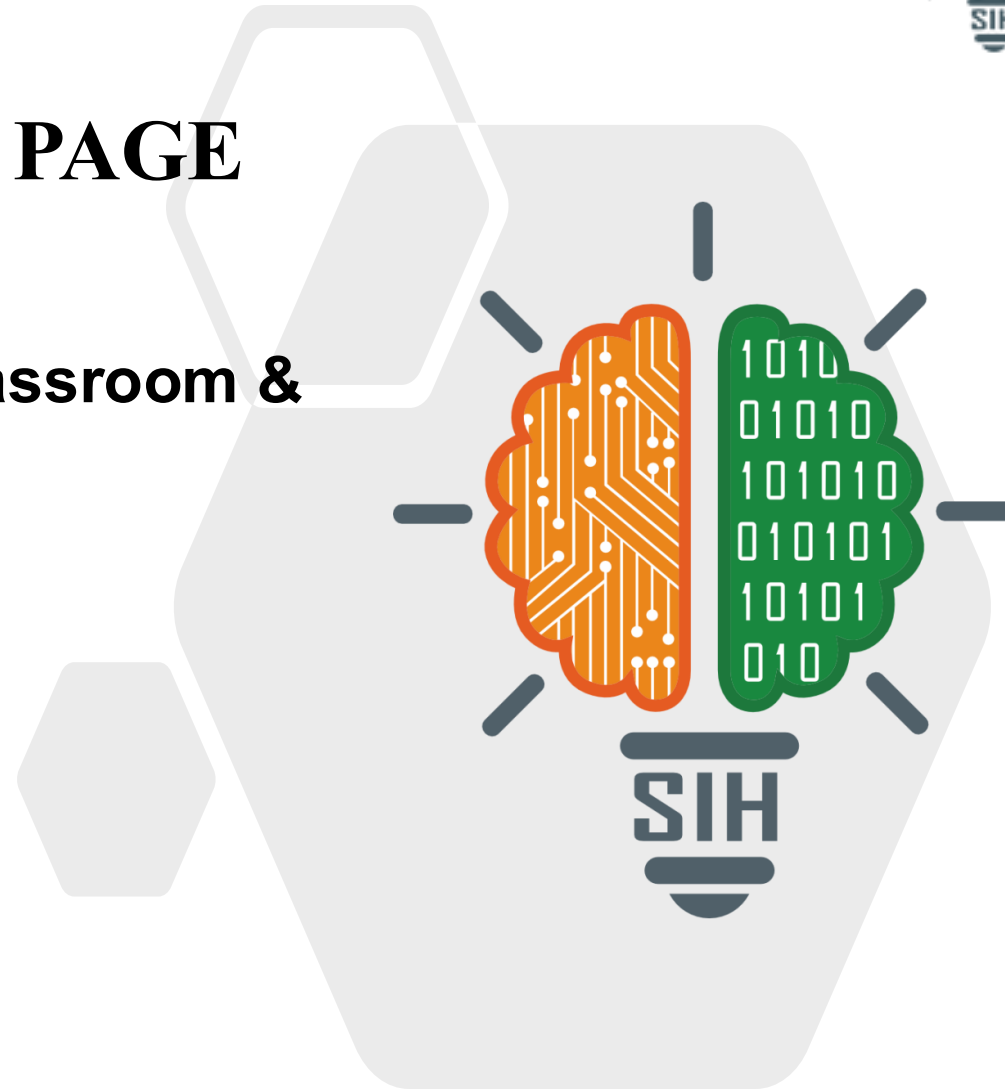


SMART INDIA HACKATHON 2025



TITLE PAGE

- Problem Statement ID –25028
- Problem Statement Title- Smart Classroom & Timetable Scheduler
- Theme- Smart Education
- PS Category- Software
- Team ID-
- Team Name (Registered on portal)- VSync



Transforming Class Scheduling into a Smart Experience

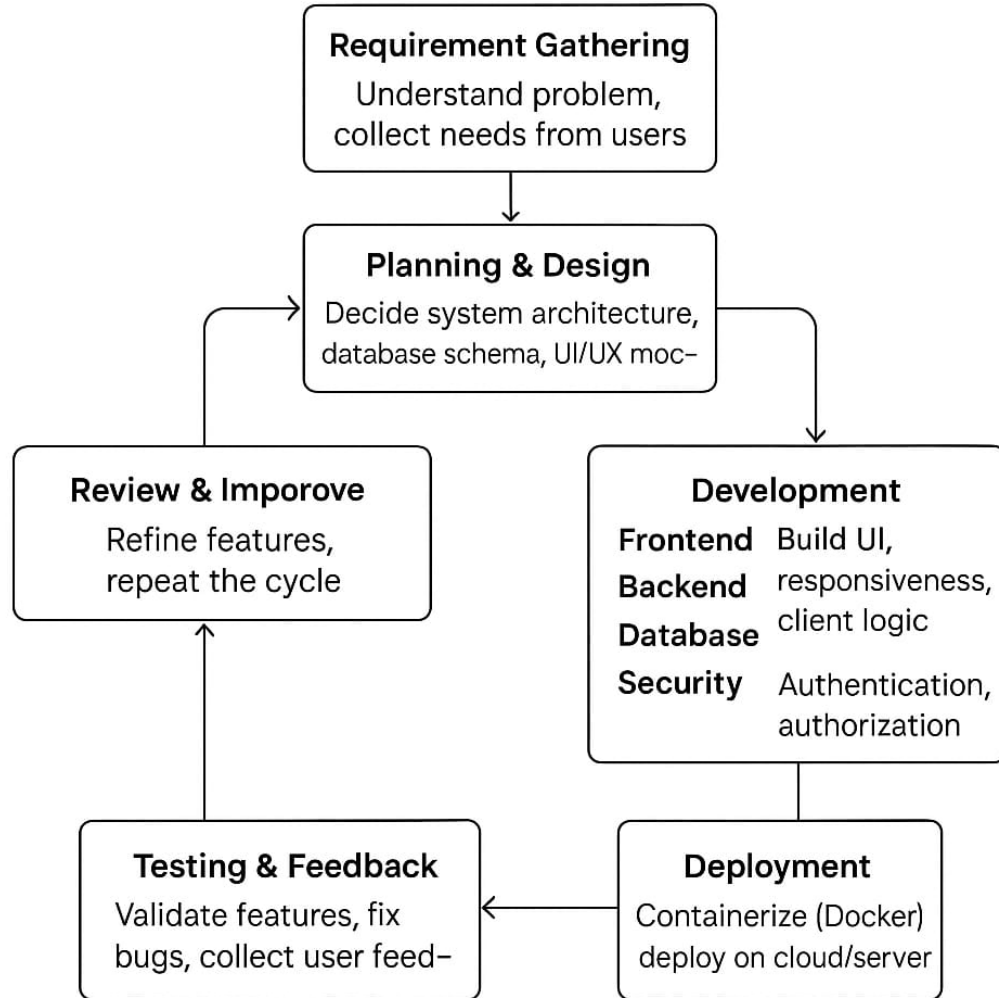
Explanation:

- Colleges spend weeks making timetables manually in Excel or PPT.
- Faculty occasionally face scheduling conflicts, with multiple or overlapping classes in a day
- Students often have consecutive classes without sufficient intervals, which leads to fatigue and reduced focus
- Classrooms and labs often remain underutilized.
- When a teacher is on leave, the timetable has to be manually reshuffled, causing disruption and administrative burden
- With NEP 2020, students choose electives across departments, making scheduling even harder.

Innovation & Uniqueness:

- A web platform that automatically creates a complete timetable in minutes, not weeks .
- Uses AI-based algorithms to avoid clashes and balance workload.
- If a teacher is absent or a class shifts, the system auto-adjusts seamlessly..
- Provides multiple timetable options → admins can choose the best one.
- AI ensures timetables are always updated, reflecting real-time changes effortlessly.

TECHNICAL APPROACH



| Category | Languages/Tech | Role in project |
|------------|--|---|
| Frontend | JavaScript(ES6+),React.js,HTML5, CSS3 / Tailwind CSS | Build user interface, ensure responsiveness and handle client-side logic. |
| Backend | Python,FastAPI/Django | Build APIs and server logic. |
| Database | SQL, PostgreSQL | Manage and store data |
| Security | OAuth2/JWT | Handle login and security |
| Deployment | Docker | Deploy app using containers |

FEASIBILITY AND VIABILITY



Types of Feasibility Study



Technical Feasibility



Economic Feasibility



Legal Feasibility



Operational Feasibility



Scheduling Feasibility

| Feasibility | Challenges | Solution |
|--|--|---|
| AI, scheduling algorithms & databases available | Last-minute teacher/class changes & overlapping bookings | Auto-update timetables & notifications, AI-driven resource reallocation |
| Classroom/lab usage data can be tracked & integrated | Inaccurate or delayed data | IOT/RFID for real-time data capture |
| Timetables auto-adjust in real time | User adoption resistance & occasional system glitches | Training + user-friendly interface, cloud backup & failover support |

Key Benefits of Smart Classroom & Scheduler

- 1.No Class Clashes – Students never miss lectures or labs.
- 2.Less Stress – Balanced timetable with breaks and project time.
- 3.Fair for Teachers – Workload shared equally, no overload.
- 4.Easy Changes – Quick rescheduling if a teacher is absent or events come up.
- 5.Smooth Operations – Saves admin time and avoids confusion.

Impact & Benefits

For Students



Reduced
Student
Fatigue



No Class
Clashes



Flexible
Rescheduling



Balanced Academic

For Teachers & Administration



Fair Teacher
Workload

Automatic
Substitution



Less
Administrative
Stress



Optimal Resource Use

RESEARCH AND REFERENCES



- IEEE & ACM Studies – Inspiration for AI-driven optimization in timetabling .
- NPTEL / AICTE AI in Education – Indian initiatives showing how AI can reduce admin workload.
- UNESCO & WEF Reports – Highlight the role of AI in digital transformation of schools.
- EdTech Startups (Teachmint, Classplus, TCS iON) – Proof that AI scheduling is already shaping real classrooms.
- Open Communities (Reddit, GitHub) – Practical insights & open-source algorithms validating real-world feasibility.