

# **PolyChat – Web Development Task Report**

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## **1. Introduction**

- PolyChat is an intelligent chat application inspired by modern answer engines like Perplexity.
- The objective was to replicate the provided UI and implement required chat functionality.
- Both Task 1 and Task 2 were fully completed as per the assignment.

## **2. UI Replication**

### **2.1 Screen 1 – Landing Screen**

- Pixel-accurate UI replication using HTML and CSS.
- Sidebar with previous chat titles.
- Model selection tabs and central search input.
- Quick action buttons for common tasks.
- Responsive layout and consistent typography.

### **2.2 Screen 2 – Chat Conversation Screen**

- Two-panel layout with chat history and conversation view.
- Clean card-based answer display.
- Model attribution shown for each response.
- Persistent input bar and smooth scrolling.

## **3. LLM API Integration (Task 1)**

- Integrated OpenAI (GPT-4o mini), Google Gemini, and Cohere models.
- Used official SDKs and free-tier supported endpoints.

### **3.1 Backend Controller – handleChat**

- Manages chat creation and message storage.
- Routes requests to the selected LLM.
- Preserves full conversation context.
- Stores responses with model metadata.

### **3.2 Manual Model Selection**

- Users can switch models on both screens.
- Full chat history is passed during model switching.
- Ensures consistent and contextual responses.

#### **4. Chat History Persistence (Task 2)**

- MongoDB Atlas integrated using Mongoose.
- Chat documents store title and message array.
- Sidebar lists chats in descending order.
- Clicking a chat reloads the conversation.

#### **5. Automatic Model Switching (Auto Mode)**

- Auto mode selects models based on query intent.
- Keyword-based intent detection implemented.
- OpenAI fallback ensures reliability.

#### **6. Conclusion**

- All requirements for Task 1 and Task 2 were satisfied.
- The application is functional, reliable, and user-focused.
- Closely mirrors real-world intelligent answer engines.