Abstract: The traditional hand operated method of time table is very time consuming and usually ends up with various classes clashing either at same room or with same teachers having more than one class at a time which is being resolved by Automatic time table scheduling. This project introduces a practical timetabling approach capable of taking care of both hard and soft constraints required specially for preparing time table in colleges with large number of students and limited resources like class-rooms or labs. The automated time table scheduling provides easier ways for teachers and student to view their timetable once they are finalized over the application, having individual login id and passwords, and also some staff usually takes the previous year’s timetable and modify it but still it is a tedious job to incorporate changes. To overcome all these problems we propose to make an automated system. This paper present a new approach to solving a heavily constrained university timetabling problem which has been used in other projects also.

Keywords—Components, Constraints, New scheduling algorithm, optimal solution

I. INTRODUCTION

The manual timetable scheduling demands considerable time and efforts along with lots of paperwork. The timetable scheduling can also be considered as a Constraint satisfaction problem (CSP)[6], which is a unique concept in Artificial Intelligence[4], in which we find a solution that satisfies the given set of constraints. 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. 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[5], 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. Other cases that can cause problem is when the number of Faculties (Teaching Staff) are less, resulting in rescheduling of time table or they need to fill on empty seats urgently. In such cases Automated time table[5], scheduling can be a very convenient method for managing it in computers with algorithms also proving to be eco-friendly for no paperwork.

II. RELATED WORK

In one of our reviewed paper[5] David Abramson and J Abela , 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. 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. In this paper, we have reviewed the problem of educational time table scheduling and solving it with new algorithm.. which uses array concept and circular queue. In August 1995, an international conference was held on the Practice and Theory of Automated Timetabling (PATAT). The aim of the conference was to align the needs of practitioners and the objectives of researchers through presentation and application of leading edge research techniques. The success of this conference brought about the formation of a committee named EURO (European Conference on Operations Research) Working Group on Automated timetabling[15][16].
III. PROJECT STATEMENT

The difficulty faced during timetabling can be represented as a constraint satisfaction problem with loose parameters and many constraints. These constraints can be replicated in a format which can be managed by our new algorithm in an organized manner. Automatic Timetable Generator is a web based system that generates timetable automatically with very less input involving only teacher with their subject name only. And can be accessed online from any where.

IV. PROPOSED PLAN

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

Our project takes various inputs from the user such as Teacher name, Course name, Semester, 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. 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, faculty login, student login. The new student can register to the system with the help of admin.

A newly added one more feature is that some time teachers are needed particular time slot only for that we have are taking manual time of lecture for that particular lecturer. And our system are giving two types of timetable one which is giving manually assign slots generated timetable i.e. view timetable and another for automatically generated timetable.

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.

V. 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: Compulsory subjects.
- 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.

VI. MODULES DESCRIPTION

In graphical representation our Automatic timetable generator has different Modules which are as follows:

- Admin Module
- Staff Module
- Student Module
- Timetable Module

VII. SYSTEM CONFIGURATION

Hardware Requirements:
- Hardware: Pentium
- Speed: 1.1 GHz
- RAM: 1 GB
- Hard Disk: 20GB

Software Requirements:
- Operating System: Windows
- Technology: Java/J2EE
- Web Technology: html, JavaScript, CSS
- IDE: Net Beans
- Web Server: Apache
- Toolkit: Web Browser
- Database: My SQL
- Java: JDK 8

VIII. IMPLEMENTATION AND RESULT

We implemented our new approach i.e. using our own algorithm involving array concept of two different thing that is subject array and teacher array and later mapping of them. and we get the desired output as we are expecting. generated timetable is clash free.

Here we can see that practical batches where created which are divided into two batches.
IX. CONCLUSION

Separate timetable for the individual class, faculty and labs are generated automatically by this system. As timetable is generating automatically, timeslots will be allocated automatically. 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 there is no headache of Giving so much of input instead we have to give only teacher name and there subject information only i.e. Subject name only. 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 my making further modifications keeping the approach and techniques used for this project.

ACKNOWLEDGEMENT

I have great pleasure in presenting the paper on Web Based Automatic Timetable Generator I am thankful to Prof. Hiral Kanani and Prof. Nidhi Sanghavi whole heartedly who guided me in my project and motivating me in this topic. They helped us to understand the concepts regarding the topic. They also guided me to put several examples which can be easily explained and understand, to
complete this dissertation. My college provided me the required resources and helped me through lots of work when required.

REFERENCES
5. VOL. 7, NO. 5, MAY 2012 ISSN 1819-6608 ARPN Journal of Engineering and Applied Sciences