**UCS 2201 Fundamentals and Practice of Software Development**

**Project on Timetable Management System**

P1: Timetable Management System for an Academic Institution

**PROBLEM OVERVIEW**:

This article represents a review about making a timetable for an Academic Institution.Timetable scheduling has been in human requirements since all thought of managing time effectively. It is widely used in schools ,and other fields of teaching and working like crash courses, coaching centre training programs etc. in early days, time table scheduling was done manually with one single person or some group involved in task of scheduling it with their hands, which takes a lot of effort and time. While scheduling even the smallest constraints can take a lot of time and the cases are even worse when the number of constraints or The amount of data to deal with increases. Now, the goal is to find a feasible assignment for all the classes of all courses to a time slot and a room subject set of constraints. Constraints are conditions that limit or control.

*Some constraints for Class Timetable are:*

Maximum of 3 hours can be alotted for a faculty.

The first hour must be allotted for a department subjects

Lab section must be allotted in morning session

Maximum of one lab session for day or may not

Department subject or high credit subject must have one period per day

For common subjects faculty handle one section per year or one section per department

Library and Sports hour should be alotted for last hour

**Application:**

This helps to create timetable for schools, colleges, universities and other institutions with proper analysis of the data given by the user as the input.

**Tools:**

Scheduling with tools is a easy way and saves time.some of the tools available are:

Optaplanner:

OptaPlanner is AI constraint solver to optimize maintenance scheduling. Constraints apply on plain domain objects and can call existing code. There’s no need to input constraints as mathematical equations. OptaPlanner combines sophisticated AI optimization algorithms with very efficient score calculation and other state-of-the-art constraint solving techniques.

OptaPlanner is open source software, released under the Apache License. It is written in Java

Basic Inputs: Number of students, teachers, classes, courses .

Reference link : <https://www.optaplanner.org/learn/useCases/schoolTimetabling.html>Skolaris:

Skolaris is a modern web application which is efficient in creating a timetable. Lots of detailed constraints and parameters allow to create a specific schedule exactly user friendly to the teacher and class.

Skolaris is a paid source software.

Basic Inputs: Subjects, Number of students and classes, Break timings, Lecture time, Different Course constraints(like reasoning, activities)

Reference Link : [https://skolaris.net/#](https://skolaris.net/)

**TECHNIQUES:**

IMPLEMENTATION OF A TIME TABLE GENERATOR USING VISUAL BASIC:

AUTHOR: Joseph M. Mom and Jonathan A. Enokela

The TTGen as an application for generating lecture and examination timetables has been effectively and successfully deployed. The efficiency of this easy to use software is shown to generate a zero clash timetable in only eight iterations. The data used in generating the timetable such as student’s and lecturer’s data can also be used for other purposes such as managing students in their respective course registration processes. The Excel files aid in bulk import of data thus making this application user friendly.

Database :The database module handles all input and output operations to the MySQL database such as read, write and delete

Input and Output : The IO module handles files with the HTML and Microsoft Excel format and provides methods for reading and writing for this files.

TIME TABLE MANAGER:

There are limited faculties, each faculty teaching more than one subjects. The time table need 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. They use a genetic algorithm for this purpose. In the Timetable Generation algorithm They 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. Fitness score relates to the quantity of crashes the timetable has regarding alternate calendars for different classes.

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 i.e. there is a crash is available then the score is augmented by one.

TIME TABLE GENERATOR:

Author :K.GANDHI ; MR. C.DANIEL NESAKUMAR

The approach of developing automated timetable system is successful in solving colleges‟lecture-course timetabling problem in the article. They have also shown that how we can fit our timetabling system as Rich Desktop Application. The graphical user interface (Windows Form Application) used in this application provides an easy way in understanding how application works and also makes ease in providing the input. This application is provided with necessary details of faculty and subjects which are stored in database(SQL SERVER) and then by making use of the available data it generates the lecturecourse timetable with minimum time when compared to manual generation of timetable and involves in satisfying all the constraints . No overlapping of time slots for any subject. There should be a minimum gap of one hour for respective faculty per subject No repetition of time slots per faculty.

**CONCLUSION :**

The major benefit of this project is to be 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

**REFERENCE:**

1.Joseph M. Mom and Jonathan A. Enokela

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