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RESEARCH ARTICLE

TIMETABLE GENERATION SYSTEM

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Abstract— This project introduces a practical timetabling algorithm capable of taking care of both strong and weak constraints effectively, used in an automated timetabling system. So that each teacher and student can view their timetable once they are finalized for a given semester but they can't edit them. Timetable Generation System generates timetable for each class and teacher, in keeping with the availability calendar of teachers, availability and capacity of physical resources (such as classrooms, laboratories and computer room) and rules applicable at different classes, semesters, teachers and subjects level.

I. 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.

A college timetable is a temporal arrangement of a set of lectures and classrooms in which all given constraints are satisfied. Creating such timetables manually is complex and time-consuming process. By automating this process with computer assisted timetable generator can save a lot of precious time of administrators who are involved in creating and managing course timetables.

Since every college has its own timetabling problem, the commercially available software packages may not suit the need of every college. Hence we have developed practical approach for building lecture course timetabling system, which can be customized to fit to any colleges timetabling problem.

The college lecture-timetabling problem asks us to find some time slots and classrooms which satisfy the constraints imposed on offered.

II. LITERATURE REVIEW

Mei Rui [1] In this paper, through the analysis and the summarization of the existing problems, a mathematical model for the course timetable system is proposed. At the same time, through the use of the pattern recognition technology in artificial intelligence, aiming at this mathematical model a new university course timetable system design program is proposed and realized. This program not only can well solve the shortages of the existing course timetable system, but also is simple and easy to operate, has strong versatility.

Bhaduri A [2] evolutionary techniques have been used to solve the time table scheduling problem. Methodologies like Genetic Algorithms (GAs), Evolutionary Algorithms (EAs) etc have been used with mixed success. In this paper, we have reviewed the problem of educational time table scheduling and solving it with genetic algorithm. We have further solved the problem with a mimetic hybrid algorithm, genetic artificial immune network (GAIN) and compare the result with that obtained from GA. Results show that GAIN is able to reach the optimal feasible solution faster than that of GA.

Dipti Shrinivasan [3] Finding a feasible lecture/tutorial timetable in a large university department is a challenging problem faced continually in educational establishments. This paper presents an evolutionary algorithm (EA) based approach to solving a heavily constrained university timetabling problem. The approach uses a problem-specific chromosome representation. Heuristics and context-based reasoning have been used for obtaining feasible timetables in a reasonable computing time. An intelligent adaptive mutation scheme has been employed for speeding up the convergence. The comprehensive course timetabling system presented in this paper has been validated, tested and discussed using real world data from a large university

III. PROPOSED PLAN

Our Timetabling Algorithm is main component of our project which produces the HTML based timetable even / odd semester sheet as the output.

Our project takes various inputs from the user such as Teacher List, Course List, Semester List, Room List, Day List and Timeslot as well as various rules, facts and constraints using web based forms, which are stored in XML based knowledge base.

This knowledge base serves as input to our Timetable Generator Algorithm residing on server machine. Our knowledgebase is in the middle, because it is between our timetabling algorithm and GUI front end which is designed in the last. After the representation of KB is standardized, we designed the timetabling algorithm.

The design of timetabling algorithm took most of our total time. During design of algorithm, first problem was, from where to start? Second problem was, does it really going to work? But after all due to our superior design of knowledgebase, flowcharts and enough thinking on timetabling data structure representation helped us to really boosted building our fine working algorithm.

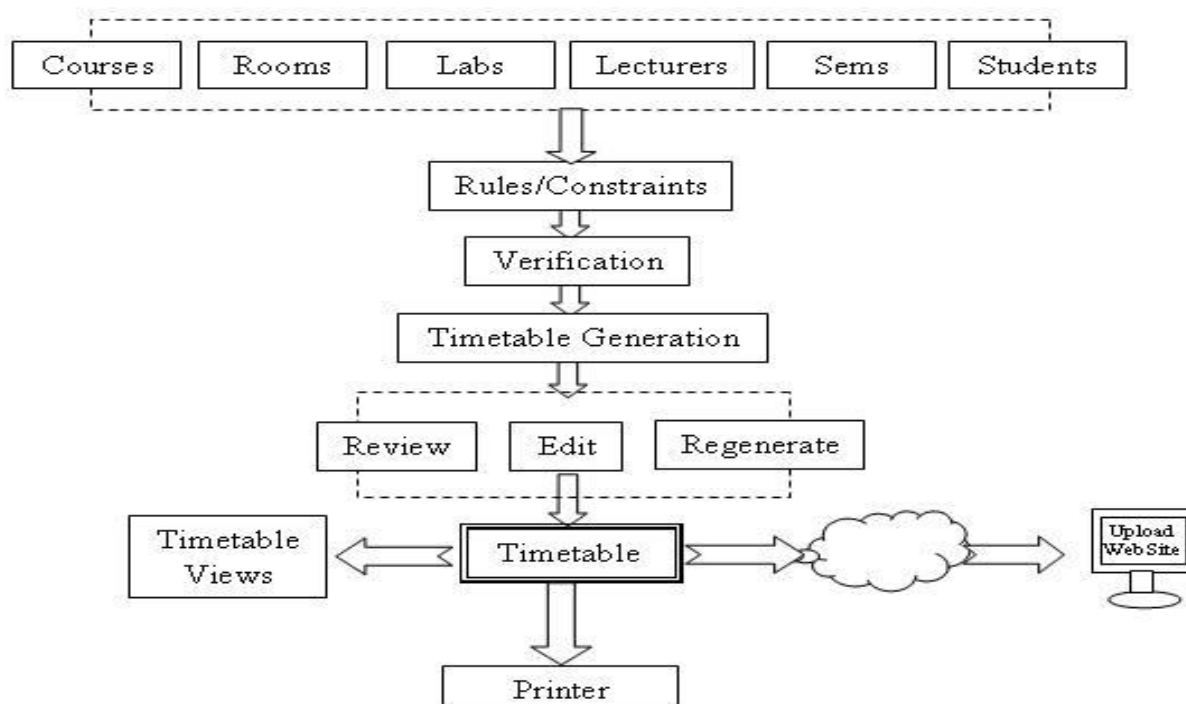


Figure:1: General View of TTGS

The proposed system is a website, which allows the student a good user interface also it provides a good user interface to admin & faculties, and they can easily get the required information. The web site provides a variety of facilities to students, admin and faculties. The main modules of the proposed system are Administrator, faculties & students.

The security feature is very strong therefore record can be only updated by Admin & related faculty to that subject. The home page contains three categories of user. By clicking on any of them the related login screen will come. Password screen includes the username and password. On being entered, the password is evaluated and the entry is given only to the correct password entry. There are three types of login, administrator login, faculties login, students login. The new student can register to the system with the help of admin.

The proposed system is used to generate time table automatically. This ensures the following features

- Easier slot assigning
- Less time consumption
- NO slot clashes
- Always considers the other department slots first
- Various possible slot combinations can be acquired
- User friendly

Methodology:-

- Complete specification of the system (with appropriate assumptions) including the framing of timetable policy.
- A database should be created. As per the rules taken for the purpose of maintaining the records
- Listing down all possible scenarios and then coming up with flow-charts or pseudo code to handle the scenario.
- Creation of the code based on the flow charts or pseudo code created.
- The system should be thoroughly tested by running all the test cases written for the system.

Functional Components Of The Project

Following is a list of functionalities of the system.

- Slots are assigned for lab and counselling hours.
- Faculties are assigned classes; each has an interval of at least 1 Period.
- Faculty is assigned maximum of 2 lectures in a day or 1 lecture and 1 practical session in a day. In worst case only one faculty may have 3 lectures in day.
- Subjects can be of any of the following categories:
 - f*Compulsory subjects.
 - f*Department Electives.
- Each Faculty workload - 10 hours / week (Theory)
 - 8 hours /week (Practical)
- Faculties assigned with Elective Subjects workload 8 hours/week (Theory) and 9 hours/week (Practical)
- Maximum & minimum of subjects should be specified.
- Preference is given to the other department staff while assigning slots.

IV. CONCLUSIONS

Separate timetable for the individual class, faculty and labs are generated automatically by this system. Various slot combinations can be acquired so that another timetable is generated as of need. The project reduces time consumption and the pain in framing the timetable manually.

The project is developed in such a way that, no slot clashes occur providing features to tailor the timetable as of wish. Additional features that is included in the project is that faculty replacement is also made possible by listing out the available faculty who are eligible to be assigned as temporary faculty until a replacement faculty is assigned

The future enhancement that can be developed from the project is to generate the master timetable for the departments and to the entire college. This enhancement can be achieved by making further modifications keeping the approach and techniques used for this project.

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