COMP2005 - Team Project
Group L
Explaination of High-Level Design documents

Explaination of Archetectural Structure of the Prototype:

For the architectural structural of the prototype, the client/server architectural design is best suited. It separates pieces of the system that needs to use a particular function (the client) from parts of the system that provides those functions (the server). This allows for decoupling between the client (the user) and the server, allowing developers to advance the prototype in the future

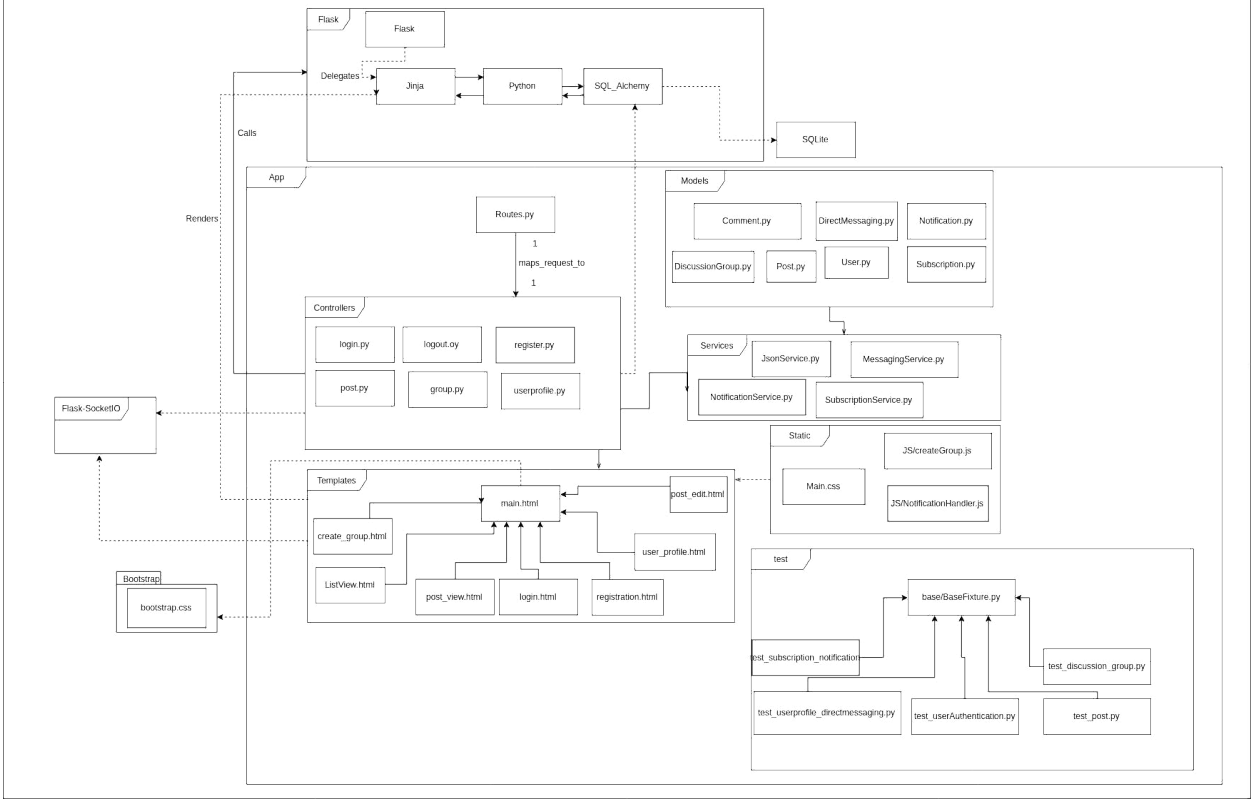
How the Client/Server architectural structure works, goes as follows:

- The User sends a web request to the Web Server.
- The web request is sent to the python package which executes the request and retrieves the data needed from the data base and the Jinja template.
- The python package has routes which connects the modules i.e.
    1. **login.py which is called by routes.py and renders template from login.html jinja template**
    2. **Post.py which is called by routes.py and renders template from postView.html jinja template**
    3. **Subscription.py which is called by routes.py and renders template from Subscription.html jinja template**
    4. **DiscussionGroup.py which is called by routes.py and renders template from DiscussionGroup.html jinja template**
    5. **UserProfile.py which is called by routes.py and renders template from UserProfile.html jinja template**

  With all Jinja files placed in a template created as shown in the uml diagram
- The route.py has functions that enables the web server to provide a requested service for the user.
- The SQLAlchemy python code file, Session is established to connect with the database and represents for all objects you've loaded or associated with it during the lifespan. the Session includes add() method, commit() method, delete() method. add() is use to place instances in the session. commit() is use to write changes to the database. delete() is use to place an instance into the Session's list of objects to be marked as deleted.
- Controllers consists of the python code for each of the requirements. The routes.py file imports the methods for each of the GET and POST requests that the users asks for. This is in a folder colled Controllers and placed in the apps folder.

- Flask delegates jinja to render all templates to extend the main.html, which uses a base design for all the requirements template.
- Flask delegates the backend routes between python, jinja and SQLAlchemy.
- Bootstrap is used to help build the user interface of the prototype. It uses CSS or Cascading Style Sheet to create the design of the prototype.

Client/Server Archetectural Diagram



Explaination of how User Authentication works:

The user authentication system consists of:

- Database user table.
- Forms use and tools for logging in user
- A pluggable backend system

The system is using SQLAlchemy to access and manage data in the SQLite database. SQLAlchemy is adapted into pythonic domain language.

In the SQLALchemy python code flee Session is established to connect with the database and represents for all objects you've loaded or associated with it during the lifespan. the Session includes add() methode commit() methode delete() method. add() is use to place instances in the session. commit() is use to write changes to the database. delete() is use to place an instance into the Session's list of objects to be marked as deleted.

Controllers consists of the python code of Login forme Register form and Logout form. Those forms are using Flask as a microframeworke which is using jinja as a template engine.

In the Flask codee the url_for() function will build a Url for a specifc function. The render_template() function will render a HTML fle which base on the jinja and html code. The get_fashed_message() passes a message o the next requeste which generally is a template.

The templates folder consists of main.htmle login.htmle registration.htmle which are base on jinja and html code. The CSS of the html fles will be using the bootstrap library.

Controllers flee routes.pye templates fle are all included in app fle.

Detailed Description for the Low-Level design

Template package

The Templates package includes three html flese which are main.htmle login.htmle registration.html.
Those fles are all written in html and using jinja to add control statementse including

get_fashed_message()e url_for()e render_template():

-get_fashed _message will passes a message o the nett request, which generally is a
template.

-url_for() will build a url for a specifc function.

-render_template will render a HTML fle which base on the jinja and html code.

In this Templates packagee we use ninja's template inheritance featuree which allows us to move the
parts of the page layout that are common to all templates and put them in a main template from
which all other templates are derived.

Controllers package

The Controllers package consists of three parts of the systeme which are Logine Logoute Register.
Those are written in python programming language.

Login and Register both have a **get()** function and a post() function.:

-The get() function will return a unique identifer for the user.

-The post() function will summit username and user password in the HTTP body.

These two controllers are all using a function called **url_for()** to redirect a user to another webpage.
Alsoe The routes.py fle imports the methods for each of the GET and POST requests that the users
asks for.

Logout has a **post()** function to tell the server that it wants to post some new information to the URL
and that the server must ensure the data is stored and only stored once.

SQLALchemy

In the SQLALchemy python code flee Session is established to connect with the database and

represents for all objects you've loaded or associated with it during the lifespan. the Session includes
add() methode commit() methode delete() method.

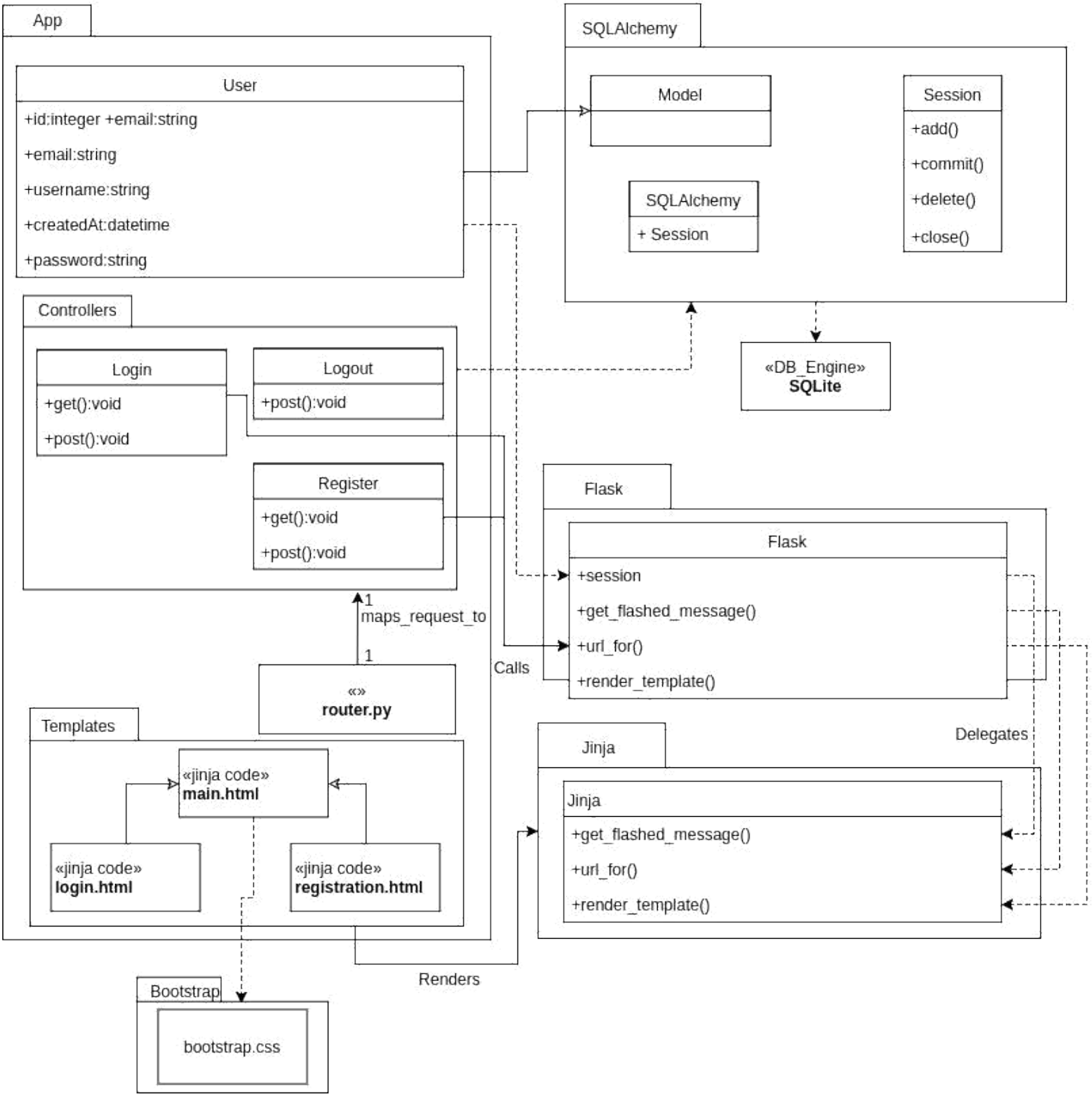
-add() is use to place instances in the session.

-commit() is use to write changes to the database.

-delete() is use to place an instance into the Session's list of objects to be marked as delete

Bootstrap package

The Bootstrap package is use for cascading style sheets. It describes how HTML elements are to be
displayed on screene paper or other media.


App
User
+id:integer +email:string
+email:string
+username:string
+createdAt:datetime
+password:string
SQLAlchemy
Model
Session
+add()
+commit()
+delete()
+close()
SQLAlchemy
+ Session
«DB_Engine»
SQLite
Controllers
Login
+get():void
+post():void
Logout
+post():void
Register
+get():void
+post():void
1
maps_request_to
1
«»
router.py
Calls
Flask
Flask
+session
+get_flashed_message()
+url_for()
+render_template()
Delegates
Templates
«jinja code»
main.html
«jinja code»
login.html
«jinja code»
registration.html
Jinja
Jinja
+get_flashed_message()
+url_for()
+render_template()
Renders
Bootstrap
bootstrap.css

Explanation of how Post View works:

The Post View system consists of:

- Database post table.
- Forms use and tools for editing and posting a post
- A pluggable backend system

The system is using SQLAlchemy to access and manage data in the SQLite database. SQLAlchemy is adapted into pythonic domain language.

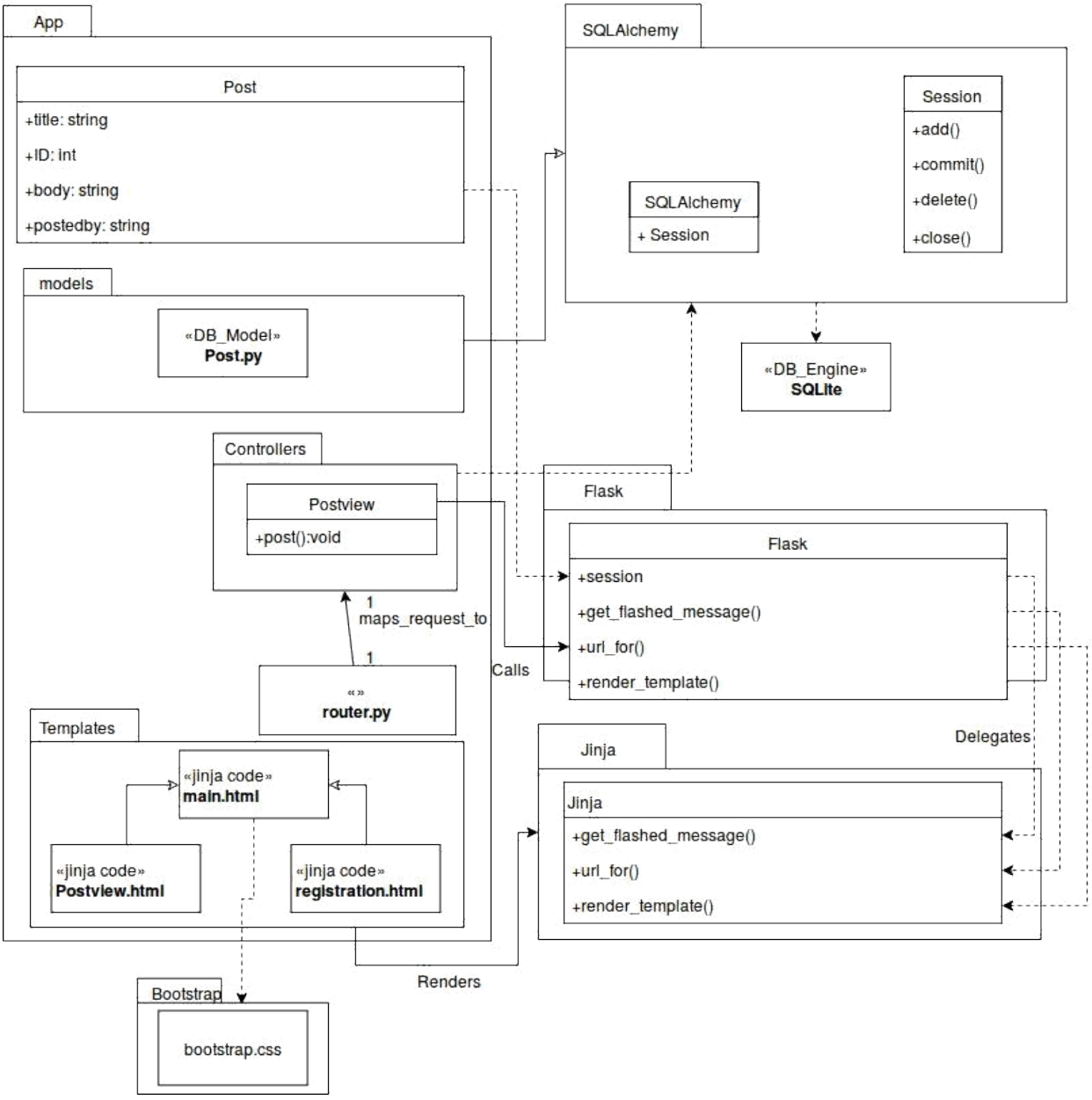
In the SQLALchemy python code flee Session is established to connect with the database and represents for all objects you've loaded or associated with it during the lifespan. The Session includes add() methode commit() methode delete() method. add() is use to place instances in the session. commit() is use to write changes to the database. delete() is use to place an instance into the Session's list of objects to be marked as deleted.

Controllers consists of the python code of the Post editor. Those forms are using Flask as a microframeworke which is using jinja as a template engine.

In the Flask codee the url_for() function will build a Url for a specifc function. The render_template() function will render a HTML fle which base on the jinja and html code. The get_fashed_message() passes a message o the next requeste which generally is a template.

The templates folder consists of main.html and PostView.html which are base on jinja and html code.
The CSS of the html fles will be using the bootstrap library.

Controllers flee routes.pye templates fle are all included in app fle.


App
Post
+title: string
+ID: int
+body: string
+postedby: string
models
«DB_Model»
Post.py
SQLAlchemy
Session
+add()
+commit()
+delete()
+close()
SQLAlchemy
+ Session
«DB_Engine»
SQLite
Controllers
Postview
+post():void
Flask
Flask
+session
+get_flashed_message()
+url_for()
+render_template()
1
maps_request_to
1
Calls
« »
router.py
Templates
«jinja code»
main.html
«jinja code»
Postview.html
«jinja code»
registration.html
Jinja
Jinja
+get_flashed_message()
+url_for()
+render_template()
Delegates
Renders
Bootstrap
bootstrap.css

Explanation of how Discussion Group works:

The Discussion Group system consists of:

- Database Discussion Group table.
- JS component to search for users to add into a discussion group
- A pluggable backend system

The system is using SQLAlchemy to access and manage data in the SQLite database. SQLAlchemy is adapted into pythonic domain language.

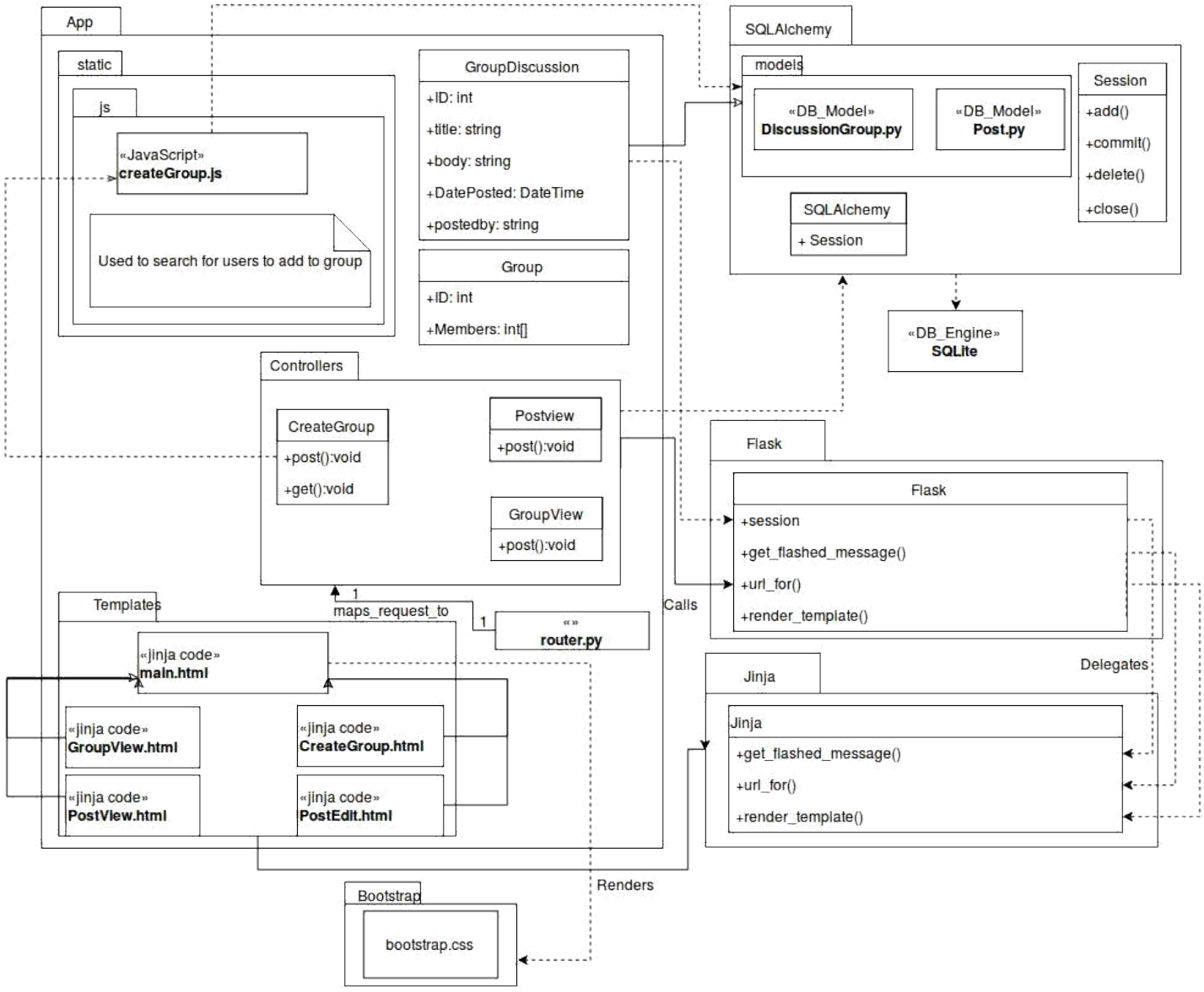
In the SQLALchemy python code flee Session is established to connect with the database and represents for all objects you've loaded or associated with it during the lifespan. The Session includes add() methode commit() methode delete() method. add() is use to place instances in the session. commit() is use to write changes to the database. delete() is use to place an instance into the Session's list of objects to be marked as deleted.

Controllers consists of the python code of the CreateGroup. Those forms are using Flask as a microframeworke which is using jinja as a template engine.

The js componente createGroup.jse is used to search for users to add to a group. This is dependent on the DiscussionGroup.py model which is the database for the Discussion Group.

In the Flask codee the url_for() function will build a Url for a specifc function. The render_template() function will render a HTML fle which base on the jinja and html code. The get_fashed_message() passes a message o the next requeste which generally is a template.

The templates folder consists of main.htmle GroupView.htmle CreateGroup.htmle PostEdit.html and PostView.html which are base on jinja and html code. The CSS of the html fles will be using the bootstrap library.
Controllers flee routes.pye templates fle are all included in app fle.


App
static
js
«JavaScript»
createGroup.js
Used to search for users to add to group
GroupDiscussion
+ID: int
+title: string
+body: string
+DatePosted: DateTime
+postedby: string
Group
+ID: int
+Members: int[]
SQLAlchemy
models
«DB_Model»
DiscussionGroup.py
«DB_Model»
Post.py
Session
+add()
+commit()
+delete()
+close()
SQLAlchemy
+ Session
«DB_Engine»
SQLite
Controllers
CreateGroup
+post():void
+get():void
Postview
+post():void
GroupView
+post():void
Flask
Flask
+session
+get_flashed_message()
+url_for()
+render_template()
Calls
1
maps_request_to
1
«»
router.py
Templates
«jinja code»
main.html
«jinja code»
GroupView.html
«jinja code»
CreateGroup.html
«jinja code»
PostView.html
«jinja code»
PostEdit.html
Jinja
Jinja
+get_flashed_message()
+url_for()
+render_template()
Delegates
Renders
Bootstrap
bootstrap.css

Etplanation of how User Subscription/Notifcation works:

The Subscription/Notifcation system consists of:

Database Subscription/Notifcation table.
JS component to alerts users on subsequent new notifcation. A
pluggable backend system

The system is using SQLAlchemy to access and manage data in the SQLite database. SQLAlchemy is adapted into pythonic domain language.

In the SQLALchemy python code flee Session is established to connect with the database and represents for all objects you've loaded or associated with it during the lifespan. The Session includes add() methode commit() methode delete() method and close() method. add() is use to place instances in the session. commit() is use to write changes to the database. delete() is use to place an instance into the Session's list of objects to be marked as deleted.

Controllers consists of the python code of the Subscribe and Unsubscribe. Those forms are using Flask as a microframeworke which is using jinja as a template engine.

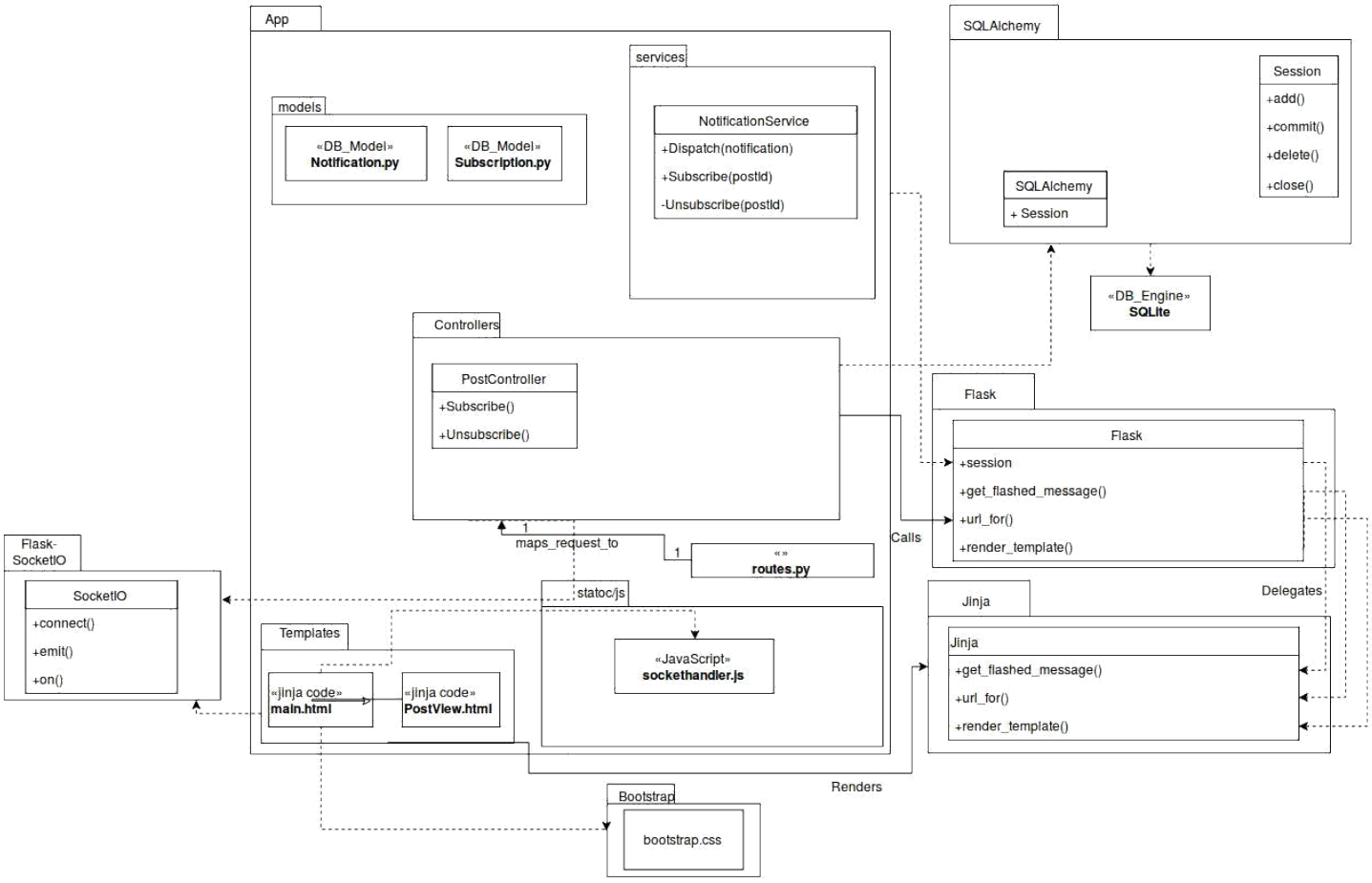
The componente sockethandler.jse enables all communication to go through one socket. This is dependent on the main jinja template which depends on the Flask-SocketIO.

In the Flask codee the url_for() function will build a Url for a specifc function. The render_template() function will render a HTML fle which base on the jinja and html code. The get_fashed_message() passes a message to the next requeste which generally is a template.

The templates folder consists of main.html and PostView.html which are based on jinja and html code. The CSS of the html fles will be using the bootstrap library.

Controllers flee routes.pye templates fles are all included in app fle.

To actually see the subscriptions work, you would need to incognito your browser. This means have two windows of the website, send a message in a post from one that the other window is subscribed to, and the other window will receive a bell notification.


App
services
NotificationService
+Dispatch(notification)
+Subscribe(postId)
-Unsubscribe(postId)
models
«DB_Model»
Notification.py
«DB_Model»
Subscription.py
SQLAlchemy
Session
+add()
+commit()
+delete()
+close()
SQLAlchemy
+ Session
«DB_Engine»
SQLite
Controllers
PostController
+Subscribe()
+Unsubscribe()
Flask
Flask
+session
+get_flashed_message()
+url_for()
+render_template()
Calls
1
maps_request_to
1
«»
routes.py
Flask-
SocketIO
SocketIO
+connect()
+emit()
+on()
statoc/js
«JavaScript»
sockethandler.js
Templates
«jinja code»
main.html
«jinja code»
PostView.html
Jinja
Jinja
+get_flashed_message()
+url_for()
+render_template()
Delegates
Renders
Bootstrap
bootstrap.css

Explaination of how User Profile works:

The User profile system consists of:

- Database User table and DirectMessaging table
- Forms use and tools for viewing user information and direct messages
- A pluggable backend system

The system is using SQLAlchemy to access and manage data in the SQLite database. SQLAlchemy is adapted into pythonic domain language.

In the SQLALchemy python code file, Session is established to connect with the database and represents for all objects you've loaded or associated with it during the lifespan. The Session includes add() method, commit() method. add() is use to place instances in the session. commit() is use to write changes to the database.

Controllers consists of the python code of the user proflie. Those forms are using Flask as a microframework, which is using jinja as a template engine.

In the Flask code, the url_for() function will build a Url for a specific function. The render_template() function will render a HTML file which base on the jinja and html code. The get_flashed_message() passes a message of the next request, which generally is a template.

The templates folder consists of main.html and user_Profile.html which are base on jinja and html code. The CSS of the html files will be using the bootstrap library.

Also, the user profile system is using the services package, which can pop up a notification when a user receive a direct message.

Controllers file, routes.py, templates file are all included in app file.

To actually see the direct messaging work, you would need to incognito your browser. This means have two windows of the website, send a message to a user from one , and the other window with another user will receive the message.

Detailed Description for the High-Level design

User Profile:

The system is using SQLAlchemy to access and manage data in the SQLite database. SQLAlchemy is adapted into pythonic domain language.

Template package

The template package includes two html files, which are UserProfile.html and Main.html. those files are all written in html and using jinja to add control statements including url_for(), render_template():

-url_for() will build a url for a specific function.

-render_template() will render a HTML file which base on the jinja and html code.

In this Templates package, we use ninja's template inheritance feature, which allows us to move the parts of the page layout that are common to all templates and put them in a main template from which all other templates are derived. Also, those templates will handle message by using MessageHandler in the user profile **js package .**

Controllers package

The Controllers package consists of three parts of the system, which are Direct Messaging and User Profile. Those are written in python programming language.

Direct Messaging has a post() method and a url_for() method:

-The post() method tells the server that it wants to post some new information to that url and that the server must ensure the data is stored and only stored once.

-url_for() method will redirect a user to another webpage.

User Profile has a get() method:

-The get() method will call the getchat() method in Services package and return the history chat of a user.

The **routes.py package** file imports the methods for each of the GET and POST requests that the user asks for. Also, in this package, it will be using Flask-SocketIO package to give flask applications access to low latency bi-directional communication between the clients and the server.

Sevices package

This package is use to dispatch a message from a user to another user. Also, the getchat() method will
return a history chat of a user.

-dispatch(message) method will dispatch a message from a user to another user

-getchat(userId) method will get the history chat below the user information.

SQLALchemy

In the SQLALchemy python code file, Session is established to connect with the database and represents for all objects you've loaded or associated with it during the lifespan. the Session includes
add() method, commit() method, delete() method.

-add() is use to place instances in the session.

-commit() is use to write changes to the database.

-close() will safely dispose of any remaining session transaction objects associated with the session.

Bootstrap package

The Bootstrap package is use for cascading style sheets. It describes how HTML elements are to be
displayed on screen, paper or other media.

Models package

This package includes a message database file. The database file creates a table for a message, which
includes:

-id: integer

-body: String

-sender: String

-recipient: String

-Date: date and time