class
Announcement Class
- Consume Web Service,
- Receive and transfer data through xml with JAXB support. through vary of operation: such as add Student, add Announcement and save to database
- Consume Web Service,
- Receive and transfer data through JAXB support.
-such as get student information.
- Received JMS messages
(Point to point pattern from Student Server such as receive Announcement or to validate password for login operation)
Transfer and Update Database through Web Service Method
JDBC Database
Student DB
Announcement DB

User Instruction

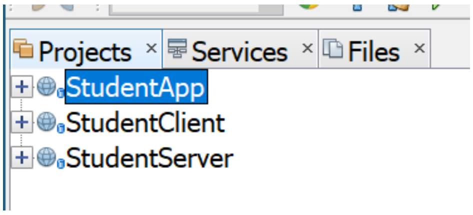
Environment require:

1. JDK 1.8 or higher
2. Glassfish 4.1.1
   a. For optimal result Glassfish 5.0
3. NetBeans 8.2

Preparation

Open Project

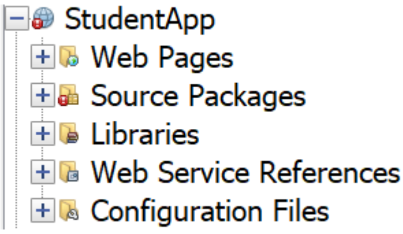
1. Unzip the project and open them in NetBeans
   a. After successfully open projects, you should see project structure like this



Projects × Services × Files ×

StudentApp
StudentClient
StudentServer

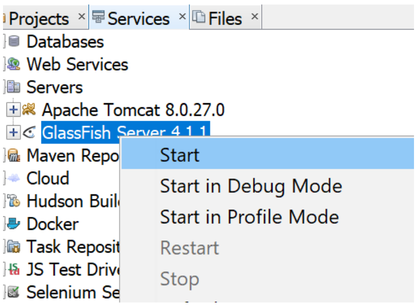
   b. Noticed that it is a chance that StudentApp project may shows it has error, but once all project import and build, error will go away



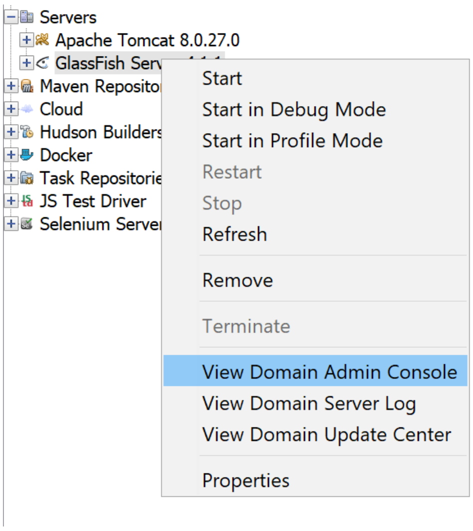
StudentApp
Web Pages
Source Packages
Libraries
Web Service References
Configuration Files

Config Glassfish Server

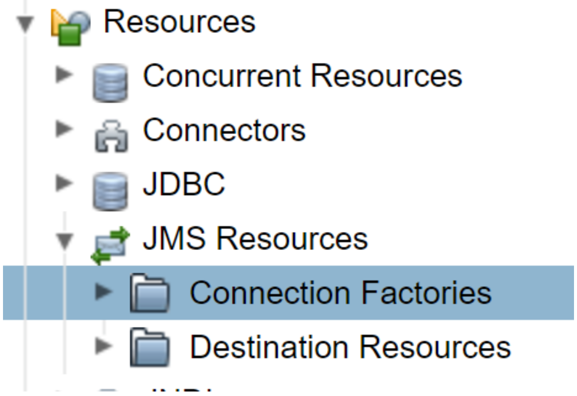
2. Go to *Services* tag, and start Glassfish Server



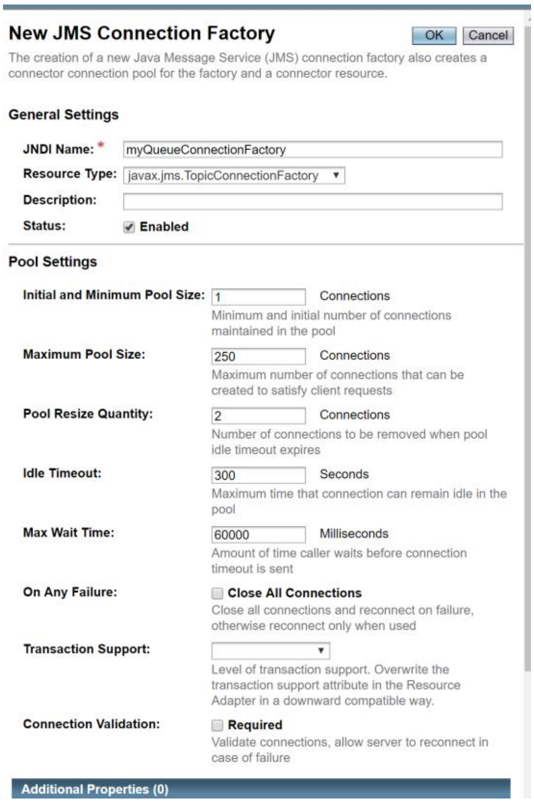
3. Wait for Glassfish server up and running, open the admin console



4. Open the *JMS Resources* tag located on the left and select *Connection Factories*



5. Make a new Connection Factory by click the *New* button and config it like the photo down below



New JMS Connection Factory

The creation of a new Java Message Service (JMS) connection factory also creates a connector connection pool for the factory and a connector resource.

General Settings

JNDI Name: * myQueueConnectionFactory

Resource Type: javax.jms.TopicConnectionFactory ▾

Description:

Status: ☑ Enabled

Pool Settings

Initial and Minimum Pool Size: 1 Connections
Minimum and initial number of connections maintained in the pool

Maximum Pool Size: 250 Connections
Maximum number of connections that can be created to satisfy client requests

Pool Resize Quantity: 2 Connections
Number of connections to be removed when pool idle timeout expires

Idle Timeout: 300 Seconds
Maximum time that connection can remain idle in the pool

Max Wait Time: 60000 Milliseconds
Amount of time caller waits before connection timeout is sent

On Any Failure: □ Close All Connections
Close all connections and reconnect on failure, otherwise reconnect only when used

Transaction Support: ▾
Level of transaction support. Overwrite the transaction support attribute in the Resource Adapter in a downward compatible way.

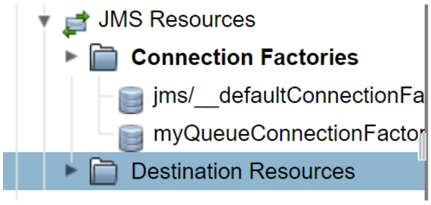
Connection Validation: □ Required
Validate connections, allow server to reconnect in case of failure

Additional Properties (0)

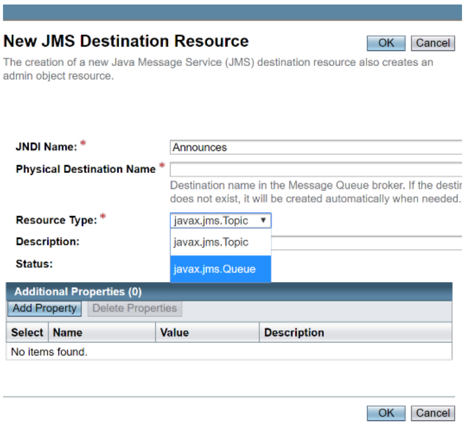
   a. Noticed that if you are running on Glassfish 4.1.1, it is a change that after you click the New button a run time error page shows up. If this happed, please upgrade you Glassfish server to 5.0.

   b. You can download Glassfish server from ***official website***

6. Open the *JMS Resources* tag located on the left and select *Destination Resources*



7. Click the *New* button to create a new queue, config is shown down below



New JMS Destination Resource

The creation of a new Java Message Service (JMS) destination resource also creates an admin object resource.

JNDI Name: * Announces

Physical Destination Name *
Destination name in the Message Queue broker. If the destir does not exist, it will be created automatically when needed.

Resource Type: * javax.jms.Topic ▾
javax.jms.Topic
javax.jms.Queue

Description:

Status:

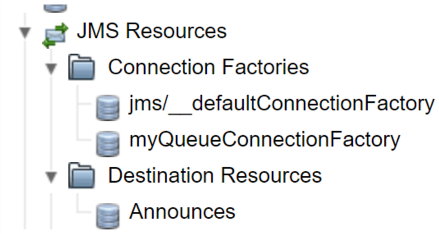
Additional Properties (0)

Select	Name	Value	Description
No items found.			

a. Noticed that if you are running on Glassfish 4.1.1, it is a change that after you click the New button a run time error page shows up. If this happed, please upgrade you Glassfish server to 5.0.

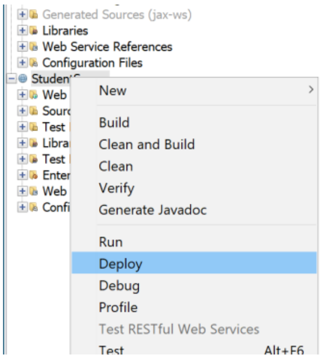
b. You can download Glassfish server from [***official website***]()

8. Once you finished your configuration, your JMS resources should look like this

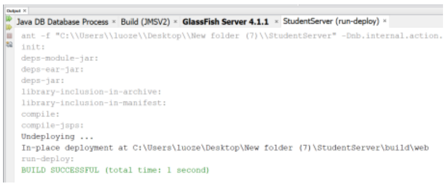


Build NetBeans projects

9. Now, keep your Glassfish server running and go back to NetBeans, right click on project *StudentServer*, then select *deploy*

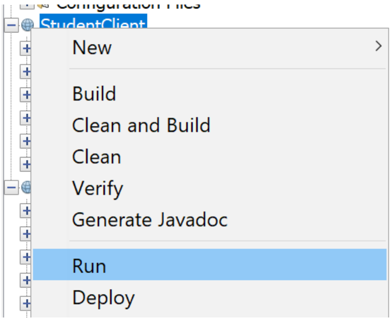


a. Once server deploy, you should see console output like this



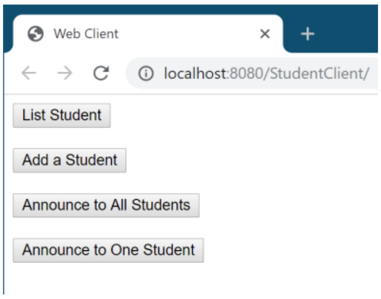
```
ant -f "C:\\Users\\luoze\\Desktop\\New folder (7)\\StudentServer" -Dnb.internal.action.
init:
deps-module-jar:
deps-ear-jar:
deps-jar:
library-inclusion-in-archive:
library-inclusion-in-manifest:
compile:
compile-jsps:
Undeploying ...
In-place deployment at C:\Users\luoze\Desktop\New folder (7)\StudentServer\build\web
run-deploy:
BUILD SUCCESSFUL (total time: 1 second)
```

10. Do the same thing to *deploy* the *StudentClient* project, then right click on the project and select *Run*

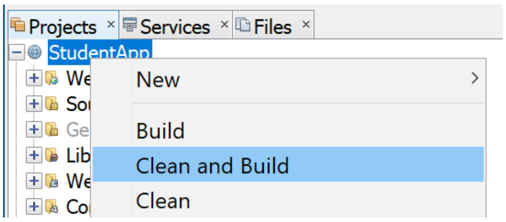


11. Once the project run, a browser windows should pop up, left it there and go back to NetBeans

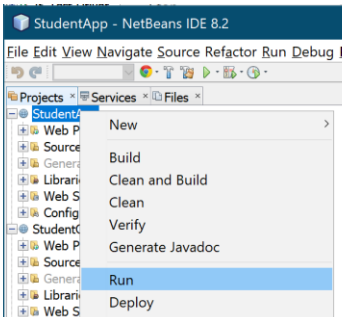
a. Windows should look like this



12. Right click *StudentApp* then select *Clean and Build*

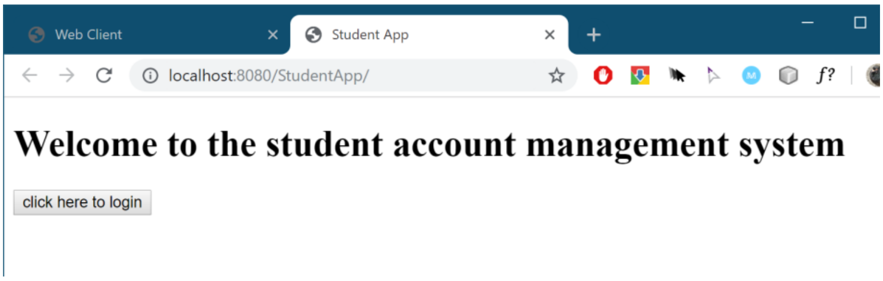


13. After it *build*, right click on the *StudentApp* project and click *Run*



14. The second windows should pop up on browser

a. Windows should look like this

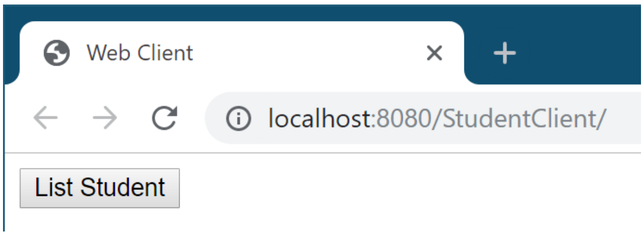

Web Client
Student App
localhost:8080/StudentApp/
Welcome to the student account management system
click here to login

Project User Instructions

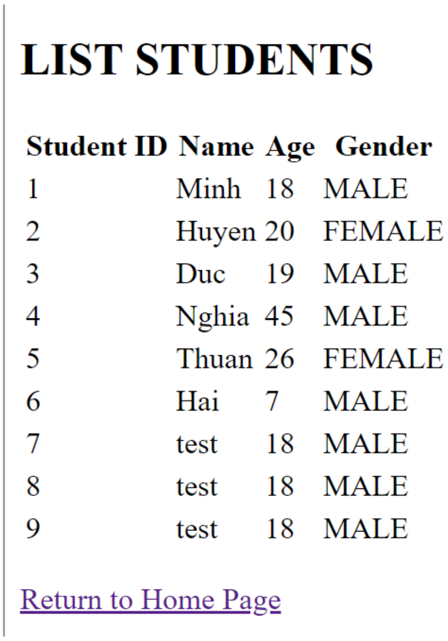
Project Student Client - Administration site

1. List student

a. Click on the *list student* button



b. Page will display all student information in database



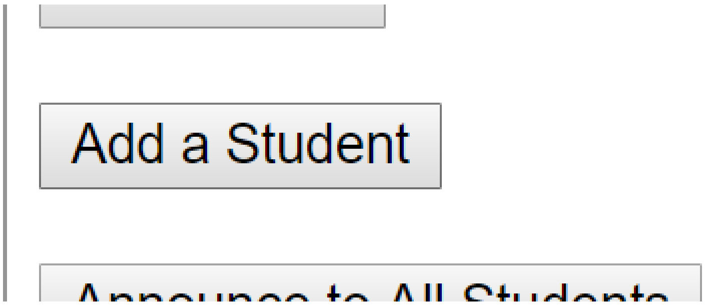
LIST STUDENTS

Student ID	Name	Age	Gender
1	Minh	18	MALE
2	Huyen	20	FEMALE
3	Duc	19	MALE
4	Nghia	45	MALE
5	Thuan	26	FEMALE
6	Hai	7	MALE
7	test	18	MALE
8	test	18	MALE
9	test	18	MALE

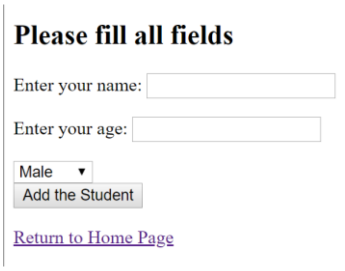
Return to Home Page

2. Add new Student

   a. Click Add a Student button



   b. Input information in the fields and click *add the student*, then student will be adding to student database



Please fill all fields

Enter your name:

Enter your age:

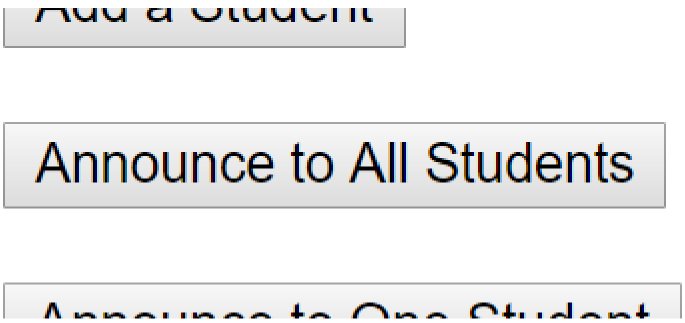
Male ▾

Add the Student

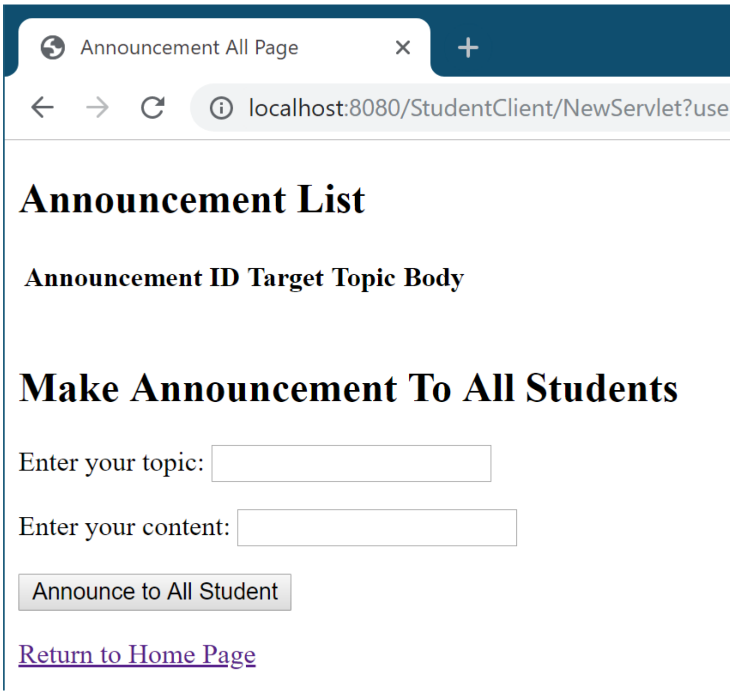
Return to Home Page

3. Send announcement without target

   a. Click *Announce to All Students* button



b. Input information in the fields and click *Announce to All Student*



Announcement List

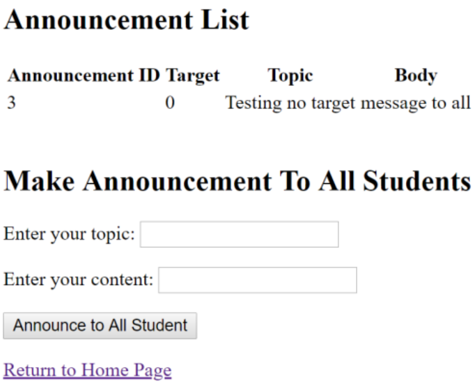
Announcement ID	Target	Topic	Body

Make Announcement To All Students

Enter your topic:

Enter your content:

c. JMS message will be push to the queue, page will reflash and you massage should show above



Announcement List

Announcement ID	Target	Topic	Body
3	0	Testing no target	message to all

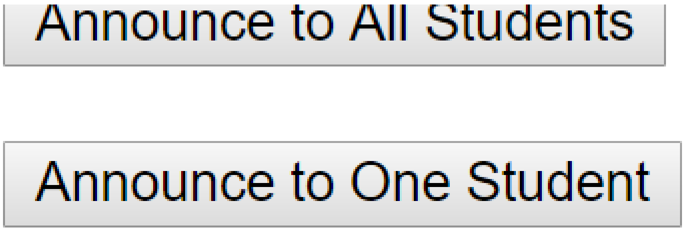
Make Announcement To All Students

Enter your topic:

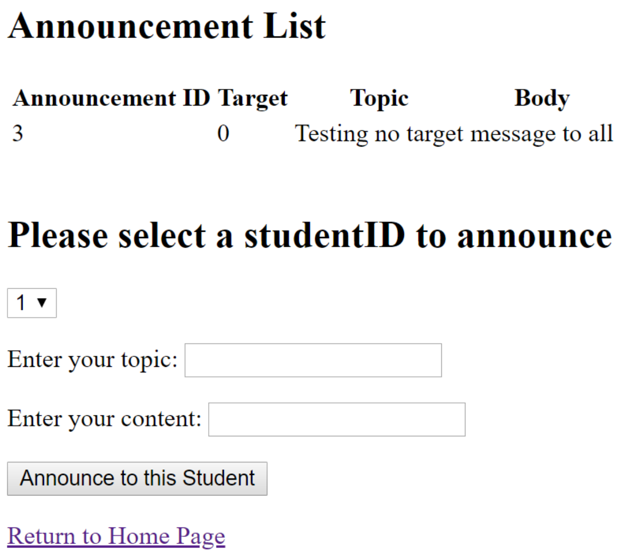
Enter your content:

4. Send message to a student with student ID

a. Click *Announce to One Student*



b. Select student ID in the drop-down table and input information in the fields and click *Announce to this Student*

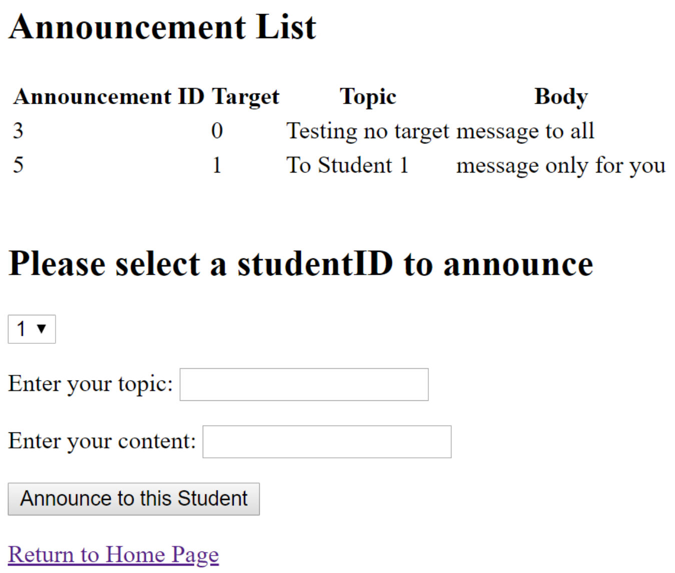


Announcement List

Announcement ID	Target	Topic	Body
3	0	Testing	no target message to all

Please select a studentID to announce

c. JMS message will be push to the queue, page will reflash and you massage should show above



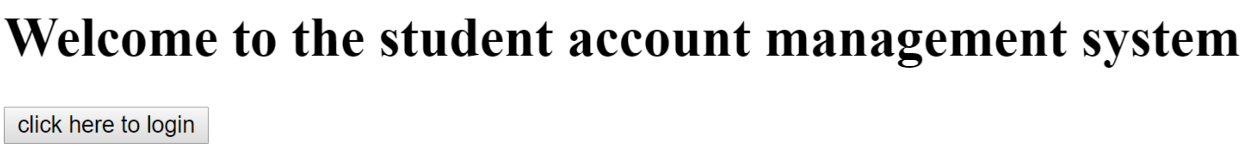
Announcement List

Announcement ID	Target	Topic	Body
3	0	Testing	no target message to all
5	1	To Student 1	message only for you

Please select a studentID to announce

Project StudentApp – Student Client Site

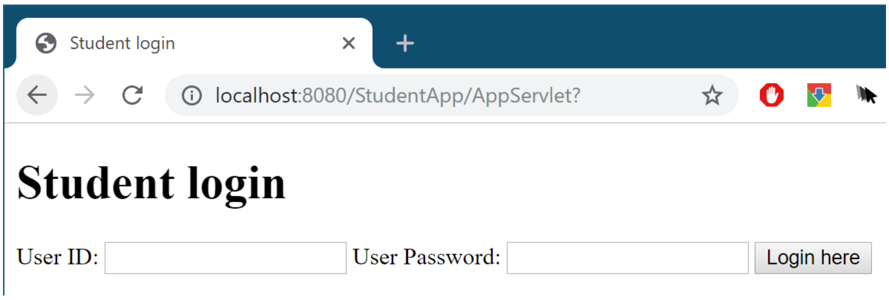
1. Welcome page, just click the button to login



Welcome to the student account management system

2. Login

a. Input user name a password, then click the Login Here button



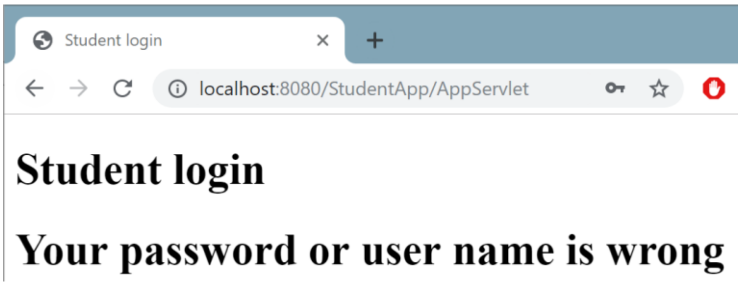
Student login

User ID: User Password: Login here

i. For testing: you can use User ID 1, password 123 to test.

b. If your password is correct you will be direct to view information page

c. If your password is not correct, website will notice you like this

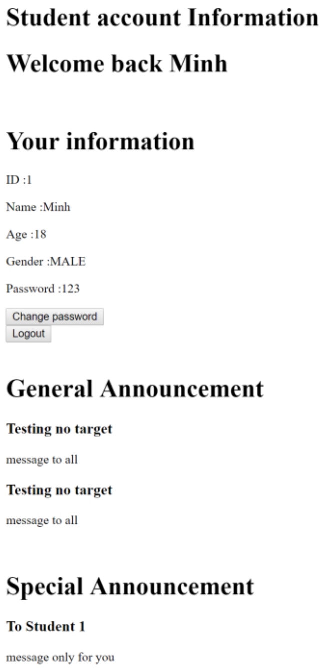


Student login

Your password or user name is wrong

3. View information

a. After login, you should see an information page like this



Student account Information

Welcome back Minh

Your information

ID :1

Name :Minh

Age :18

Gender :MALE

Password :123

General Announcement

Testing no target

message to all

Testing no target

message to all

Special Announcement

To Student 1

message only for you

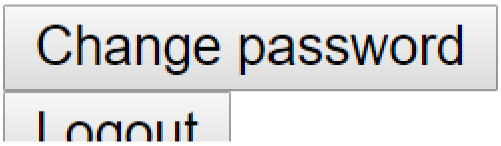
b. Information can be display on this page and announcements can be display on this page

i. General Announcement – all student can see

ii. Special Announcement – only student id matches the announcement can see

4. Change password

a. Click the *Change Password* button on the page



b. Input new password and login again