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## A Comparative Analysis of Web Database and Local Database

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**ABSTRACT:** Storage and distribution subsystems are fundamental components of any information system. Databases are becoming an efficient tool used to manage large amount of data. Local database has a server-less nature and keeps everything simple and packaged on just the machine on which it's installed, unlike a web database which manages data online. The challenge is choosing the right database for your data storage needs. In this paper, we analyze the performance of a Local and web database system. Experiments are designed to investigate how both database systems work and what affects its performance, in particular, the response time.

**KEYWORDS:** Local database, Online database, Response time.

### I. INTRODUCTION

The technologies of data and information management, is an important and active research field. After decades of development, today's database systems all have numerous features, making it very difficult to choose these features toward the need of the specific applications using them.

With the rapid development of Web, more and more accessible databases are available in the Web [1]. The integration of these databases aims to help people make use of the abundant information in Web databases efficiently. The information stored in Web databases is hidden behind the query interfaces in Web pages. This means that the main approach to access a Web database is through their query interfaces.

The objective of this study is to investigate the performance of Web database and Local database through experiments. In this paper the initial experiments on a Web and Local database system performance and an analysis of the test results are presented. Relationships between database base table size, and the response time are examined [2]. The contents of the paper are organized as follows: Section 2 explains the experiments used, Section 3 provides the simulation result analysis, and Section 4 provides conclusions and future directions.

### II. EXPERIMENTS

Tests were carried out to simulate the activities of a Web database system and a Local database system. In the experiments, Windows is used as the platform with Apache as the Web server, MS SQL Server as the database server, and the PHP as the Web site script language [3].

#### A. *Experimental design for web database*

The web database tests involve three primary components: a Server, Clients, and a Network. During the tests, a client runs a client program and the server responds with a result [4].

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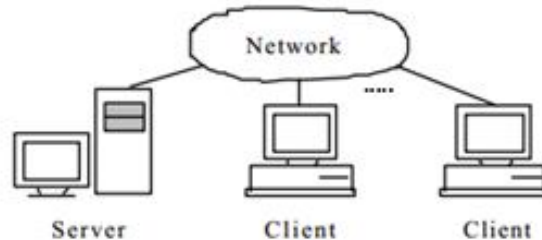


Fig.1. Components of the Web database test

The Server uses a set of prepared sample PHP pages and sample database, which simulate those that a server might provide for its clients. A client application is running on a computer to simulate one/many client's browser(s). The client application can be run on more than one client computer. Each client makes one connection and a page request to the server at a time. This design enables each client computer to simulate more than one client.(Figure 1. shows the components used) [5].

## B. Experimental design for local database

The Local database tests involve three primary components: Client, Network, Localhost Server. (Figure 2. shows the components used.)

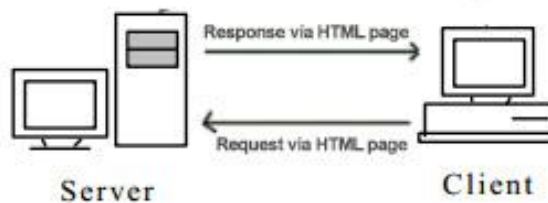


Fig.2. Components of the Local database test

Similarly to the method used for Web database, sample PHP pages and sample database is used to measure the performance. The local database server allows the client to send request and receive response via web pages.

## III. SIMULATION RESULTS

A set of six tables were created for comparing web and local database. Different tables created consisted of text data and images. Queries to the database tables were adopted according to the standard SQL. Web database and local database were compared with respect to query result file size for single table and multiple tables in terms of load time and first byte retrieval.

### A. Single table

Comparison of both database was carried out with respect to single table with different data and time obtained with respect to load time was graphically represented (Fig 3).

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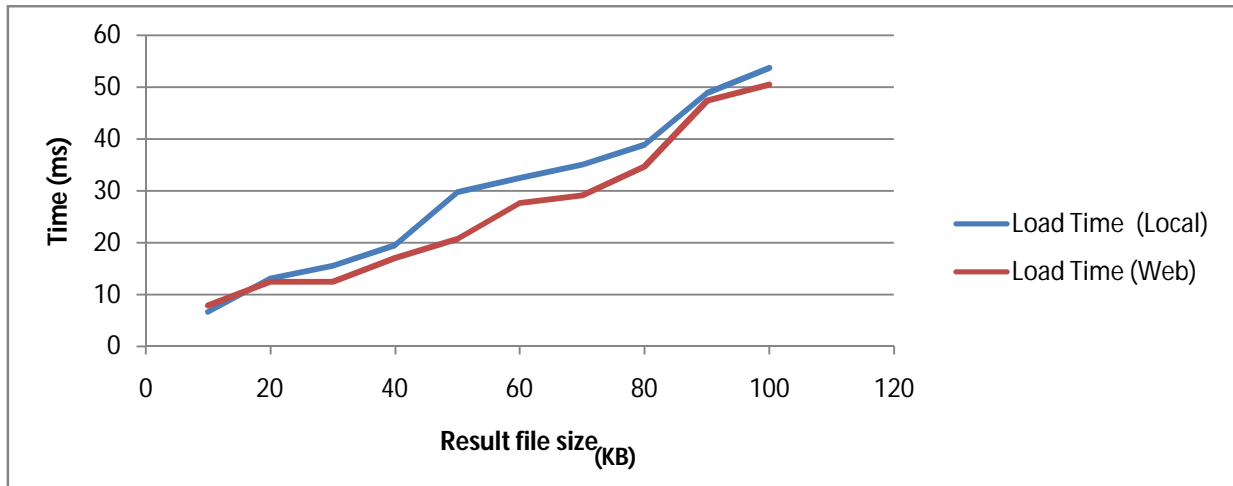


Fig.3. Response time in terms of query result file size

To test the response time for query result file size using the single table, multiple users who accesses the database over a network was also considered. A number of queries were tested, to get the response time of different result file sizes. Tests show that the results file size has a direct impact on the response time (Fig 4).

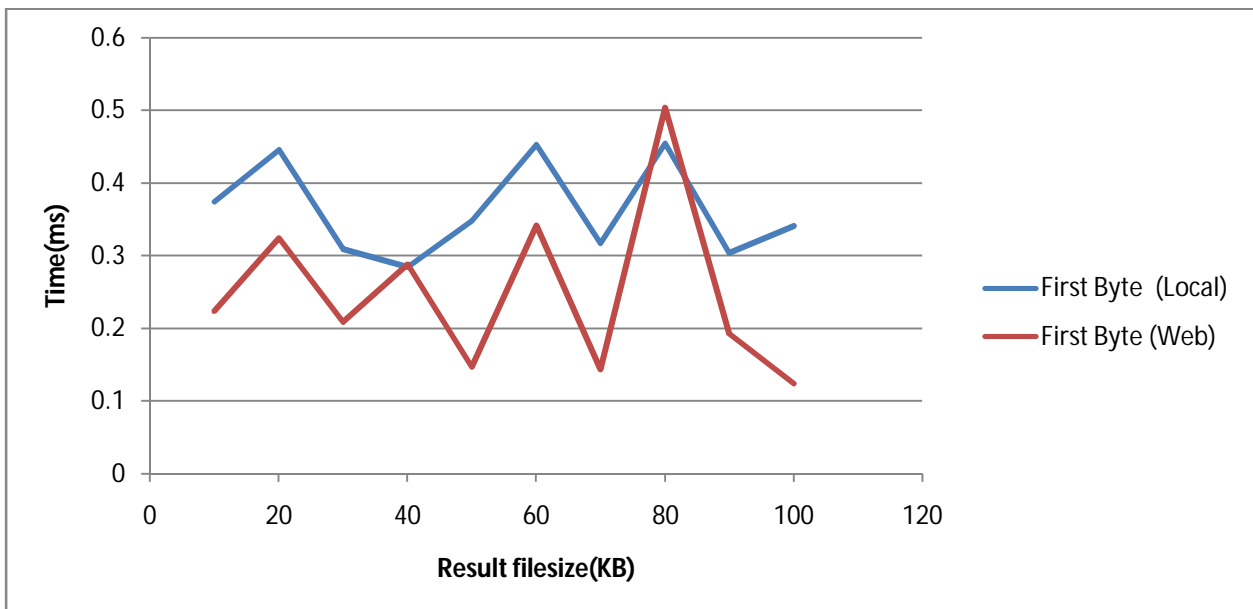


Fig.4. Response time in terms of First byte retrieved

### B. Multiple tables

Web database was also tested for load time and response time for first byte retrieval. Here also multiple users accessing database was considered. Response time obtained for load time and first byte retrieval was plotted graphically in figures 5 and 6 (Fig 5 and Fig 6).

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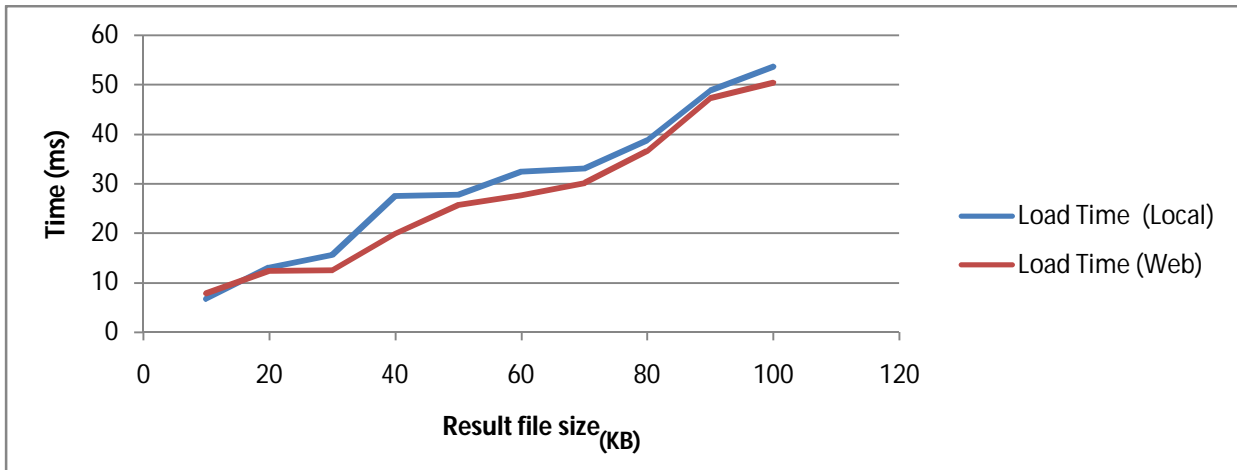


Fig.5. Response time in terms of query result file size

The figures plotted for standalone and web databases concludes that the time taken to retrieve data from a web database is less than that of a local database. However, there are certain factors that can affect the response time, such as the network and the number of users, hence this graph may have changes when network is slow or when there are multiple users.

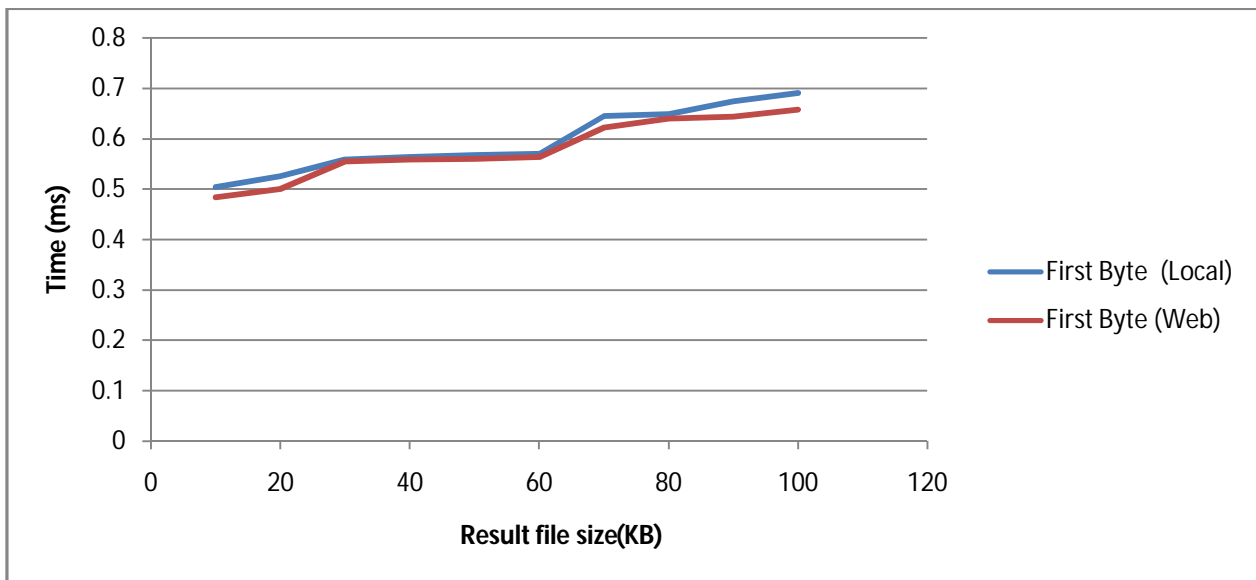


Fig.6. Response time in terms of query result file size

## VI. CONCLUSION AND FUTURE WORK

In this study a comparison is done with respect to a local and a web database, to check the efficiency of both. This study will help researchers to choose an efficient database for their study. We could conclude that web database is more efficient with respect to local database as it takes less time to retrieve data. In our future work we propose to compare the efficiency of different web databases with respect to various conditions.

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