Automation of Timetable Scheduling In Educational Institutions

[1]Sujatha Thulam, [2] P S L Sravani, [3]G Sujatha [4]Razia Sulatana

[1] Assistant Professor, Dadi Institute of Engineering & Technology, Visakhapatnam
[2] Assistant Professor, Vizag Institute of Engineering & Technology, Visakhapatnam
[3] Assistant Prifessor, Dadi Institute of Engineering & Technology, Visakhapatnam
[4] Assistant Professor Dadi Institute of Engineering & Technology, Visakhapatnam

_____

Scheduling the timetables is a very important problem that encounters in real life. The proposed solution aims to solve the issues in scheduling such as clashes of lectures and subjects and build an effective timetable for the satisfaction of educational requirements. The resulted schedule can be used in educational institutions for effectively generating the timetable schedules.

This thesis examines the university timetable generation problem. It begins with a discussion on the conflicting terminology used and differentiates between the terms scheduling and timetabling. This discussion integrates with an overview of the problem itself both from practical and academic perspectives.

Keywords: Timetables, Scheduling, Academics, Evolutionary Algorithms (EAs), like Genetic Algorithms (GAs), GAIN

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. A college timetable is an 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 program 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 there is a necessity of developing a practical approach for building lecture course timetabling system, which can be customized to fit to any colleges timetabling problem.

This thesis examines the general and well established research into the timetable scheduling problem. The very real need to optimize timetable construction from a practical perspective has driven and provided funding for an extensive research activity resulting in a very well developed and ongoing research literature. The work contained in this thesis not only summarizes the voluminous literature but also contributes through analysis as well as providing a benchmark for the objective comparison of future research in this area.

2. Literature Review

In this paper, through the analysis and the summarization of the existing problems, a model for the course timetable system is proposed. 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.
[1]University Timetable Scheduling Using Genetic Artificial Immune Network proposed a few evolutionary techniques to solve the time table scheduling problem. Methodologies like Genetic

Algorithms (GAs), Evolutionary Algorithms (EAs) etc have to be 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) [2]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[5].

Automated Timetable Generation Using Multiple Context Reasoning for University Modules discussed about finding a feasible lecture/tutorial timetable in a large university department is a challenging problem faced continually in educational establishments. 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.

Increased transaction leads to the increased source document and hence maintenance becomes difficult. Normally timetable generation is done manually. As we know all Institutions or organizations have its own timetable, managing and maintaining these will not be difficult. The proposed system is designed to be more efficient than the actual manual system. Most colleges have a number of different courses and each course has 'n' number of subjects. Now there are limited faculties, and each faculty might be teaching more than one subjects.

So now the time table needed to schedule all the faculty at provided time slots in such a way that their timings do not overlap and the time table schedule will make the best use of all faculty subject demands. The customized algorithm is used for this purpose.
In every obligation class the condition as determined in our inquiry is now checked between both the timetable objects and augmented by one.

This project takes various inputs that include Teacher List, Course List, Semester List, Day List and Timeslots as well as various constraints using web based forms, which are stored in XML based knowledge base.

This knowledge base serves as input to our Timetable Generation Algorithm residing on server machine. Our knowledgebase is in the middle, because it is in between our timetabling algorithm and GUI front end which is designed in the last. After the representation of Knowledge Base is standardized, we designed the timetabling algorithm.
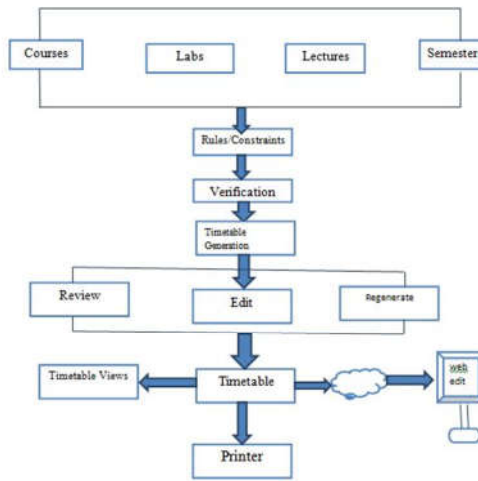
Fig :General View of TTG

3. Results

Timetable layout:

4. Conclusion

This study can be further extended by examining the affects of changing various parameters in the time table and its performance. The including of one department faculty to various other departments and still no collisions happening could be the major future scope for better implementation of this application. But lot of work has already been done in this area, and a feasible solution has been obtained.

The major benefit of this paper is to store information at one place and it can be accessed via online transaction. Instead of tedious paperwork, students can view the timetable with a quick

turnaround. This system is user friendly and provides faster and better generation of timetable, which in turn saves time. There are few points that justify the need of this system user friendly faster and better generation of timetable Saving time and manpower.

REFERENCES:

1. "An introduction to timetabling" by Dr Werra D , European journal of operations research , vol 19 1985, pp.151-162
2. "Recent developments in practical course timetabling" by Carter M.W LaPorte G, lecture notes in computer science, volLNCS1408,Springer-verlag,1998,pp.3-19
3. "Tabu search for large scale timetabling problems" by Hertz. A , European journal of operations research, vol 54,1991,pp.39-47
4. "constraint based timetabling   a case study" by Abbas A.M, ACS/IEEE international conference on computer systems and applications ,2001,pp.67-72