ABSTRACT

Cloud computing is a service based rapidly increasing technology based on the virtualization concept due to its popularity as it offers apparition to its end users by providing the infinite computing resources with less cost as this technology works on the principle of, “Pay as you use service” or “Resources on demand”. This principle allows the users to use resources according to their need & pay accordingly thereby saving of resources thereby also providing reliability, scalability, availability for the resource utilization. Adopting this technology has led the users to think a lot as with the new invention this technology also brings out new challenging issues that need to be taken care such as data security, leakage prevention.

The title of the thesis, “A Component Based Re-engineered Architecture for Cloud Computing” has been detailed by taking into consideration of introduction & literature survey in detail as well as various issues & challenges of this technology related to the scheduling of jobs, interoperability issue, mobile computing in cloud, component based repository model & the model of cloud for the e-governance.

The interoperability issues occur as these phase does not involve the cloud service provider due to which software development was typical so in order to remove the drawback the cloud service provider was integrated with the service provider at every phase of the SDLC & the roles separating these two in detail has been discussed in the respective chapter with the introduction of cloud metric for the estimation of the cot in the software development in case of cloud & focusing on providing framework for integrating the cloud provider with the software developer for developing the software as per cloud platform.

With the rapid advancement in the technology & evolving cloud platform it is very essential that mobile computing needs to be merged with the cloud technology by means of proxy & other means thereby a new emergence occurs called as the computation over mobile. The main cons of this computing technology is the connection loss, lesser availability of bandwidth & limited resources. While a problem is still there in connecting mobile devices with an existing web services because: 1). Mobile devices have limited resources such as CPU power, screen size, memory, and durability. 2). the mobile clients are also not supported in the recent cloud web service network.
The jobs are ignored due to large burst time with reference to the runtime can proceed in running after the timeout if other jobs are not been allowed for delaying in executing so in this case the jobs need to be prioritized by means of priority based scheduling algorithm & moving into the modern computing technology much advanced algorithms were developed namely the easy backfill & conservative backfill algorithms. Backfill algorithm focuses on optimum utilization of resources with improved waiting time by means of executing multiple jobs at a time by in the order of their arrival.

A priority based scheduling algorithm is shown in which the customers are allotted the priority according to their arrival in the queue & the prioritized customers are categorized into different priority queues. These prioritized customers have guaranteed Quality of Service (QoS) by the cloud computing by means of reducing the waiting time & increase in arrival rate of new jobs thereby turnaround time also gets better. The priority to the customer needs to be done on the basis of selection probability which is introduced according to which the cloud metascheduler chooses the next query for execution. The priority queues are modeled as M/M/1/K/K queues and an analytical model is developed for the calculation of selection probabilities. A model has been developed whereby user can demand QoS for his request. When a user comes to the website, he opts for a particular request/task & accordingly priority is assigned. The system provides him the option for prioritized/non-prioritized service.