AI Scheduling Agent Case Study - Intern Assignment

Project Overview

Build a **medical appointment scheduling AI agent** that automates patient booking, reduces no-shows, and streamlines clinic operations. This mirrors real-world challenges in healthcare technology.

Business Problem

Medical practices lose **20-50% revenue** due to no-shows, missed insurance collection, and scheduling inefficiencies. Your AI agent will solve these operational pain points.

Technical Requirements

Core Features to Implement (MVP-1)

Feature	Description	Technical Challenge
Patient Greeting	Collect name, DOB, doctor, location	Data validation & NLP
Patient Lookup	Search EMR, detect new vs returning. Use any DB of choice. Feel free to generate synthetic data of your choice here with 50 patients	Database integration
Smart Scheduling	60min (new patient) vs 30min (returning patient)	Business logic implementation
Calendar Integration	Show available slots. Calendy tool integration	File/API management
Insurance Collection	Capture carrier, member ID, group	Data structuring
Appointment Confirmation	Export to Excel, send confirmations	File operations & messaging
Form Distribution	Email patient intake forms. This will only be sent after the appointment is confirmed. Attached are the sample forms in the case-study	Integration & automation

Reminder System	3 automated reminders with confirmations on their email and SMS. 1st reminder should be regular, while 2nd and 3rd reminder should have actions: 1) Have they filled the forms? 2) If their visit is confirmed or not? If not, please mention the reason for cancellation?	Scheduling & tracking

Mock Data Sources (Provided)

- **Patient Database**: CSV with 50 sample patients - Synthetically generate this
- **Doctor Schedules**: Excel files with availability - Assumption of your choice, synthetic generation
- **Appointment Templates**: Form templates

Technical Stack Options (Choice from either of the 2 choices)

Option 1: LangGraph + LangChain

- Multi-agent orchestration with LangGraph
- LangChain tools for integrations
- Any LLM of your choice

Option 2: Agent Development Toolkit (ADK)

- Built-in agent framework
- Pre-configured medical templates
- Streamlined development process

Integration Requirements

- **Patient Data**: Read from CSV (simulate EMR)
- **Calendar Management**: Calendly tool file operations for booking it on calendar and schedule should be on the excel (simulated data)
- **Communication**: Email & SMS
- **Data Export**: Generate Excel reports for "admin review". As per the above steps.

Deliverables (Due: Saturday 4 PM)

1. Technical Approach Document (1 page)

- **Architecture Overview**: Agent design and workflow
- **Framework Choice**: LangGraph/LangChain vs ADK with justification
- **Integration Strategy**: How you handled data sources
- **Challenges & Solutions**: Key technical decisions made

2. Demo Video (3-5 minutes)

- **Live Interface**: Streamlit or Gradio chatbot demo
- **Complete Flow**: Patient booking from greeting to confirmation
- **Key Features**: Show calendar integration, Excel export, reminder setup
- **Edge Cases**: Demonstrate error handling

3. Executable Code Package

- **Complete Source Code**: All Python files, requirements.txt
- **Sample Data**: Include test patient data and schedules
- **Configuration**: Environment setup guide

Evaluation Criteria

Technical Implementation (50%)

- Agent architecture and workflow design
- Code quality, error handling, documentation
- Integration with mock data sources
- Framework utilization effectiveness

User Experience (30%)

- Conversation flow naturalness
- Interface usability (Streamlit/Gradio)
- Error handling and edge cases
- Complete booking workflow execution

Business Logic (20%)

- Accurate patient type detection
- Proper appointment duration assignment
- Calendar availability management
- Data export functionality

Success Metrics

- **Functional Demo**: Complete patient booking workflow
- **Data Accuracy**: Correct patient classification and scheduling
- **Integration Success**: Excel exports and calendar management working
- **Code Quality**: Clean, documented, executable codebase

Timeline Expectations

- **Day 1**: Architecture design, framework setup, basic conversation flow

- **Day 2**: Core feature implementation, data integration, testing
- **Day 3**: UI development, demo preparation, documentation completion

Submission Format

Email with subject: **"AI Scheduling Agent - [Your Name]" to chaithra.mk@raga.ai and fill the google form attached to submit the case study.**

- **Attachment 1**: Technical approach document (PDF)
- **Attachment 2**: Demo video (MP4, max 50MB)
- **Attachment 3**: Code package (ZIP file with all source code)

Deadline: Saturday, 6th September, 4 PM - No exceptions

This project simulates real healthcare AI development challenges and demonstrates your ability to build practical AI solutions with business impact.

Post submission of this case-study, evaluations take 2-3 days, followed by a discussion with the Hiring Manager and you will be given an offer for 3 to 6 months of internship. This is work from office internship with 3 days WFO and 2 days WFH

All the best for the case-study round!