Web team: Crowd sourcing Application

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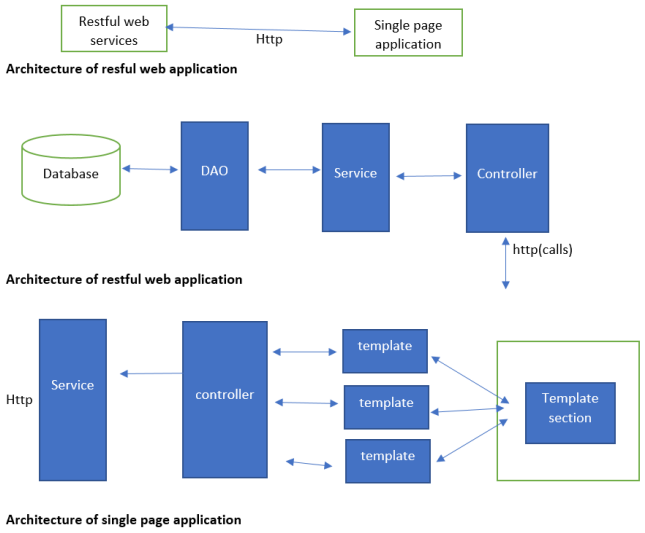
Abstract— ***This application is a crowdsourcing application that allows completion of tasks from a known crowd to the anonymous crowd, which is the public. Crowdsourcing is a newly developed term which refers to process of outsourcing of activities in form of 'open call'. This application allows enterprises to focus on other tasks that needs to be completed by public rather than its employees. It focuses on target audience with regards to task assignment , where main objective is to assign tasks to relevant people with appropriate core skills and qualifications.***

Keywords*— (Crowd sourcing, Team formation, UI, Quality, Reliability***)**

I. INTRODUCTION

The term 'Crowdsourcing' was introduced by Jeff Howe and Mark Robinson in a wired Magazine article in June 2016. Crowdsourcing defines a process for organizing labour, where firms parcel out work to online anonymous community, offering payment within crowd who completes given task. Outsourcing work not only gives access to large set of potential workers but also works out to be cost effective for these firms.
This application works in following way. It identifies a task or group of tasks that is posted by the job poster (firm). These tasks are then released to the crowd who match the particular knowledge or expertise needed for job. A member of the crowd community then offers to undertake the task and a specific time allowance will be given to complete the task. When the task is completed the job poster will then assess the quality of work and if satisfied will complete the payment to member.

II. ARCHITECTURE DIAGRAM AND WORKING



Literature review

III. OBJECT STORAGE AND MESSAGING INFRASTRUCTURE IN THE CLOUD

Abstract In this era of technology, we are encountering a blast of unstructured data such as "90% of world's data generated over last two years". Managing this unstructured content cost efficiently and securely has become a major challenge. Cloud object storage systems nowadays provide promising elastic capability and high reliability at low cost to handle this explosion of data.
With the on demand growth of resources cloud computing has emerged as an inevitable technology. Connecting different components in cloud environments can be challenging issue. Message-Oriented-Middleware is a popular tool for attaining optimum communication. This paper discusses Object storage and messaging infrastructures in the cloud environment.

Introduction:

Cloud computing forecasts noteworthy change in how to store data and run applications. In lieu of running programs and data on an individual desktop, everything is hosted on cloud network via internet. Cloud computing provides easy on the go access to applications and documents in any geographical locations, making it easier to collaborate with other group members in different locations and freeing from the confines of desktop.
One of the predominant uses for cloud computing is storing data on multiple third party servers maintained by cloud service providers, unlike dedicated servers used in traditional network data storage. Cloud computing storage excels both in financial and security sector compared to traditional dedicated storage.
Financially virtual resources are much cheaper compared to private physical resources which makes it a obvious choice for business investors. On the security aspect it is much more reliable and secure than accident prone hardware crashes because it duplicates its data on multiple servers.

IaaS
Cloud (IaaS) infrastructure as a service is a service model which manage, access and monitor the remote data centre. Instead of purchasing or leasing data centre and other services. The service providers provide the virtual data centres for the deployment of computer servers, network and its storage. Other important resources which are provided by the IaaS service providers are the CPU cores, hard disk , storage space and RAM. The resources provided by the IaaS are highly scalable and reliable. The customer consuming the service have the option to pay per usage basis. They can subscribe the service as on hourly, monthly or yearly basis. The IaaS service can be differentiated into three models as per the client's need such as private cloud, public cloud and hybrid cloud. Some of the leading Infrastructure service providers are IBM smart cloud, Windows Azure and Amazon web services.

Paas
Platform as a service is one of the cloud computing module. This service allows the customer to develop, test, run and manage the applications by providing the online tools over the internet. The PaaS service providers hosts the services such as hardware and software on its own Infrastructure to run the application. PaaS services providers also charge as the pay as you use. The service provider controls the infrastructure such as operating systems, storage and networks as well but the consumer has the control over the deployed application and its configurations. The PaaS service provider is fully responsible for provisioning of the lower level infrastructure resources, development and deployment. PaaS allows the users or consumers to avoid unnecessary complexity and expenses for maintaining and buying software licenses and other critical resources.

Storage as Service *(StaaS)* is a huge segment of cloud which is growing exponentially, driven by videos, mobility , big data and file sharing. In order to meet the ever growing demands several cloud storage techniques are coming online. Object storage conceivably seems to be most cost efficient, persistent and reliable data storage. Object storage not only offers a huge revenue opportunity, it is also the fastest growing segment of cloud computing market. Amazon simple storage service (S3) tops the list of the most successful object storage service to date.

Object Storage and Architecture

Architecture of Cloud object storage service system consists of three layers Data Storage Layer, Data Transformation and Routing Layer and Data Access Layer. The main challenge consists of making these different components work together in a coherent system. The final goal of this system is to achieve high scalability and high availability.
Main role for Data Transformation and Routing Layer is to change different type of web requests (e.g. SOAP or REST) into bottom level data storage requests. Multiple different interfaces must be provided to end user to share more and more cloud storage services. Object storage separates file metadata from data to support additional capabilities unlike fixed metadata in file systems, object storage provides full

function to capture application and user specific information for better indexing purposes it also optimises metadata storage along with centralized management of storage across many individual nodes and clusters.

Advantages:

As been mentioned before the growing popularity of cloud storage and its benefits are numerous. It gives us a rational reason for its popularity and provision of doing business with ease. Hence, here are number of benefits the object storage in cloud provides us.

Cost efficiency: After a thorough analysis of total cost of ownership it can be said that the
Cloud storage is the most cost effective. A large amount of cost saving can be attained by eliminating number of expensive systems which are needed for short time. The scale achieved by the cloud or data storage cannot be matched. In addition, the cloud service providers provide high level of scalability and reliability which is highly profitable than the conventional systems.

Disaster management: Off site storage is one of the basic foundation of every organization. Thus keeping the very Important data of the organization backed up Offsite has been always the inception in data recovery. Cloud storage not only secure data off premises but also provides redundancy in the system for disaster recovery.

Planning: The cloud storage needs a well formed IT management and precise set of solutions. It should highly put its emphasis on flexibility and scalability considering the security aspects. The challenges include:

- Data integrity and security
- Extra power as per data duplication
- Speed of replication
- Cost
- Reliability of the overall system

Management: It is the most basic and general task which deals with the hardware, software and the cloud infrastructure. Most of these tasks have simplified with the help of the simple cloud applications which directly deals with the deployment and all its implementations.

Messaging Infrastructure

In today's interconnected network of ubiquitous distributed systems connecting them in a simple and reliable manner is challenging. Message oriented middleware (MOM) is an accepted solution to the above problem. MOMs usually offer two communication paradigms one-to-one, in which each generated message is consumed once and only once , achieved by using message queuing and one-to-many or publish-subscribe where all subscribed consumers are guaranteed to receive message via topics. Java Message Service (JMS) standardized MOMs in the Java world. Since its introduction it has been adopted by many MOM vendors and it has been implemented as an asynchronous messaging system in its own right. A queue in MOM is used to store produced messages until consumed by receiver.

Conclusion*:* Cloud object storage promises great deal for extreme scalable, easy to manage storage systems but aren't designed to be high performing file systems. Approach to data resiliency is completely different, Redundant array of inexpensive nodes, coupled with object based or object-like file systems and multiple copies of data , to create a high scalable storage system.

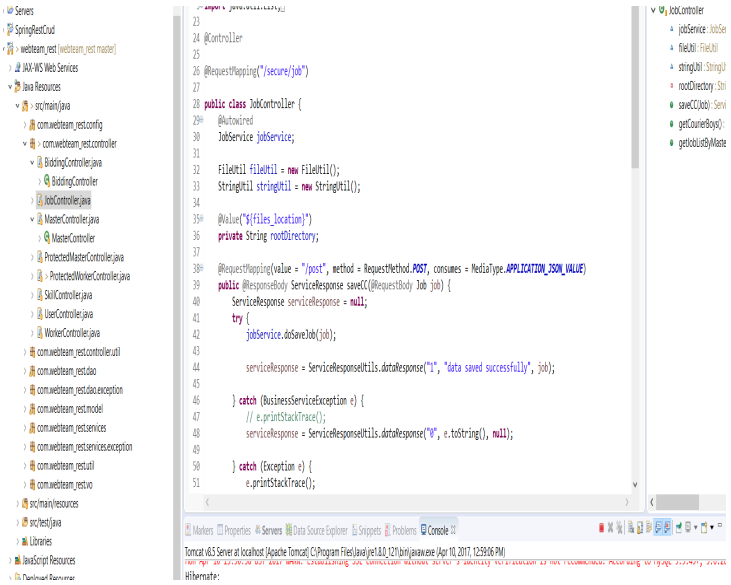
Application Development Tools used:

1) MySQL: MySQL is one of the most popular database management system. The web project pertaining small to medium projects has a wide use of MySQL databases.
The structured query language which is known as SQL is used in this project for data base operations such as define, queries and updating of data bases. The use of MySQL contributes in the making, operating and implementation of data bases.
Here the data is stored randomly in form of tables and rows respectively. The data can be retrieved, deleted and edited as per the users choice. A scripting language such as java script is used in this project which helps to visualize tables and row and increase the understanding in more depth.

2) Hibernate: The use of hibernate in this project facilitates the framework for java which is helpful in the interaction with the components within the data base. Hibernate is a open-source tool used for mapping the databases. The ORM is widely used within the project which manipulates the data and its access. The mapping tool simplifies the data manipulations for activities and operations such as Data creation, Data addition, editing and data deletion.
Hibernate uses number of function in context of natural programming model.
1)Polymorphism
2)Composition
3)Inheritance
4)Java collection framework
Hibernate provides the necessary scalability and application support for the multi layered cache architecture within the cloud cluster. Insertion and extraction of object from databases becomes much simpler with the use of Hibernate technology.

3) Spring security:
Spring security is a comprehensive service in security for software applications which is a J2EE based enterprise. It provides a supporting environment for the spring framework. The easier and practical way to implement security in the

projects is using dependency injection principles. The application rather than security has two more important features such as “Authentication” and “Authorization”.
At authentication, Different level of authentication models are supported by spring. It also provides its own features of authentications with its integration of own sets.



4)Testing:

Junit testing is a framework used for java programming. The approach used in the Junit testing is the test –driven approach which is also known as xUnit testing. Junit testing is used to enhance quality of the code and increase the speed of programming in the java framework. For a successful testing environment testing fixtures are used in java such as setUp() or teardown() methods.
Thus the use of assert classes or assert methods are made to run the test cases.
Thus powerMock and mockito are some of the mocking extentions used in the Junit testing. The Junit tools helps us in the test optimization, creation, updating and the maintainability of the tests. Thus basically Junit is a JAR which is linked at the compiler time under the framework.

A. Design patterns and Layers:

Dao patterns:
The data access object layer or pattern is an interface to the database or data bases in the system. The mapping application calls out the functioning layer such as the persistence layer thus resulting in showing some specific or important layer without exposing the details in the data bases. Thus Dao layers provides a simple and framed separation following the parts in the application. The the construction of business logic largely dependent on the Dao layer and changes as well. All the number of storage details are hidden which is also known as information hiding from the application.

The application consists of the following layers.

- Dependency Injection
- Composite entity pattern
- Singleton
- MVC

The application consists of four different layers

- Entity layer
- Dao layer
- Main controller
- Service layer

AngularJs: Angular.js is an open source front-end based web application framework. Which is helpful in resolving issues and challenges based upon single page application. The components it consists are also useful for the development and deployment of cross-platform mobile apps. It also consists an MVC which is an model view controller. The angular JS used is also an frontend part of different applications used worldwide.

OAuth: OAuth is used for authorization. It is also an open standard used for the authorization of the web based applications and exchanging information with other websites without sharing critical information such as credentials and passwords. Number of companies used this techniques fir the accounts which share to a third party applications and the following frequently used mediums such as Facebook, Google or Twitter. The resource owners authorize number of outside third parties for the given credentials. The OAuth allows the tokens to be issued for all the third party clients. It also

consists of a OIDC or open ID connect which is an absolute authentication layer.

Implementation:

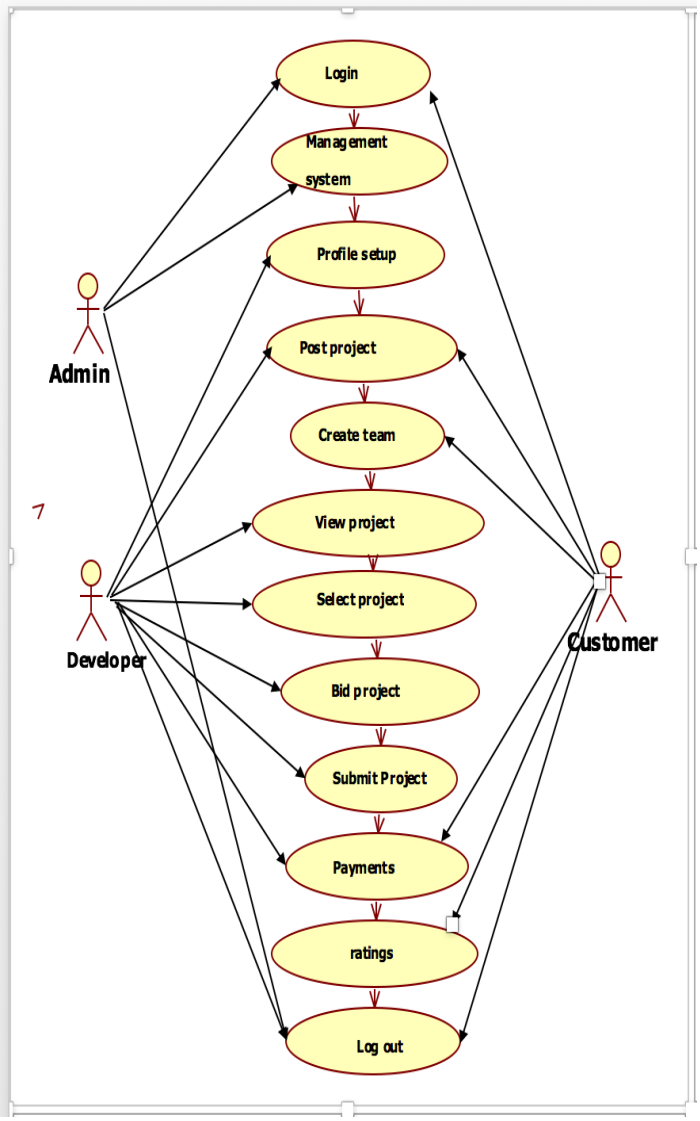


TABLE I. INTERNAL API

Sl no	url	method	Requestbody	Headers
1	http://localhost:8383/webteam_rest/user/login	POST	{ "userName":"farooqsmasher@outlook.com", "password":"farOOQQ1231" }	Content-Type=application/json,
2	http://localhost:8383/webteam_rest/secure/job/list	Get	{ "userId":"16", "token":"03fcdfff3c794a6abc4aac0a9f9e674b" }	Content-Type=application/json,
3	http://localhost:8383/webteam_rest/master/save	post	{ "userId":"16", "token":"03fcdfff3c794a6abc4aac0a9f9e674b" }	Content-Type=application/json,
4	http://localhost:8383/webteam_rest/secure/skill/list	get	{ "userId":"16", "skills":"Data" }	Content-Type=application/json,
5	http://localhost:8383/webteam_rest/secure/job/post	post	{ "userId":"16", "job":"Data }	Content-Type=application/json,

TABLE II. EXTERNAL API

S.NO	URL	Method Type	Request Body	Headers
1	https://restcountries.eu/rest/v2/al	GET	List of countries	json
2	https://www.googleapis.com/auth/plus.login	GET	google + login	json
3	'https://www.googleapis.com/auth/analytics.readonly'	GET	Google Analytics	json

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