



# Web Based Application for College Automation System

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**ABSTRACT:** In the present scenario all the college related work such as timetable generation, making the defaulter list of students and measuring the performance of a teacher according to feedback given by students is done manually. All these tasks are time consuming and also require a lot of efforts and resources. To overcome these problems our system uses heuristic approach which form the scheduling tasks that consist of mapping class, teacher and room combination (which have already been pre-allocated) onto time slots and automatically generate our college Timetable when the year and branch of student is given as input and also generate the performance graph of teachers according to the feedback given by students. The system will also send alarm message to students if their attendance is less than 75%. The main purpose of our system is to reduce the work load of teachers and also be a cost effective and a quick respondent system.

**KEYWORDS:** Naïve Bayes, Text-Local, Heuristic Approach, Automation.

## I. INTRODUCTION

Timetabling concerns all activities with regard to making a timetable that must be subjective to different constraints. According to Collins Concise Dictionary (4th Edition) "a timetable is a table of events arranged according to the time when they take place." A critical factor in running a university or essentially an academic environment is the need for a well-planned and clash-free timetable. Back in the times when technology was not in wide use, academic timetables were manually created by the educational center staff.

Every school year, institutions of education face the rigorous task of drawing up timetables that satisfies the various courses and their respective examinations being offered by the different departments. The difficulty is due to the great complexity of the construction of timetables for lectures and exams, due to the scheduling size of the lectures and examinations periods and the high number of constraints and criteria of allocation, usually circumvented with the use of little strict heuristics, based on solutions from previous years (Jose, 2008). Nowadays, this process has been simplified by semi-automatic solutions based on timetable generation applications (e.g. Open Course Timetable). A timetable management system is designed and created to handle as much course data as fed while ensuring the avoidance of redundancy. An educational timetable must meet a number of requirements and should satisfy the desires of all entities involved simultaneously as well as possible. The timing of events must be such that nobody has more than one event at the same time (Robert us, 2002). The proposed timetabling system is designed to handle events of course lectures offered at a university (university course timetabling). Based on the above event, the system would have Course Lecture Timetable Module. The system will also generate the performance graph of teachers according to the feedback given by students. The system will also send alarm message to students if attendance is less than 75%. Our application is web based application hence we are using JSP.

## A) MOTIVATION

1. University Timetabling has many constraints.

I. **Resource conflict:** A Teacher must not have two classes in the same slot.

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- II. **Electives:** Same slot is not available to be allocated by same student for two choose able subject.
  - III. **Exclusion:** A Period of more than one slot must be linear in manner.
  - IV. **Juxtaposition:** Different outputs with same data enable to compare the better result.
2. Accuracy and patience needed ,manually it is a combustive process
  3. Automated Time-Table generation reduces a huge human work
  4. Different Time-Tables for the same data can be obtained juxtaposition,
  5. Automation makes it reliable too.
  6. For calculating Defaulter list of a student the teacher require to carefully examine all the database of attendance and then write warning letters to all the defaulter students this require lot of resources and time.
  7. Graphical representation of the performance graph makes it simple and quick to track the record of teacher's performance.

## B) BACKGROUND

The generation of timetable is a tedious process which involves number of meetings of teachers and all staff members to state their availability and other constraints and resource (printers, projectors etc.) and after a long planning a timetable is prepared which satisfies most if not all the constraints. Timetabling is a NP complete problem. For NP complete problems no best solutions is to be known and so we choose a heuristic approach to find the solution. In an educational institute attendance is of utmost importance and so the defaulter students are given warning by sending letters to their parents. To check the performance of the faculty the higher authority is required to go through every feedback form submitted by students on paper.

## C) NEED

Every school year, institutions of education face the task of drawing up timetables that satisfies the various courses and their respective examinations being offered by the different department. The difficulty is due to the great complexity of the construction of timetables for lectures and exams, due to the scheduling size of the lectures and examinations periods and the high number of constraints and criteria of allocation, usually circumvented with the use of little strict heuristics based on solutions from previous years.

In the current scenario attendance is taken manually by the teacher on a daily basis. This task is time consuming and requires the teacher to keep a record of attendance for calculating the monthly defaulter list.

The performance of the teacher for an academic year is calculated according to the feedback given by students .This require the student to be physically present in the class. There is also risk of miscalculation involved when each and every form to be checked by single Individual.

To reduce the complexity of these entire three tasks we introduce the proposed system.

## II .PROPOSED SYSTEM

This paper describes how our system is going to ease the workload and confusion of college staff and students. It also saves time of staff and college resources like paper.

The architecture of our system is as follows:

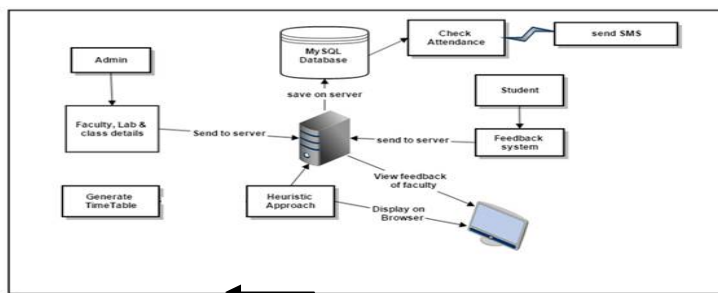


Fig No 01 Proposed System Architecture



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## EXPLANATION-

### A. TIMETABLE

Time table module works on the principal of iteration. We have adapted heuristic approach and used naive bayes algorithm for the same.

This module requires us to fill in the details of all the components required to make a timetable such as teacher name and associated subject along with time slots and break in database created in WAMP Server after which the algorithm calculates the clash free timetable and displays it on our website.

### B. PERFORMANCE GRAPH GENERATION

To know about the performance of teachers colleges provide feedback forms from which the performance is calculated based on different rating given by students.

The feedback form is filled online by students after which a graph of teacher performance is generated in form of pie chart.

### C. DEFAULTER LIST GENERATION

This module allows us to generate defaulter list based on the poor attendance of student and a message is sent on the student's mobile. A third party application TextLocal is used to send messages to students in defaulter list.

#### • TEXTLOCAL

It is a messenger application that allows user to communicate via SMS, MMS and Mobile Web.

To access the TextLocal we have to create account on it. The services include sending message, view inbox, contact groups. It allows us to send messages to individual as well as groups. For sending information securely API Key is generated which is a alphanumeric code that is unique to our TextLocal account.

To create API Key:

- 1) Login to TextLocal account and open All Settings.
- 2) Go to Connectivity > API Keys..
- 3) Click Create New Key.
- 4) Click Save New Key

### D) FEATURES

- I. Timetable generation for each branch according to the year entered.
- II. Regeneration of timetable until an optimum solution is obtained
- III. Generation of defaulter list from the attendance given for a period of a month.
- IV. Sending SMS to the students if their name is in the defaulter list.
- V. Taking feedback from students on a web based forms.
- VI. Display a graph of performance for each faculty.

### E) SCOPE

We will be developing automation system for our college. Which includes three modules

- I. Automatic Timetable generation
- II. Generation of Defaulter list
- III. Performance graph generation.

### F) OBJECTIVES

The proposed system will be used to solve the timetabling problem being faced by colleges every year.



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- I. To reduce the load of teachers by making manual work automatic
- II. To help teachers to maintain record of attendance of students.
- III. To generate defaulter list of students and send the message to defaulter students.
- IV. To generate performance graph of each teacher according to feedback given by student.

## H) CONSTRAINTS

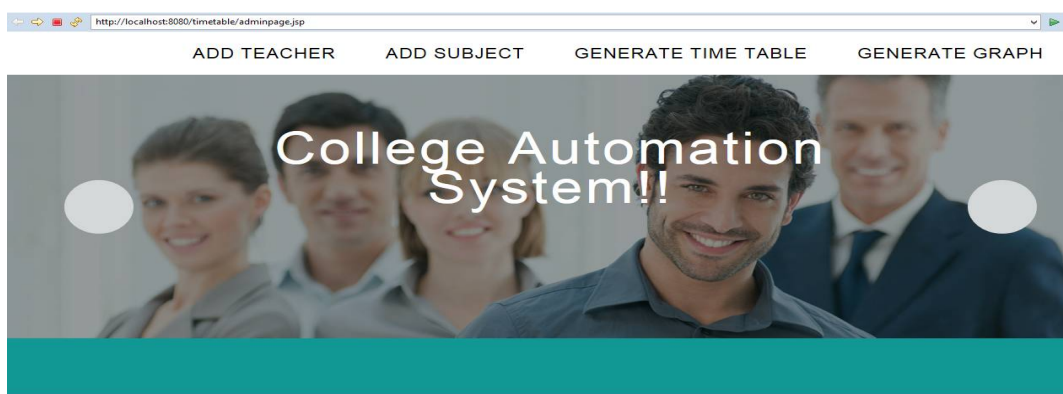
Several constraints need to be meeting in order to generate timetables. These constraints can be classified into strong and weak constraints which are as follows,

### 1) STRONG CONSTRAINTS:

- I. No two lectures can be allotted to the same classroom at the same time,
- II. A same lecturer cannot teach to more than one class at the same time.
- III. For each time period there should be sufficient resources available for all the events that have been scheduled for that time period.

### 2) WEAK CONSTRAINTS:

- I. Subsequent lectures of same subject are not allowed (min 1 time slot gap).
- II. Repeated lecture of the same teacher must be avoided.
- III. Working hours of a teacher must not exceed 5 hrs a day.
- IV. There must be at least 4 lectures of every subject in a week.
- V. At least once every subject must come in the first timeslot of the week.



MENU PAGE

Teacher Name::

Teacher Password::

specialization::

Teacher Cell No::

Email ID:

ADDTTEACHER

ADD TEACHER



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localhost:8080/timetable/generatett.jsp

ADD TEACHER    ADD SUBJECT    **GENERATE TIME TABLE**

GENERATE GRAPH

Monday	Prof.N.N.C EM	Prof.S.R.M M-II	Prof.B.P.G CHE	Prof.M.A.P PHY	N/A	c3 FPL c4 PHY	Prof.A.M.P BME	N/A	
Tuesday	Prof.A.M.P BME	c1 PHY	N/A	Prof.M.A.P PHY	N/A	Prof.S.R.M M-II	c1 FPL c3 PHY	Prof.N.N.C EM	
Wednesday	N/A	c2 PHY c3 FPL	Prof.A.M.P BME	c2 PHY	N/A	Prof.N.N.C EM	Prof.B.P.G CHE	Prof.S.R.M M-II	
Thursday	Prof.A.M.P BME	Prof.B.P.G CHE	c2 FPL	N/A	Prof.S.R.M M-II	c2 PHY c3 FPL	Prof.M.A.P PHY	N/A	
Friday	Prof.M.A.P PHY	c2 FPL c3 PHY	Prof.B.P.G CHE	N/A	Prof.S.R.M M-II	N/A	Prof.A.M.P BME	Prof.N.N.C EM	
Saturday	PHY	FPL							

localhost:8080/timetable/generatett.jsp

GENERATE TIME TABLE

### III. CONCLUSION AND FUTURE SCOPE

In the present scenario apart from teaching the teachers have to put a great deal of efforts on other activities like time table making ,analyzing the attendance of every student and accordingly creating a defaulter list so that he/she can be warned about his/her lack of attendance these activities consume a lot of time. We concentrated on these factors and attempted to reduce these efforts to save time of college staff. Our application automatically generates timetable and sends SMS to defaulter students thereby saving time and efforts of college staff. Analyzing performance of teachers is also an important task that is done by every college so as to provide its students with upmost education but this simple activity wasted a lot of resource like paper and had a major task of gathering and analyzing each and every feedback form to conclude on the performance, What we did was took this task online and represented the performance graphically which resulted in a more clear idea of analyzing the performance of teachers.

**Future Scope** of this application revolves around making it more compact application and platform independent. An android version of this application can be made to make it available on smart phones. Blog for college students regarding the important notices and placements can be added to this application. Feedback forms could contain staff photo to make module more visually pleasing.

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