### **Project Schedule and Milestones**

#### **1. Project Initiation (1 Week)**

* **Milestone:** Project Kickoff
  + Define project goals and objectives
  + Identify stakeholders
  + Establish project team and roles
  + Set up initial backlog with user stories and requirements

#### **2. Sprint 0: Database Design (2 Weeks)**

* **Milestone:** Database Design Complete
  + **Week 1:**
    - Analyze requirements and define the database schema
    - Design database architecture and relationships
    - Create initial database schema and ER diagrams
  + **Week 2:**
    - Implement and test the database schema
    - Set up initial data and perform basic database operations
    - Document database design and setup instructions

#### **3. Sprint 1: Backend User Management (2 Weeks)**

* **Milestone:** User Management Backend Complete
  + **Week 1:**
    - Develop backend API for user registration, login, and profile management
    - Implement authentication and authorization
  + **Week 2:**
    - Integrate backend user management with UI (basic UI components for user registration and login)
    - Perform unit testing and initial integration testing
    - Document API endpoints and usage

#### **4. Sprint 2: Backend Product Management (2 Weeks)**

* **Milestone:** Product Management Backend Complete
  + **Week 1:**
    - Develop backend API for product catalog management (CRUD operations for products)
    - Implement product search and filtering capabilities
  + **Week 2:**
    - Integrate backend product management with UI (product listing, search, and filter functionalities)
    - Perform unit testing and integration testing
    - Document API endpoints and usage

#### **5. Sprint 3: Backend Shopping Cart (2 Weeks)**

* **Milestone:** Shopping Cart Backend Complete
  + **Week 1:**
    - Develop backend API for shopping cart management (add, remove, and update items)
    - Implement cart persistence and calculation logic
  + **Week 2:**
    - Integrate backend shopping cart with UI (shopping cart UI components)
    - Perform unit testing and integration testing
    - Document API endpoints and usage

#### **6. Sprint 4: Backend Order Management (2 Weeks)**

* **Milestone:** Order Management Backend Complete
  + **Week 1:**
    - Develop backend API for order processing (checkout, order history, order details)
    - Implement order status tracking and management
  + **Week 2:**
    - Integrate backend order management with UI (order checkout process, order history)
    - Perform unit testing and integration testing
    - Document API endpoints and usage

#### **7. Sprint 5: Backend Payment Integration (2 Weeks)**

* **Milestone:** Payment Integration Backend Complete
  + **Week 1:**
    - Develop backend integration with payment gateway (e.g., Stripe, PayPal)
    - Implement payment processing and validation
  + **Week 2:**
    - Integrate payment backend with UI (payment forms and confirmation)
    - Perform unit testing and integration testing
    - Document API endpoints and usage

#### **8. Sprint 6: Backend Administration and Reporting (2 Weeks)**

* **Milestone:** Admin and Reporting Backend Complete
  + **Week 1:**
    - Develop backend API for administrative functions (user management, product management)
    - Implement reporting features (sales reports, user activity)
  + **Week 2:**
    - Integrate backend admin features with UI (admin dashboards, reporting UI)
    - Perform unit testing and integration testing
    - Document API endpoints and usage

#### **9. Sprint 7: Final Testing and Refinements (2 Weeks)**

* **Milestone:** Final Testing Complete
  + **Week 1:**
    - Conduct comprehensive testing (functional, integration, performance)
    - Fix any bugs or issues found during testing
  + **Week 2:**
    - Perform final rounds of testing and QA
    - Prepare deployment documentation and user manuals

#### **10. Deployment and Post-Deployment Support (1 Week)**

* **Milestone:** Go-Live
  + **Week 1:**
    - Deploy the website to production
    - Monitor deployment and perform post-deployment testing
    - Provide initial support and address any post-deployment issues

#### **11. Post-Launch Review and Iteration (1 Week)**

* **Milestone:** Post-Launch Review Complete
  + **Week 1:**
    - Collect user feedback and review project performance
    - Address any critical issues or required changes
    - Plan for future iterations or enhancements based on feedback

### **Summary Timeline**

* **Project Initiation:** 1 Week
* **Sprint 0:** 2 Weeks (Database Design)
* **Sprint 1:** 2 Weeks (User Management Backend)
* **Sprint 2:** 2 Weeks (Product Management Backend)
* **Sprint 3:** 2 Weeks (Shopping Cart Backend)
* **Sprint 4:** 2 Weeks (Order Management Backend)
* **Sprint 5:** 2 Weeks (Payment Integration Backend)
* **Sprint 6:** 2 Weeks (Admin and Reporting Backend)
* **Sprint 7:** 2 Weeks (Final Testing and Refinements)
* **Deployment and Post-Deployment Support:** 1 Week
* **Post-Launch Review and Iteration:** 1 Week

**Total Estimated Duration:** 16 Weeks

This schedule provides a structured approach to delivering backend functionality and integrating it with the UI. It ensures that each backend component is developed, tested, and integrated sequentially with the user interface.

### **Detailed Project Schedule and Milestones**

#### **1. Project Initiation (2 Weeks)**

* **Milestone:** Project Kickoff
  + **Week 1:**
    - Kickoff meeting with stakeholders
    - Define project vision and goals
    - Identify and assemble project team
    - Define roles and responsibilities
    - Develop initial project backlog with high-level user stories
  + **Week 2:**
    - Establish project tools and infrastructure (version control, issue tracking)
    - Create a detailed project roadmap and schedule
    - Conduct a risk assessment and mitigation planning

#### **2. Sprint 0: Database Design (3 Weeks)**

* **Milestone:** Database Design Complete
  + **Week 1:**
    - **Requirements Gathering:**
      * Analyze functional and non-functional requirements
      * Define data requirements and constraints
    - **Initial Schema Design:**
      * Create high-level database schema
      * Develop Entity-Relationship (ER) diagrams
  + **Week 2:**
    - **Schema Refinement:**
      * Refine schema based on feedback and additional requirements
      * Define indexing, constraints, and normalization rules
    - **Database Setup:**
      * Implement schema in a development environment
  + **Week 3:**
    - **Testing and Documentation:**
      * Perform initial database testing (CRUD operations, data integrity)
      * Document schema design and setup instructions
      * Review and finalize database design with stakeholders

#### **3. Sprint 1: Backend User Management (3 Weeks)**

* **Milestone:** User Management Backend Complete
  + **Week 1:**
    - **Backend Development:**
      * Design API endpoints for user registration, login, and profile management
      * Implement authentication (e.g., JWT, OAuth)
    - **Initial Testing:**
      * Unit tests for user management functionality
  + **Week 2:**
    - **Backend Development Continued:**
      * Implement user roles and permissions
      * Develop password recovery and user verification
    - **Integration:**
      * Begin integration with UI (basic user registration and login UI components)
  + **Week 3:**
    - **Integration Continued:**
      * Complete integration with UI (profile management, user settings)
    - **Testing and Documentation:**
      * Perform integration testing with UI
      * Document API endpoints and user management features

#### **4. Sprint 2: Backend Product Management (3 Weeks)**

* **Milestone:** Product Management Backend Complete
  + **Week 1:**
    - **Backend Development:**
      * Design API endpoints for product catalog management (CRUD operations)
      * Implement product categories and attributes
    - **Initial Testing:**
      * Unit tests for product management functionality
  + **Week 2:**
    - **Backend Development Continued:**
      * Implement product search and filtering capabilities
      * Integrate with inventory management (if applicable)
    - **Integration:**
      * Begin integration with UI (product listing and search UI components)
  + **Week 3:**
    - **Integration Continued:**
      * Complete integration with UI (product detail pages, filtering options)
    - **Testing and Documentation:**
      * Perform integration testing with UI
      * Document API endpoints and product management features

#### **5. Sprint 3: Backend Shopping Cart (3 Weeks)**

* **Milestone:** Shopping Cart Backend Complete
  + **Week 1:**
    - **Backend Development:**
      * Design API endpoints for shopping cart management (add, remove, update items)
      * Implement cart persistence (session or database)
    - **Initial Testing:**
      * Unit tests for shopping cart functionality
  + **Week 2:**
    - **Backend Development Continued:**
      * Implement cart calculation logic (subtotal, taxes, discounts)
    - **Integration:**
      * Begin integration with UI (shopping cart UI components)
  + **Week 3:**
    - **Integration Continued:**
      * Complete integration with UI (cart review, updates, and checkout initiation)
    - **Testing and Documentation:**
      * Perform integration testing with UI
      * Document API endpoints and shopping cart features

#### **6. Sprint 4: Backend Order Management (3 Weeks)**

* **Milestone:** Order Management Backend Complete
  + **Week 1:**
    - **Backend Development:**
      * Design API endpoints for order processing (checkout, order history)
      * Implement order status tracking and management
    - **Initial Testing:**
      * Unit tests for order management functionality
  + **Week 2:**
    - **Backend Development Continued:**
      * Implement order notifications (email, SMS)
      * Integrate with payment processing (mock or sandbox environment)
    - **Integration:**
      * Begin integration with UI (order checkout process, order history UI components)
  + **Week 3:**
    - **Integration Continued:**
      * Complete integration with UI (order confirmation, tracking)
    - **Testing and Documentation:**
      * Perform integration testing with UI
      * Document API endpoints and order management features

#### **7. Sprint 5: Backend Payment Integration (3 Weeks)**

* **Milestone:** Payment Integration Backend Complete
  + **Week 1:**
    - **Backend Development:**
      * Design API endpoints for payment processing
      * Implement integration with payment gateway (e.g., Stripe, PayPal)
    - **Initial Testing:**
      * Unit tests for payment functionality
  + **Week 2:**
    - **Backend Development Continued:**
      * Implement payment validation and handling
      * Integrate with order management
    - **Integration:**
      * Begin integration with UI (payment forms and confirmation UI components)
  + **Week 3:**
    - **Integration Continued:**
      * Complete integration with UI (payment processing, order confirmation)
    - **Testing and Documentation:**
      * Perform integration testing with UI
      * Document API endpoints and payment integration features

#### **8. Sprint 6: Backend Administration and Reporting (3 Weeks)**

* **Milestone:** Admin and Reporting Backend Complete
  + **Week 1:**
    - **Backend Development:**
      * Design API endpoints for administrative functions (user and product management)
      * Implement reporting features (sales reports, user activity)
    - **Initial Testing:**
      * Unit tests for admin and reporting functionality
  + **Week 2:**
    - **Backend Development Continued:**
      * Implement advanced reporting and analytics
      * Integrate with frontend admin dashboards
    - **Integration:**
      * Begin integration with UI (admin dashboards, reporting UI components)
  + **Week 3:**
    - **Integration Continued:**
      * Complete integration with UI (admin tools, reports)
    - **Testing and Documentation:**
      * Perform integration testing with UI
      * Document API endpoints and administrative features

#### **9. Sprint 7: Final Testing and Refinements (3 Weeks)**

* **Milestone:** Final Testing Complete
  + **Week 1:**
    - **Comprehensive Testing:**
      * Conduct functional, integration, and performance testing
      * Address and fix critical bugs
    - **UI/UX Refinements:**
      * Polish UI/UX based on feedback and testing
  + **Week 2:**
    - **Final Testing Continued:**
      * Perform user acceptance testing (UAT)
      * Review and finalize documentation (user manuals, deployment guides)
  + **Week 3:**
    - **Final Adjustments:**
      * Address final issues and enhancements
      * Prepare for deployment

#### **10. Deployment and Post-Deployment Support (2 Weeks)**

* **Milestone:** Go-Live
  + **Week 1:**
    - **Deployment:**
      * Deploy the website to production
      * Conduct post-deployment checks and validation
    - **Monitoring:**
      * Monitor deployment for issues
  + **Week 2:**
    - **Support:**
      * Provide initial support and address any post-deployment issues
      * Collect user feedback and perform any necessary hotfixes

#### **11. Post-Launch Review and Iteration (2 Weeks)**

* **Milestone:** Post-Launch Review Complete
  + **Week 1:**
    - **Review:**
      * Collect and analyze user feedback
      * Review project performance and identify areas for improvement
  + **Week 2:**
    - **Iteration Planning:**
      * Plan for future iterations or enhancements based on feedback
      * Update backlog and prepare for the next development cycle if needed

### **Summary Timeline**

* **Project Initiation:** 2 Weeks
* **Sprint 0:** 3 Weeks (Database Design)
* **Sprint 1:** 3 Weeks (User Management Backend)
* **Sprint 2:** 3 Weeks (Product Management Backend)
* **Sprint 3:** 3 Weeks (Shopping Cart Backend)
* **Sprint 4:** 3 Weeks (Order Management Backend)
* **Sprint 5:** 3 Weeks (Payment Integration Backend)
* **Sprint 6:** 3 Weeks (Admin and Reporting Backend)
* **Sprint 7:** 3 Weeks (Final Testing and Refinements)
* **Deployment and Post-Deployment Support:** 2 Weeks
* **Post-Launch Review and Iteration:** 2 Weeks

**Total Estimated Duration:** 26 Weeks

This extended schedule allows for a more thorough development process, with ample time for design, testing, and refinement at each stage. It ensures that both backend and frontend components are well-integrated and thoroughly tested.

| **Phase** | **Tasks** | **Duration** | **Weeks** |
| --- | --- | --- | --- |
| **1. Project Initiation** | - Kickoff meeting and project goals  - Assemble team and define roles  - Setup tools  - Develop initial backlog | 2 Weeks | Week 1-2 |
| **2. Sprint 0: Database Design** | - Requirements gathering  - Initial schema design  - Schema refinement  - Implement and test schema  - Document design | 3 Weeks | Week 3-5 |
| **3. Sprint 1: Backend User Management** | - Develop API for user registration and login  - Implement authentication  - User roles and permissions  - Initial testing  - UI integration | 3 Weeks | Week 6-8 |
| **4. Sprint 2: Backend Product Management** | - Develop API for product management  - Implement search and filtering  - Integrate with UI  - Testing and documentation | 3 Weeks | Week 9-11 |
| **5. Sprint 3: Backend Shopping Cart** | - Develop API for shopping cart management  - Implement cart persistence and calculations  - Integrate with UI  - Testing and documentation | 3 Weeks | Week 12-14 |
| **6. Sprint 4: Backend Order Management** | - Develop API for order processing  - Implement order tracking and notifications  - Integrate with UI  - Testing and documentation | 3 Weeks | Week 15-17 |
| **7. Sprint 5: Backend Payment Integration** | - Develop API for payment processing  - Integrate with payment gateway  - Implement validation and handling  - UI integration  - Testing and documentation | 3 Weeks | Week 18-20 |
| **8. Sprint 6: Backend Administration and Reporting** | - Develop API for admin functions and reporting  - Implement reporting features  - Integrate with UI  - Testing and documentation | 3 Weeks | Week 21-23 |
| **9. Sprint 7: Final Testing and Refinements** | - Comprehensive functional, integration, and performance testing  - UI/UX refinements  - Final adjustments  - Prepare documentation | 3 Weeks | Week 24-26 |
| **10. Deployment and Post-Deployment Support** | - Deploy to production  - Post-deployment checks  - Monitoring and initial support | 2 Weeks | Week 27-28 |
| **11. Post-Launch Review and Iteration** | - Collect and analyze feedback  - Review performance  - Plan future enhancements  - Update backlog | 2 Weeks | Week 29-30 |

### **Summary**

* **Total Estimated Duration:** 30 Weeks

This table provides a clear view of each phase, the tasks involved, and the time allocated to ensure a comprehensive and well-organized project timeline.