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CHAPTER 1: INTRODUCTION

Even though most college administrative work has been computerized, the lecture timetable scheduling is still mostly done manually due to its inherent difficulties. The manual lecture-timetable scheduling demands considerable time and efforts. The lecture-timetable scheduling is a Constraint satisfaction problem in which we find a solution that satisfies the given set of constraints.

Time Table generator is for remove the clashing of the teachers' lecture and to manage information of the students. It contains an admin side from where a user can manage all the timetables and records easily.

When making timetable of exams and lecture, it is so difficult to manage all the lectures and subjects without clashing, and the process of making this is time taken.

Time table generator makes a proper timetable without any clashing in very less time. User can also manage teachers, course/year/section, subjects, room, class, and exam schedule. The users can also view class archive records.

CHAPTER 2: SPECIFICATION REQUIREMENTS

2.1 HARDWARE REQUIREMENTS

The most common set of requirements defined by any operating system or software application is the physical computer resources, also known as hardware. A hardware requirements list is often accompanied by a hardware compatibility list (HCL), especially in case of operating systems.

Table 2.1: HARDWARE REQUIREMENTS FOR PRESENT PROJECT

HARDWARE REQUIREMENTS	
PROCESSOR	Intel (R) Core (TM) i37020U CPU @2.30 GHZ
RAM	8.00 GB
HARD DISK	221 GB
MONITOR	Standard colour monitor
KEYBOARD	Standard Keyboard
MOUSE	Standard Monitor

2.2 SOFTWARE REQUIREMENTS

Software Requirements deal with defining software resource requirements and pre-requisites that need to be installed on a computer to provide optimal functioning of an application. These requirements or pre-requisites are generally not included in the software installation package and need to be installed separately before the software is installed.

Table 2.2: SOFTWARE REQUIREMENTS FOR PRESENT PROJECT

SOFTWARE REQUIRMENTS	
OPERATING SYSTEM	Windows 10 Home Single Language
UI DESIGN	HTML, Bootstrap, CSS
CLIENT SIDE SCRIPTING	JavaScript
SERVER SIDE SCRIPTING	PHP
DATABASE	MySQL
LOCAL SERVER	APACHE

CHAPTER 3: TECHNOLOGY USED

3.1 HTML

Hypertext Markup Language (HTML) is the standard markup language for creating web pages and web applications. With Cascading Style Sheets (CSS) and JavaScript, it forms a triad of cornerstone technologies for the World Wide Web. Web browsers receive HTML documents from a web server or from local storage and render the documents into multimedia web pages. HTML describes the structure of a web page semantically and originally included cues for the appearance of the document.

HTML can embed programs written in a scripting language such as JavaScript which affects the behaviour and content of web pages. Inclusion of CSS defines the look and layout of content. The World Wide Web Consortium (W3C), maintainer of both the HTML and the CSS standards, has encouraged the use of CSS over explicit presentational HTML since 1997.

3.2 CSS

CSS Stands for **"Cascading Style Sheet"** Cascading style sheets are used to format the layout of Web pages. They can be used to define text styles, table sizes, and other aspects of Web pages that previously could only be defined in a page's HTML.

While CSS is great for creating text styles, it is helpful for formatting other aspects of Web page layout as well. For example, CSS can be used to define the cell padding of table cells, the style, thickness, and color of a table's border, and the padding around images or other objects. CSS gives Web developers more exact control over how Web pages will look than HTML does. This is why most Web pages today incorporate cascading style sheets.

3.3 JAVASCRIPT

JavaScript often abbreviated as JS, is a high-level, interpreted programming language. It is a language which is also characterized as dynamic, weakly typed, prototype-based and multiparadigm. Alongside HTML and CSS, JavaScript is one of the three core technologies of World Wide Web content engineering. It is used to make

dynamic web pages interactive and provide online programs, including video games. The majority of websites employ it, and all modern web browsers support it without the need for plug-ins by means of a built-in JavaScript engine. Each of the many JavaScript engines represent a different implementation of JavaScript, all based on the ECMA Script specification, with some engines not supporting the spec fully, and with many engines supporting additional features beyond ECMA.

Although there are strong outward similarities between JavaScript and Java, including language name, syntax, and respective standard libraries, the two languages are distinct and differ greatly in design; JavaScript was influenced by programming languages such as self and Scheme.

3.4 APACHE

The Apache web server, more popular as simply Apache, represents an open-source web server platform lying in the basis of most of the websites we see today on the World Wide Web. Looking back at the time when it was introduced in mid-90's and gradually adopted as a preferred server platform on the web, we could state that Apache acted as the main driving force behind today's web expansion. As a web server 'pioneer', Apache has turned into a standard for the development of other successful web server platforms.

The Apache web server is a work of the Apache Software Foundation open source community. Namely the fact that it is backed up by the efforts of many supporters worldwide keeps it so well maintained and regularly updated with new useful features and functionalities up to the latest quality and security requirements in HTTP service delivery.

3.5 MySQL

MySQL is a database management system that is used by Word Press to store and retrieve all your blog information. Think of it this way. If your database is a filing cabinet that WordPress uses to organize and store all the important data from your website (posts, pages, images, etc), then MySQL is the company that created this special type of filing cabinet.

For users that are not comfortable writing their own PHP and SQL scripts, most web hosting providers offer easy to use web applications to manage databases. One such web application is phpMyAdmin which allows users to manage their database using a web based graphical interface. You can manipulate your tables visually while phpMyAdmin runs the SQL queries for you.

3.6 PHP

PHP is a server side scripting language. that is used to develop Static websites or Dynamic websites or Web applications. PHP stands for Hypertext Pre-processor, that earlier stood for Personal Home Pages.PHP scripts can only be interpreted on a server that has PHP installed. The client computers accessing the PHP scripts require a web browser only. A PHP file contains PHP tags and ends with the extension ".**php**".

3.7 BOOTSTRAP

Bootstrap is a powerful front-end framework for faster and easier web development. It includes HTML and CSS based design templates for common user interface components like Typography, Forms, Buttons, Tables, Navigations, Dropdowns, Alerts, Modals, Tabs, Accordion, Carousel and many other as well as optional JavaScript extensions. Bootstrap also gives your ability to create responsive layout with much less efforts.

CHAPTER 4: FUNCTIONAL SPECIFICATION

Time Table Generator is a web based application which guides you about time table management. This project includes mainly 3 main modules:

- Admin
- Teacher
- Student

4.1 ADMINISTRATIVE MODULE

The page requires user id and password to start the application. Login is a process by which individual access to a computer system is controlled by identifying and authenticating the user through the cardinalities presented by the user. Admin can add or delete the category, subcategory etc.

- **Add teachers:** Add the teacher's details such as name, id, designation, mobile number, email etc.
- **Add subjects:** Add the subject details such as name of the subject, subject code, class etc.
- **Add classrooms:** Add the classrooms details like classroom number etc.
- **Add courses:** Add the course details.
- **Allotment:** Allotting the subjects to teachers like theory subjects, practical subjects, classrooms etc.
- **Generate timetable:** Generates the timetable for teacher and class wise timetable.

4.2 TEACHER MODULE

Teacher can register by admin. The teacher have to login to get more information about the time schedule.

- View other teacher's timetable.
- View their timetable.
- Download the copy of timetable.
- View student's timetable

4.3 STUDENT MODULE

Students can just visit the site and they can check their timetable schedule and they can download it for their own purpose easily.

CHAPTER 5: SYSTEM IMPLEMENTATION

5.1 DATA FLOW DIAGRAM

Data flow diagram is a graphical representation of data movement, process files used in support of an information system. Unlike detail flow charts, DFDs do not supply detailed description of modules but graphically describe a system's data and how the data interact with the system.

Workflow focuses on what happens to the data through various points in the system. A data flow diagram represents the information at each processing points in the system and the direction it takes from the source and destination.

To construct a data flow diagram, we use

- Arrows
- Circles
- Open-ended boxes
- Squares

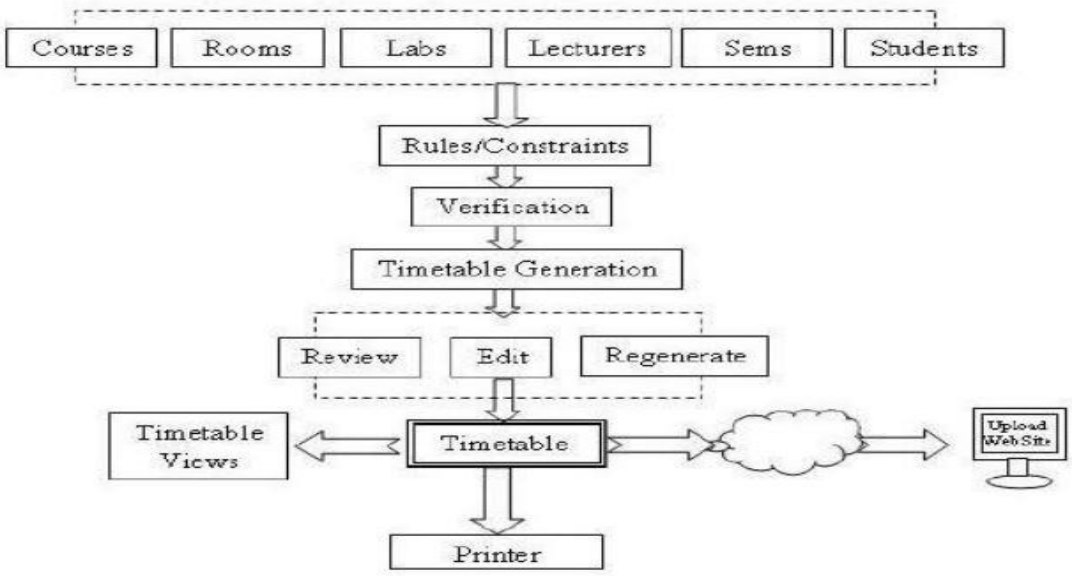

Figure 5.1 DATA FLOW DIAGRAM

5.2 ENTITY-RELATIONSHIP DIAGRAM

The Entity-Relationship (ER) model was originally proposed by Peter in 1976 as a way to unify the network and relational database views. Simply stated the ER model

is a conceptual data model that views the real world as entities and relationships. A basic component of the model is the Entity-Relationship diagram which is used to visually represent data objects.

E-R data model employs three basic notions: entity sets, relationship sets and attributes.

Entity set: An entity is a thing or object in the real world that is distinguishable from all other objects. An entity has a set of properties and values of some properties uniquely define the entities.

Attributes: Attributes are the descriptive properties possessed by each member of an entity set. Each entity may have its own value for each attribute.

Relationship set: A relationship is an association among several entities. A relationship set is the set of the relationships of same type.

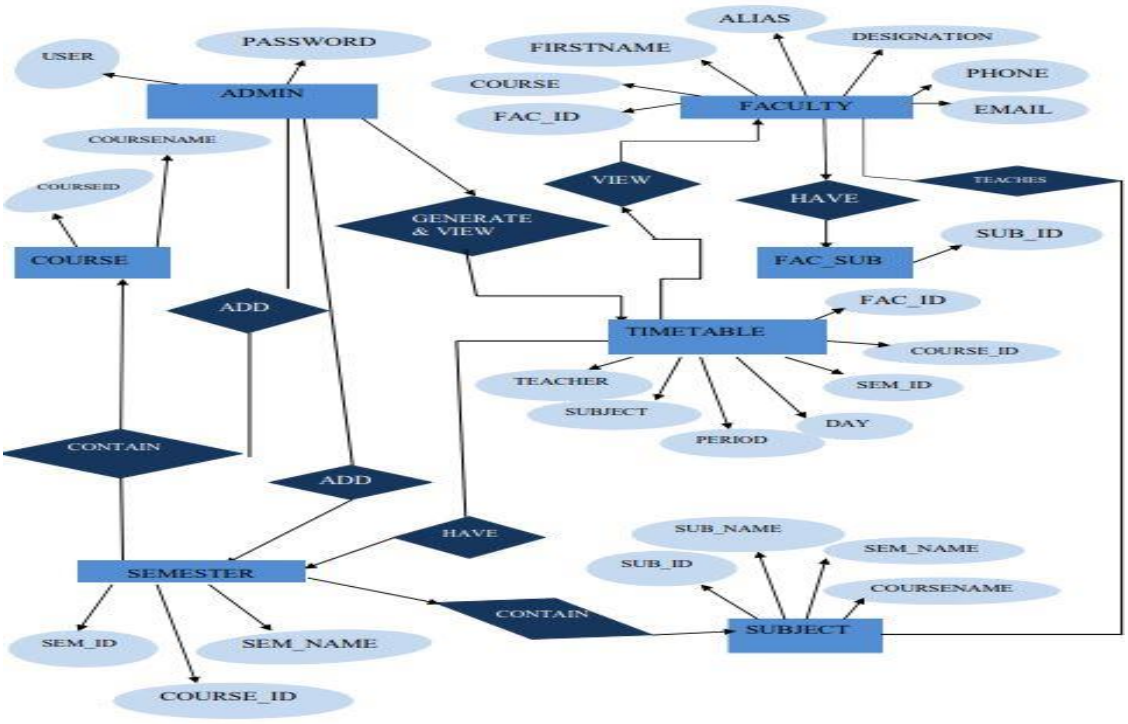

Figure 5.2 ER DIAGRAM

CHAPTER 6: TESTING

6.1 SOFTWARE TESTING

Software testing is an activity to check whether the actual results match the expected results and to ensure that the software system is Defect free. It involves execution of a software component or system component to evaluate one or more properties of interest. Software testing also helps to identify errors, gaps or missing requirements in contrary to the actual requirements. It can be either done manually or using automated tools. Some prefer saying Software testing as a white box and Black Box Testing.

6.2 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.

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.

6.2.1 **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
- All loops are executed at their boundaries and within their operational bounds
- All internal data structures have been exercised to assure their validity.

6.2.2 **BASIC PATH TESTING:** Established technique of flow graph with Cyclomatic complexity was used to derive test cases for all the functions. The main steps in deriving test cases were: Use the design of the code and draw correspondent flow graph. Determine the Cyclomatic complexity of resultant flow graph, using formula:

$$V(G) = E-N+2 \text{ or } V(G) = P+1$$

6.2.3 **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.

6.2.4 **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 variable were declared. The definition-use chain method was used in this type of testing. These were particularly useful in nested statements.

6.2.5 **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.

CHAPTER 7: SCREENSHOTS

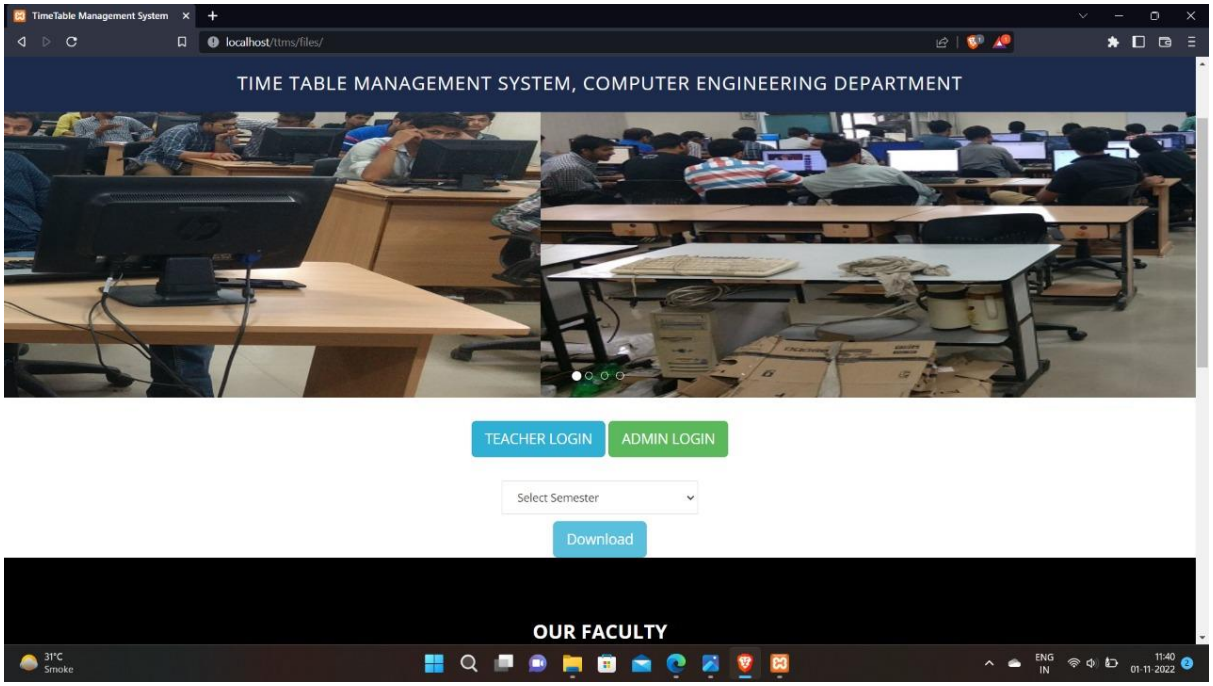

Figure 7.1 LOGIN PAGE

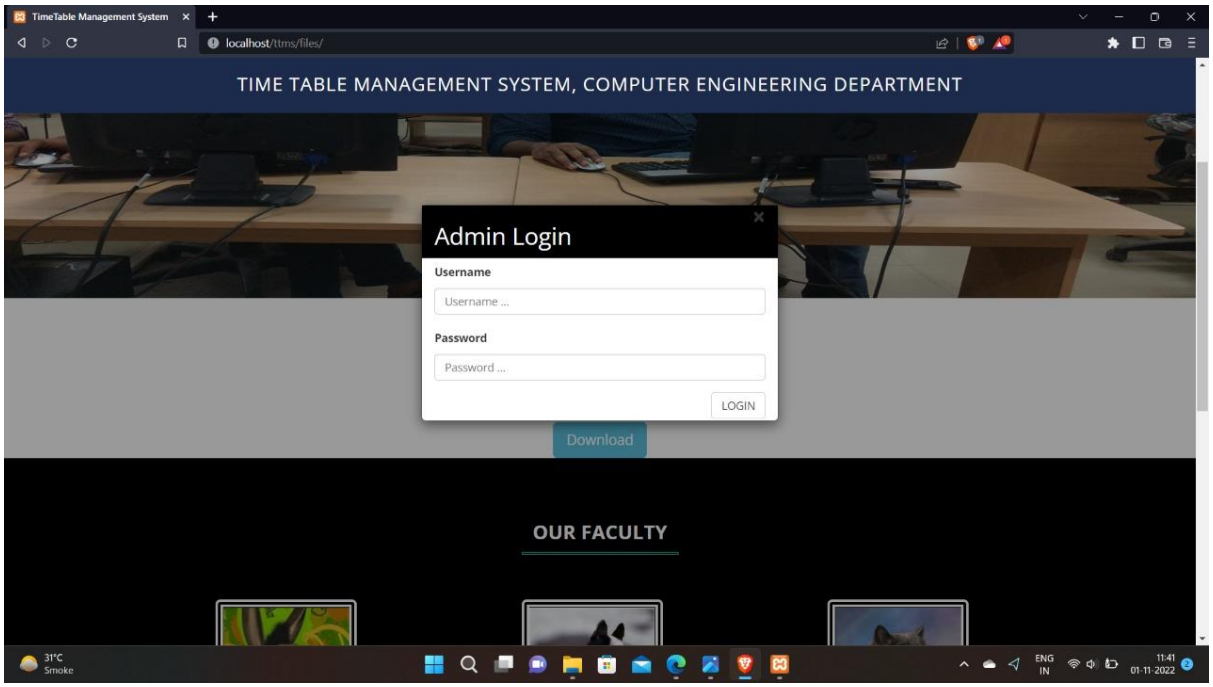

Figure 7.2 ADMIN LOGIN

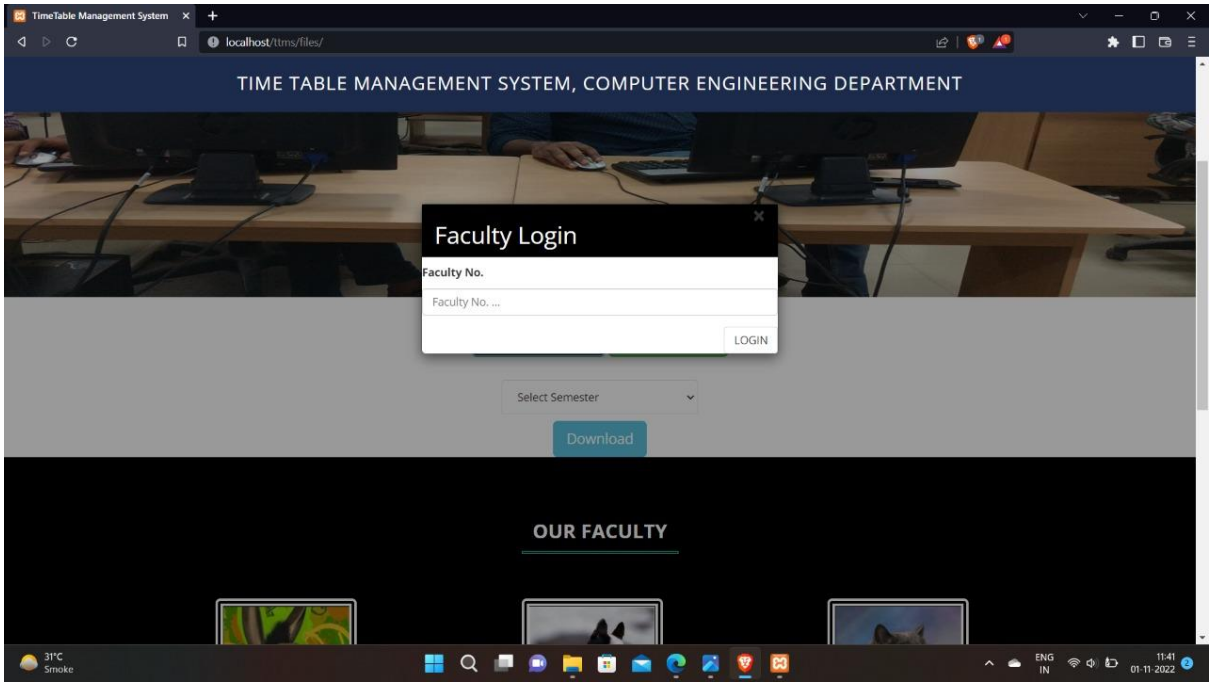

Figure 7.3 FACULTY LOGIN

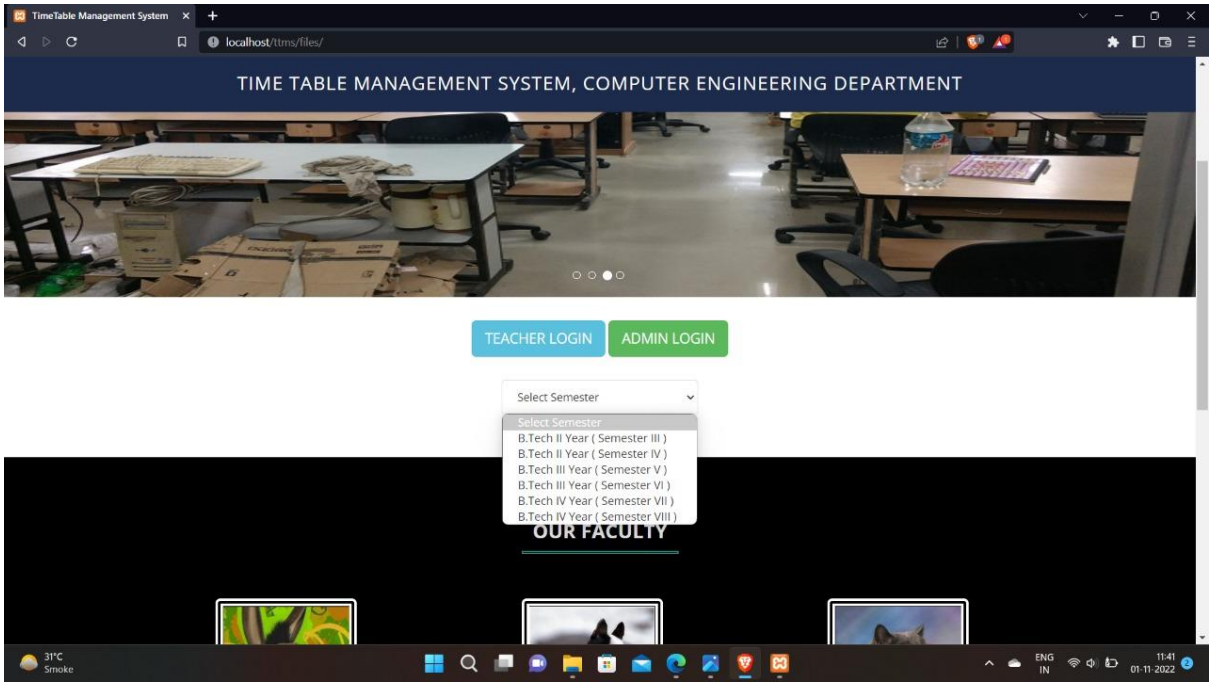

Figure 7.4 SEMESTER SELECTION

CHAPTER 8: FUTURE ENHANCMENT

We think that not a single project is ever considered as complete forever. Because our mind is always thinking something new and our necessities also are growing day by day. We always want something more than what we have.

Our application also, If you see at the first glance then you find it to be complete but we want to make it still mature and fully automatically.

This project can be easily implemented under various situations. We can add new features as and when we require. Reusability is possible as and when require in this project. There is flexibility in all the modules.

The system can have following changes in future:-

- To generate Timetable for all classes this uses shared resources.
- To format the exported timetable in HTML
- To provide additional features:
    - Student Attendance
    - Assignment Distribution over internet
    - Direct Export to college site
    - Sending timetable to the faculties directly through their email id.
    - Substitute teachers if a teacher is absent.
    - Making a mobile (android) app for the user is also a future step development.

CHAPTER 9: CONCLUSION

It is complicated task that to handle many Faculty's and allocating subjects for them at a time physically. So our proposed system will help to overcome this disadvantage. Thus we can produce timetable for any number of courses and multiple semesters.

Time Table Generator is a convenient time table managing website .Time table management may be aided by a range of skills, tools, and techniques used to manage time table when accomplishing specific subjects, semesters, and students. Initially, time table management referred to just work activities, but eventually the term broadened to include personal activities as well. A time table management system is a designed combination of processes, tools, techniques, and methods. Timetable management is usually a necessity in project development as it determines the project completion time and scope.

CHAPTER 10: REFRENCES

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10.2 WEBSITES

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