Vivekananda College of Engineering & Technology

[A Unit of Vivekananda VidyavardhakaSangha, Puttur ®]

Affiliated to Visvesvaraya Technological University

Approved by AICTE New Delhi &Govt of Karnataka

| PRJ02 |
| Rev 3.0 |
| CD |
| 03/02/2025 |

STUDENT PROJECTS

PROJECT PHASE 1

Department: CD	Semester: 6	Academic Year: 2024–25

I	**Proposed Title of the Project:**	**Web-Based Automatic Timetable Scheduler for Schools & Colleges**
	Area of Specialization/Stream	**Web Application**
	Mapping with POs & PSOs	
II	**Name(s) of guide(s):**	**Prof. Chaithanya D**
III	**Name of Team Members** (Not more than four students in a batch):	

Sl. No.	Name	USN	Contact No.
1	**Gaurav G Alva**	**4VP22CD019**	+91 7259130756
2	**Harshit M Naik**	**4VP22CD022**	+91 7975517211
3	**Prapthi J P**	**4VP22CD037**	+91 8660960756
4	**Supreetha N S**	**4VP22CD058**	+91 95359 65726

IV	**Introduction**

A college timetable is essential for organizing lectures, lab sessions, and faculty assignments while ensuring smooth coordination of resources. Creating a timetable for multiple subjects manually while satisfying all constraints is a challenging and time-consuming task that often leads to errors, scheduling conflicts, and inefficient resource allocation. In the traditional method, coordinators must manually manage faculty availability, classroom assignments, and student course distribution, making the process tedious and prone to clashes and resistant to last-minute changes. By automating the timetable generation process, institutions can optimize scheduling, minimize manual effort, and ensure a seamless, conflict-free academic experience for both students and faculty.

Objectives of the project

- To develop a system that simplifies the process of timetable scheduling for institutions by understanding the requirements of the course.
- This system reduces the burden of the coordinator, reducing the conflicts like overlapping classes, overlapping labs etc.,
- To develop a timetable generator that satisfies the scheduling needs based on the faculty workload, course structures and institutional policies.
- To improve decision-making by offering a user-friendly interface for administrators to input constraints, review timetables, and make necessary adjustments before finalising schedules.

V	**Methodology**

Automatic timetable generation involves several approaches, including **constraint satisfaction**, **genetic algorithms**, and local search procedures.

- **Constraint Programming (CP)** A clear statement of constraints makes the program easy to adjust. Timetable constraints are managed through constant propagation, which minimizes domains of variables, coupled with backtracking search.
- **Genetic Algorithms (GA)** These algorithms use concepts such as chromosome representation, initial population, selection, crossover, and mutation to find optimal solutions. A fitness function is used to evaluate the quality of potential solutions.

The design of timetable generation includes several elements:

- Consideration for lower semester timetables when creating higher semester timetables.

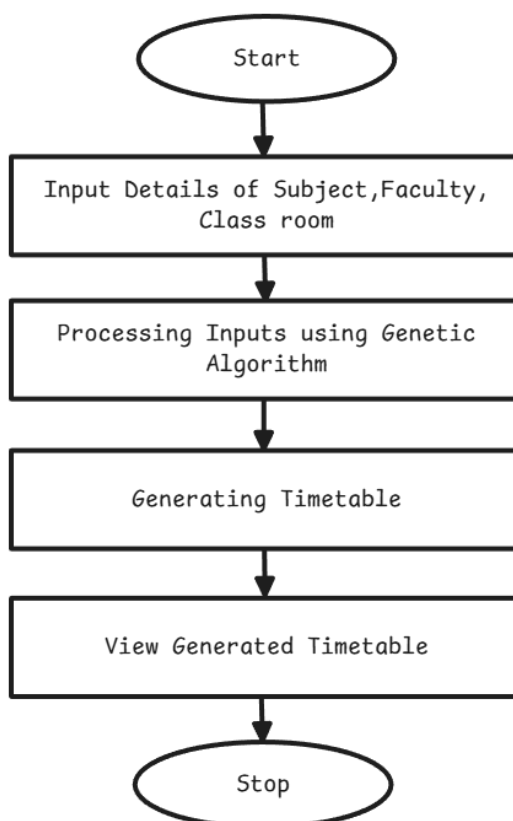|	PRJ02
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- Faculty details.
- Workload details based on faculty designation.
- Subject details, including subject name and code.
- Faculty and subject allotment based on time slots.
- Details of theory and lab courses handled by each faculty.

The typical workflow involves the admin modifying details of students, faculty, and subjects; generating the timetable by providing input such as subject, faculty, and type and updating the timetable. The system then generates a timetable without clashes, satisfying all constraints, and allocates appropriate labs or classes. Students and faculty can then view the timetable through their accounts.

- **Requirements**:
  - Identifying the requirements of the Timetable generation process.
  - Details about the class room, subject and faculty.
- **Design and Development**:
  - User friendly interface for uploading details of class room, subject and faculty.
  - Using basic HTML, CSS and Django and other libraries for development.
- **Deployment**:
  - Deploying the System in the Server / Cloud platform (AWS or Google Cloud).
  - GitHub for managing the Code.

Flow Chart Diagram of Automatic Timetable Generator

```
                    ( Start )
                        |
                        v
        +-------------------------------+
        | Input Details of Subject,     |
        |   Faculty, Class room         |
        +-------------------------------+
                        |
                        v
        +-------------------------------+
        | Processing Inputs using       |
        |   Genetic Algorithm           |
        +-------------------------------+
                        |
                        v
        +-------------------------------+
        |   Generating Timetable        |
        +-------------------------------+
                        |
                        v
        +-------------------------------+
        |   View Generated Timetable    |
        +-------------------------------+
                        |
                        v
                    ( Stop )
```

STUDENT PROJECTS

Activity Diagram of Automatic Timetable Generator

VI	**Expected Outcome of the project**
	The automatic timetable generation process eliminates the manual scheduling process in schools and colleges, reducing the workload for the coordinates and improving efficiency. This generates individual schedules and also creates academic, class schedules, enhancing the academic planning. By intelligently managing constraints that are difficult to handle manually, it ensures a seamless schedule for both students and faculty.
VII	**Application of the project**
	• Educational Institutions like colleges, universities and schools. • Training Programs • Online learning platforms • Research institutions
VIII	**Does the project proposed is relevant to any of the Industry or Institution in and around your area: Yes** School, Colleges and Coaching Institutions. Vivekananda College of Engineering & Technology
IX	**Budget**

Materials Cost:	--
Labour Charges:	--
Any other cost:	5000
Total:	**5000**
Source for Funds:	Self

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X	Schedule for Major Activities	Time
		Plan (Last date)
	Date of commencement of project: (Project team formation details submitted to Dept project coordinator)	18-02-2025
	Project Plan (Synopsis) submission to the Department	25-02-2025
	Review of the Project Plan by Guide/Project Coordinators/HoD	25-02-2025 to 28-02-2025
	Presentation 1: Presentation of Project Plan (Synopsis)	1st Week of March 2025
	Submission of Progress report: Chapter 1: Introduction & Chapter 2: Literature review – Problem Statement, Requirements Specification and Analysis (soft copy)	18-04-2025
	Project Phase-I Presentation 2: Introduction & Literature Review-Problem Statement, Requirements Specification and Analysis.	Between 4th Week of April 2025 to 1st Week of May 2025
	Submission of soft copy of Project Report	Before 10-05-2025
	Date of completion of the Project Phase-I report on Introduction & Literature Review-Problem Statement/ Requirements Specification and Analysis.	20-05-2025
	Note: Above schedule may change as per VTU academic calendar.	
XI	**Team members**	
	Student(s)	Signature with date
	1. Gaurav G Alva	
	2. Harshit M Naik	
	3. Prapthi J P	
	4. Supreetha N S	
XII	**Guidance**	
	Guide (s) allotted:	Signature (s) with date
	1. Guide: Prof. Chaithanya D	