Final Project Report

TopSpaceHL

Team member

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Submission Instruction:

Please name the zip archive document following the convention "ProjectFinalSubmission-GROUPNAME.zip", where GROUPNAME is your project group's name.

Submit the document to the "Project Final Submission" assignment inside the "Final Project" folder listed in the course home page on eLearning.

Please hand over a hard copy of the project report before your group's demo session with the TA

Website Description:

After 126 years of printing ink on paper with weekly, biweekly or monthly frequency, Sporting News will officially become a digital bran. Based on interest expressed by a number of longtime readers, our website will continue to provide access to highly popular, sport-specific sports news resources previews in NBA, College Football and College Basketball plus Fantasy Football and Fantasy Baseball—that will be available at newsstands across the country.

Introduction to our SOA (Service-Oriented Architecture):

Please design and implement a website based on the **service-oriented architecture** (SOA). The students can pick a domain, application, or service of their choice for their website. For example, students can implement websites related to e-commerce (i.e. buying or selling of products or services) such as online book store, online flight reservation system, etc.

Introduction to our Core Web Services Implemented:

You are required to implement all the website functionalities that you specified in your short project description document that was approved by your instructor.**Mandatory Services:** At least three (3) functionalities should be implemented as services and these Open API services should be used by your website. Services are unassociated, loosely coupled units of functionalities that are self-contained. The Open API for these services can be provided using Web services or non-Web services implementations.

Introduction to project core feature inplementation:

**Core Features**: Your website should also include at least five (5) out of the following seven (7) features:

1. High A vailability

a. Add redundancy at the:

i. Web or application server level: each service should be supported on at least 2 node instances

AND/OR

ii. Database level: replicate the database on at least 2 node instances

2. High Performance: perform distributed caching. Memcached is a good option for implementing a distributed caching mechanism.

3. Client-Server Communication Encryption: encrypt the communication channel between the client and server using TLS/SSL

4. Request/Response Compression: perform compression (e.g. gzip) of the client request and server response

5. Authentication/Authorization: the website should be protected by a username/password

6. Asynchronous Services: at least three (3) supported services/functionalities should be asynchronous. This can be implemented either using AJAX or performed using request/response queuing techniques.

**Extra Credit Features**:

1. Scalability: perform database sharding. The database should be broken into at least 2 shards.

2. Single Sign-On: perform single sign-on using SAML or OpenID/oAuth

oAuth Implementation

To use the APIs of Sina Weibo open platform, we have to register a application first. We will provide a unique App Key and App Secret for every application. The Key and Secret has a same usage of other public key/private key in other protocol. You can use the programming language you like to sign every API call with the Key and Secret, to authenticate the access for Sina Weibo open platform.

Web application should fully use OAuth for user authentication. Desktop and mobile application should use OAuth as well, but Basic Auth, a simple method that directly use the user name and password is also accepted for desktop application. Details can be found at authorization mechanism statement Currently, OAuth 1.0a is used for Sina Weibo open platform.

Basic steps of login using weibo api:

### Request the signature

### Retrieve the requesttoken

### User Authentication

### Retrieve access token

### Retrieve user profile

Bonus obejct:

### Post weibo through OAuth

**Now we can post weibo on oauth\_token and oauth\_token\_secret through Statuses/update API. Here is the relative parameters:**

* **POST body - status=message**
* **oauth\_consumer\_key - GDdmIQH6jhtmLUypg82g**
* **oauth\_nonce - oElnnMTQIZvqvlfXM56aBLAf5noGD0AQR3Fmi7Q6Y**
* **oauth\_signature\_method - HMAC-SHA1**
* **oauth\_token - 819797-Jxq8aYUDRmykzVKrgoLhXSq67TEa5ruc4GJC2rWimw**
* **oauth\_timestamp - 1272325550**
* **oauth\_version - 1.0**

3. Object-Relation Mapping (ORM) Framework: perform mapping of object-oriented

domain model to RDBMS tables using ORM frameworks such as Hibernate (Java), ADO.NET Entity Framework (.NET), Django (Python), Propel (PHP), etc.

· A ReadMe file with instructions on how to access the project demo

· Project report (5 to 10 pages) in PDF or MS Word document format with the following details:

· An architectural diagram showing how the various components (i.e. client browser, web/application server, database, cache, etc.) interact with each other in your project

· For each module, a clear description of the various technologies considered and the technology that was finally used in the module development. Also provide a reason why a particular technology was selected.

· A clear description of the three (3) mandatory services supported by your application.

· A clear description of the various functionalities that was available to users on your website

· A summary of the problems encountered during the project and how these issues were resolved

· Please specify your group name and group member names on the document's cover/start page