

# ANALYSIS OF CONNECTION POOLING METHODOLOGY FOR REAL TIME WEB APPLICATION

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**Abstract-** Connection pooling is not only a supporter for database performance but also emphasis web application ability. The content on the webpage is dynamically changes but lacking of connections highly affects the loading performance. This research paper is aimed to analysis previous research on connection pooling and to suggest some new topologies for intelligently optimizing the performance. The multiple queries from the database at the same time require multiple data connections, which tends to the available strengths of the database software. In between application and database software we have an intelligent approach to surprise optimize the performance of real time web application by using connection pooling. The connections insight the pool is managed by pool manager. The articles found on the topic leads to fulfill the possibilities of connection pooling as a based approach for optimization. Different policies a methodology is being reaching to improve the physibilites and operability of connections from the pool to get best results.

This research found the connection pool is essential for any real time web application which supports multi login framework and report generation because connection pool allows client to freely used the connection without any boundation and protocols. So naturally the availability of the connections improves the performance of real time web application.

**Keywords-** Database, Connection Pool, Connection pool manager, Real Time Web Application, Jmeter, JSP, Mysql, Apache Tomcat.

## I. INTRODUCTION

A high Efficiency database connection is the basic requirement of high performance of Web service. Connection pool is an scheme for the database connection and collective process of distributed heterogeneous databases. The use of a web services structure allows direct programmatic access to remote data and applications have the opportunity to obtain a overabundance of data without storing and managing a lot of data locally. There are openly a number of advantages to this paper. First, data is often maintained by specific entities or organization. Second, the correct data set can be downloaded automatically without user involvement, reduced data acquisition time. Third updates and changes to the data are instantly available to remote applications. In a period of time, there will be a lot of database operation can be increases, and the system performance will be become very badly. A good solution is to solve the problem of connection database is commend the connection pool technology. Thus the performance optimization to the database connection pool is vital to improve the accessing database performance. The system of B/S structure, each dynamic page and application system must repeatedly access to the database, connecting of database prerequisites users' validation and after using the database must be warranted that it can be correctly closed to prevent memory leakage. Therefore connecting database is a time-consuming operation. In a specific period of time, there will be a lot of database operation needs in an application website, and then system performance will be become very critically. A good solution to solve the blockage

of connection database is to approve the connection pool technology which can efficiently realize the management of database connection. Thus the performance optimization to the database connection pool is vital to improve the accessing database performance. The latest trend of technology which tremendously improving day by day requiring enhanced tech skills. The points to be required to concern to progress with time are as follows:

- The Rapid development of mobile applications.
- Availability of fast internet (4G).
- Easy to use smart devices.
- Full faith over cloud solutions.
- Promotional motivational of e-commerce services.

## II. STANDARD MODEL FOR CONNECTION POOLING

### 2.1 Basic Principle of Database connection Pooling

Database connection pool is the basic principle is to maintain a certain amount of internal object pool database connections Collection pool is a combined of connection objects. Basic idea of connection pooling technology is to pre-establish of some connection objects and place them in memory, when is needing to start a new database connection.

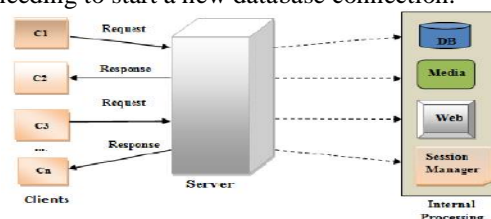


Fig 1: Workload on Server

A connection pool is a container of open and reusable connections. A connection pool is unconfined from the memory when the last connection to the database is closed. When the connection is locked or inclined, it is refunded to the pool and remains idle until a request for a new connection comes in. If we use connection pool efficiently, opening and closing of connection to the database becomes less luxurious. Connection pool is to provide a kind of management tool which can control the number, frequency and time of connection objects.

### 2.2 Connection Pool Model

The growth of database connection pool is composed of three parts: Initialization of the configuration constraints in connection pool; obtaining connection from connection pool and retrieving to the database; releasing obtained connection and recurring it to connection pool. The configuration parameters of centralized connection pool include: (1) Min-Connections established by connection pool, namely the idle connections maintaining dynamic connection pool (2) Max-Connections in connection pool (3) connections maintaining dynamic connection pool, and in which  $\text{Max-Connections} = \text{Min-Connections} + \text{Connections}$  (4) Wait-Connection-Times without idle connection (5) Connection-Use-Count (6) Wait-Release-Time.

## III. TRAFFIC LOAD BALANCING

### 3.1 Load Balancing

A load balancer is an Expedient that distributes network or application traffic across a cluster of servers to optimize utilization, improve openness and increase accessibility. A load balancer sits between the client and the server farm accepting incoming network and application traffic and distributing the traffic across several backend servers using various methods. By balancing application requests across several servers, a load balancer averts any one application server from becoming a single idea of failure, thus improving overall application availability and openness. Load balancing is the most forthright method of scaling out an application server infrastructure. As application demand increases, new servers can be easily added to the resource pool and the load balancer will immediately initiate sending traffic to the new server.

### B. Load balancing Algorithms

Table 1. Name of Load Balancing Algorithms

| Sr. No. | ALGORITHMS                      |
|---------|---------------------------------|
| 1.      | Round Robin VM                  |
| 2.      | Weighted Round-Robin            |
| 3.      | Round Robin Server              |
| 4.      | Min-Min Algorithm               |
| 5.      | Max-Min Algorithm               |
| 6.      | Active Monitoring Load Balancer |
| 7.      | Honeybee Foraging               |
| 8.      | A Fuzzy-based Load Balancing    |
| 9.      | Throttled Load Balancer         |

## IV. PERFORMANCE FOR REAL TIME WEB APPLICATION

The variety of mobile applications are available today. They directly connect on our device to the cloud center. It can be easily downloadable from the app stores. With them, one can do basic function as well as some smart or intelligent tasks.

A critical condition for any web-oriented consumer service is to maintain valuable resources with a time changes as modification is going with the availability of new hardware and as well as new communication technologies with some time adheres system specific functionalities to finalize or complete the processing task. Simply the aim is to improve the performance of web application simultaneously maintain all others related service broker policies. The research for performance of real time application was doing by many companies and organization, to improve their user interface with the backbone technologies.

The name of companies and their products are:

- 1) Microsoft: Microsoft Reunite Hotmail with its new interface of windows life services, and then it again upgraded by outlook.com.
- 2) Google: Google facilitated they e-mail users with the html version of g-mail which as limited capabilities and each time loading of page occurs, which is then upgraded to new version of g-mail.
- 3) Google Plus: Outlook was overtaken by google and then google research identified the reason of its unpopularity's of using old technologies and uninteracted user interface, which is then surprising release as the name of google plus in the field of social networking sites.
- 4) Google Search: Google had changed its searching interface with the instant change of research at real time, to improve the performance and user easiness.

## V. CONNECTION POOLING AS A SOLUTION

Web Technology today has lots of function than just downloading and presenting content. Native mobile application gives best performance and a high degree of stability. Mobile are getting the direct access to the real time applications. Some applications allow users to run application without Internet.

System needs active response at every time but inter calculation of processing leads users to wait for some time. What if when a user struck in a particular situation of computer processing? It is very unfriendly and irritating situation. At one palace when computer system give a palace to solve problems and at the other side it block user because of its hardware or technologies dependancies. The situation was very common in the initial development of dynamic web applications and web services. The

dynamic websites include database is the main concerned of the performance impact. The database connection to the web interface directs the client to deal with stored information (data values). So availability of database connection is a main issue which deals with the overall functionalities of the system. But as the time changed the number of web users and web contents was drastically increased and that time many web services was became slow and unresponsive at the service time. At that time connection pooling came as the solutions to improve the overall performance of web application. Initially some companies implemented connection pooling are as follows-

Sun Microsoft (java) and Microsoft asp.net. The connection pooling is supported by IBM DB2, Microsoft SQL Server, oracle, MySQL and PostgreSQL.

### CONCLUSIONS

The research work is focused on the evaluation of connection pooling technology and the possibility of implementing it as solution. The real-time application is totally dynamic which requires to reply instantly. The other barriers are limited to the area, performance of the application directly depends on the data availability. So, to avail the require information at the time is must for efficient web processing. Connection Pooling is technique which reduces the load by providing response to multiple client at the same time. These all requests and responses are managed by Web Servers Software and Pool of Connection is also created at Server Side. The client always use new connection from the pool to retrieve and insert or modify data values from or inside the database. The conclusion of the research is

that Connection Pooling technique is really very helpful to reduce the overall traffic load on the server for data enquiry.

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