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# An Optimistic Differentiated Job Scheduling System for Cloud Computing

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## ABSTRACT

**Job scheduling is one of the major activities performed in all the computing environments. Cloud computing is one the upcoming latest technology which is developing drastically. To efficiently increase the working of cloud computing environments, job scheduling is one the tasks performed in order to gain maximum profit. In this paper we propose a system for scheduling the multiple requests. A web application is developed which provides authenticated users two types of service-uploading and downloading respectively. Multiple requests are processed by the use of non-pre-emptive priority algorithm. The service provider's main aim is to provide fast services to the multiple requests. This paper gives the corresponding strategy and algorithm to gain optimistic value of service. This paper considers the goals of users and service providers to quality of service. The main aim of the system is to achieve an affirmative response at the users end. Utilization of resources is done in a very transient manner. The experimental studies show that the proposed scheme provides promising results.**

*Keywords* - **Cloud user, Load balancing, queuing system, scheduling, service provider.**

## 1. Introduction

The cloud computing environment is highly dynamic; the system load and the computing resource utilization exhibit a rapidly changing characteristic over time. Therefore the cloud service provider normally over-provision the computing resources to accommodate the peak load and the computing resources are typically left under-utilized at nonpeak times. The often significantly under-utilized cloud resources led to the potential of exploiting surplus resources for jobs in cloud systems. Job scheduling problems are of paramount importance which relate to the efficiency of the whole cloud computing facilities. The scheduling algorithms in distributed systems usually have the goals of spreading the load on processors and maximizing their utilization while minimizing the total task execution time Job scheduling, one of the most famous combinatorial optimization problems, plays a key role to improve flexible and reliable systems. The main Purpose is to schedule jobs to the adaptable resources in accordance with adaptable time, which involves finding out a proper sequence in which jobs can be executed under transaction logic constraints. Based on the system information used by the scheduling approaches, there are two main categories, namely static and dynamic. Both have their own limitations. Usually dynamic load-balancing mechanism has better performance in comparison to static one, but has higher overhead since the schedule need to be determined dynamically and system information should be updated on the fly [3]. So, in this paper we will be implementing static load balancing based on the size of files .We build the corresponding non-preemptive priority queuing model for cloud computing system.

## 2. Related Work

Job Scheduling is done in various cloud and grid computing environments. Job scheduling is responsible in the selection of the best suitable resource in a cloud or grid, user's job [1]. The previous research work of grid computing is used in job scheduling of cloud computing. There are two types of topologies of job scheduling system in cloud/grid computing i.e. centralized and decentralized. Decentralized scheduling have high implementation complexity therefore most of the work is done on centralized schedulers. Research work is done on modeling and simulation of a cloud computing scheduling to get high throughput of computing. For scheduling purpose iterative algorithm and stochastic algorithm have been previously stimulated in cloud computing scheduling system. Very few papers have dealt with the profit of cloud computing service providers and to meet cloud computing user's job QoS requirement [1]. In this paper we explain the service job scheduling system and give the analysis of the processes along with the maximum profits to be achieved by cloud computing user and cloud computing service provider.

## 3. Implementation

This is the web application project to do the job scheduling with non-preemptive priority queuing model for activities performed by cloud user in the cloud computing environment.

In this project when multiple users needs to do some activity like one of the file uploading and downloading then there is need of efficient job scheduling algorithm. In our project, we handle these multiple user by job scheduling algorithm. Multiple clients for uploading or downloading the file on web site that time they have multiple priorities; using that priority job scheduler handles the clients request by non-preemptive priority queuing model .When the job scheduler gives the entry to one of the user for uploading/downloading the file by checking the priority then if user wants to upload , file is stored to the one of the folder on site and if user wants to download then all the files that are available for download is display on the site. Figure 1 shows the working of the model.

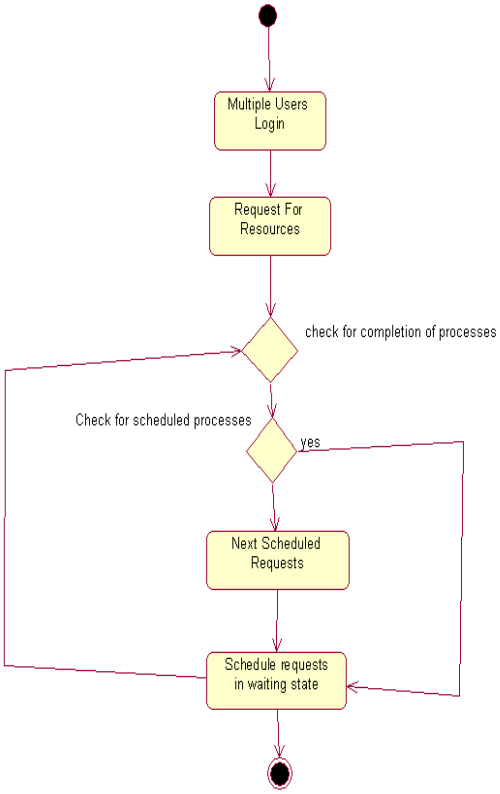


Fig 1: Working

At the time of storing file to the folder the checking of load balancing is done. Load balancing means checking the load. In this project we have taken three folders for storing the file. If one of the folders has more files than other one then that uploaded file is stored in such a folder where less number of files are stored. This means checking of volume of each folder is done in this project for load balancing and the file is stored/uploaded in less volume folder. After the successful storing of file appropriate message is given to the current user. Same process for downloading file happens means after successful download of file appropriate message is given to the current user. When current users activity completes then other high priority scheduled users task will be performed. By this way we can get result of how fast the process is done and how much time need to do upload and download one of the file in cloud computing environment using non preemptive priority queuing model. Also we can get approximate optimistic value of service for each job in the corresponding no-preemptive priority queuing model. This process shows that how job scheduling is efficiently working in the cloud computing environment. When two or more clients make a request at the same time then the scheduling will be done according to fraction of a second difference between requests. If a packet arrives to a full queue then the packet will be dropped on priority basis i.e. if a packet of less priority is present in the queue then that packet will be discarded and this new packet will be inserted in the queue. This may result in starvation of the processes, but this problem can be overcome by gradually increasing the priority of the processes. If the system crashes the data of the last user activity will be maintained whereas the new user will have to make the request again when the system recovers.

### 3.1 Download

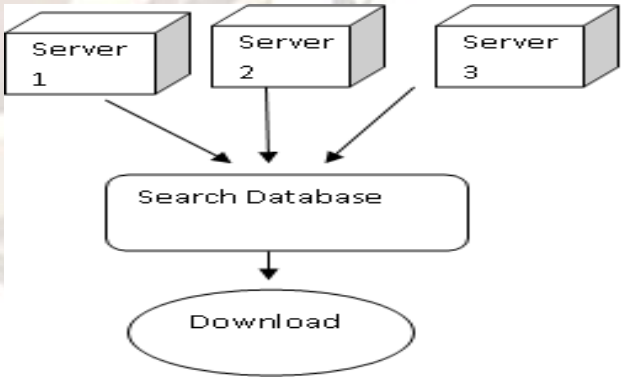


Fig 2: Downloading Process

If DOWNLOAD button is clicked: Download button should enable the user to download a new text, audio or video file if request is available. The user should

be able to select the appropriate option from the given options and proceed by clicking on OK. The appropriate form should be displayed wherein all the details are to be fed up. The guide should be provided at right end so as to give guidelines to the user. Proper validations should be checked. The SUBMIT button in all the above cases should assure that all fields are filled up by the user and not a single field is left blank. On clicking SUBMIT button, the given information should be saved to the database and the button should be disabled after saving, in order to avoid duplication in the database and thus maintaining consistency and redundancy in the database.

3.2 Upload

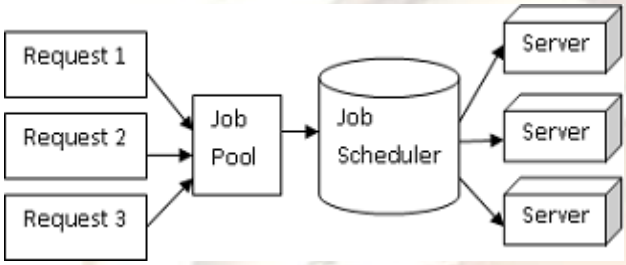


Fig 3: Uploading Process

If UPLOAD button is clicked: Upload button should enable the user to upload a new text, audio or video file if request is valid. The user should be able to select the appropriate option from the given options and proceed by clicking on OK. The appropriate form should be displayed wherein all the details are to be fed up. The guide should be provided at right end so as to give guidelines to the user. Proper validations should be checked. The SUBMIT button in all the above cases should assure that all fields are filled up by the user and not a single field is left blank. On clicking SUBMIT button, the given information should be saved to the database and the button should be disabled after saving, in order to avoid duplication in the database and thus maintaining consistency and redundancy in the database.

## 4. Conclusion

In this paper, we proposed a job scheduling system for cloud computing system.. In our scheme
The Qos requirements of the cloud computing user and the maximum profits of the cloud computing service provider are achieved with our analysis and approach. Thus we put forward a service oriented and self adaptive job scheduling system for cloud computing.

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