**Project Specification for GPT-Engineer**

**Overview**

We are developing a **gamified business simulation platform** designed to empower founders and attract investors. The platform integrates multiple AI agents to provide personalized guidance, engaging gamification elements, interactive business simulations, and investor-founder connections. The platform must be user-friendly, secure, and scalable, providing an exceptional experience to both founders and investors.

**Platform Objectives**

1. **Empower Founders**:
   * Provide personalized business roadmaps.
   * Assign adaptive tasks to guide business development.
   * Offer interactive simulations to test business strategies.
   * Enhance engagement through gamification.
2. **Attract Investors**:
   * Curate startups matching investor preferences.
   * Facilitate transparent milestone tracking.
   * Enable direct communication with founders.
   * Provide tools for mentorship and engagement.
3. **Enhance User Engagement**:
   * Implement gamification elements like XP accumulation, streaks, challenges, leaderboards.
   * Create a virtual village representing business growth.
   * Foster a community through social features and mentorship opportunities.

**Technical Requirements**

* **Frontend**: Responsive web application compatible with modern browsers and devices.
* **Backend**: Scalable server infrastructure with secure databases.
* **AI Integration**: Utilize AI models for personalization, recommendations, and natural language processing.
* **Security**: Implement robust security measures for data protection and compliance with regulations.
* **Performance**: Ensure fast load times and smooth interactions.
* **Testing**: Comprehensive testing for functionality, security, and performance.

**AI Agents Specifications**

**1. Personalized Roadmap Generation Agent**

**Description**

An AI agent that creates and continuously updates personalized business roadmaps for founders based on their inputs, industry data, and progress.

**Functionality**

* **Data Collection**: Gathers information from founders during onboarding and through ongoing interactions.
* **Roadmap Creation**: Generates a step-by-step plan with milestones and tasks tailored to the founder's business goals.
* **Dynamic Adaptation**: Adjusts the roadmap in real-time based on task completion, performance metrics, and changes in business strategy.
* **Feedback Integration**: Incorporates user feedback to refine recommendations.

**Implementation Details**

* **Input**:
  + Founder’s business details (name, industry, target market, goals).
  + Progress data from task completion and performance metrics.
* **Output**:
  + Personalized roadmap with milestones and associated tasks.
* **Algorithms**:
  + Machine learning models for recommendation systems.
  + Data analysis for industry trends and best practices.
* **Data Models**:
  + Business profile schema.
  + Roadmap and task schemas.

**User Interface**

* **Onboarding Forms**: Simple, intuitive forms for data entry during signup.
* **Roadmap Display**:
  + Timeline view with milestones and tasks.
  + Interactive elements to expand task details.
* **Customization Options**:
  + Ability to edit business information and goals.
  + Feedback mechanisms for users to rate recommendations.

**User Experience Flow**

1. **Signup and Onboarding**:
   * User creates an account and provides business details.
   * Agent generates an initial roadmap.
2. **Roadmap Interaction**:
   * User reviews the roadmap, explores milestones.
   * Adjusts preferences if necessary.
3. **Continuous Adaptation**:
   * Agent updates roadmap based on user progress and feedback.

**2. Task Management and Adaptation Agent**

**Description**

An AI agent that assigns daily tasks derived from the personalized roadmap, monitors completion, and adapts future tasks based on performance and feedback.

**Functionality**

* **Task Assignment**: Generates daily task lists from the roadmap.
* **Progress Monitoring**: Tracks task completion and user performance.
* **Adaptive Scheduling**: Adjusts task difficulty and scheduling based on user feedback and progress.
* **Notifications**: Sends reminders and alerts for upcoming tasks and deadlines.

**Implementation Details**

* **Input**:
  + Roadmap tasks.
  + User feedback and performance data.
* **Output**:
  + Daily task lists.
  + Adjusted future tasks.
* **Algorithms**:
  + Reinforcement learning for adaptation.
  + Scheduling algorithms.
* **State Management**:
  + User task progress tracking.
  + Feedback data storage.

**User Interface**

* **Task List View**:
  + Checklist of daily tasks with due dates and priorities.
  + Options to mark tasks as complete or provide feedback.
* **Feedback Mechanisms**:
  + Quick buttons to indicate task difficulty or relevance.
* **Notifications**:
  + In-app alerts and email reminders.

**User Experience Flow**

1. **Daily Engagement**:
   * User logs in and views the daily task list.
2. **Task Completion**:
   * User completes tasks and marks them as done.
3. **Providing Feedback**:
   * User rates tasks or provides comments.
4. **Adaptive Adjustments**:
   * Agent updates future tasks based on feedback.

**3. Gamification Engine**

**Description**

An AI agent that manages gamification elements, including experience points (XP), levels, achievements, leaderboards, and a virtual village representing the user's business growth.

**Functionality**

* **XP Accumulation**: Awards XP for task completion and achievements.
* **Leveling System**: Users level up based on XP thresholds.
* **Achievements and Badges**: Unlock badges for significant milestones.
* **Virtual Village**: Visual representation of business growth.
* **Leaderboards**: Ranks users based on XP and achievements.
* **Challenges**: Offers quests and challenges for extra rewards.

**Implementation Details**

* **Input**:
  + User actions (task completions, achievements).
* **Output**:
  + Updated XP, levels, badges, and village growth.
* **Algorithms**:
  + Point calculation systems.
  + Leaderboard ranking logic.
* **Data Models**:
  + User gamification profiles.
  + Achievement and badge definitions.

**User Interface**

* **Dashboard Widgets**:
  + Displays current XP, level, and recent achievements.
* **Virtual Village Screen**:
  + Interactive map showing buildings and progress.
* **Leaderboards**:
  + Shows user rankings and allows filtering.
* **Achievements Page**:
  + Lists unlocked badges and those yet to be earned.

**User Experience Flow**

1. **Earning Rewards**:
   * User completes tasks and earns XP.
2. **Leveling Up**:
   * Reaching XP thresholds unlocks new levels and features.
3. **Village Growth**:
   * Virtual village expands with new buildings as milestones are achieved.
4. **Participating in Challenges**:
   * User engages in challenges for additional rewards.
5. **Viewing Leaderboards**:
   * User checks rankings and competes with others.

**4. Investor-Startup Matching Agent**

**Description**

An AI agent that curates a list of startups for investors based on their preferences and tracks startup progress to identify optimal investment opportunities.

**Functionality**

* **Profile Analysis**: Evaluates investor preferences and startup profiles.
* **Matching Algorithm**: Recommends startups that align with investor criteria.
* **Milestone Tracking**: Monitors startup progress and notifies investors.
* **Communication Facilitation**: Enables direct contact between investors and founders.

**Implementation Details**

* **Input**:
  + Investor preferences (industry, stage, investment size).
  + Startup data and milestones.
* **Output**:
  + Curated startup recommendations.
  + Notifications of key milestones.
* **Algorithms**:
  + Recommendation systems using collaborative filtering.
* **Data Models**:
  + Investor profiles.
  + Startup profiles and progress data.

**User Interface**

* **Investor Dashboard**:
  + Displays recommended startups and updates.
* **Startup Profiles**:
  + Detailed information on startups, including milestones and projections.
* **Communication Tools**:
  + Messaging system for investor-founder interactions.

**User Experience Flow**

1. **Investor Onboarding**:
   * Investor sets up preferences.
2. **Receiving Recommendations**:
   * Agent provides a list of matching startups.
3. **Monitoring Progress**:
   * Investor tracks startup milestones.
4. **Engaging with Startups**:
   * Investor contacts founders through the platform.

**5. Business Simulation and Analytics Agent**

**Description**

An AI agent that provides a simulation environment for founders to test business ideas and strategies, offering real-time analytics and visual representations of potential outcomes.

**Functionality**

* **Simulation Modeling**: Allows users to input variables and simulate business scenarios.
* **Analytics Generation**: Provides data insights and projections based on simulations.
* **Visual Milestones**: Displays results through charts, graphs, and dashboards.
* **What-If Analysis**: Enables users to adjust variables and see immediate effects.

**Implementation Details**

* **Input**:
  + User-defined variables (pricing, marketing budget, etc.).
* **Output**:
  + Simulation results and analytics reports.
* **Algorithms**:
  + Predictive models using statistical analysis.
* **Integration**:
  + Connects with the user's business data for accuracy.

**User Interface**

* **Simulation Lab**:
  + Interactive inputs for scenario variables.
* **Results Display**:
  + Visualizations of outcomes (graphs, charts).
* **Comparison Tools**:
  + Ability to compare different simulation results.

**User Experience Flow**

1. **Setting Up Simulations**:
   * User selects variables and parameters.
2. **Running Simulations**:
   * Agent processes inputs and generates results.
3. **Analyzing Results**:
   * User reviews analytics and adjusts strategies accordingly.

**6. Mentorship Coordination Agent**

**Description**

An AI agent that facilitates mentorship connections between founders and investors or experienced entrepreneurs, managing communication and scheduling.

**Functionality**

* **Matchmaking**: Pairs users based on expertise and needs.
* **Scheduling Assistance**: Coordinates availability and sets up meetings.
* **Communication Platform**: Provides messaging and video conferencing tools.
* **Progress Tracking**: Monitors mentorship interactions and outcomes.

**Implementation Details**

* **Input**:
  + Mentor and mentee profiles.
  + Availability schedules.
* **Output**:
  + Match suggestions.
  + Meeting schedules and reminders.
* **Algorithms**:
  + Matching logic based on profiles.
* **Data Models**:
  + User profiles with skills and preferences.
  + Interaction histories.

**User Interface**

* **Mentorship Hub**:
  + Displays potential mentors or mentees.
* **Scheduling Interface**:
  + Calendar integration for booking sessions.
* **Messaging System**:
  + Secure communication channels.

**User Experience Flow**

1. **Searching for Mentors/Mentees**:
   * User browses profiles and selects potential matches.
2. **Connecting**:
   * Sends connection requests.
3. **Scheduling Sessions**:
   * Sets up meetings through the integrated calendar.
4. **Engaging in Mentorship**:
   * Communicates via messaging or video calls.

**7. Data Security and Compliance Agent**

**Description**

An AI agent that ensures all data handling processes comply with privacy laws and security protocols, protecting user information.

**Functionality**

* **Encryption Management**: Secures data in transit and at rest.
* **Access Control**: Manages user authentication and permissions.
* **Compliance Monitoring**: Ensures adherence to regulations (e.g., GDPR, CCPA).
* **Anomaly Detection**: Identifies and responds to security threats.

**Implementation Details**

* **Input**:
  + User data and system logs.
* **Output**:
  + Security alerts.
  + Compliance reports.
* **Algorithms**:
  + Security protocols implementation.
  + Anomaly detection models.
* **Data Models**:
  + User access logs.
  + Compliance checklists.

**User Interface**

* **Security Settings**:
  + Options for users to manage privacy settings.
* **Notifications**:
  + Alerts for security issues or policy updates.
* **Support Resources**:
  + Access to security FAQs and support.

**User Experience Flow**

1. **Account Security Setup**:
   * User configures security settings during onboarding.
2. **Ongoing Protection**:
   * Agent monitors activities and safeguards data.
3. **Incident Response**:
   * Alerts user of any security concerns and provides steps to resolve them.

**8. Feedback and Support Agent**

**Description**

An AI agent that interacts with users to collect feedback, answer questions, and provide support, enhancing user satisfaction and platform improvement.

**Functionality**

* **Chatbot Support**: Provides instant answers to common questions.
* **Feedback Collection**: Gathers user input on features and experiences.
* **Issue Resolution**: Escalates complex problems to human support.
* **Knowledge Base Management**: Maintains FAQs and guides.

**Implementation Details**

* **Input**:
  + User queries and feedback.
* **Output**:
  + Responses and support tickets.
* **Algorithms**:
  + Natural Language Processing for understanding queries.
* **Data Models**:
  + Knowledge base articles.
  + Support ticket logs.

**User Interface**

* **Chat Interface**:
  + Accessible from any page for quick support.
* **Feedback Forms**:
  + Prompted after key interactions or at user initiation.
* **Help Center**:
  + Searchable articles and tutorials.

**User Experience Flow**

1. **Seeking Help**:
   * User accesses the chatbot for assistance.
2. **Receiving Support**:
   * Agent provides answers or directs to relevant resources.
3. **Providing Feedback**:
   * User submits feedback through forms.
4. **Issue Escalation**:
   * Complex issues are forwarded to human support.

**Assumptions and Decisions**

* **Technology Stack**:
  + **Frontend**: React.js for dynamic and responsive UI.
  + **Backend**: Node.js with Express.js for scalable server operations.
  + **Database**: MongoDB for flexible data management.
  + **AI Models**: Utilize TensorFlow or PyTorch for machine learning implementations.
  + **Security**: Implement JWT for authentication, SSL/TLS for data encryption.
* **Integration**:
  + Use RESTful APIs for communication between frontend and backend.
  + Modular architecture to allow independent development and scalability.
* **Third-Party Services**:
  + **Email Notifications**: Use services like SendGrid.
  + **Payment Processing**: Integrate with Stripe for any transactional needs.
  + **Calendar Integration**: Utilize Google Calendar API for scheduling features.
* **User Roles**:
  + **Founders**: Primary users seeking guidance and tools to develop their businesses.
  + **Investors**: Users looking to find and support promising startups.
  + **Mentors**: Experienced professionals offering guidance (could be investors or separate entities).
* **Design Principles**:
  + **User-Centric**: Focus on intuitive design and ease of use.
  + **Accessibility**: Ensure the platform is accessible to users with disabilities.
  + **Responsiveness**: Optimize for various devices and screen sizes.

**Testing and Validation**

* **Unit Testing**: Write tests for individual components and functions.
* **Integration Testing**: Ensure that different modules work together seamlessly.
* **User Acceptance Testing**: Collect feedback from a group of target users to validate functionality and usability.
* **Security Testing**: Perform penetration testing to identify and fix vulnerabilities.

**Deployment and Scaling**

* **Cloud Infrastructure**: Host the application on AWS or Azure for scalability.
* **Containerization**: Use Docker for consistent deployment environments.
* **Continuous Integration/Continuous Deployment (CI/CD)**: Implement pipelines using tools like Jenkins or GitHub Actions.

**Documentation**

* **Code Documentation**: Comment code thoroughly for maintainability.
* **API Documentation**: Use tools like Swagger to document APIs.
* **User Guides**: Create manuals and tutorials for end-users.
* **Developer Guides**: Provide setup instructions and development guidelines for contributors.