FINAL PROJECT:WEB PROGRAMMING LANGUAGES

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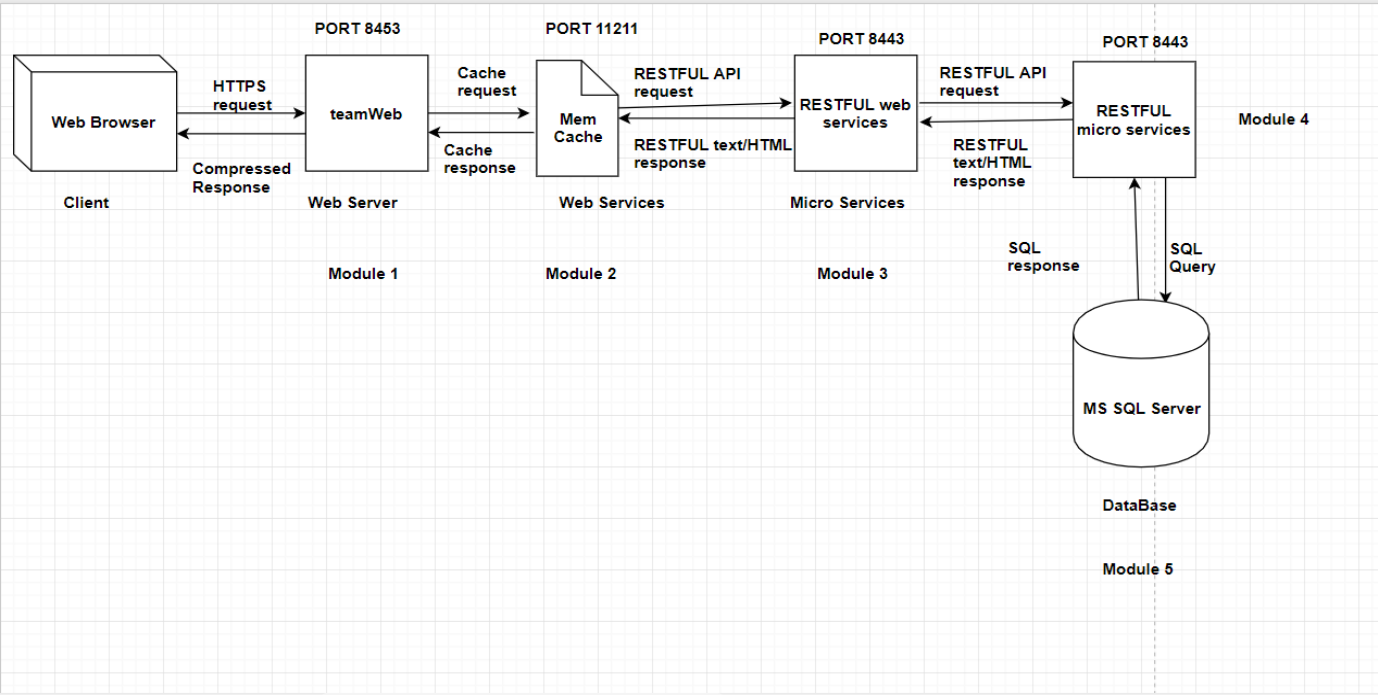
GROUP NAME TEAMWEB



Introduction :

- teamWeb makes use of modules like Web Browser, RESTFUL Web services, RESTFUL micro services and MS SQL server.
- Each module is involved in a two way communication which is shown in the above architecture.
- When client sends a HTTP request to the web browser, a compressed response is sent to the user.
- Cache response and Cache hit are implemented and observed using memcache placed between module 1 and module 2.
- Micro services and web services communicate with each other using REST APIs.

- Module description:

Module	Options	Used	Reason
Module 1	JSP, PHPMyAdmin	JSP server	Better hands on JSP
Module 2	Memcached , redis	Memcached	Light weight, simple, free, Jar files for java were easily available
Module 3,4	REST, SOAP	REST	Simplicity, REST does not require

			fully mapping of objects to client
Module 5	Oracle, My SQL, MS SQL	MS SQL	MS SQL was available for free under Express edition, easier to connect and migrate between databases.

- **Functionalities**:

1. Register :
   -A new user can register into the teamWeb's website so that it can access the inventory and buy items if wanted.
2. Login :
   -A registered user can login into his/her account and access the profile and the functionalities provided.
3. Login as Admin :
   -Admin rights can be given to the database handler who has been authorized to perform different actions on the inventory and has to maintain the database.
   - Admin has been authorized to
   : a) add items into the inventory.
   b) remove items from the inventory.
4. Forgot password :
   - If a user forgets the password, provision has been given to retrieve the password by answering security questions.
5. Change password:
   -User has the provision to change password whenever he/she wishes.
6. View Profile :
   User can view profile in which the user can view his/her name and email id.
7. Edit Profile :
   - The user can edit the data i.e. name and email id by accessing the profile section.
8. Create new registry:
   - User can create new registry and add items.
   - Registry of the particular user will hold all the items that have been added by the user.
9. View Inventory:

- Any user can view inventory of items which has all the available items to choose from.
- Also, the option for searching the inventory.

10. View, add, remove items from registry:
    - A user can view items from registry.
    - The items can be added into his/her own registry.
    - Also, if needed user can remove items from registry.
11. Share registry:
    - A user can share registry, which allows the shared user to see this registry items.
12. List shared registry:
    - Users can view all the items which have been shared with him.
13. Buy items:
    - The foremost operation is the buying of items.
    - User can buy items from the list of registry items shared with him.

- **Web Services:**

Sr No	Web Service	Request
1	View Profile	Servlet controller for view profile calls this web service which in turn calls the corresponding micro service.
2	Edit profile	Servlet controller for edit profile calls this web service which in turn calls the edit profile micro service.
3	Login	Servlet controller for login calls this web service which in turn calls the corresponding micro service.
4	Registration	Servlet controller for registration calls this web service which in turn calls the corresponding micro service.
5	Admin Login	Servlet controller for admin login calls this web service which in

		turn calls the corresponding micro service.
6	Change password	Servlet controller for change password calls this web service which in turn calls the corresponding micro service.
7	Create registry	Servlet controller for create registry calls this web service which in turn calls the corresponding micro service.
8	View admin's inventory	Servlet controller for viewing admin's inventory calls this web service which in turn calls the corresponding micro service.
9	Add, remove items from admin's inventory	Servlet controller for add, remove items calls this web service which in turn calls the corresponding micro service.
10	Show users' inventory	Servlet controller for show users' inventory calls this web service which in turn calls the corresponding micro service.
11	Add user registry	Servlet controller for add user registry calls this web service which in turn calls the corresponding micro service.
12	View user Registry	Servlet controller for view user registry calls this web service which in turn calls the corresponding micro service.

13	Share registry	Servlet controller for share registry calls this web service which in turn calls the corresponding micro service.
14	Remove registry items	Servlet controller for remove items calls this web service which in turn calls the corresponding micro service.
15	View shared registry	Servlet controller for view shared registry calls this web service which in turn calls the corresponding micro service.
16	Buy items	Servlet controller for buying items calls this web service which in turn calls the corresponding micro service.

- **Micro Services** :

  -Web services call micro service to return the data or perform the functionality the user wants.

  -Every web service has a corresponding micro service which in turn performs the action.

Sr No	Micro Service	Response
1	View Profile	In response to the web service, this micro service will receive the input, send query to sql and send the user profile details obtained from sql back to micro service.
2	Edit profile	In response to the web service, this micro service

		will receive the input, send query to sql and send the name or mail id obtained from sql back to micro service.
3	Login	In response to the web service, this micro service will receive the input, send query to sql and responds true or false based on the result of the login attempt.
4	Registration	In response to the web service, this micro service will receive the input, send query to sql and update entries in the database.
5	Admin Login	In response to the web service, this micro service will receive the input, send query to sql and send the admin's login page obtained from sql back to micro service.
6	Change password	In response to the web service, this micro service will receive the input, send query to sql and send the password details obtained from sql back to micro service.
7	Create registry	In response to the web service, this micro service will receive the input, send query to sql and send the registry details obtained from sql back to micro service.
8	View admin's inventory	In response to the web service, this micro service will receive the input, send query to sql and send the admin's inventory obtained from sql back to micro service.
9	Add, remove items from admin's inventory	In response to the web service, this micro service will receive the input, send

		query to sql and send the items that the user wants to add/ remove obtained from sql back to micro service.
10	Show users' inventory	In response to the web service, this micro service will receive the input, send query to sql and send the users' inventory obtained from sql back to micro service.
11	Add user registry	In response to the web service, this micro service will receive the input, send query to sql and send the user registry option obtained from sql back to micro service.
12	View user Registry	In response to the web service, this micro service will receive the input, send query to sql and send the registry obtained from sql back to micro service.
13	Share registry	In response to the web service, this micro service will receive the input, send query to sql and send the shared registry obtained from sql back to micro service.
14	Remove registry items	In response to the web service, this micro service will receive the input, send query to sql and send the items the user want to remove obtained from sql back to micro service.
15	View shared registry	In response to the web service, this micro service will receive the input, send query to sql and send the shared registry obtained from sql back to micro service.
16	Buy items	In response to the web service, this micro service will receive the input, send query to sql and attempts to

		assign the item to requested user in the database and responds either true or false

- Problems faced and solutions:
    1) Authorization and authentication :
    - It was difficult to choose which authentication technology will be the best to use.
    - Basic Auth is used in our implementation because it is simpler to implement and the algorithm is secured.
    2) Compression :
    - We had two server instances. So, it was difficult to set up the compression between these servers.
    - As a solution, we made changes in the server.xml file in both the servers.
    3) Password retrieval through mail :
    - We were not able to set up the password retrieval method using email.
    - The SMTP server of Gmail was not accepting the request as it was unauthenticated.
    - The problem is still unsolved.
    - So, we worked around and used the security question retrieval method