A

MINI-PROJECT REPORT

ON "Data storage and analytics with dashboard"

Submitted in partial fulfillment of the requirement for the award of

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In

Computer Science and Engineering
Punyashlok Ahilyadevi Holkar Solapur University

By

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Under Guidance
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CERTIFICATE

This is to certify that the Mini-Project entitled

“Data storage and analytics with dashboard”

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Abstra ct

Schools in Sikkim are located in different terrain and during monsoon season it's very difficult to reach every school to get data. In govt. sector sometimes data need immediately in such scenario creating data is difficult.

There is need to develop a desktop based application which can store data of all students across the four districts. The data storage should be block level, district level and state level so that govt. Sector can easily access data whenever required without manually trying to reach every school. As network is very challenging throughout the state of Sikkim. Software should be design such a way that data can be entry offline and later on put into the web when network is available. That's way need a desktop based application that records a variety of data like attendance or students as well as teachers, marks of students, and other statutory data as required by education department. Most important aspect of this application is sync only when network is available.

The proportional solution is to develop desktop based application where only authorized system user of every school can write the data related to school which will be written back to the server for making it accessible to govt. sector. This application is a better solution for the challenging network throughout the Sikkim, because the data entered by system administrator will directly go to server on active network availability, when network unavailability the data will be maintained in a "File" which will get updated from "File" as soon as "Sync" functionality will recognize active network connection with server. The strong "Sync" functionality is useful for checking of active network repeatedly to update the data which has stored in "File" due to network unavailability. This application gives ideal solution for those schools which are located at terrain and having challenging season it's very difficult to reach every school to get data, system administrator can send data to server and govt. sector can access it without manually trying to reach school.

Introduction

The project target is providing a user-friendly interface to the govt. of Sikkim due to network challenging whether, to retrieve required data among four district is very difficult so that the data can be entry offline and later on put into the web when network is available.

The project is based on java language to synchronization the data whenever network is available and to run the server continuously using threads in java.

A web-based approach is used to retrieve the data of student from database so that it will make available on four districts database.

The project aims at providing a good user experience of the service to the govt. of Sikkim through the synchronization of data when network is available.

Objective and Goals:

- To update the data automatically on network availability, which was failed due to network unavailability.
- Providing Analytics of Student's record data.
- To improve the time management of the govt. of Sikkim by making data available in database frequently.
- To optimize the project to run on existing system.

Backgroun
d

1. Data status flag for indication of data updation:

When system administrator writes data of student in our application then for every data there will be a status flag named as “updated” to indicate that whether this data is updated at both the side server and client. When system administrator writes a data and system has network connection and if data has been updated at server sides then “updated” flag will indicate ”Yes” which means data has been updated at both the sides. If system has no network connection then “updated” status flag will indicate “No” which means because of lack of connection data has been temporarily stored in a “File” which will be updated at server side as soon as internet connection will appear and status flag will become “Yes”.

2. Storing offline data using synchronization:

When system has no network connection and system administrator writes any data, that data cannot get updated at server side because of network unavailability that data temporarily goes to a “File” which also maintains ‘some of the pointer information’. Here we have provided “sync” option for those data which is in “File”, “sync” option checks whether network connection has been arrived in system or not after every specific period of time, whenever network connection arrives in system then “sync” option automatically syncs the data at server side with the help of pointer.

3. Backup

system:

Every data related to each school written by system administrator also gets written in “Backup System” of every school provided by our application. This “Backup System” stores complete data of respective school since the application is used for storing student information. Unfortunately if server meets with any accident or losses any data then server can take Backup from the schools “Backup System”.

Technologies Used

Front End:-

Java : A *distributed application* is a program that runs on more than one computer and communicates through a network. Some distributed applications are two separate software programs: the back- end server software and the front-end client software. Distributed applications can be simple, requiring a single client computer and a single server, or more complex, allowing many client computers and several servers Java Can provide the distributed application programing. Applications generally contain many miniprograms with various functions. Some miniprograms have a graphical user interface (GUI),

GUI :- To create the GUI, you use the Java Foundation Classes/Swing (JFC/Swing) and Abstract Window Toolkit (AWT) API. The many classes and interfaces in those packages allow you to easily create buttons, check-box objects, text fields, and other components, as well as components to organize them. By far the easiest way to create the frame and all the GUI components for your

application is to use an integrated development environment (IDE), such as the NetBeans IDE. This IDE allows you to drag and drop your components into place while it writes the complex component code for you. It's easy to learn and saves you a lot of time.

Back End :-

1.Multi threading:- Applications must often do more than one thing at a time. For example, a streaming audio application must simultaneously read the digital audio off the network, Concurrency can be achieve in java by using “Thread’s”.

2. Application Security:- Java security technology includes a large set of APIs, tools, and implementations of commonly used security algorithms, mechanisms, and protocols. The Java platform security APIs span a wide range of areas, Java security technology provides you with a comprehensive security framework for writing applications, and it also provides the user or administrator with a a set of tools to securely manage applications.

Database: We created mysql database as server and sql lite for local database server which is used to store the local database.

Mysql: A database is a separate application that stores a collection of data. Each database has one or more distinct APIs for creating, accessing, managing, searching and replicating the data it holds. Other kinds of data stores can also be used, such as files on the file system or large hash tables in memory but data fetching and writing would not be so fast and easy with those type of systems.

MySQL is a fast, easy-to-use RDBMS being used for many small and big businesses. MySQL is developed, marketed and supported

by MySQL AB, which is a Swedish company. MySQL is becoming so popular because of many good reasons MySQL is released under an open-source license. So you have nothing to pay to use it.

SQLite: SQLite is an in-process library that implements a self-contained, server less, zero-configuration, transactional SQL database engine. It is a database, which is zero-configured, which means like other databases you do not need to configure it in your system. SQLite engine is not a standalone process like other database, you can link it statically or dynamically as per your requirement with your application. SQLite accesses its storage files directly.

Description and Working of Project

Architecture:-

login Options Storing Info.

Local

If Online

Database

Updated Status “YES” Server Database

If Offline

Updated Status “YES”

Local Database

Updated Status “NO”

Log File Mechanism

Online Read Log

Change File in Status

Updated Status “YES”

Description :-

Front End

- Only system administrator can write the data of respective school.
- The data entered by system administrator goes to the “Backup System” as well as to the server side, if system has active connection with server then “updated flag” will indicate successful data updation at both the sides.
- It goes to “Backup System” and in “File” and “data updated” flag will indicate data has not yet updated at server side.
- Those data which is not yet updated at server side will be updated as soon as system will get active connection to the server.

Back End:

- The information of students entered by system administrator goes to server side on connection availability and returns 1 on success and 0 on failure.
- The succeeded data as well as failed data goes to “Backup System” and “File” which maintains the failed data and pointer information from which the data has to be updated.
- For updation of failed data due to unavailability of active connection to the server “sync” function is used.

- The “sync” function checks for arrival of active connection to server for failed data updation at server side after specific period of time.
- As soon as system gets active connection to the server “sync” function reads the “File”, with the help of pointer it reads the failed and write to the server side and modifies the “updated flag” indicating successful data updation.
- In the middle of this process if system looses its connection with server or after completion of this process “sync” function modifies the pointer value up to what data successfully updated.
- Now the file will contain only failed data that has to be updated and pointers Pointing to appropriate location

Screenshots & Results

Advantages

Advantages:-

• Large availability of data storage on local system to prevent the data lose.

• Providing data Synchronization because of unpredictable weather conditions in the area.

• providing a user friendly interface that can easily access the application

• Dashboard is used to analyse the data i.e, how much data is synchronize and how much data in local database.

• providing centralize data by using distributed database schema

Future scope

• This product can be made available for every school or organization for storage and analysis of the information.

• By analyzing our application, data regarding every school (student count, result, staff information etc.) education department can take more good decision for students.

• Feedback and discussion session can be useful for maintaining good relation of school and education department

Conclusion/Summary

This project is based on the approach of developing a web based application which helps to maintain the information of every school related to student staff, result etc. and also useful for analysis.

The “Sync” functionality is used to write those data at server side which was Failed due to client- server connection failure.

The updated flag has maintain to learn about the updation process succession or failure of data at server side.

This application maintains the “Backup System” on any unfortunate situation to the server, for backup.

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