

A Project Report

Submitted in Partial fulfilment of Minor Project for the award of Bachelor of Technology in (Computer Science & Engineering)

**Submitted To**

**ITM UNIVERSITY GWALIOR (M.P.)**

**MINOR PROJECT REPORT**

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CERTIFICATE

This is to Certify that { Syeed Chowdhury and Nahinul Hussain}, students of B. Tech sixth Semester, January2021– June 2021 sessions of this school has completed his final semester project entitled

Project title:

**Database Management System via PHP-My SQL**

1. **Electronic Voting System**
2. **Online Healthcare System**

**He has submitted a satisfactory project report for the award of** degree of Bachelor of Technology (B. Tech) Computer Science of ITM University, Gwalior.

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**Acknowledgment**

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**Syeed Chowdhury**

**Nahinul Hussain**

**DECLARATION**

I, student of Bachelor of Technology (B.Tech) Computer Science, Dept. of Computer Science & Applications ,ITM UNIVERSITY, Gwalior (M.P.) hereby declare that the work presented in this Major project is outcome of our own work, is Bonafede, correct to the best of our knowledge and this work has been carried out taking care of Engineering Ethics. The work presented does not infringe any patented work and has not been submitted to any University for the award of any degree or professional diploma.

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Preface

In the recent times, the human civilization is becoming more and more connected to each other. For this over the centuries major inventions and discoveries has enabled us to share our thoughts and voice over large distances and with increasingly high speeds. Today, the technology has enabled us to communicate just at the click of a button. We can send messages, voice and even multimedia videos and that to in real time. But this comes at a cost and more sophisticated the communication network is, more cost is needed to maintain it also when the communication becomes the necessity, security of the transmitted and received message also comes into the picture. Today we not only need to find out better ways to communicate but also, we need to ensure that our message reaches the intended user quickly and securely while maintaining its integrity. Through this project we have tried to do just that by finding a new way for communicating our messages point to point wirelessly.

|  |  |
| --- | --- |
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**Chapter 1**

**Introduction to Project**

**Project Abstract Electronic Voting System**

**Electronic Voting System in PHP MySQL Free Download** is an election system that allows voters to record a secret ballot and have it tabulated electronically. Votes are stored so they can be re-counted should the need arise.

**Voting Management System** can speed up election results and lower the cost of conducting an election by significantly reducing the number of people required to operate a polling place and tabulate results. A primary concern with e-voting, however, is how to store votes so they can be recounted if required.

## Features of  Electronic Voting System in PHP MySQL

* **Vote preview**
* **Multiple votes**
* **Result tally via Horizontal Barchart**
* **Print voting result in PDF**
* **Changeable order of positions to show in ballot**
* **CRUD voters**
* **CRUD candidates**
* **CRUD positions**

**Project Abstract Online Healthcare System**

Online Healthcare Patient Record Management System is customized utilizing PHP programming language and MySQL as the database. An online patient record framework in human services is a sort of clinical data framework, which is committed to gathering, putting away, controlling, and making accessible clinical data critical to the conveyance of patient consideration. The focal point of this framework is clinical information and not money related or charging data.

**⌨️Features of this System ⌨️**  
**⭐️Client Side ⭐️**  
– Login/Logout Nurse/Staff as a user  
– View Patients  
– View Medical Records  
– View Complaints  
– Monitor Patients  
**⭐️Admin Side ⭐️**  
– User Management  
– CRUD – Patients  
– Admit/Admit Patients  
– Complaints/Illness Dashboard  
– Monitor Patients  
– Create history of complaints using graphs  
– Integrated with graphs and tables for monitoring complaints of patients.

**Chapter 2**

**Project Plan**

The project is planned in a simple eight step process as below:

* Determining the stakeholder of the project(Users, Consumers, Bridges)

### List out goals, align OKRs, and outline the project

### Create a project scope document

### Craft a detailed project schedule

### Define the roles, responsibilities, and resources

### Define the communication and check-in process

* List out assets the project is expected to deliver.
* Discuss risk management and plan for security

**Chapter 3**

**Creating the database**

**In** Object Explorer, connect **to** an instance of the **SQL** Server **Database** Engine and then expand that instance. Right-click **Databases**, and then click New **Database**. **In** New **Database**, enter a **database** name. **To create** the **database by** accepting all default values, click OK; otherwise, continue **with** the following optional steps.

**Chapter 4**

**Software Requirement Specifications**

1. **Introduction**

The database management system via PHP-MySQL remains an easier way to convey and store information and deliver online services with the minimal expense runnable on private servers of organizations to reduce traffic with the only expense of advanced security issues that needs to be worked upon.

**1.1 Purpose**

The purpose of the database management system is to host , record, display and control the data in a secured managed environment with ease of access and broad functionality.

**Voting Management System** can speed up election results and lower the cost of conducting an election by significantly reducing the number of people required to operate a polling place and tabulate results. A primary concern with e-voting, however, is how to store votes so they can be recounted if required. Future scope of this database lies with the integration of BLOCKCHAIN technology to make it more secure thus elimination the need of EVM(Electronic Voting Machines).

An online patient record framework in human services is a sort of clinical data framework, which is committed to gathering, putting away, controlling, and making accessible clinical data critical to the conveyance of patient consideration. The focal point of this framework is clinical information and not money related or charging data. Therefore services are provided with minimal expenses without a hectic hospitalized scheduling system.

**1.2 Document Conventions**

The standard format template of Software Requirement Specifications has been integrated in this report.

**1.3 Intended Audience and Reading Suggestions**

Among the two projects Electronic Voting system is intended for the Electoral Committee of a government for example state governments of India so that an online method of election using the backbone of this system integrating it with fingerprint can be implemented to eliminate the use of electronic voting machines aka. EVMs for eliminating the transport issue of EVMs and the Online Healthcare System to the Health Ministry of State governments for smooth conduction of medical services online in the immense pressure of the pandemic and vaccination programs.

The document is further intended for php developers who can integrate the projects with further use cases in the databases and Blockchain developers, Software testing officials who can further improve upon security making the database impervious to active and passive attacks.

**1.4 Product Scope**

The mentioned two products can be used by State governments and medical hospitals and clinics on a Non-Profit clause to provide secure and faster e-service with ensured security , ease of access and minimal expenses.

**2. Overall Description**

**2.1 Product Perspective**

Current voting procedures followed are throughout different countries are manual procedures. Voatz first tried to change this by creating an online voting app using blockchain which worked on the policy that one person one vote, but there was a security issue as the ballot was always being tracked back to the voter. Here in this project the ballot does not identify the voter and if the security issue of tracking down the voter id can be solved then this becomes the most viable voting software .

On the other hand the online health care management system is an extended version of the medlife online application but without the delivery of the medicine

**2.2 Product Functions**

Electronic voter lists and voter authentication. Part of an electronic voting system can be an electronic voter list, covering either a single polling station or the entire country. This list can be used to authenticate eligible voters and to record that they have cast their vote. •  Poll worker interfaces. Special functionalities that are only available to poll workers, for example, resetting the vote count at the opening of the polling station, closing polling, printing and transmission of results. •  Interfaces for casting votes. These include touch screens, optical mark recognition (OMR) ballot papers that are fed into a scanner, touch-sensitive tablets, push buttons, web pages or special client software for Internet voting. •  Special interfaces for handicapped voters. These include Braille or audio input devices for the blind, easier access for voters with physical disabilities, and simpler interfaces for illiterate voters.

The online scheduling systems are also known in many names such as online booking application, online scheduler, online scheduling software, and more. It is one of the most commonly used web-based applications and enables individuals to securely and conveniently book their reservations and requests online via a laptop, tablet, smartphone, computer, and other web-connected devices.

Anyone can access the online appointment management system via the URL provided by the healthcare or medical facility or through a “Book Now” button in the website. Once the time and date are selected, the system confirms the bookings automatically and also records it within the system instantly without any intervention from the staff.

The online appointment management system also comes with features like automated text and email message reminders, which is sent to the booked patients or individuals on the date booked before their scheduled time of booking. The flexibility of the online appointment management system in healthcare includes

* Booking inoculations and vaccine in hospitals.
* Scheduling a patient’s treatment, services, and appointments.

**Time-Saving:**

The staff spends less time on managing appointments, and phone booking, and can, therefore, use their free time for more urgent and vital tasks. The patients can also save time as there is no need for calling the hospital and booking an appointment in the middle of their busy schedule.

For example, consider a large medical facility hospital which schedules 100 plus appointments daily. Every appointment calls are handled by the support staff from the administration, and they spend approximately 3 to 4 minutes on a phone call.

In this case, if the healthcare facility switches to an online booking system it can save most of their time and also get more time to deal with other pressing tasks in the facility.

**Monetary Savings:**

The time savings made by the facility can translate automatically into monetary savings as a reduction in services and staff translates into a reduction in expenses. The appointment management system can reduce the need for extra human resources created by the process of appointment scheduling.

**24 hours convenience:**

An individual is needed to schedule an appointment over the phone calls during the office hours, and therefore people need to work round the clock on the phone booking. With online appointment management system, the individual or the patient can book an appointment any time. It is seen that after business hours there is more than 55 percent of all appointments booked through online scheduling appointment systems.

**Online Payment:**

Every service needs a secure payment system. As an online appointment management system is safe, and the data is kept secure, people find themselves comfortable with online payments. Offering a free consultation or discounts on consultation fees within the limited period after the initial consultation encourages the individual patients to make use of the online appointment management system every time to book the appointment.

Healthcare providers are making use of the latest technology and keeping themselves updated to enhance quality. The online appointment scheduling system is considered to be a step forward to bring a healthcare facility to the future.

Making the workflow perfect, enhancing data reporting and capturing, improving efficiency and time savings, providing the patient with significant convenience and choice, thereby enhancing the patient loyalty and trust are some important benefits of an online appointment management system.

**Centralized Information System:**

Online systems make patient management easier and more efficient. Some online scheduling systems for appointments also have management of patient health records as part of the package. The organization can create a single point from which to save, update, manage and analyze patient information.

Recording, reporting and analyzing such information helps to efficiently manage the case file of a patient. All regularly recorded patient information, along with a history of check-ups and associated medical tests, can be used to make educated, carefully considered health care decisions. This can reduce the amount of documentation and the time it takes to access physical files.

It is also possible to avoid redundant data entries about the same patient. In addition, the ongoing records of the patient can be updated at each appointment, making patient information available for easy and fast access in one place. This is important when two different practitioners are consulted at the same facility by a patient.

**2.4 Operating Environment**

* **Browser used:**          IE8, Google Chrome, Opera Mozilla
* **Software used:**         WAMP/ XAMPP/ LAMP/MAMP

**2.5 Design and Implementation Constraints**

In electronic voting system the fact that ballot ID can be traced back to the voter may cause an identity theft which is the prime security issue.

**External Interface Requirements**

No external user interface required

**3.1 User Interfaces**

The user interface of electronic voting system contains dashboard, votes, voters, position, candidates, ballot position and election title.

The user interface of online healthcare management system contains dashboard, accounts, patients and sections

**3.2 Hardware Interfaces**

Not required

**3.3 Software Interfaces**

Interface built through html , javascript and jquery and linked to My Sql database displayable on server

**4. System Features**

Both the projects contain some common and some unique set of features.

**4.1 System Feature 1**

## Features of  Electronic Voting System in PHP MySQL

* Vote preview
* Multiple votes
* Result tally via Horizontal Barchart
* Print voting result in PDF
* Changeable order of positions to show in ballot
* CRUD voters
* CRUD candidates
* CRUD positions

**4.2 System Feature 2**

## Features of  Online healthcare management System in PHP MySQL

**⌨️Features of this System ⌨️**  
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– Login/Logout Nurse/Staff as a user  
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– Admit/Admit Patients  
– Complaints/Illness Dashboard  
– Monitor Patients  
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– Integrated with graphs and tables for monitoring complaints of patients.

**5.1 Performance Requirements**

Browser, installed Xampp / Wamp server

**5.3 Security Requirements**

Blockchain integration is required which will prevent data being traced back to its user.

**5.4 Software Quality Attributes**

Some to consider are: adaptability, availability, correctness, flexibility, interoperability, maintainability, portability, reliability, reusability, robustness, testability, and usability.

It is adaptable and portable at any system as the database can be imported on My SQL over a secure connection n any private server. Availability is high as technology used is common and supportive of maximum systems. Correctness of data is assured to the maximum. Data can be dropped and limit of data can also be set therefore its expandable and flexible. Due to having a client side and an user side its maintenance can be strictly monitored. It is not completely secure.

**5.5 Business Rules**

Non-Profit

**Chapter 5**

**Testing**

**Database Testing** is a type of software testing that checks the schema, tables, triggers, etc. of the Database under test. It also checks data integrity and consistency. It may involve creating complex queries to load/stress test the Database and check its responsiveness.

The GUI is usually given the most emphasis by the test and development team members since the Graphical User Interface happens to be the most visible part of the application. However, what is also important is to validate the information that is the heart of the application, aka DATABASE.

Testing has been approached in two ways:

|  |  |
| --- | --- |
| **User-Interface testing** | **Database or Data testing** |
| This type of testing is also known as Graphical User Interface testing or Front-end Testing. | This type of testing is also known as Backend Testing or data testing. |
| This type of testing chiefly deals with all the testable items that are open to the user for viewership and interaction like Forms, Presentation, Graphs, Menus, and Reports, etc. (created through VB, VB.net, VC++, Delphi - Front-end Tools ) | This type of testing chiefly deals with all the testable items that are generally hidden from the user for viewership. These include internal processes and storage like Assembly, DBMS like Oracle,[SQL](https://www.guru99.com/sql.html)Server, MYSQL, etc. |
| This type of testing includes validating the   * text boxes * select dropdowns * calendars and buttons * Page navigation * display of images * Look and feel of the overall application   . | This type of testing involves validating:   * the schema * database tables * columns * keys and indexes * stored procedures triggers * database server validations * validating data duplication |
| The tester must be thoroughly knowledgeable about the business requirements as well as the usage of the development tools and the usage of automation frameworks and tools. | To be able to perform backend testing, must the tester have a strong background in the database server and Structured Query Language concepts. |

The 3 types of Database Testing done in this project:

1. Structural Testing
2. Functional Testing
3. Non-functional Testing

In this Database Testing tutorial, we will look into each type and its sub-types one by one.

**Structural Database Testing**

**Structural Database Testing** is a database testing technique that validates all the elements inside data repository that are mainly used for data storage and which are not allowed to be directly manipulated by end-users. The validation of database servers is also an important consideration in structural database testing. A successful completion of this testing needs mastery in SQL queries.

**What is Schema Testing?**

**Schema Testing** in database testing validates various schema formats associated with the database and verifies whether the mapping formats of tables/views/columns are compatible with mapping formats of user interface. The main purpose of schema testing is to ensure the schema mapping between front-end and back-end are similar. Thus, it is also referred to as **mapping testing.**

Let us discuss the most important checkpoints for schema testing.

1. Validation of the various schema formats associated with the databases. Many times the mapping format of the table may not be compatible with the mapping format present in the user interface level of the application.
2. There is a need for verification in the case of unmapped tables/views/columns.
3. There is also a need to verify whether heterogeneous databases in an environment are consistent with the overall application mapping.

Let us also look at some of the interesting Database Testing tools for validating database schemas.

* DB Unit that is integrated with Ant is very suitable for mapping testing.
* SQL Server allows the testers to be able to check and to query the schema of the Database by writing simple queries and not through code.

For example, if the developers want to change a table structure or delete it, the tester would want to ensure that all the Stored Procedures and Views that use that table are compatible with the particular change. Another example could be that if the testers want to check for schema changes between 2 databases, they can do that by using simple queries.

**Database Table, Column Testing**

Let us look into various checks for database and column testing.

1. Whether the mapping of the database fields and columns in the backend is compatible with those mappings in the front-end?
2. Validation of the length and naming convention of the database fields and columns as specified by the requirements.
3. Validation of the presence of any unused/unmapped database tables/columns.
4. Validation of the compatibility of the

* datatype
* field lengths

of the back-end database columns with that of those present at the front-end of the application.

1. Whether the database fields allow the user to provide desired user inputs as required by the business requirement specification documents.

**Keys and indexes testing**

Important checks for keys and indexes -

1. Check whether the required

* Primary Key
* Foreign Key

constraints have been created on the required tables.

1. Check whether the references for foreign keys are valid.
2. Check whether the data type of the primary key and the corresponding foreign keys are the same in the two tables.
3. Check whether the required naming conventions have been followed for all the keys and indexes.
4. Check the size and length of the required fields and indexes.
5. Whether the required

* Clustered indexes
* Non Clustered indexes

have been created on the required tables as specified by the business requirements.

**Stored Procedures Testing**

Important tests to check stored procedures are:

1. Whether the development team did adopt the required

* coding standard conventions
* exception and error handling

for all the stored procedures for all the modules for the application under test.

1. Whether the development team did cover all the conditions/loops by applying the required input data to the application under test?
2. Whether the development team did properly apply the TRIM operation whenever data is fetched from the required tables in the Database?
3. Whether the manual execution of the Stored Procedure provides the end-user with the required result?
4. Whether the manual execution of the Stored Procedure ensures the table fields are being updated as required by the application under test?
5. Whether the execution of the Stored Procedures enables the implicit invoking of the required triggers?
6. Validation of the presence of any unused stored procedures.
7. Validation for Allow Null condition which can be done at the database level.
8. Validation of the fact that all the Stored Procedures and Functions have been successfully executed when the Database under test is blank.
9. Validation of the overall integration of the stored procedure modules as per as the requirements of the application under test.

Some of the useful Database Testing tools for testing stored procedures are LINQ , SP Test tool etc.

**Trigger Testing**

1. Whether the required coding conventions have been followed during the coding phase of the Triggers?
2. Check whether the triggers executed for the respective DML transactions have fulfilled the required conditions.
3. Whether the trigger updates the data correctly once they have been executed?
4. Validation of the required Update/Insert/Delete triggers functionality in the realm of the application under test.

**Database Server Validations**

1. Check the database server configurations as specified by the business requirements.
2. Check the authorization of the required user to perform only those levels of actions that are required by the application.
3. Check that the database server is able to cater to the needs of the maximum allowed number of user-transactions as specified by the business requirement specifications.

**Functional Database Testing**

**Functional Database Testing** is a type of database testing that is used to validate the functional requirements of a database from the end-user’s perspective. The main goal of functional database testing is to test whether the transactions and operations performed by the end-users which are related to the database works as expected or not.

Following are the basic conditions that need to be observed for database validations.

* Whether the field is mandatory while allowing NULL values on that field?
* Whether the length of each field is of sufficient size?
* Whether all similar fields have the same names across tables?
* Whether there are any computed fields present in the Database?

This particular process is the validation of the field mappings from the end-user viewpoint. In this particular scenario, the tester would perform an operation at the database level and then would navigate to the relevant user interface item to observe and validate whether the proper field validations have been carried out or not.

The vice versa condition whereby, first operation is carried out by the tester at the user interface, and then the same is validated from the back end is should also be done.

**Checking data integrity and consistency**

Following checks are important

1. Whether the data is logically well organized?
2. Whether the data stored in the tables is correct and as per the business requirements?
3. Whether there are any unnecessary data present in the application under test?
4. Whether the data has been stored as per as the requirement with respect to data which has been updated from the user interface?
5. Whether the TRIM operations performed on the data before inserting data into the Database under test?
6. Whether the transactions have been performed according to the business requirement specifications and whether the results are correct or not?
7. Whether the data has been properly committed if the transaction has been successfully executed?
8. Whether the data has been rolled backed successfully if the transaction has not been executed successfully by the end-user?
9. Whether the data has been rolled backed if the transaction has not been executed successfully and multiple heterogeneous databases have been involved in the transaction in question?
10. Whether all the transactions have been executed by using the required design procedures as specified by the system business requirements?

**Login and User Security**

The validations of the login and user security credentials need to take into consideration the following things.

1. Whether the application prevents the user from proceeding further in the application in case of a

* invalid username but valid password
* valid username but invalid password.
* invalid username and invalid password.

1. Whether the user is allowed to perform only those specific operations which are specified by the business requirements?
2. Whether the data is secured from unauthorized access?
3. Whether there are different user roles created with different permissions?
4. Whether all the users have required levels of access on the specified Database as required by the business specifications?
5. Check that sensitive data like passwords, creditcard numbers are encrypted and not stored as plain text in Database. It is a good practice to ensure all accounts should have passwords that are complex and not easily guessed.

**Non-functional testing**

Non-functional testing in the context of database testing can be categorized into various categories as required by the business requirements. These can be load testing, Stress Testing, [Security Testing](https://www.guru99.com/what-is-security-testing.html), [Usability Testing](https://www.guru99.com/usability-testing-tutorial.html), and [Compatibility Testing](https://www.guru99.com/compatibility-testing.html), and so on. The load testing, as well as stress testing, which can be grouped under the gamut of [Performance Testing](https://www.guru99.com/performance-testing.html) serves two specific purposes when it comes to the role of non-functional testing.

**Risk quantification**- Quantification of risk helps the stakeholders to ascertain the various system response time requirements under required levels of load. This is the original intent of any [quality assurance](https://www.guru99.com/all-about-quality-assurance.html) task. We need to note that load testing does not mitigate risk directly, but through the processes of risk identification and risk quantification, presents corrective opportunities and an impetus for remediation that will mitigate risk.

**Minimum system equipment requirement**- The minimum system configuration that will allow the system to meet the formally stated performance expectations of stakeholders. So that extraneous hardware, software, and the associated cost of ownership can be minimized. This particular requirement can be categorized as the overall business optimization requirement.

**Load Testing**

The purpose of any load test should be clearly understood and documented. The following types of configurations are a must for load testing.

1. The most frequently used user transactions have the potential to impact the performance of all of the other transactions if they are not efficient.
2. At least one non-editing user transaction should be included in the final test suite, so that performance of such transactions can be differentiated from other more complex transactions.
3. The more important transactions that facilitate the core objectives of the system should be included, as failure under a load of these transactions has, by definition, the greatest impact.
4. At least one editable transaction should be included so that performance of such transactions can be differentiated from other transactions.
5. Optimum response time under huge number of virtual users for all the prospective requirements.
6. Effective times for fetching of various records.

Important load testing tools for this project are load runner and win runner .

**Chapter 6**

**Result**

The results that came out of the testing are as follows:

* The SQL database is neatly imported on the apache server.
* Log-In and Log-Out function works properly and identifies security issues.
* PHP scripts are clearly working
* Dashboard is properly visible and all elements are navigable and interactive
* Information inputted by an user is updated in the SQL database i.e keys, id, password etc
* All user information is editable by the user.
* Dual Log-In is not possible.
* Load time speed of the database is as expected
* All graphical elements are working properly
* Following Functions are in DB are working properly:
* the schema
* database tables
* columns
* keys and indexes
* stored procedures triggers
* database server validations
* validating data duplication
* **SQL** Server allows the testers to be able to check and to query the schema of the Database by writing simple queries and not through code

**Chapter 7**

**Conclusion**

The project is well constructed and loaded successfully and the goal of the projects are properly manipulation of data real time through online mode without the expense of money and labour which has been possible .But the project also depends on the connectivity of the server and faces the threat of security and can be further implemented in any organization with respect to its use cases provided security is improved.