Module Code & Module Title

CS6P05NI Final Year Project

Assessment Weightage & Type

5% FYP Proposal

Semester

2025 Autumn

PROJECT TITLE: PanditYatra AI-Powered Global Pandit Booking Platform with Offline JyotishAI

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I confirm that I understand my coursework needs to be submitted online via Google Classroom under the relevant module page before the deadline in order for my assignment to be accepted and marked. I am fully aware that late submissions will be treated as non-submissions, and a mark of zero will be awarded.

1. Introduction

1.1 Background and Problem Statement

For millions of Nepalese and the Nepali diaspora worldwide, Hindu rituals and pujas continue to be essential components of cultural identity. However, carrying out genuine rituals presents serious difficulties for Non-Resident Nepalis (NRNs):

- Difficulty finding verified Nepalese pandits who speak Nepali/English
- Time-zone confusion between user location and Nepal (UTC+5:45)
- Lack of transparent pricing and inclusion of required samagri
- Absence of live video puja with automatic recording
- No reliable offline horoscope generation in rural or low-connectivity areas

Existing platforms (for example, panditji in astrosage.com) are either region-locked, lack live video, or require constant internet connectivity.

1.2 Proposed Solution

PanditYatra is a Progressive Web App (PWA) that connects verified Nepalese pandits with global users through an AI-powered recommendation engine, a unified booking cart, multi-currency payments (Khalti & Stripe), live video puja with automatic cloud recording (Whereby), and a fully offline JyotishAI Kundali chatbot using pyswisseph compiled to WebAssembly.

2. Aims and Objectives

To develop a culturally sensitive, globally accessible, AI-powered pandit booking platform with zero-cloud-cost offline capabilities.

Specific Objectives:

1. Implement passwordless OTP authentication and role-based dashboards
2. Develop rule-based AI pandit and samagri recommendation engine
3. Create real-time calendar with automatic Nepal Time conversion

4. Build unified cart combining pandit service, puja samagri, and sacred books
5. Integrate Khalti (NPR) and Stripe (USD) payment gateways
6. Enable live video puja with automatic cloud recording using Whereby
7. Implement fully offline Kundali generation using WebAssembly
8. Achieve complete PWA offline functionality (installable, works without internet)

3. Expected Outcomes and Deliverables

- Fully functional installable Progressive Web App
- Minimum 20 verified pandits and 50+ samagri items
- Admin dashboard with four role levels=
- Complete source code on GitHub, documentation, and demonstration video
- Research potential on "Rule-based AI for Cultural Preservation"

4. Project Risks, Threats and Contingency Plans

Risk	Probability	Impact	Mitigation/Contingency
Whereby API changes	Medium	High	Switch to Daily.co or Jitsi
pyswisseph WASM compilation issues	Low	High	Use pre-compiled community build
Payment gateway delays	Medium	High	Implement mock payments first
Supervisor unavailability	Low	Medium	Weekly email progress reports
Browser storage limits	Low	Medium	Compress media, limit chat history

5. Methodology

5.1 Considered Methodologies

Waterfall, Agile Scrum, Incremental, Rational Unified Process (RUP)

5.2 Selected Methodology Rational Unified Process (RUP) with Agile Practice

Reason: RUP's risk-driven, iterative approach perfectly suits innovative features (offline AI, time-zone logic, video auto-recording). Combined with weekly Agile sprints for rapid feedback.

Phases:

- Inception (Nov 2025)
- Elaboration (Dec 2025)
- Construction (Jan–Feb 2026)
- Transition (Mar–Apr 2026)

Sprint Duration: 1 week (24 sprints total)

6. Resource Requirements

6.1 Functional Requirements

ID	Function	Description	Priority
FR1	User Authentaction	Users (admin, pansdits and customers) can register, login and reset passwords securely using JWT + OTP.	High
FR2	Pandit Booking	Users can search, filter, and book	High

		pandits based on language, occasion, rating, and availability.	
FR3	AI Pandit Recommednder	Rule-Base AI suggests suitable pandits base on iuser preferences occasion type, and language.	High
FR4	AI Samgri Recommender	Auto suggest required and optional ritual items based on booked puja or occasion.	Medium
FR5	Real Time Avalibility Calander	Users can view live pandit availability solts with timsezone conversion.	High
FR6	Unified Booking Cart	Users can add pandits, samagri, and books to a single cart with transparent pricing.	High
FR7	Payment Processing	Support for NRP (Khalti) and USD (Stripe) with webhook confirmation of successful transactions.	High
FR8	Live Video Puja	Browser based group video calls with up to 10 participants.	Medium
FR9	Real Time Chat	Users and pandits can message each others,	High

		send images, and access chat history.	
FR10	Books Buy/Borrow	Users can buy or borrow PDF Scriptures (For instance , Bhagavad Gita) with 7-20 days borrowing.	Medium
FR11	Offline Kundali JyotishAI chatbot	Provides birth chart predictions without internet connection using rules and pywisseph.	Medium
FR12	PWA Offline Access	User can install the app and access cached books and kundali offline.	Medium
FR13	User Reviews & Rating	Users can submit post-puja feedback for pandits and samagri to build trust.	Medium
FR14	Admin Dashboard	Role-based dashboard for super admin, and admins ro manage users, pandits and inventory.	High
FR15	User Dashboard	Personalized dashboard for users to view upcoming bookings, borrowed books, saved kundali charts, cart summary, and past reviews. Includes quick actions like "Ask	High

		Kundali AI" and "Book Pandit".	
FR16	Pandit Alert	SMS + Email alerts in Nepali/English for new bookings, reminders, and payments.	Medium
FR17	AR Puja Room Planner (Optional)	Users can upload a room photo and view 3D mandap overly using AR.js	Low
FR18	Community PUja Sharing (Optional)	Users can share 1 minute highlight reels of puja sessions using FFmpeg.	Low

6.2 Non-Functional Requirements

ID	Requirement	Description	Priority
NF1	Performance	The system must handle up to 10,000 concurrent users with fast response times.	High
NF2	Security	Securte authenatction (JWT+OTP), encrypted data in transit and test, and protection against XSS/CSRF attacks.	High
NF3	Usability	Responsive UI across devices, intuitive navigation, and helpful error messages.	Medium
NF4	Reliability	System uptime of 99.9% offline fallback for key features.	High

NF5	Maintainability	Modular code structure, detailed documentation, and automated testing.	Medium
NF6	Scalability	Must allow future addition of features, more pandits and higher user load.	Medium
NF7	Comoatibility	Works on modern web browsers (Chrome, Firefox, Edge, Safari) and mobile devices.	High
NF8	Performance of Video	Live video sessions must support 200 concurrent participants with minimal lag.	Medium
NR9	Payment Reliablity	Multi currency payments must confirm transactions within 5 seconds.	HIgh
NF10	Data Privacy	GDPR and local data protection compliance for global users.	High

6.3 External Interface Requirements

6.3.1 User Interfaces

ID	Inteface	Description	Priority
UI1	Web Interface	Responsive UI b uilt with React+TailwindCSS for desktop and mobile users.	High
UI2	Admin Dashboard	Role based dashboard for super admin and admin to manage users, pandits, and inventory.	High
UI3	Mobile PWA	Progressive Web App with Offline access to cached books and kundali chatbot.	Medium
UI4	Video Puja Interface	Browser based video call interface supporting 200 users with screen sharing and recording.	Medium

6.4 Hardware Interfaces

ID	Hardware	Description	Priority
HW1	User Device	Desktop, laptop, tablet, and smartphones with modern web browser.	High
HW2	Server Infrastructure	Cloud Hosted backend (Django. Docker, PostgresSQl)	High

		with sufficient CPU, RAM, and storage.	
HW3	Video Streaming Devices	Microphone, camera and speakers required fore video puja sessions.	Medium

6.5 Softwares Interface

ID	Softwares	Description	Priority
SW1	Backend Framework	Django with REST API for backend logic and data handling.	High
SW2	Backend Farmework		
SW3	Frontend Framework	React+ Typescript + TilwindCSS for UI development.	High
SW4	Payment Gateway APPIs	Khalti (NRP) and Stripe (USD) for processing payments.	High
SW5	OTP Service	Twilio?pyotp for email?SMS verification	High
SW6	Video Conferecing API	Whereby for browser based group video calls.	Medium

6.6 Communication Interfaces

ID	Communication	Description	Priority
CI1	HTTP/HTTPS	Secure communication between client and server.	High
CI2	Websocket	Real Time communication for chat and live updates.	HIgh
CI3	Payment Webhooks	Instant payment confirmation from Stripe/Khalti to backend.	High

7. Entity Relationship Diagram (ERD)

7.1 Entities and Attributes

Entity	PK	Attributes
User	user_id	name,email,phone,password_hash, timezone, profile_pic_url, role (user/pandit/admin)
Pandit	pandit_id	user_id (FK), experience_years, languages (JSON), bio, certificate_url, is_verified, rating

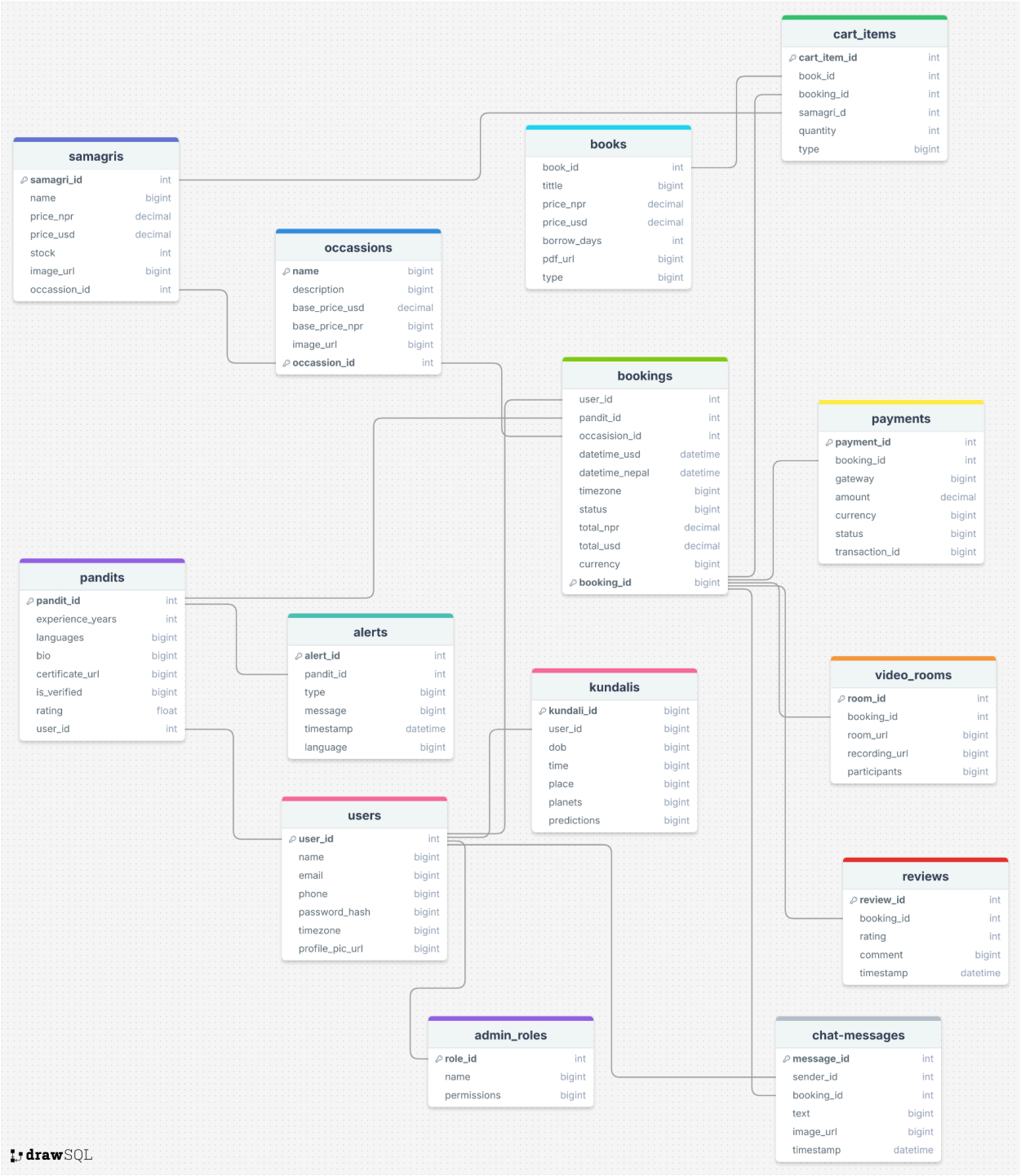
Occasion	occasion_id	name, description, base_price_npr, base_price_usd, image_url
Samagri	samagri_id	name, price_npr, price_usd, stock, image_url, occasion_id (FK)
Book	book_id	title, price_npr, price_usd, borrow_days, pdf_url, type (buy/borrow)
Booking	bokking_id	user_id (FK), pandit_id (FK), occasion_id (FK), datetime_user, datetime_nepal, timezone, status, total_npr, total_usd, currency
CartItem	cart_tem_id	booking_id (FK), samagri_id (FK), book_id (FK), quantity, type (samagri/book)
Payment	paymen t_id	booking_id (FK), gateway, amount, currency, status, transaction_id
VideoRoom	room_id	booking_id (FK), room_url, recording_url, participants (JSON), start_time, end_time

ChatMessage	message_id	booking_id (FK), sender_id (FK), text, image_url, timestamp
Review	review_id	booking_id (FK), rating, comment, timestamp
Kundali	kundali_id	user_id (FK), dob, time, place, planets (JSON), predictions (JSON), created_at
AdminRole	role_id	name (super/pandit/inventory/support), permissions (JSON)
Alert	alert_id	pandit_id (FK), type (sms/email), message, language, timestamp

7.1 Relationship

1. **User → BookingType:** 1:M **Cardinality:** One user → many bookings
2. **Pandit → BookingType:** 1:M **Cardinality:** One pandit → many bookings
3. **Occasion → BookingType:** 1:M **Cardinality:** One occasion → many bookings
4. **Samagri → CartItemType:** 1:M **Cardinality:** One item → many cart entries
5. **Book → CartItemType:** 1:M **Cardinality:** One book → many cart entries
6. **Booking → PaymentType:** 1:1 **Cardinality:** One booking → one payment
7. **Booking → VideoRoomType:** 1:1 **Cardinality:** One booking → one video room
8. **Booking → ChatMessageType:** 1:M **Cardinality:** One booking → many messages
9. **Booking → ReviewType:** 1:1 **Cardinality:** One booking → one review
10. **User → KundaliType:** 1:M **Cardinality:** One user → many charts
11. **User → AdminRoleType:** 1:M **Cardinality:** One user → multiple roles

12. **Pandit → AlertType:** 1:M **Cardinality:** One pandit → many alerts

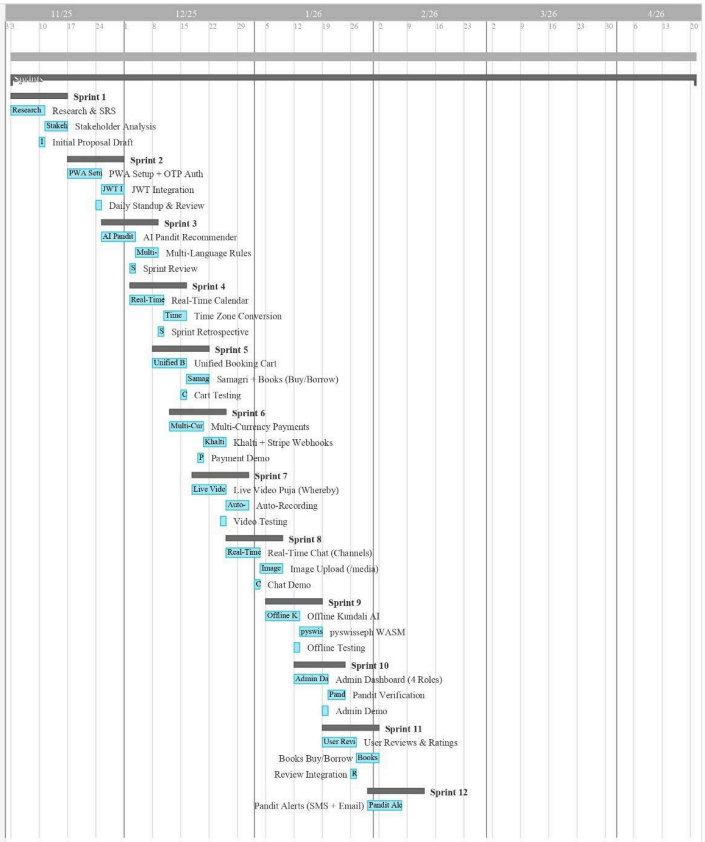


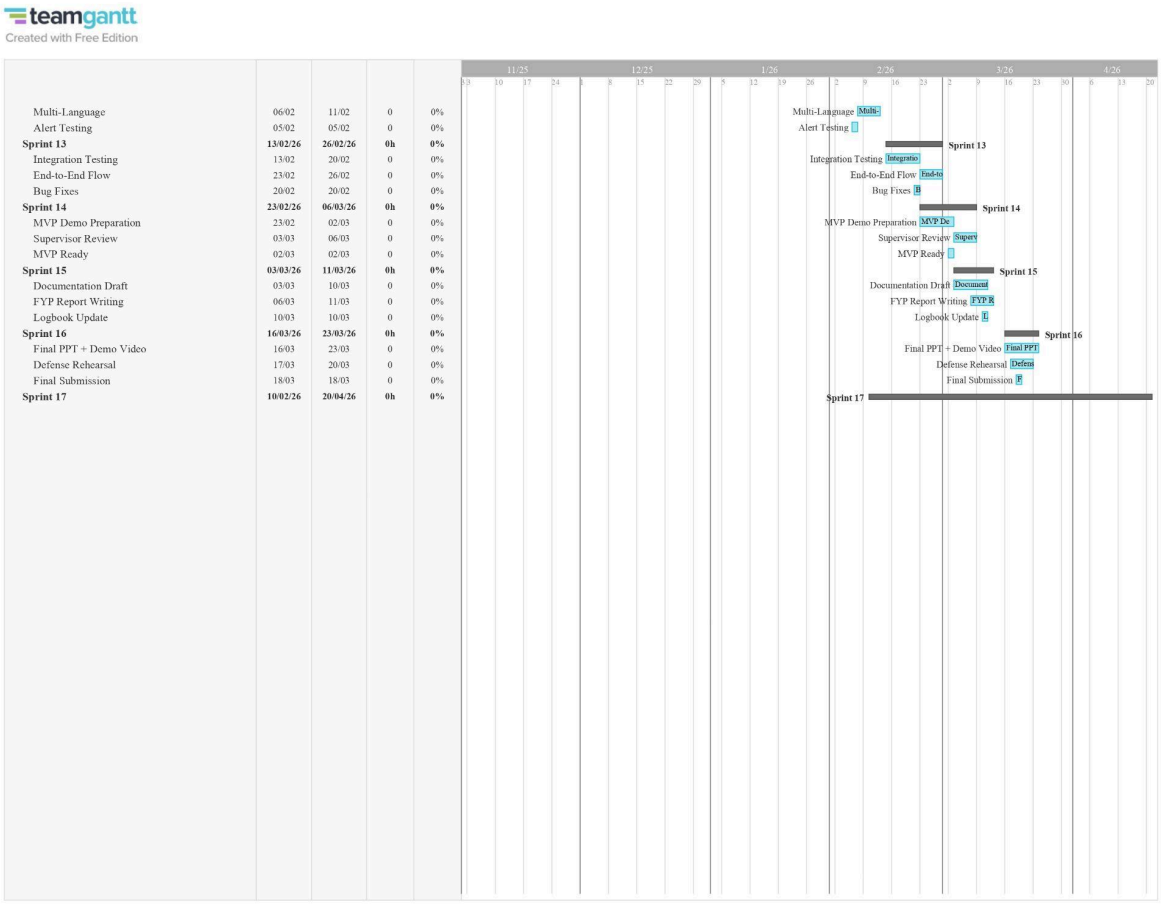
8. Work Breakdown Structure

9. Gantt Chart

teamgantt
Created with Free Edition

PanditYatra FYP – Agile Scrum	start	end	0h	0%
Sprints	**03/11/25**	**20/04/26**	**0h**	**0%**
Sprint 1	**03/11/25**	**14/11/25**	**0h**	**0%**
Research & SRS	03/11	10/11	0	0%
Stakeholder Analysis	11/11	14/11	0	0%
Initial Proposal Draft	10/11	10/11	0	0%
Sprint 2	**17/11/25**	**28/11/25**	**0h**	**0%**
PWA Setup + OTP Auth	17/11	24/11	0	0%
JWT Integration	25/11	28/11	0	0%
Daily Standup & Review	24/11	24/11	0	0%
Sprint 3	**25/11/25**	**08/12/25**	**0h**	**0%**
AI Pandit Recommender	25/11	02/12	0	0%
Multi-Language Rules	03/12	08/12	0	0%
Sprint Review	02/12	02/12	0	0%
Sprint 4	**02/12/25**	**15/12/25**	**0h**	**0%**
Real-Time Calendar	02/12	09/12	0	0%
Time Zone Conversion	10/12	15/12	0	0%
Sprint Retrospective	09/12	09/12	0	0%
Sprint 5	**08/12/25**	**19/12/25**	**0h**	**0%**
Unified Booking Cart	08/12	15/12	0	0%
Samagri + Books (Buy/Borrow)	16/12	19/12	0	0%
Cart Testing	15/12	15/12	0	0%
Sprint 6	**11/12/25**	**24/12/25**	**0h**	**0%**
Multi-Currency Payments	11/12	18/12	0	0%
Khalti + Stripe Webhooks	19/12	24/12	0	0%
Payment Demo	18/12	18/12	0	0%
Sprint 7	**17/12/25**	**30/12/25**	**0h**	**0%**
Live Video Puja (Whereby)	17/12	24/12	0	0%
Auto-Recording	25/12	30/12	0	0%
Video Testing	24/12	24/12	0	0%
Sprint 8	**25/12/25**	**07/01/26**	**0h**	**0%**
Real-Time Chat (Channels)	25/12	01/01	0	0%
Image Upload (/media)	02/01	07/01	0	0%
Chat Demo	01/01	01/01	0	0%
Sprint 9	**05/01/26**	**16/01/26**	**0h**	**0%**
Offline Kundali AI	05/01	12/01	0	0%
pyswisseph WASM	13/01	16/01	0	0%
Offline Testing	12/01	12/01	0	0%
Sprint 10	**12/01/26**	**22/01/26**	**0h**	**0%**
Admin Dashboard (4 Roles)	12/01	19/01	0	0%
Pandit Verification	20/01	22/01	0	0%
Admin Demo	19/01	19/01	0	0%
Sprint 11	**19/01/26**	**30/01/26**	**0h**	**0%**
User Reviews & Ratings	19/01	26/01	0	0%
Books Buy/Borrow	27/01	30/01	0	0%
Review Integration	26/01	26/01	0	0%
Sprint 12	**29/01/26**	**11/02/26**	**0h**	**0%**
Pandit Alerts (SMS + Email)	29/01	05/02	0	0%





10. Milestones

Milestone	Date	Deliverable
Proposal Approval	16 Nov 2025	This document

Elaboration Complete	31 Dec 2025	ERD, UI mockups, Offline AI prototype
MVP Completion	07 Feb 2026	All 14 features working
Final Documentation	15 Mar 2026	Report, PPT, video
Project Defense	30 Apr 2026	Live demonstration

11. Conclusion

PanditYatra is a special combination of contemporary technology and cultural preservation. It demonstrates advanced skills in full-stack development, WebAssembly, PWA, and rule-based AI while addressing actual problems of the Nepali community worldwide by providing AI-driven pandit matching, automatic time-zone conversion, live recorded pujas, and fully offline Kundali generation with no cloud cost.

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