PROJECT REPORT

ON

"ASSIGNMENT SUBMISSION PORTAL"

Submitted in partial fulfilment of the requirements for the award of

Diploma in

(Computer Engineering)

SUBMITTED TO

MAHARASHTRA STATE BOARD OF TECHNICAL EDUCATION, MUMBAI

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This is to Certify that the project report entitled "ASSIGNMENT SUBMISSION PORTAL" Was successfully completed by Student of sixth semester Diploma in Computer engineering.

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in partial fulfilment of the requirements for the award of the Diploma in Computer engineering and submitted to the Department of Computer of Government polytechnic Vikramgad work carried out during a period for the academic year 2021-22 as per curriculum

Name of Guide **Name of HOD**

Principal. **External Examiner**

Acknowledgement

It gives me an immense pleasure to submit a Project Planning Report under Capstone Project Planning (22058) having project entitled as "**Assignment Submission Portal**". I tried my level best to Present this report into compact and to the point framework.

I wish to express my sincere thanks with profound gratitude to my guide **Prof. S. S. Gawade** of Computer Engineering for their valuable guidance and constant encouragement without which it Would have been impossible for me to present and complete this project report successfully. I Would like to extend my sincere and true thanks to my HOD, **Dr M. H. Bhalerao** and Principal, **Dr, J. P. Shirsagar** for the facilities provided to me. Let us not forget to thank all our friends for their assistance and help. It is my pleasant privilege to express my sincere gratitude to my Beloved parents, without their blessings I would not be here at this stage of my life. Finally, I Thank to my family for all the support, caring, motivation and understanding throughout this last Year. Their love and care kept me going in the hardest times.

Apologies to those whose help is not acknowledged.

Abstract

As the educational world is moving faster and becoming more competitive, almost every university started to use an online submission system, or newer technologies to facilitate their task, to have more time, and to be in pace with this fast-moving IT world. This project focuses on the development of Online Assignment Submission Portal, the project provides information on things that were acquired during industrial training and how does system help us for our future life. This project is aimed at downloading and uploading online assignments for students; with each assignment having information about the instructions, description, deadline, and submission details.

The most obvious advantage offered by online assignment submission is that it offers faster transmission of assignments than using traditional way by using online system. The interface uses to invoke different testing program by teachers, so save the time and cost for teachers by enabling them to put up a fast response for students as well as increasing the quality of the feedback provided to students. The main aim of our project is to make sure that we create a system that will provide easy handling of assignment and notes.

Assignment submission on time helps to reduce laziness of students on accomplishing several tasks provided by instructors in class. Easy the processing of forming Assignment Groups because student is willing to select themselves to do assignment posted by the instructor in required order of members needed by instructor. To increase the confidential of scholar information such as scholar assignment result. Provision and distribution of academic material such as notes in better ways. Make the system to be able to keep track of what materials are to be offered in each academic year and the current year of studies. Digital marking of Assignment simplify work since the manual system is tiresome and time consuming. Reduce paper work. Increase efficiency of assignment submission and result due to deadline

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Chapter 1

1. Introduction

Nowadays, higher education has become one of the most necessary factors in daily life. Parents send their children to the best colleges and universities that they can afford to make sure their children can acquire knowledge and ready for work. One of the first requirements for recruitment in specialized fields is higher education degrees. According to Value of Education, an average of annual earnings of full-time employee with bachelor's degree is 1.8 times the employee without higher education [1]. Meanwhile, higher education providers such as Universities are becoming more competitive and more concerned about their quality. It is obvious that universities are concerned about their image and rank in national and international states [2]. Universities are ranked based on their performance and quality which are the main concerns of students as well as their future employers. Since the beginning academic education has been evolving and improving itself using different techniques and practices. Higher education is consisting of courses, exams and projects that need to be accomplished to be able to get a bachelor's or master's degree. In modern academic curriculum, the projects are becoming more and more important. Time limitation is an undeniable issue that people face in daily life and work. Student projects are not an exception and most of student and supervisors face this issue during the project progress. Students hardly can manage their time to do their projects and meet their supervisors. This paper will discuss on prototype that will attempt to help in overcoming these issues and provide a good experience for the users. The objective of OPAS system is to be able to monitor and control the students' assignment or project progress as the following

- To increase student and supervisor accessibility and availability.
- To ensure projects are always on-track and on-time by proving project management and monitoring.
- To facilitate file-sharing (increase accessibility and availability of files) as well as reducing redundancy through online repository.
- To facilitate communication and collaboration between supervisor and student by use of collaboration tools.

Informational challenges play a significant role in societal development since they contribute immensely in the proliferation of knowledge. Easy and effective proliferation of knowledge should be the main raison d'être of modern information technology. Colleges and universities are considered the main provider of know-how in various fields. At these institutions, various courses of studies are taught, covering several fields including applied sciences, math and computer. Normally, a given course at college consists of the theoretical as well as practical subject matter. To evaluate the degree of comprehension among students, assignments are given. However, evaluating and marking the assignments by instructors are a problematic and time-consuming process.

Assignment submission is one of the fundamental activities in education. In traditional assignment management schemes, assignments are recorded on paper, floppy disks, and emails. They have to be delivered or organized manually. This is inconvenient and inefficient, and may cause many problems due to material limits and human errors, such as disordered printouts (without page numbers), damaged floppy disks, etc. Furthermore, instructors and students usually are unaware of the ongoing academic information, which can be used to help them find out problems and improve their teaching and learning qualities. Therefore, it becomes important to implement an assignment management method, which can provide both instructors and students with quality educational services

Along with the development of web and Common Gateway Interface (CGI) technologies, more and more web-based systems have been implemented. In such systems, users can handle their management in an extremely convenient way: they can access the systems from anywhere at any time; get responses immediately; make use of countless online resources and share their own with others. More importantly, they do not need to worry about the operating systems and different application software on either server or client side. All they need to have been a browser and the ability to get online.

It is a comprehensive Assignment portal solution for colleges which help to overcome the Challenges in manually submitting assignments. By using this software, it will be very easy for Faculty as well as students to manage the data of Submission.

1.1 Problem Statement

- Students submitting their assignment on Google Drive are visible to everyone, and both the teacher and student can download, edit and also can delete files.
- While Students submitting their assignments through mails can unable to edit or resend Files, and can't respond to teachers if any correction is needed.
- It is complex and very time-consuming process to teachers to check all the submitted Assignment through mail and respond to it if any correction.

1.2 Functional Requirements

1. The system can accept details and save to the in database
2. The system will able to give alert notification to students about status of their confirm Submission.

1.3 Project Scope:

Assignment submission through manually is a complex process and consume lot of time. But through this portal students can submit their assignment at same time. This will also Minimize human errors like submitting wrong name or roll number. By this assignment Submission will go easy.

Chapter 2

LITERATURE REVIEW

2.1 Overview

Online Assignment Submission System is a web-based module that allows Teachers and Students to communicate with each other about the assignments and other academic matter Easily and rapidly. Students can submit assignments; receive academic material and the result of the assignment anywhere at any time. Teachers can check assignments and not only mark Them but also leave their marks about the assignment with some online clicks, and also, they Will be able to post assignment and notes and other materials to students at anyplace at any Time. Many Universities and Colleges are adopting this method to increase Teacher Student Interaction with each other.

2.2 Weaknesses of manually submitting Assignment

- While sharing assignment on Drive anyone have the access of viewing of file and can Download it.
- While mailing assignment it is very complex for teachers to sort it and cannot view it Directly and unable to respond to student if any correction has to be made.

2.3 Separation and isolation of data

When the files are sent on mails and stored them are very complex. It becomes extremely Complex when the data has to be retrieved from more than two files as a large amount of data Has to be searched. Duplication of data: Due to the decentralized approach, the file system Leads to uncontrolled duplication of data. This is undesirable as the duplication leads to wastage of a lot of storage space. It also costs time and money to enter the data more than once.

Chapter 3

METHODOLOGY

3.1 Research Design

3.1.1. PHP

PHP can receive data from forms, generate dynamic page content, can Work with databases, create sessions, send and receive cookies, PHP Can receive data from forms, generate dynamic page content, can work with databases, create sessions, send and receive cookies.

3.1.2. Bootstrap

It has a lot of components, a good grid system, styling for many HTML elements ranging from typography to buttons, as well as support of JavaScript plugins, making it even more flexible.

3.2. Propose system

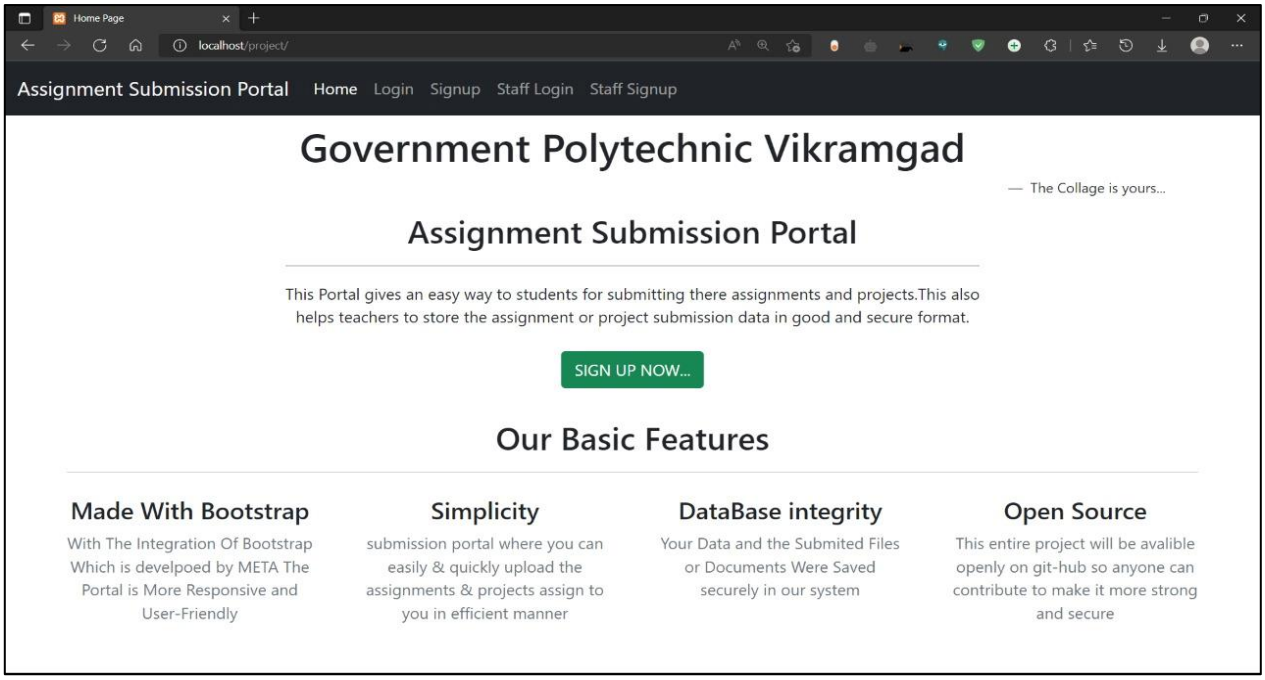
The system was designed based on our teaching and studying experience at Government Polytechnic, Vikramgad. It can perfectly meet the needs of most instructors and students. The system applications are installed on *XAMPP*, an Apache web server with Windows operating system. All CGI scripts are written in PHP and generate a set of friendly dynamic HTML pages according to user requests. This system also implements a Database system, which uses MySQL DBMS (Database Management System). Because of the cross-platform attributes of OHP and MySQL, this system can easily migrate to other operating systems or employ to other DBMSs with slight modifications. The main features of the system and its implementation will be discussed in detail in the following sections.

3.2.1 Features – From a User's Perspective

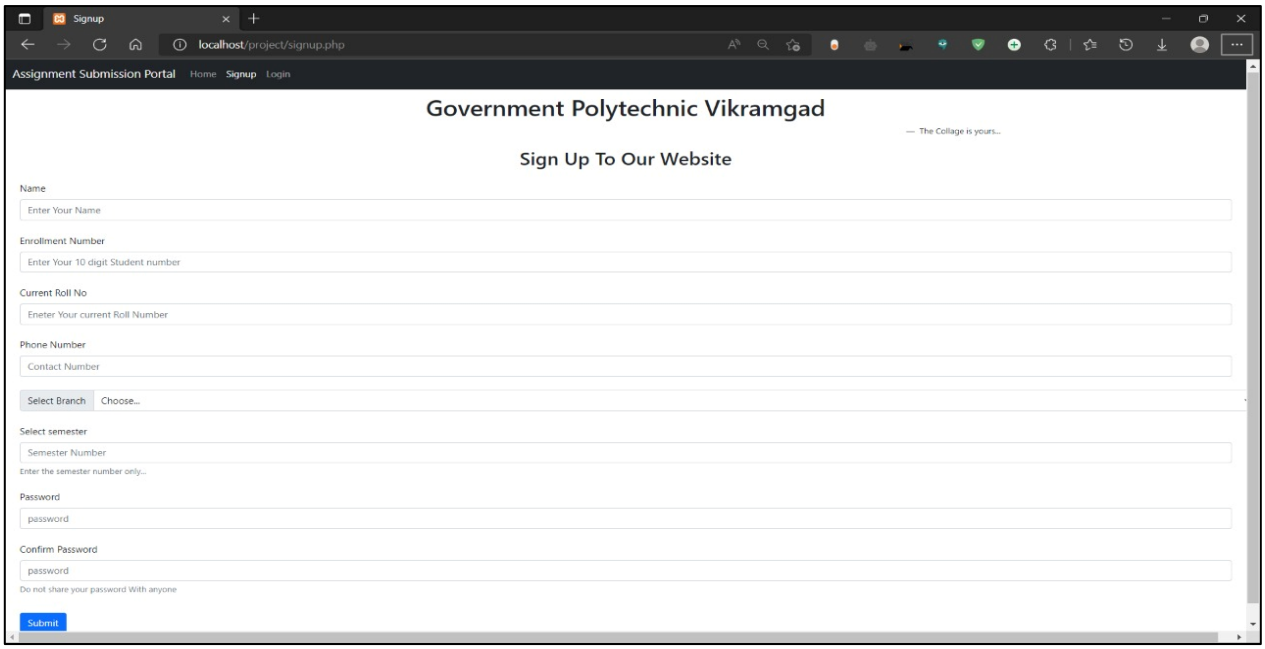
Three types of users typically handle different tasks in Assignment Submission Portal: admin, teachers and students. For an administrator, the main tasks are database cleanup and database initialization. Database initialization includes submission schedule and instructor information initialization. For teachers, the main tasks are: posting assignments topics, which may include both electronic files and hand-outs; monitoring assignment submission status; grading; checking class academic status; and searching student information. For a student, tasks include checking posted homework assignments, uploading electronic assignment files, and checking both personal and class academic status. All users access the system via a login page, which is shown in Figure 1. Upon logging in, the system automatically executes user identification validating process. If both the user's name and password are considered valid, the user enters the system. Otherwise, an error message will prompt the user to attempt the login process again.

PHP stands for Hypertext Pre-processor.

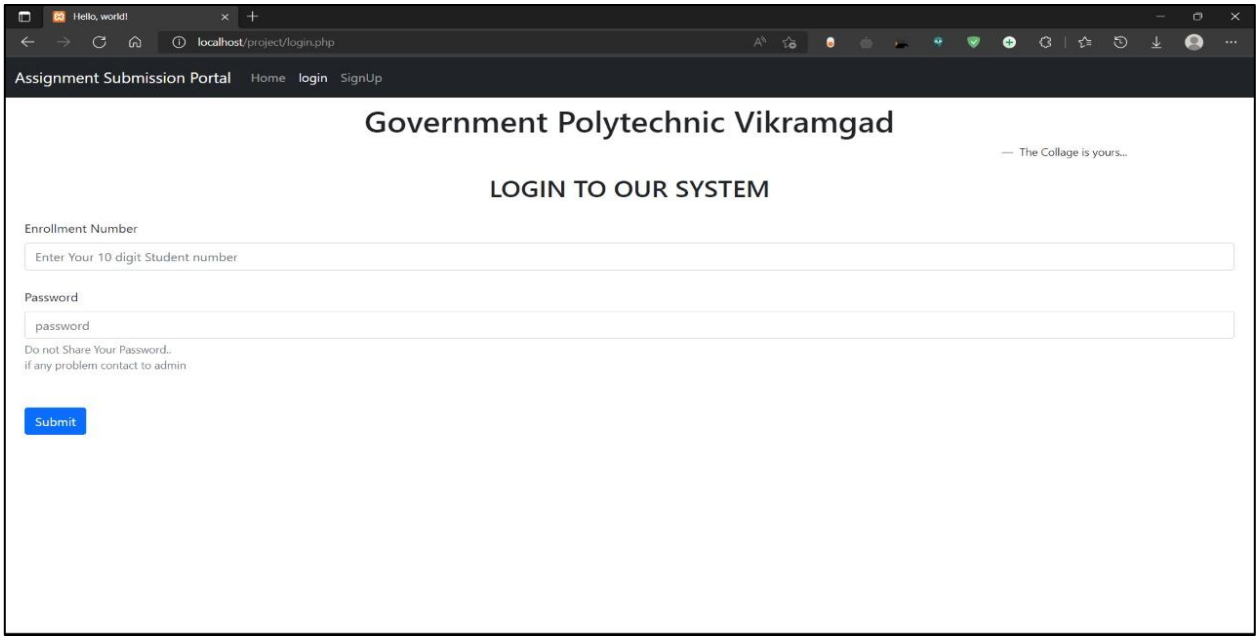
3.3. **Output Screen**



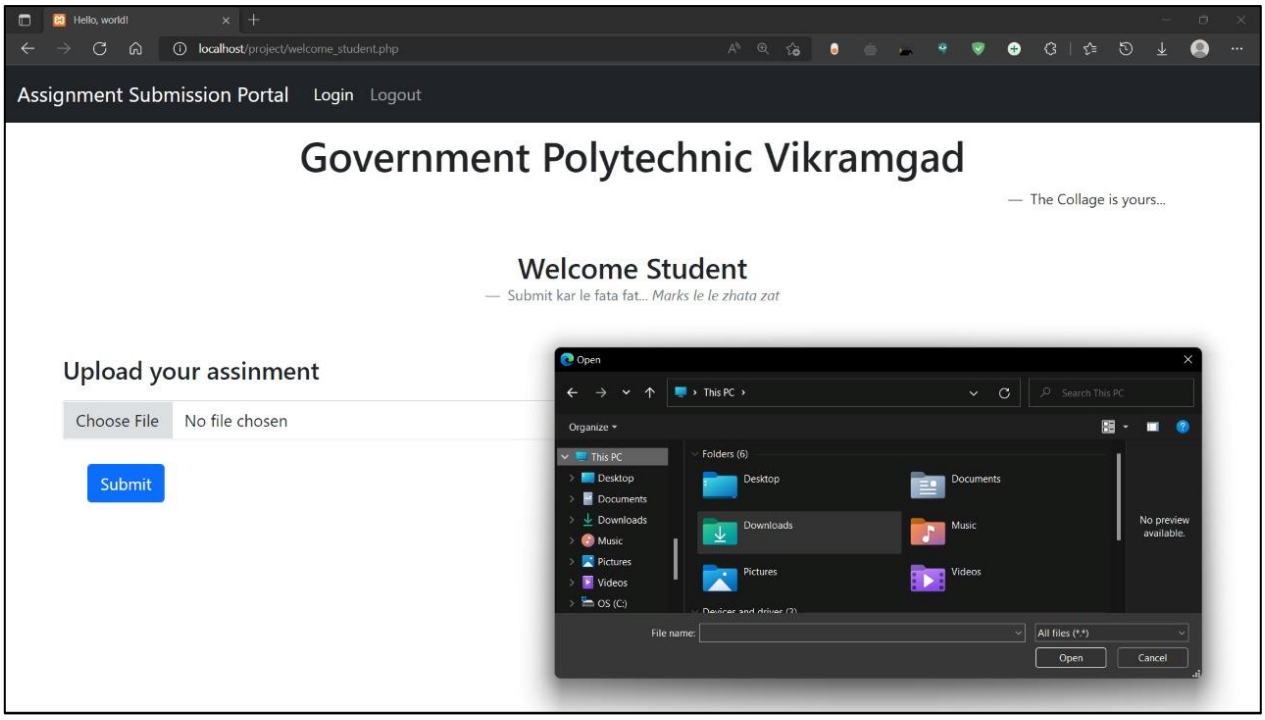
3.3.1. Home Page



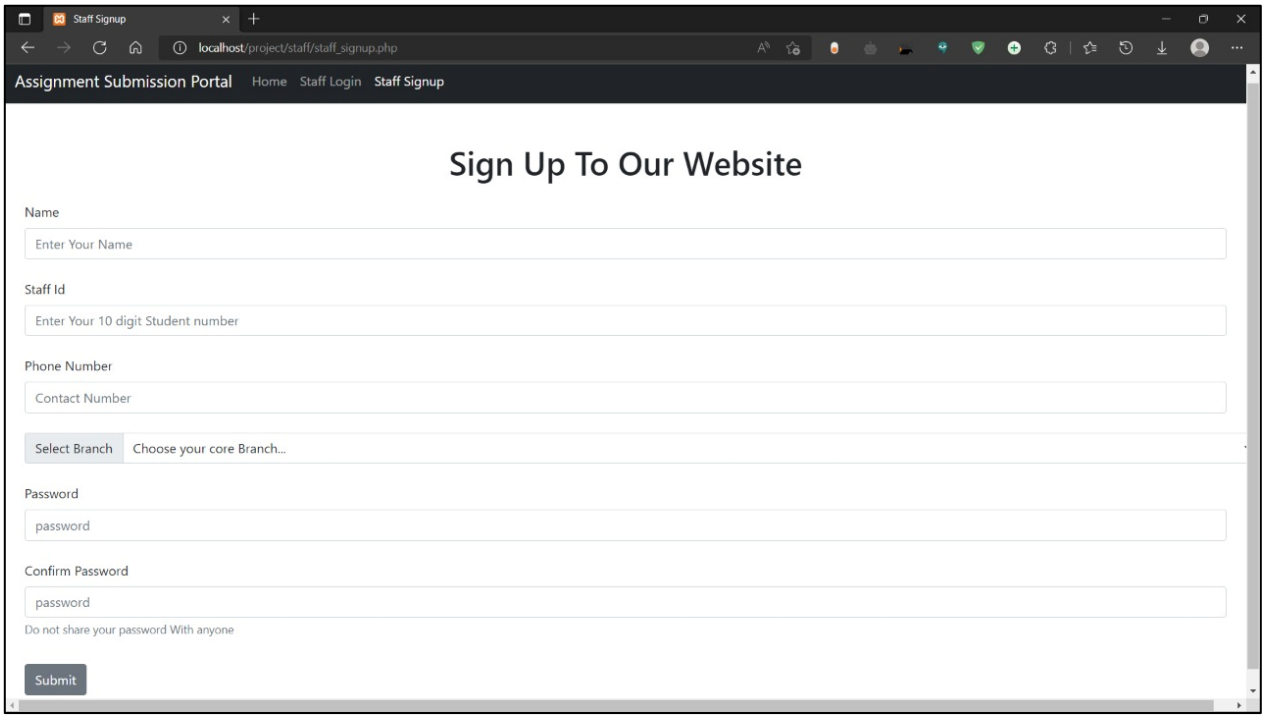
3.3.2. Students Registration



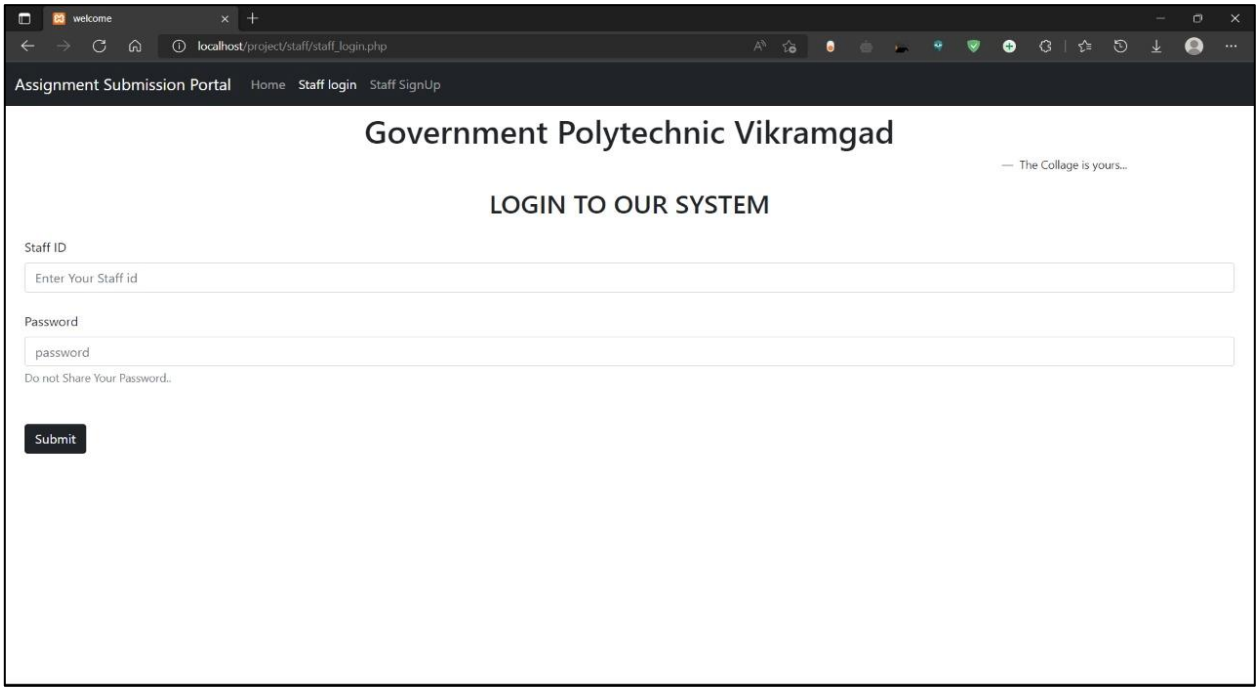
3.3.3. Students' login



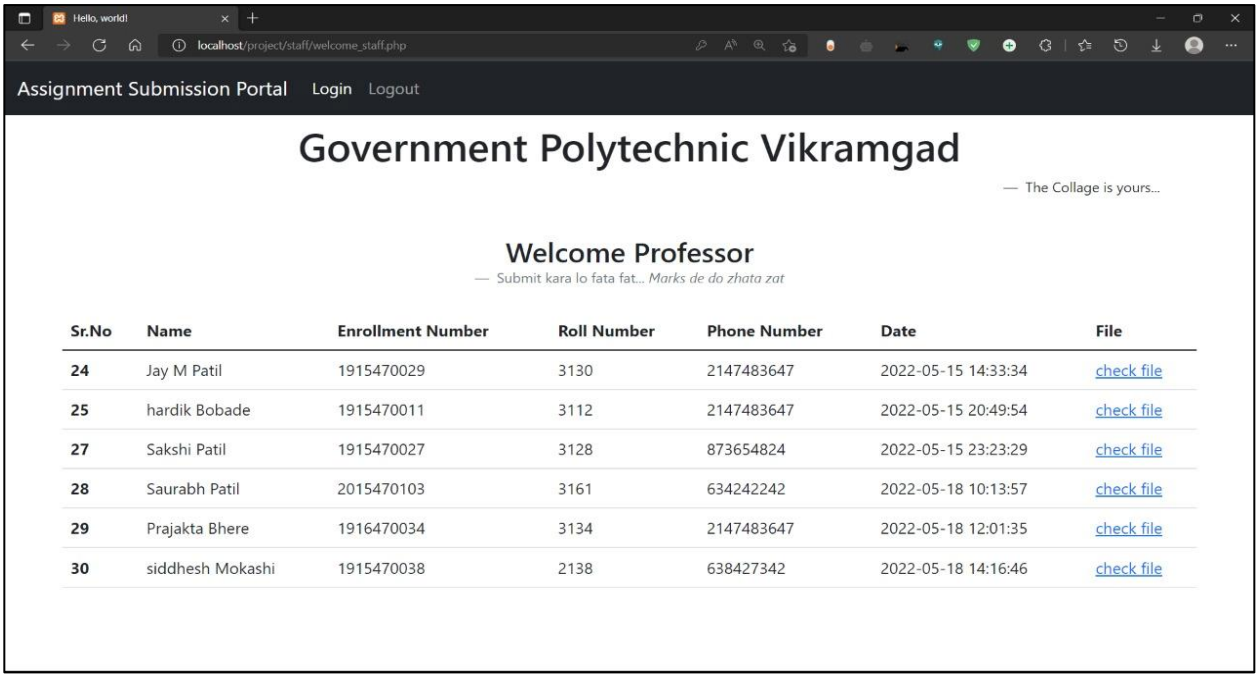
3.3.4. Students welcome page



3.3.5. Staff Registration



3.3.6. Staff login



Sr.No	Name	Enrollment Number	Roll Number	Phone Number	Date	File
24	Jay M Patil	1915470029	3130	2147483647	2022-05-15 14:33:34	check file
25	hardik Bobade	1915470011	3112	2147483647	2022-05-15 20:49:54	check file
27	Sakshi Patil	1915470027	3128	873654824	2022-05-15 23:23:29	check file
28	Saurabh Patil	2015470103	3161	634242242	2022-05-18 10:13:57	check file
29	Prajakta Bhere	1916470034	3134	2147483647	2022-05-18 12:01:35	check file
30	siddhesh Mokashi	1915470038	2138	638427342	2022-05-18 14:16:46	check file

3.3.7. Staff Welcome Page

3.4. Tools for developing online system:

3.4.1. VS Code

Visual Studio Code is a source-code editor. We used html, bootstrap to make website responsive.

3.4.2. Xampp

Xampp is a free and open-source cross-platform web server solution stack package developed by Apache

3.4.2.1. Localhost

XAMPP helps a local host or server to test its website and clients via computers and laptops before releasing it to the main server.

3.4.2.1. MariaDB

MariaDB is an open-source relational database management. System (DBMS) that is a compatible drop-in replacement for the widely. Used MySQL database technology.

3.5. Database back-end and web-based administration tool 5

3.5.1. PHP

WE used some functions in php to connect database, to display data of the database table. They are as given below.

Mysqli_num_rows()

The mysqli_num_rows() function is an inbuilt function in PHP which is used to return the number of rows present in the result set. It is generally used to check if data is present in the database or not. To use this function, it is mandatory to first set up the connection with the MySQL database.

The mysqli_connect() function establishes a connection with MySQL server and returns the connection as an object. There are four parameters used inside the mysqli_connect() function are as following:

Host is optional and it specify the host name or IP address. Username is optional and it specify MySQL username. In local server username is root. Password is optional and it specify MySQL password. Database name is database name where operation perform on data. It also optional.

Mysqli_querry

The mysqli_query() function accepts a string value representing a query as one of the parameters and, executes/performs the given query on the database.

HTML processing includes form processing and dynamic HTML generation. User input information is usually stored in HTML forms and is sent to the server with an HTTP request. GET and POST are the two methods used in form transmission. Compared to GET, in which data is sent as part of the URL (Uniform Resource Locator) so form values are visible to users, POST is more secure because form data is placed in the environment variable PATH_INFO and can only be decoded by CGI programs.

3.5.2. MySQL

We used MySQL queries to perform operations on database. MySQL query is any command that used to retrieve the data from a table. MySQL can be used for querying the data, filtering data, sorting data, joining the tables, grouping data, modifying the data.

3.6 Graphical front-end

The front-end of a website is the part that users interact with everything that you see when you're navigating around the internet, from fonts and colours to dropdown menus and sliders.

3.6.1. Bootstrap

Bootstrap is an intuitive and powerful front-end framework for developing responsive, mobile first project on the web. It has collection of html and css components facilitates faster and easier development of website.

3.7. Database Design

Providing user good interaction with system was a very important task during system design. One crucial thing of this is to let system be aware of as much as possible information, such as: instructor and student information, class information, and student academic information. Therefore, an information system is required for maintaining these data.

CGI script is one of several technologies used to generate dynamic web pages. Here is how it works. First, a server listens to port 80 on the host machine. When it gets the connection request from the client side, the server establishes an HTTP connection between itself and the browser. Second, when the server gets an HTTP request from a browser, it takes all the input and passes it as input to the CGI script. Once the CGI script terminates, the server returns its script output to the browser and closes the connection. By studying the working flow carefully, we can see that each time an HTTP request is made to the CGI script, a new process for the program is invoked and then terminated. There is no way to store any information in variables within the program to be accessible next time. That's why we say that HTTP is a stateless protocol, i.e., "the server doesn't maintain or store any request-related information from one transaction to the next". Nevertheless, CGI scripts need to preserve their states for information sharing. How to make this happen? The solution is to use some external storage. Usually, there are three categories of such storage: browser/client side, flat files, and a database.

In the browser/client-side strategy, three approaches can be used: query strings (with or without extra path information), hidden fields, and client-side cookies. Simplicity of implementation and no concurrency problems are the most benefits of these methods, but they are more appropriate for storing small amounts of information. Flat files can be used to store a relatively large amount of information and are fairly simple to implement, but concurrency control is difficult when multiple users are trying to write to the same file at the same time.

Locking can be used to solve this problem, but it may lead to poor concurrency. Deadlock is another potential problem of using locks. It happens if a file is not successfully unlocked and other

processes are all waiting for this lock. Increasing the number of files can reduce locking conflicts, but the resulting information inconsistency between different files may cause other troubles.

Compared to the other two strategies, using a database is more powerful in data management. Any concurrency issues can be handled by the DBMS. Databases appeared prior to the emergence of World Wide Web. It is not an exaggeration to say that databases have changed our world and made our lives much easier. Take library management system as example. With database management applications, one does not have to walk through all racks in the library to find the books he/she wants. Instead, he/she can use the computers at the library, input some simple information about the books, and then search all the books by title, author, ISBN number, or even a keyword. Until now, most information in the world has been stored in databases, so connecting web pages to databases is a natural and necessary step for sharing information with the world. A database back-end can support many critical functions on the web. Let's think about the library system again. By integrating a database with web pages, users can search book information from any online libraries even at home, and librarians can update library information from any computer connected to the Internet. Therefore, a good assignment management system should be able to provide users with powerful, convenient services via good interaction. This is why we have chosen to use a DBMS in the AMS system.

Currently, there are many DBMS products in the market, including Oracle, DB2, Sybase, etc. They are all fully featured and highly optimized because they are designed to handle heavy tasks with very complex data relationships. That is why these systems are inevitably expensive. MySQL is suitable for small-scale database applications. Although compared to those large systems MySQL may lack some features, it is free, lightweight, fast and robust. MySQL perfectly matches the needs of this project. We are using MySQL Version 3.22.32.

The interface between MySQL and PHP is DBI, which stands for Database Independent Interface. Before DBI, in order to connect any specific DBMS, PHP needs to use the corresponding Application Programming Interface (API), such as Mysql.pm for MySQL. This will cause problems when it is necessary to upgrade current system to a new DBMS or to connect different databases within one Perl script. DBI has been created to solve this problem. The name of Database

Independent comes from two-layer interface structure. The bottom is the database dependent layer, which contains modules for each type of database accessible from PHP.

Database independent layer lies on the top of these modules and is the real interface to access databases. By using such a common API, programmers only need to care about one interface,

and new databases can be easily imported by adding its DBI module to the dependent layer, thus portability is enhanced. Furthermore, the DBI interface is robust and has become a standard in PHP programming.

The database created for this system is users, which can be divided into two parts: *staff* and *students*. Staff parts contain seven columns. Column *Sr.no*, Column *Name*, Column *Staff_id*, Column *Phone No*, Column *Branch*, Column *Password*, Column *date*. Also, Students parts contain nine columns Column *Sr.no*, Column *Name*, Column *enrollNo*, column *rollNo*, Column *Phone_No*, Column *Branch*, Column *sem*, Column *Password*, Column *date*.

The Students table is used to store Student details. The staff table is used to store students details along with their assignment files. They are both maintained by admin. STUDENT table is populated automatically when instructors create class lists. It is used to maintain students' personal information and their A account information. When instructors set up topic for their assignments, the settings are saved to the COURSE table and can be retrieved later for computing student final grades. All assignment information is maintained in the staff table.

Primary keys are used in each table to ensure uniqueness and query efficiency. The following is an example of creating the STUDENT table.

3.8. System Security

Before the appearance of CGI technology, the World Wide Web had been a relatively secure way for cross-site resource sharing, because only static web pages could be sent in reply to a browser request. As soon as a CGI script is put online, anyone can run the application from almost anywhere in the world. This is amazing but also scary, because it means that users have gained higher authorities on the web server. Along with the development of CGI technology, network security has gained more and more attention of web programmers, since hackers have caused much damage to the web servers through the Internet. Cross-site scripting is an attack that tricks a user into

submitting scripting code to a dynamic form on the target web server, which can later cause all kinds of damage if the danger is not detected by the web server. As Paul Lindner said in his online article Preventing Cross-site Scripting Attacks, “The cross-site scripting attack is one of the most common security problems facing web developers today”. There are also many other forms of attacks that work directly on the operating system or applications on the web server. The compromise of even a user account may cause risks to the entire network system. Therefore, much attention has been paid to the security problem in the implementation. The first step for system security is the password protected user accounts. Each user has his/her own unique account ID and a password. To access the system, a user has to provide valid identification. Otherwise, any access request will be rejected.

The security of the database is as important as the server itself since it maintains all the useful information of the Assignment Submission system. MySQL uses its own database server MySQL Portal to ensure security. The database uses is created with the installation of MySQL. It contains two tables: staff and student. The student table specifies what each user is allowed to do. The staff table controls the accesses to individual databases and tables. During implementation, three different types of users were created for the system: admin, instructor, and student.

As one can see from the user table, three types of users were created. They can access the MySQL server only via the web server xampp. User passwords are encrypted by the PASSWORD () function. This function is not reversible, which means no one can guess the real password by reversing the encrypted password into the original one. When users attempt to connect to the database with their real passwords, the server performs the same calculations and compares results with the values saved in the user table. If the comparison fails, the server rejects the connection request. Please notice that in the user table, we assigned instructor and student users no permissions. This scheme enables users to connect to the server but nothing else. All detailed permissions are defined in the db table. The rule of thumb for database security is: never give users more privileges than they have to have. We assigned these users access permissions only to database assignment submission system, and only select, insert, update, and delete operations can be done to its tables. The exception is to administrator users who have full control over the system.

Although MySQL provides database-level and table-level securities, deletion of users is still a problem for database security. Hackers may operate some malicious deletions and destroy everything on the server. The implementation applied a fake deletion strategy to avoid this kind of

attack. Fake deletion means that data are not really deleted from database although to users they appear to have been deleted. Take the assignment deletion as an example. In some cases, the instructor needs to delete an assignment, and everything related to this assignment, including assignment information and all related student academic records, will be deleted and will not be visible again to users after the deletion. It is a very dangerous operation because the potential exists to lose all information. In the implementation, when a user sends such kind of requests to the server, the CGI script will warn user of the serious consequences. The real moves will be made to the database only after the user reconfirms his/her request. Furthermore, only assignment records can be deleted from the database. All student academic records will remain untouched. Later, when the user needs to check the class academic status, only the student records that related to the assignments currently existing in the ASSIGNMENT table will be presented. From the user's point of view, all deletions have been made. If an instructor deleted an assignment mistakenly or if some hacker by whatever means entered the Assignment Submission Portal system and maliciously deleted all assignments of a course, only the assignment information needs to be recovered. The instructor can use the Add Assignment
function to re-input assignment information, thus all student information is visible again. The same strategy is also used in deletion of student information.

User input is always a potential problem of system security. Some users can always surprise people by their "creativity". Therefore, no assumptions should be made on the data from users. In other words, never trust the browser. User input can come from either URL addresses or HTML forms, so each time an HTTP request is sent to the server, CGI script needs to check both parts.

Let's talk about the URL check first. The content of URL is visible and can be modified by users. At the beginning of the system implementation, the current user's account ID was saved in the URLs of main function bar. In this way, the current user can easily access other users' information by changing the user ID from the browser address field. We have solved this problem by using hidden fields. Other users may try to break into the system by avoiding the login process. In this implementation, each action was assigned a unique name. When the CGI script is called, it retrieves the action name from the HTML form. If the action name is invalid or is empty (which is the case when a user calls it directly without going through the login page), the login page will be displayed and the user is forced to redo the log on transaction.

HTML form input can cause even more trouble if the input is not carefully checked. For example, to add a new student to the class list, an instructor needs to input the student information. Invalid

or mistaken inputs can cause database errors, such as duplicate records, different records with same user ID, same user ID with different student IDs, or different user IDs with the same student ID. To avoid such errors, all user inputs are checked by system before any operation is done to the system or database. If the input is found to be invalid, the system terminates the current transaction and returns an error message to the user.

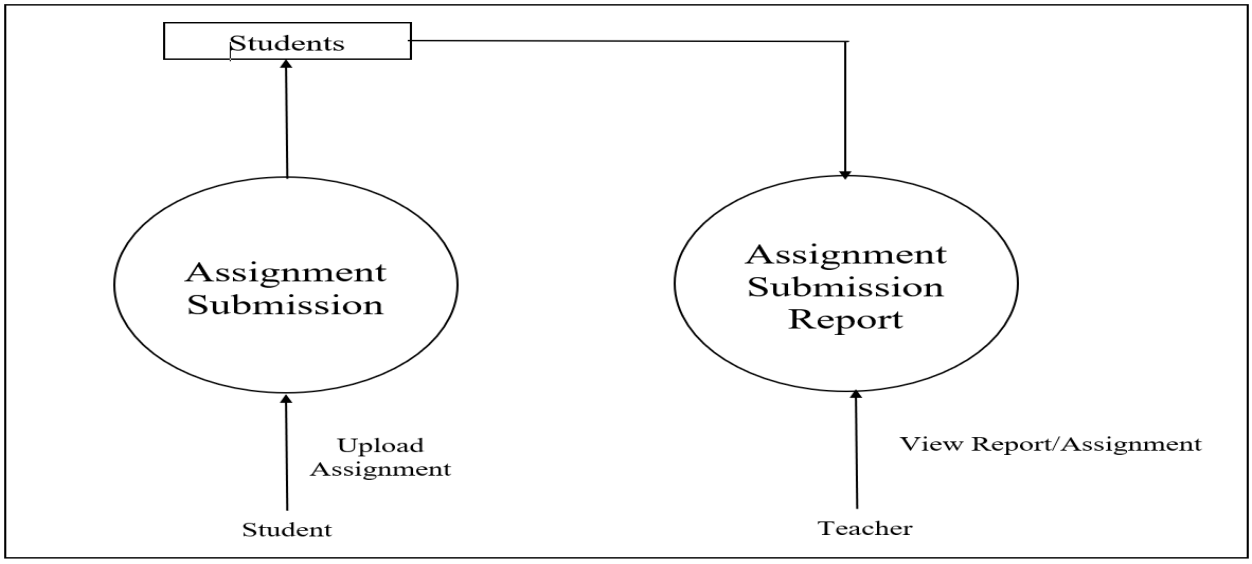
Allowing users to upload files to a web server may be a huge security hole because the upload directory has to be open to the users. To limit the access privileges to the smallest group of users, the upload directory was set to be accessible only by nobody users. The upload directory, including its descendant subdirectories, has to be fully opened to nobody users since they need to create subdirectories and files under it. During the uploading process, the system first creates

a new file on the server, and then copies the contents of original file to the new file. Problems may happen if the filename on the server side is generated dynamically. Let's take a look at the following example. A user may be able to access the root of the web server file system by using ". /. /" path in the file field. Thus, some very important system files such as the system password file may be exposed. Or, a user may try to overwrite other files (both system files or other users' user files), by using the * character in the file field. In this system, filename restrictions are put on the inputs. If any dangerous symbols such as. / or * are found, the input is considered insecure. In addition, the size of the uploading file and capacity of each assignment directory are also restricted to some reasonable range. If any user tries to upload an unreasonably large file or countless files with the intent to use up all free space on the server, the size restrictions can prevent the attacks.

For a secure system, it is important to maintain a system log file, which can keep track of users operations on the server side. It also may be helpful for system administrators in identifying malicious users and dangerous operations. If any damage has been done to the system, a good log file can help with the system recovery. Although both Linux and MySQL systems have their own system log files, it is still necessary to create a particular log file for the Assignment Submission system itself. In this system, three log files are created for three types of users. The content of the log files follows the format of the SQL language, so that the administrator can easily back up old data by executing these commands in order. File locks are used here to ensure the file consistency. Each process has to gain an exclusive lock before it executes writing to the log files. To avoid deadlock happening, the system assigns each process a maximum waiting time for gaining the lock.

If the assigned amount of time has passed and the process still cannot gain the lock, the process automatically sends an error report email to the administrator and jumps to the next step.

3.9. DATA FLOW DIAGRAMS



3.9.1 Data Flow Diagram level 1

A data flow diagram is graphical tool used to describe and analyse movement of data through a system. These are the central tool and the basis from which the other components are developed. The transformation of data from input to output, through processed, may be described logically and independently of physical components associated with the system. These are known as the logical data flow diagrams.

The physical data flow diagrams show the actual implements and movement of data between people, departments and workstations. A full description of a system actually consists of a set of data flow diagrams. Using two familiar notations Yourdon, Gane and Sarson notation develops the data flow diagrams.

Each component in a DFD is labelled with a descriptive name. Process is further identified with a number that will be used for identification purpose. The development of DFD'S is done in

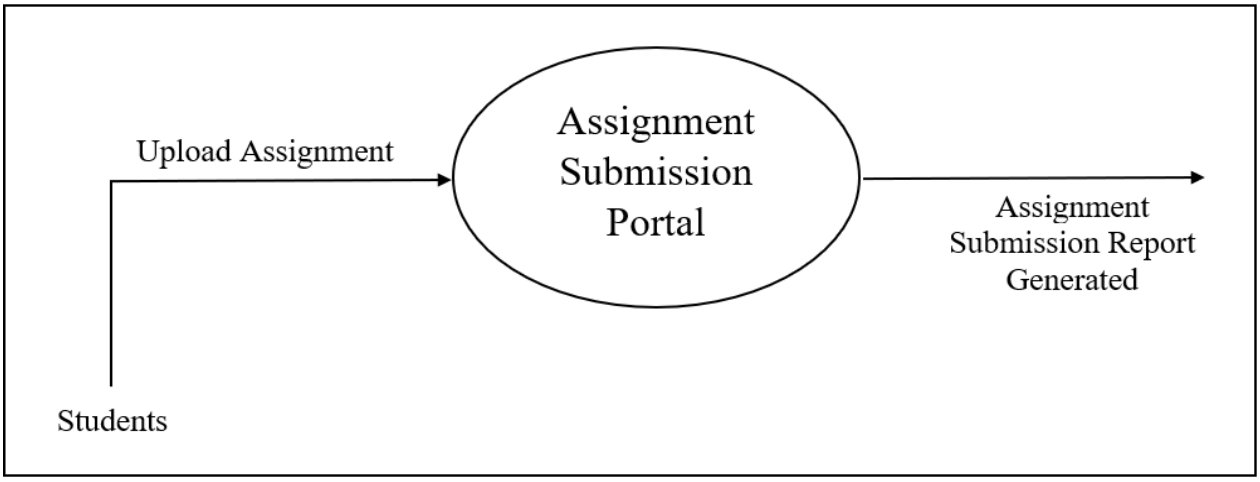
several levels. Each process in lower-level diagrams can be broken down into a more detailed DFD in the next level.

The top-level diagram is often called context diagram. It consists a single process bit, which plays vital role in studying the current system. The process in the context level diagram is exploded into other process at the first level DFD.

The idea behind the explosion of a process into more process is that understanding at one level of detail is exploded into greater detail at the next level. This is done until further explosion is necessary and an adequate amount of detail is described for analyst to understand the process.

Larry Constantine first developed the DFD as a way of expressing system requirements in a graphical from, this led to the modular design.

A DFD is also known as a “bubble Chart” has the purpose of clarifying system requirements and identifying major transformations that will become programs in system design. So, it is the starting point of the design to the lowest level of detail. A DFD consists of a series of bubbles joined by data flows in the system.

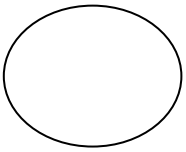


3.9.2 Data Flow Diagram level 0

3.10. DFD SYMBOLS:

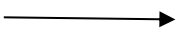
In the DFD, there are four symbols

1. A square defines a source(originator) or destination of system data
2. An arrow identifies data flow. It is the pipeline through which the information flows
3. A circle or a bubble represents a process that transforms incoming data flow into outgoing data flows.
4. data flow Source or Destination of data Data flow Data Store.



Process that transforms data flow

Source or Destination of data



Data flow

Data Store

3.10.1. CONSTRUCTING A DFD:

Several rules of thumb are used in drawing DFD'S:

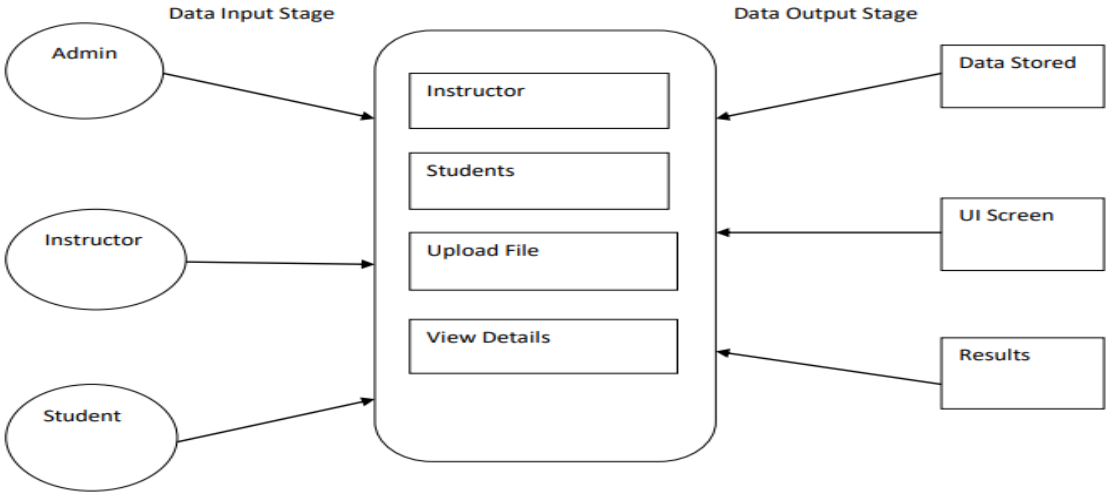
1. Process should be named and numbered for an easy reference. Each name should be representative of the process.
2. The direction of flow is from top to bottom and from left to right. Data traditionally flow from source to the destination although they may flow back to the source. One way to indicate this is to draw long flow line back to a source. An alternative way is to repeat the source symbol as a destination. Since it is used more than once in the DFD it is marked with a short diagonal.

3. When a process is exploded into lower-level details, they are numbered.

4. The names of data stores and destinations are written in capital letters. Process and dataflow names have the first letter of each work capitalized

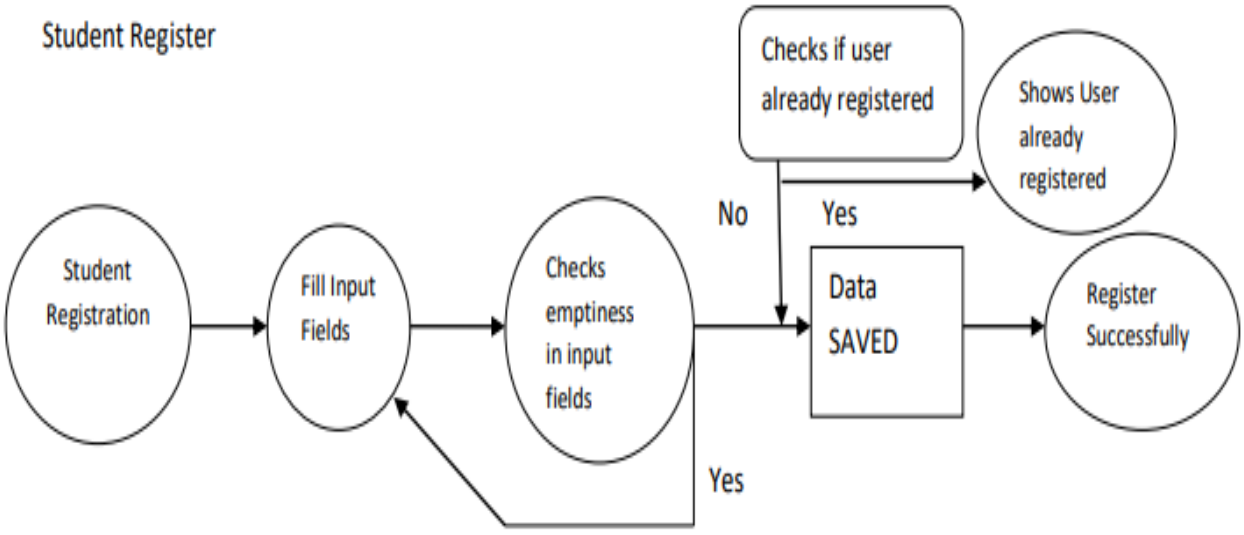
5. A DFD typically shows the minimum contents of data store. Each data store should contain all the data elements that flow in and out. Questionnaires should contain all the data elements that flow in and out. Missing interfaces redundancies and like is then accounted for often through interviews.

Context Level DFD:



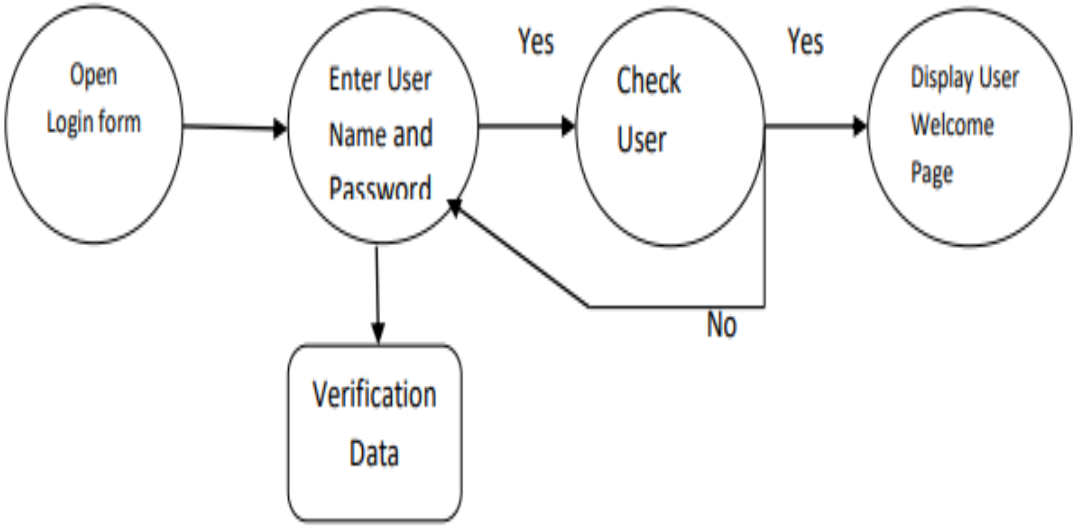
3.9.3 Context Level DFD

DFD Student Signup



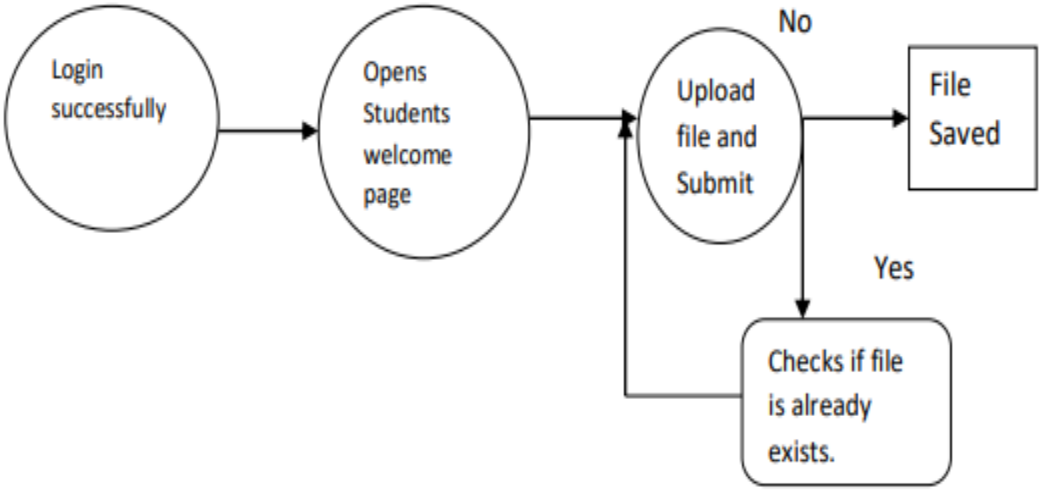
3.9.4 Data Flow Diagram Student Signup

DFD Student Login:



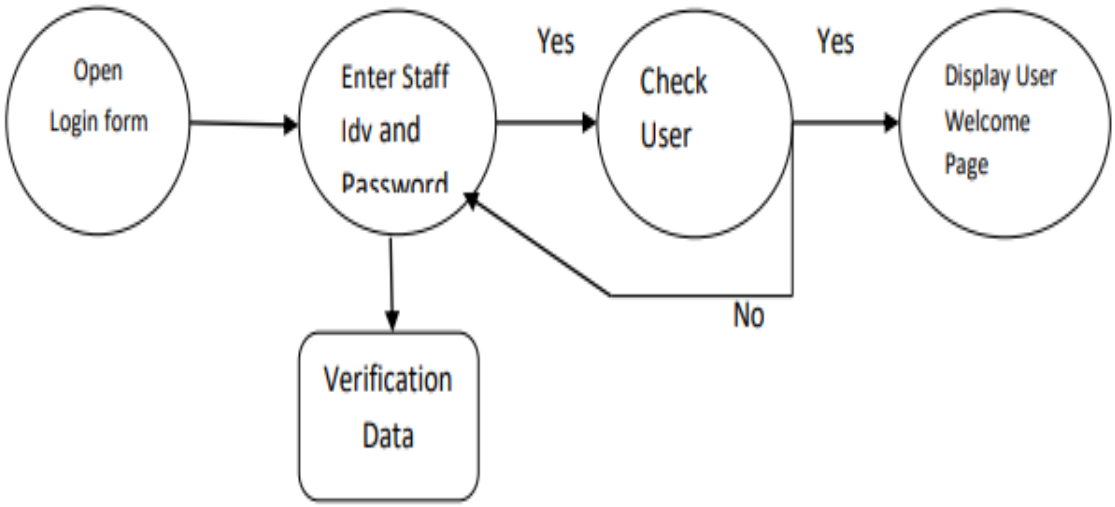
3.9.5 Data Flow Diagram Student Login

DFD Student Welcome Page



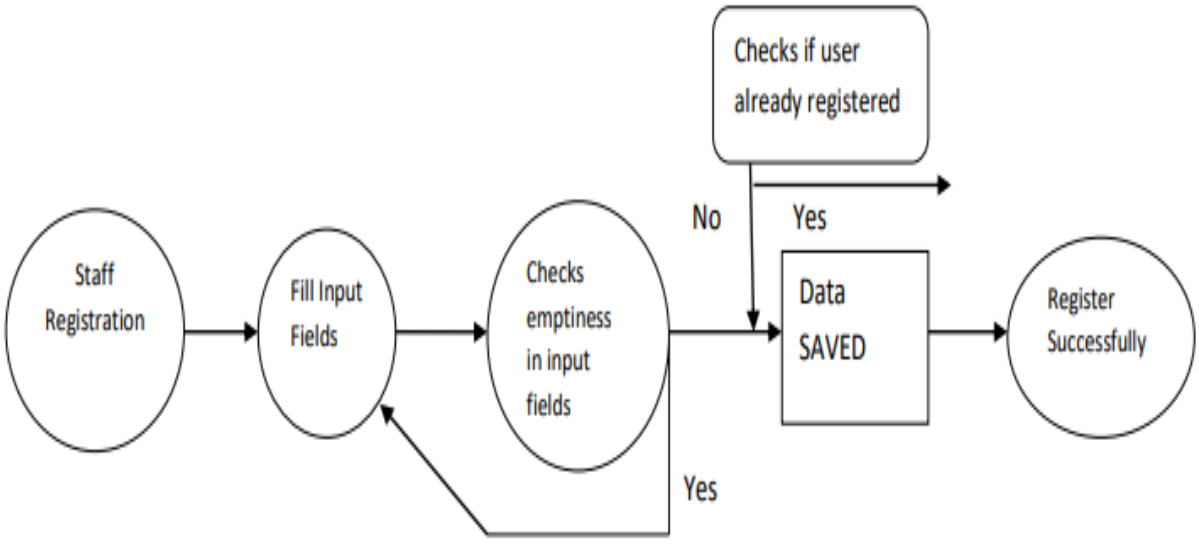
3.9.6 Data Flow Diagram Student Welcome

DFD Staff Signup



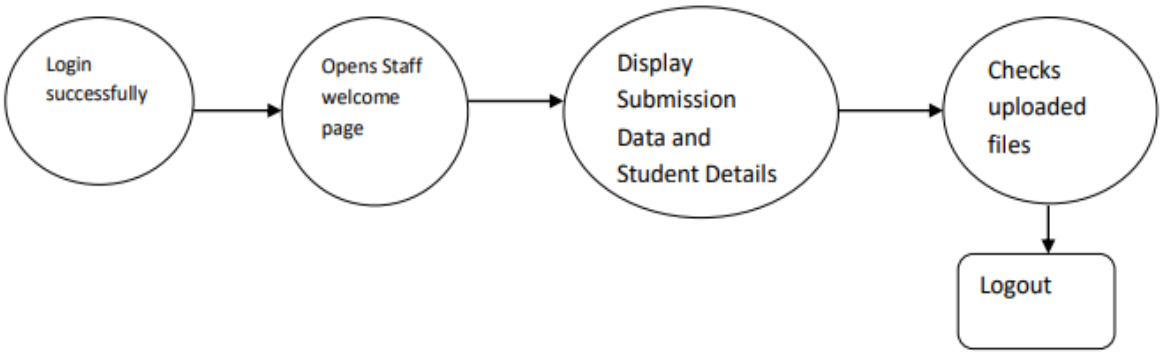
3.9.7 Data Flow Diagram Staff Signup

DFD Staff Login



3.9.8 Data Flow Diagram Staff Login

DFD Staff Welcome



3.9.2 Data Flow Diagram Staff Welcome

3.11. DATA DICTIONARY

After carefully understanding the requirements of the client the entire data storage requirements are divided into tables. The below tables are normalized to avoid any anomalies during the course of data entry.

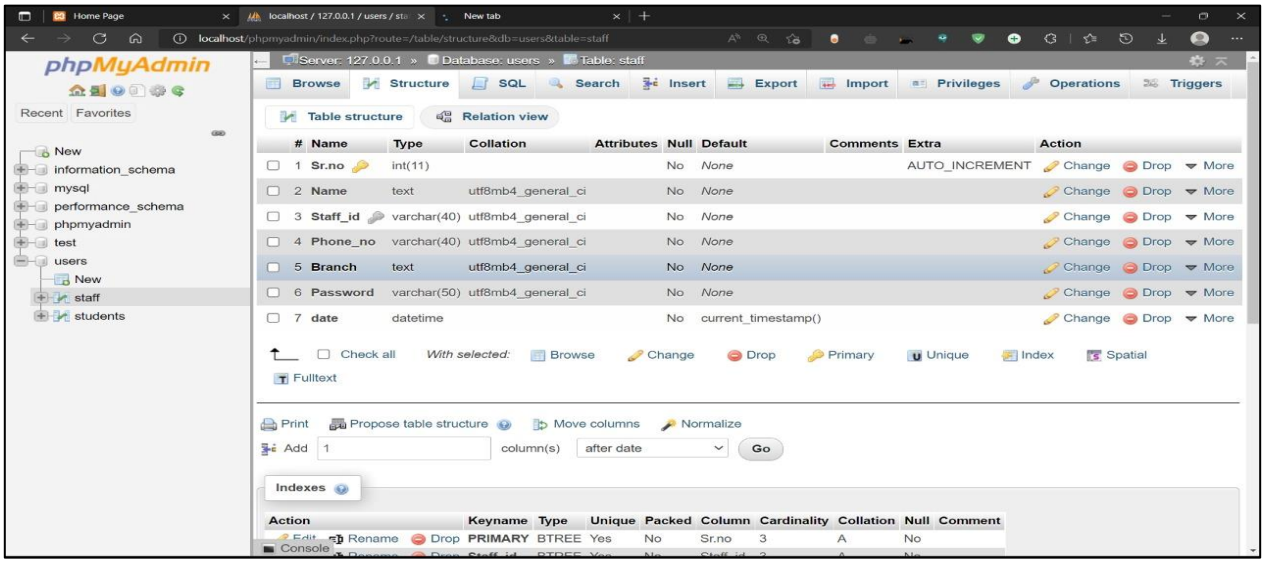


Table1: Staff

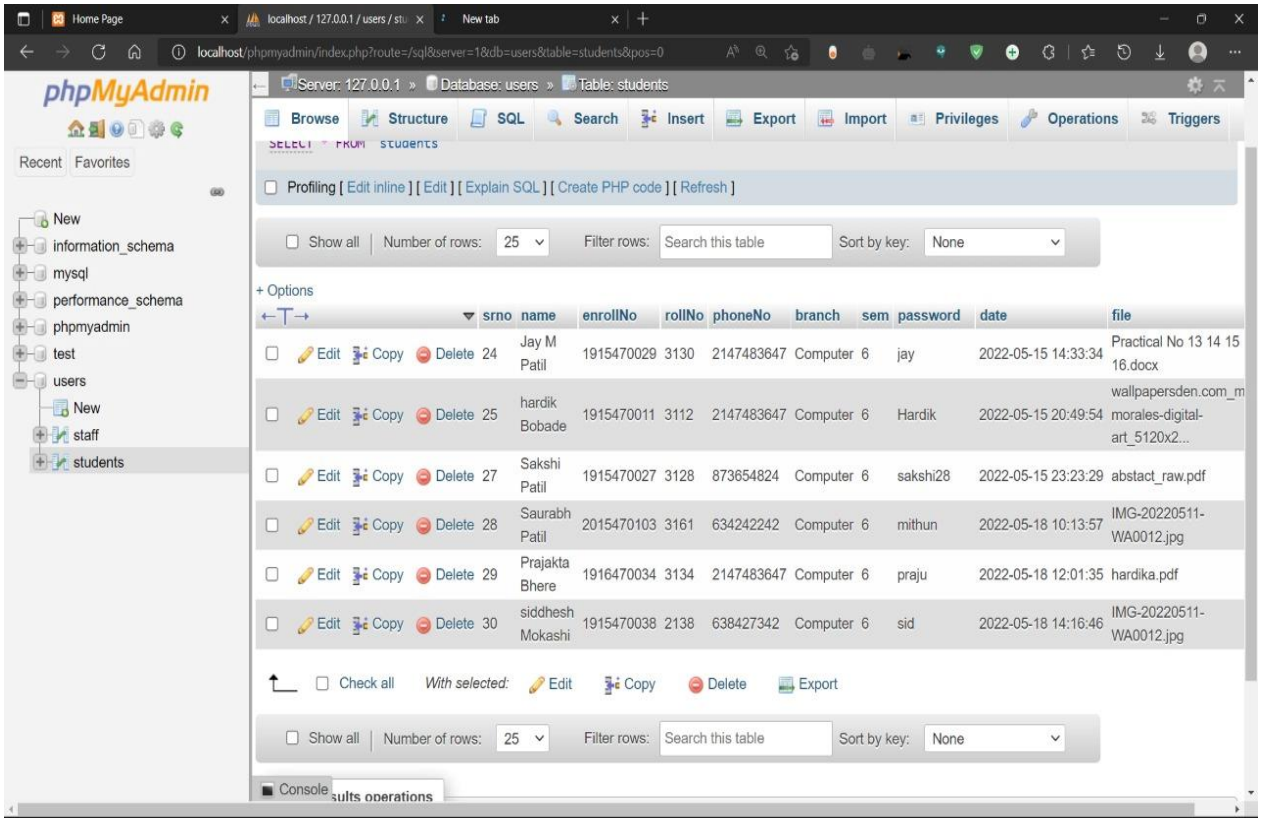


Table2: student

Chapter 4

SYSTEM TESTING

4.1 INTRODUCTION

Software testing is a critical element of software quality assurance and represents the ultimate review of specification, design and coding. In fact, testing is the one step in the software engineering process that could be viewed as destructive rather than constructive.

A strategy for software testing integrates software test case design methods into a well-planned series of steps that result in the successful construction of software. Testing is the set of activities that can be planned in advance and conducted systematically. The underlying motivation of program testing is to affirm software quality with methods that can economically and effectively apply to both strategic to both large and small-scale systems.

4.2 STRATEGIC APPROACH TO SOFTWARE TESTING

The software engineering process can be viewed as a spiral. Initially system engineering defines the role of software and leads to software requirement analysis where the information domain, functions, behaviour, performance, constraints and validation criteria for software are established. Moving inward along the spiral, we come to design and finally to coding. To develop computer software, we spiral in along streamlines that decrease the level of abstraction on each turn.

A strategy for software testing may also be viewed in the context of the spiral. Unit testing begins at the vertex of the spiral and concentrates on each unit of the software as implemented in source code. Testing progress by moving outward along the spiral to integration testing, where the focus is on the design and the construction of the software architecture.

Talking another turn on outward on the spiral we encounter validation testing where requirements established as part of software requirements analysis are validated against the software that has been constructed. Finally, we arrive at system testing, where the software and other system elements are tested as a whole.

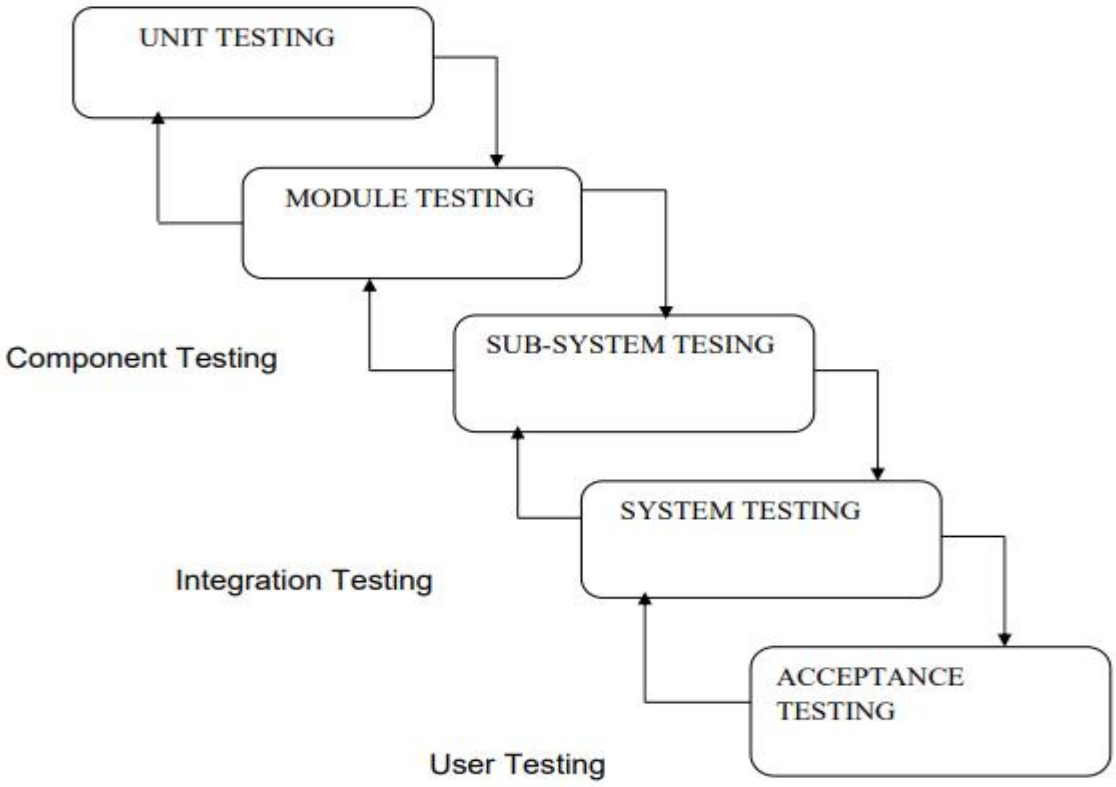


Figure 4.1 Testing Types

4.3 Unit Testing

Unit testing focuses verification effort on the smallest unit of software design, the module. The unit testing, we have is white box oriented and some modules the steps are conducted in parallel.

1. WHITE BOX TESTING

This type of testing ensures that

- All independent paths have been exercised at least once

- All logical decisions have been exercised on their true and false sides UNIT TESTING MODULE TESTING SUB-SYSTEM TESING SYSTEM TESTING ACCEPTANCE TESTING Component Testing Integration Testing User Testing
- All loops are executed at their boundaries and within their operational bounds

All internal data structures have been exercised to assure their validity. To follow the concept of white box testing we have tested each form. we have created independently to verify that Data flow is correct, all conditions are exercised to check their validity, all loops are executed on their boundaries.

2. CONDITIONAL TESTING

In this part of the testing each of the conditions were tested to both true and false aspects. And all the resulting paths were tested. So that each path that may be generate on particular condition is traced to uncover any possible errors.

3. DATA FLOW TESTING

This type of testing selects the path of the program according to the location of definition and use of variables. This kind of testing was used only when some local variables were declared. The definition-use chain method was used in this type of testing. These were particularly useful in nested statements.

4. LOOP TESTING In this type of testing

all the loops are tested to all the limits possible. The following exercise was adopted for all

loops:

- All the loops were tested at their limits, just above them and just below them.

- All the loops were skipped at least once.
- For nested loops test the inner most loop first and then work outwards.
- For concatenated loops the values of dependent loops were set with the help of connected loop.

- Unstructured loops were resolved into nested loops or concatenated loops and tested as above. Each unit has been separately tested by the development team itself and all the input have been validated.

4.4 TEST CASES:

Test cases are derived to ensure that all statements in the program have been executed at least once during testing and that all logical conditions have been executed. Using White-Box testing methods, the software engineer can drive test cases that

- Guarantee that logical decisions on their true and false sides.
- Exercise all logical decisions on their true and false sides.
- Execute all loops at their boundaries and within their operational bounds.
- Exercise internal data structure to assure them validate

Chapter 5

Conclusion:

The currently implemented Assignment Management System provides instructors and students powerful features to handle assignments. The friendly HTML pages allow users to work easily and conveniently. The utilization of DBMS produces high system efficiency in data manipulation. Cross platform attributes of Perl and MySQL make it a portable system on most operating systems with slight modifications. In addition, the system security is strengthened by multiple security schemes.

The database design is very important during implementation because the database structure can significantly affect system efficiency and flexibility. Currently, the database structure is constructed in a very flexible manner, so that new data attributes or items can be easily added to the system without changing current structure significantly.

For further implementation, more features can be added to the system, such as the management of backup data or disaster recovery. More information could be explored according to users' requirements.

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