



Rental Management System

Problem Overview

Build a **Rental Management System** that enables businesses to rent products online while managing quotations, rental orders, inventory, invoicing, and returns.

The system must support **Customers, Vendors, and Admins**, and should follow a **complete rental lifecycle**, from product browsing and quotation creation to payment, invoicing, pickup, return, and reporting.

Objectives

- Implement an end-to-end rental flow
 - Prevent overbooking through reservation logic
 - Support flexible rental durations and time-based pricing
 - Generate invoices with partial or full payments
 - Provide dashboards and reports for business insights
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User Roles

1. Customer (End User)

- Accesses the website portal
- Browses rentable products
- Creates rental quotations
- Confirms orders and makes payments
- Views invoices and order history

2. Vendor (Internal User)

- Manages rental products
- Views and processes rental orders
- Creates invoices
- Tracks pickups, returns, and earnings

3. Admin (System Administrator)

- Full access to backend (Settings, Users, Reports)
 - Manages vendors, products, and configurations
 - Views global analytics and reports
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Core Functional Modules

1. Authentication & User Management

Features:

- Login using email and password
 - Signup via website with:
 - Name
 - Email
 - Company Name
 - GSTIN (mandatory for invoicing)
 - Password & confirmation
 - Forgot password with email verification
 - Coupon code support during signup
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2. Rental Product Management

Product Configuration:

- Products marked as **Rentable**
- Rental pricing per:
 - Hour
 - Day
 - Week
 - Custom period
- Quantity on hand
- Cost price & sales price
- Publish / Unpublish on website

Attributes & Variants:

- Product attributes (e.g., Brand, Color)
 - Variant-based pricing
 - Attribute values configurable from Settings
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3. Rental Quotations & Orders

Rental Flow:

1. **Quotation**
 - Created when customer adds products to cart
 - Editable until confirmation
2. **Rental Order**
 - Created when quotation is confirmed
 - Automatically reserves stock
3. **Sales Order Status**
 - Draft → Sent → Confirmed

Key Rules:

- Reserved products cannot be double-booked
 - Rental period blocks availability
 - Order lines include rental start & end dates
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4. Pickup, Delivery & Return Flow

Pickup:

- Pickup document generated on order confirmation
- Stock moved to “With Customer”
- Pickup instructions visible to vendor

Return:

- Return document generated when rental ends
- Stock restored after return
- Late return fees applied automatically

Notifications:

- Automated reminders before return date
 - Alerts for delayed returns
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5. Invoicing & Payments

Invoice Features:

- Draft invoice created from rental order
- Supports:
 - Full upfront payment
 - Partial payment / security deposit
- Taxes calculated automatically
- Print & export invoice

Payment:

- Online payment gateway integration
 - Payment confirmation updates invoice state
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6. Website & Customer Portal

Website Features:

- Product listing with filters
- Product detail page with rental configuration
- Cart and checkout flow
- Address & payment selection

Portal Features:

- View rental orders
- Download invoices
- Order status tracking

7. Settings & Configuration

Admin Settings:

- Rental periods (Hourly, Daily, Weekly)
- Product attributes & values
- User roles (Admin / Vendor / Customer)
- GST and company details

User Profile:

- Company information
 - GSTIN
 - Password change
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8. Reports & Dashboards

Dashboards:

- Total rental revenue
- Most rented products
- Vendor-wise performance
- Order trends over time

Reports:

- Exportable reports (PDF, XLSX, CSV)
 - Date-range filters
 - Separate views for Admin and Vendor
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Terminology & Document Reference

- **Quotation:** It is a **price proposal** sent to a customer before an order is confirmed.
- **Rental Order:** It is a confirmed agreement that products will be rented for a specific period.
- **Reservation:** It ensures that a product **cannot be rented by multiple customers at the same time**.
- **Invoice:** It is a legal financial document requesting payment from the customer.

- **Security deposit:** It is an amount collected upfront to protect against damage or late returns.
 - **Vendor:** A vendor is a business user who owns rental products.
 - **Admin:** It is the **super user** of the system.
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Deliverables (Hackathon Evaluation)

Participants must deliver:

- Functional rental flow (Quotation → Order → Invoice → Return)
 - Website + backend integration
 - Role-based access implementation
 - At least one dashboard or report
 - Clean UI aligned with business flow
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Learning Outcomes

By completing this problem statement, students will demonstrate:

- Practical understanding of **ERP workflows**
- Ability to model real-world rental businesses
- Full-stack thinking

Mockup: <https://link.excalidraw.com/l/65VNwvy7c4X/3tAPpfIFLrG>