

AUTOMATIC TIME TABLE GENERATOR

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ABSTRACT

This project is aimed at developing a Time Table Generator for Colleges. Timetable generation is a very well known problem that is faced in every educational institution. The problem actually occurs when there are clashes among the preferences given by the staffs. Colleges are supposed to make time tables for each semester which used to be a very tedious and pain staking job. Student is eligible for viewing his timetable once they are finalized for a given semester. Staff also is eligible for viewing Staff timetable once they are finalized for a given semester and Class Allot.The objective of the Time Table Allotment for any department project was to develop an application that enables allotment subject to staff as well as classes for students. Administrator Added the Following details for Add the Student, Add Staff, Add Subject, Time Table Entry, Time Table Update.

Keywords-Time tabling, Scheduling, Timetable Generator, Genetic Algorithm, Resource Scheduling

I. INTRODUCTION

Time table scheduling has been in human requirements since they thought of managing time effectively. It is widely used in schools, colleges and other fields of teaching and working like crash courses, In early days, time table scheduling was done manually with a single person or some group involved in task of scheduling it with their hands which take lot of effort and time. While scheduling even the smallest constraints can take a lot of time and the case is even worse when the number of constraints or the amount of data to deal with increases. Even the perfectly designed time table is reused for whole generation without any changes, proving to be dull in such situations. Other cases are caused because the problem is the number of employers or workers keeps changing, this result in rescheduling of time table urgently. A great deal of time is devoted by the teaching personnel in generating and managing timetables. This project aims at the development of a tool which will allow institutes generate timetables for schools and colleges without any hindrance, directly from raw schedule. While generating a timetable, the availability of teachers and other resources is considered by this timetable generation software. Furthermore, timetables can be changed according to our necessity, depending on the availability of students, technicians, teachers, substitutes, classrooms and lessons. The difficulties that arise during the generation of timetables are definite and are concerned mainly with assigning events to timeslots subject to constraints with the resultant solution constituting a timetable. Timetabling as defined by Wren (1996) is, Timetabling is the allocation, subject to constraints, of given resources to objects being placed in space time, in such a way as to satisfy as nearly as possible a set of desirable objectives. The constraints during timetable generation can be categorized into hard constraints that cannot be violated and soft constraints that are not vital but their satisfaction is highly desirable for a good quality solution to be processed. A common timetabling issue is composed of assignment of events like course, examinations, lectures, lab sessions etc. into a limited number of rooms while reducing the violations in the set of constraints.

II. METHODOLOGY

As the below flow chart explains the overall working of the AUTOMATIC TIME TABLE GENERATOR System. It includes soft and hard constraints, input as student details, teacher details, and subject details. By using this collection of input from using the system will generate an optimized time table Firstly the system contains Login Page. The User has to login first with the valid user-id and password which in turn opens the Home Page which contains the information about the AUTOMATIC TIME TABLE GENERATOR System. It also has the various link tabs on the menu bar to navigate to other pages but it will work if and only if the user is logged in to the system. Once the user gets logged in he/she will get the approval to use the next page which is to add subjects where the subject name, semester, Timings, and other such required details input will be given by the user. As the details related to subjects and semester is filled by the user it will get reflected and saved into the

database. Once the system gets the subject detail it will take the user to the next page where the user needs to add the faculty information i.e. the faculty name, which faculty will be taking which subject, and whether it will be a theory session or practical, etc. . And this details will also get saved into our dataset. Now the system has all information related to subjects, teachers, semesters, Labs, Theory, timings, etc. So now it will ask the user from the given semester details for which semester the user wants to generate a timetable i.e. ODD Semester / EVEN Semester. All these data inputs will get saved and collected in our dataset and after this, the user will click on the generate button of the system, based on all the information and constraints the Automated timetable generating System will generate an optimized timetable in Excel Sheet and the user can download the sheet from the system into their device

III. EXISTING SYSTEM

In the existing system, each task is carried out manually and processing is also a tedious job. In previous system colleges were maintaining time table details manually in pen and paper, which was time taking and costly. The Organization is not able to achieve its need in time and also the results may not accurate

IV. PROPOSED SYSTEM

The proposed system is designed to be more efficient than the manual system. It invokes all base tasks that are now carried out manually, such as the forms transactions and reports which is added advantage. The proposed System is completely computer-based application. Thousands of records can searched and displayed without taking any significant time

V. ADVANTAGES OF THE PROPOSED SYSTEM

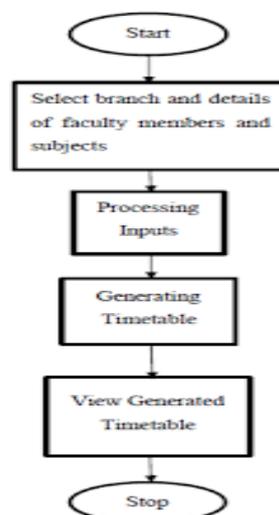
- Gives accurate information
- Simplifies the manual work
- It minimizes the documentation related work
- Provides up to date information
- Friendly Environment by providing warning messages.

HARDWARE REQUIREMENT: Processor Type: Intel i5 Processor or More Processor Speed: 2.6GHZ RAM: 8 GB Hard Disk: 1 TB

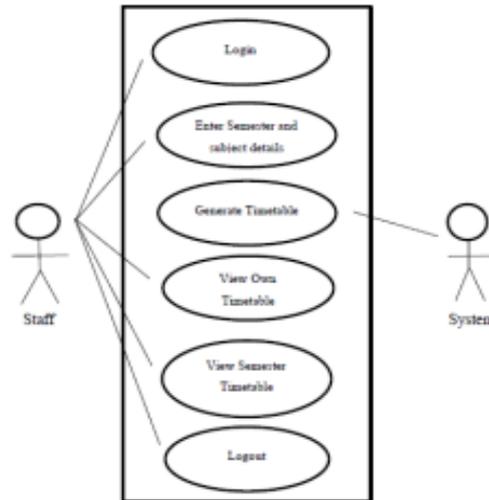
SOFTWARE REQUIREMENT: Front end: html, css, java script Back end: PHP Operating system: Windows 10. Server: XAMPP Database: Sql

VI. FLOWCHART

A flowchart is a type of diagram that represents an algorithm, workflow or process, showing the steps as boxes of various kinds, and their order by connecting them with arrows. The diagram below shows the step by step working of the automatic timetable generator.



Use case diagram of System



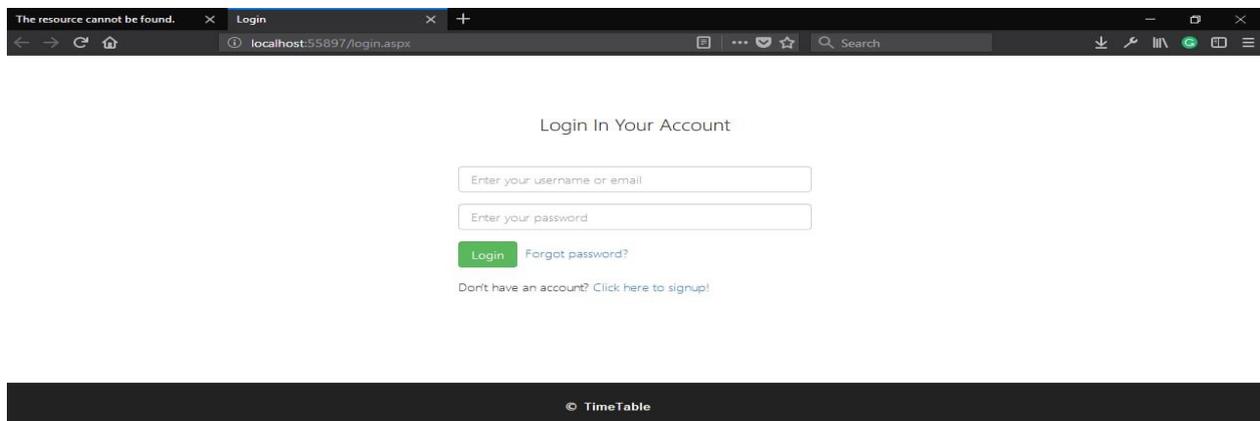
VII. IMPLEMENTATION

Implementation is a phase where all that we thought of comes into the picture. All the modules of our project are building using software development approaches. In our project, languages that we have used are HTML, PHP, Database used is MYSQL, Framework is Python Flask, the server used here is Machine Learning server (provided by our college), Operating system is Windows 7+. Modules that are developed in our project are as follows:

A. Registration In this module, every faculty needs to register themselves onto the portal. We provide the user various inputs to our system which gets store into the database.

B. Login This is a submodule of registration. Once registered a user only needs to log in every time they want to access the system. In this module, the user will have to provide details about the semesters they are teaching in, subjects and practical's they will take. Every faculty member has their faculty identification number which will act as registration and login credentials.

C. Generate Once the details are inserted into the database, the timetable generator can now do its task. Processing the data provided, and using the algorithm wisely, the timetable for even/odd semester will be generated. Display of timetable generated by our system provides viewing of timetable semester wise.



Administration

Allocate Slots Add Branch Add Subjects Add Staffs Allocate Subject Generate Timetable Show Timetable

Allocate Subject to Staff

Branch
COMPUTER

Year
Select year

Select semester
Select semester

Select Staff name
PHY SIR

Select Subject

Allocate

Allocated Staffs list

id	branch	year	sem	staff_name	subject
4	COMPUTER	FY	1	PHY SIR	PHY
5	COMPUTER	FY	1	CHEM SIR	CHEM
6	COMPUTER	FY	1	ENG SIR	ENG
7	COMPUTER	FY	1	M1	M1
13	COMPUTER	FY	1	CHEM SIR	CHEM PRAC
15	COMPUTER	FY	1	PHY SIR	PHY PRAC
14	COMPUTER	FY	2	GADE SIR	C PRAC
8	COMPUTER	FY	2	M1	M2
9	COMPUTER	FY	2	ETX SIR	ETX
10	COMPUTER	FY	2	CMS SIR	CMS
12	COMPUTER	FY	2	ETX SIR	ETX PRAC

VIII. FUTURE SCOPE

In our system, there are some problems those are user has to format it a bit after it is prepared. The system will generate a particular class timetable at a time and once the user downloads the current timetable sheet then the next timetable can be generated. In future work, we will overcome these disadvantages by using some logical approaches.

IX. CONCLUSION

This paper addresses the Timetabling Issues, real-life problems faced by many educational institutions till now. Since, it is a very complicated task for a single staff to handle many Faculty's and allocating subjects for them at a time, physically. So our proposed system will help to overcome this disadvantage. Generally, this system can be considered a useful system since it helps the teacher to improve their process of preparing the timetable. Separate timetable for the individual class, faculty, and labs are generated automatically by the system that will save the time and effort of the teacher as well as no more paper wastage will be there and possibly solving all constraints problems smoothly that are difficult to determine when time table is generated manually and helps to provide an optimal solution

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