

# Automatic Time table Generator System

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## ABSTRACT

*Most colleges have a number of different courses and each course has a number of subjects. Now there are limited faculties, each faculty teaching more than one subjects. So now the time table needed to schedule the faculty at provided time. slots in such a way that their timings do not overlap and the time table schedule, makes best use of all faculty subject demands.*

*We use a genetic algorithm for this purpose. In our Timetable Generation algorithm, we propose to utilize a timetable object. This object comprises of Classroom objects and the timetable for every them likewise a fitness score for the timetable. Also, further on discussing the imperatives, we have utilized composite configuration design, which make it well extendable to include or uproot as numerous obligations. In every obligation class the condition as determined in our inquiry is now checked between two timetable objects. On the off chance that condition is fulfilled Le, there is a crash is available then the score is augmented by one*

**Keyword:** - Evolutionary Algorithms, System Design, etc....

## 1. INTRODUCTION-1

This project Online **Automatic Timetable Generator** has been developed on Python and SQLite. Automatic Timetable Generator is a python-based software used to generate timetable automatically. Currently timetable is managed manually. It will help to manage all the Periods automatically and also will be helpful for faculty to get timetable It will also manage timetable when any teacher is absent late coming or early going. Maximum and minimum work-load for a Faculty for a day, week and month will be specified for the efficient generation of timetable.

In the existing system, the problem occurs when any teacher is on the leave and he will not able to inform or inform it late than the manual assignment of substitute teacher is also a very difficult job. When the schedule tracker is generated manually, there is a case when the department head want to makes some changes in the lectures. At this situation, the chances of the collision of the period or assignment of the teachers will increase because it is not possible for one teacher to remember all assignment done earlier. The manual maintenance of the databases of items, schedule tracker processing is a time taking process an somehow erroneous. So there is a need for the new system to resolve such problems.

### 1.1 Detailed Problem Definition

Our basic function is to create a schedule tracker for a college including different branches and semester. The main problem that occurred during the project is to create and maintain the databases of different entities involved in this process. The database contains the information about the various semesters, subjects, lab, teachers etc. So maintain such a large database is a big challenge for us. The problem we face during our project is how the collision of two subjects or the teachers can avoid. Every project has some drawbacks. There is a chance when the collision will occur when we generate more schedule trackers for different branches. So, these are some problem which we face in our project.

### 1.2 Purpose

Principal can approve Before the beginning of a session the first and foremost thing that is of the biggest concern to any department and the concerned faculty is his/her time table. Time table is the arrangement of the classrooms a the classes in appropriate manner to get the definite schedule matching the requirement of the university curriculum. To every university, time table is a unique concept to make coordination in between the faculty, students, parents and the other academician. Although nowadays every university has its own manual method or software usage technique for making time table but making a perfect time table is still a cumbersome task. Any software can arrange the cards (lectures) according to the input only but giving it a perfect input/shape requires days of planning by department

## 2. Genetic Algorithms

Evolutionary Algorithms (EAs) are a class of direct, probabilistic search and optimization algorithms gleaned from the model of organic evolution. A Genetic Algorithm (GA) is a type of EA and is regarded as being the most widely known EA in recent times. A GA differs from other search techniques in the following ways: GAs optimizes the trade-o between exploring new points in the search space and exploiting the information discovered thus far.

GAs has the property of implicit parallelism. Implicit parallelism means that the GAs effect is equivalent to an extensive search of hyper planes of the given space, without directly testing all hyper plane values. Each schema denotes a hyper plane. GAs are randomized algorithms, in that they use operators whose results are governed by probability. The results for such operations are based on the value of a random number. This means GAs use probabilistic transition rules, not deterministic rules. GAs operates on several solutions simultaneously, gathering information from current search

### STRUCTURE OF THE AUTOMATED TIME TABLE GENERATOR

The structure of time table generator consist Input Date Module, relation between the input data module, time interval, time slots module, applying active rules and GA module then extract the reports.

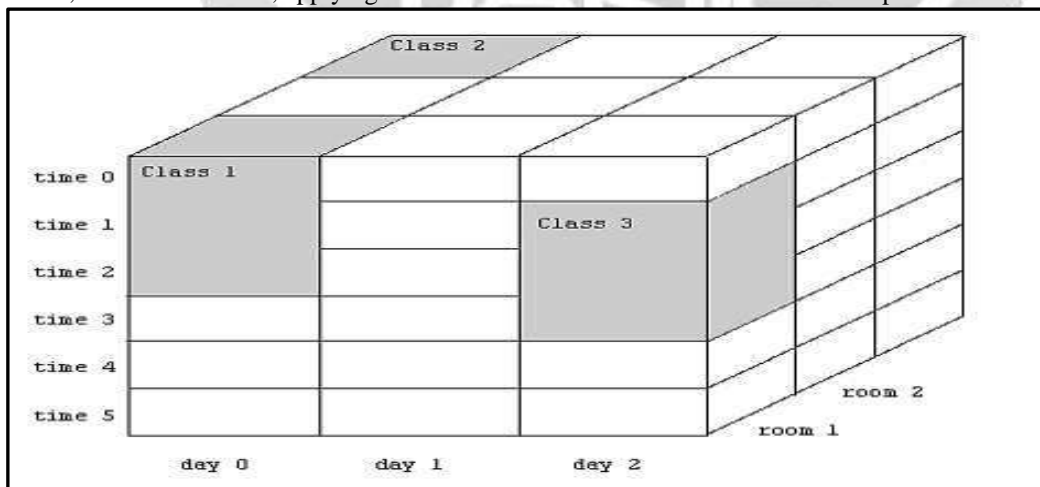


Fig 1:- Time Table presented as 3 D Structure

## 2.1 Economical benefits

In the economic feasibility, the development cost in creating the system is evaluated against the ultimate benefit derived from the new systems. Economical benefits must equal or exceed the costs. Our system is economical feasible Genetic algorithm is used commonly to develop scheduling systems. When scheduling automatic timetable there may be set of solutions that doesn't violate constraints. So, when using a genetic algorithm we get pool of good solutions. So, using this algorithm we cannot obtain best answer.

## 2.2 System Design

The design phase is the life cycle phase in which the detailed design of the selected system in the study phase is accomplished. In the design phase, the technical specifications are prepared for the performance of all allocated tasks. It also includes the construction of programs and program testing. In the design phase, the first step is to determine the output is to be produced and in what format. Second, input data and master files have to be designed to meet the requirements of proposed output. The system analyst has to define the methods of capturing and input programs and format of the output and its use by the users. The design is a solution, the translation of requirements into center ways of meeting. The design is actually the process of analyzing, organizing and developing a database model that accurately reflects the organization functioning in the real world and implementing that model by creating a database requires an appropriate methodology.

- Register with all information
- View Timetable
- Apply for leave with specifying Substitute faculty
- View Substitute response
- Give subject name, semester and faculty
- View timetable

## 3. Literature Survey

In some years two main approaches have been successful for implementing the timetabling problem. The first approach is based on local search procedures method such as simulated annealing, tabu search and genetic algorithms. These methods express constraints as some value of functions, which are minimized by a heuristic search of better solutions in reference of some initial feasible solution. The second approach is based on constraint programming (CP). Its main advantage is declaratively a direct statement of the constraints serves as part of the program. This makes the program easy to modify, which is critical in timetabling problems. The constraints are handled through a system of constraint propagation, which decrease domains of variables, coupled with backtracking search. The main disadvantages of these approaches are 1. Difficulties with expressing hard and soft constraints, 2. The need to determine their parameters through experimentation and 3. Possible problems with improving the initial feasible solution, Which- as a rule - may be determined without problem? An attempt to overcome the drawbacks along soft constraints was discussed, successfully combined local search with constraint satisfaction to decrease their drawbacks

### 3.1 Timetable Generation Module

It is the vital part of undertaking which generate Timetable automatically. In this module it increase module. Generation achieved through thinking about most and minimal workload for a Faculty (without much less and without exceeding). This may be generated through admin and considered through the customers of the system

#### Linear and Integer Programming

The Linear and Integer Programming techniques, the first applied to scheduling, were developed from the broader area of mathematical programming. Mathematical programming is applicable to the class of problems characterized by a large number of variables that intersect within boundaries imposed by a set of restraining conditions (Thompson, 1967). The word "programming" means planning in this context and is related to the type of application (Feiring, 1986). This scheme of programming was developed in connection with finding optimal strategies for conducting the war effort and used afterwards in the fields of industry, commerce and government services

## 4. CONCLUSIONS

I can confidently say that the progress I made so far is very satisfying. I learned the major web development basics as well as understood how genetic algorithms and evolutionary strategies can work together to optimize goal-finding in terms of time and space complexity. As for my understanding of python. Amazing opportunity to learn the framework and discover the features it provides. It is a great discovery on my side. Lastly, I would also like to mention that all the links I used, be it on my project or in this report are cited in the references section.

Our approach of developing automated timetable system is successful in solving colleges "lecture-course timetabling problem. We have also shown that how we can fit our timetabling system as Rich web-based Desktop system. The graphical user interface used in this system provides an easy way in understanding how system works and also makes ease in providing the input.

**suggestion for future work** This project will be a great helpful for the institution because, It is a great difficult task that to manage many Faculty's and allocating subjects for them at a time manually and this project will help to manage it properly. This manage timetable for faculty with considering maximum and minimum workload, and can be managed easily

## 5. ACKNOWLEDGEMENT

It gives us immense pleasure in presenting the preliminary project report on "**Automatic Timetable Generator.**" The success and the outcome of this report required a lot of guidance. We are very grateful to our guide **Prof. K.R. Ghule** who has provided expertise and encouragement. We thank sir who provided vision and knowledge that was very helpful throughout the research. All that we have done is only due to the great guidance. We also express our gratitude to **Dr. V.B. Kamble** Head of Computer Science and Engineering Department, P.E.S. College of Engineering, for the valuable support.

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