Software Project Plan

**Work Breakdown Structure (WBS)**

**1. Project Management**

1.1 Requirement Analysis  
1.2 Task Assignment  
1.3 Sprint Planning & Retrospectives  
1.4 Documentation (SRS, UML Diagrams, Architecture)  
1.5 Progress Tracking (Trello, GitHub Projects)

**2. Frontend Development (React + Vite)**

2.1 UI/UX Design  
2.2 Landing Page  
2.3 Authentication Pages  
   2.3.1 Login Page  
   2.3.2 Registration Page  
   2.3.3 Role Selection (User/Admin)  
2.4 User Dashboard  
   2.4.1 Parking Slot Availability (Grid/List View)  
   2.4.2 Booking Page (Duration & Slot Type)  
   2.4.3 Booking History  
   2.4.4 Expiry Notifications UI  
2.5 Admin Dashboard  
   2.5.1 Manage Parking Slots (Add/Edit/Delete)  
   2.5.2 Manage Bookings  
   2.5.3 Pricing Adjustments & Promotions  
   2.5.4 Report Generation (Revenue, Usage, Occupancy)  
2.6 Reviews & Ratings Section  
2.7 Responsive Design and Mobile Compatibility  
2.8 Frontend Testing (Jest, React Testing Library)

**3. Backend Development (ASP.NET Web API)**

3.1 Database Design and Configuration (e.g., SQL or In-Memory)  
3.2 API Development  
   3.2.1 User Authentication and Role Management  
   3.2.2 Reservation Management (Create/Cancel)  
   3.2.3 Parking Session Tracking  
   3.2.4 Payment Processing (Mock Payment)  
   3.2.5 Notification Service (Console-based or Email)  
   3.2.6 Admin APIs (Pricing, Reports, Complaints)  
   3.2.7 Feedback and Ratings APIs  
3.3 Business Logic Implementation  
3.4 API Security (RBAC, Validation, Input Sanitization)  
3.5 Unit Testing (xUnit or NUnit)

**4. Integration**

4.1 Frontend-Backend Integration (REST API Consumption)  
4.2 Error Handling and Input Validation  
4.3 Response Validation and UI State Management  
4.4 End-to-End Testing (Full User Scenarios)

**5. Testing and Quality Assurance**

5.1 Functional Testing (Black Box Testing)  
5.2 Unit Testing (White Box – Services & APIs)  
5.3 User Acceptance Testing (Real User Feedback Loop)  
5.4 Regression Testing  
5.5 Bug Fixing and Performance Optimization

**6. Deployment and Maintenance**

6.1 Deployment (Cloud, Docker, or Localhost Setup)  
6.2 Developer Documentation  
6.3 User Manual / Help Section  
6.4 Maintenance and Future Features Planning  
6.5 Backup Strategy & Data Migration Support

**Project Gantt Chart**

