BILL ME SYSTEM

Software Requirements Specification Document

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INTRODUCTION

Bill Me is a cloud-based **Software-as-a-Service (SaaS) platform** designed to digitize and streamline business operations for entities such as restaurants, gas stations, supermarkets, etc. The system offers an integrated environment for **subscription management, order handling, digital receipts, employee operations, and financial auditing**, ensuring efficiency, transparency, and compliance.

The solution supports both **web and mobile platforms** and provides role-based dashboards for Super Admins, Entity Owners, Managers, Employees, and Customers. It is built to scale across multiple entities under a unified subscription framework.

SYSTEM FUNCTIONALITIES

1. Dashboard

The system dashboard serves as a central hub for analytics, monitoring, and quick access operations:

- **Business Insights:** Real-time statistics on orders, payments, and receipts.

- **Subscription Overview:** Displays active, expired, or pending subscriptions per entity.

- **Entity Health Metrics:** Summarizes daily sales, employee activity, and order trends.

- **Notifications & Alerts:** System warnings on failed transactions or expiring subscriptions.

- **Quick Actions:** Create entities, add menu items, approve payments, or generate reports.

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2. Subscription Management Module

This module handles billing and plan management for all entities:

- **Plan Creation & Management:** Super Admin defines pricing tiers and subscription durations.

- **Subscription Activation/Deactivation:** Enables or suspends access based on payment status.

- **Auto-Renewal & Expiry Notifications:** Sends alerts to entity owners on renewal deadlines.

- **Payment Gateway Integration:** Supports integration with mobile money and card payment APIs.

- **Usage Tracking:** Monitors active users, orders processed, and entity performance metrics.

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3. Entity Management Module

Manages onboarding and configurations of registered entities:

- **Entity Registration & Profiling:** Captures entity name, address, category (restaurant, hotel, gas station, etc.), and contact info.
- **Entity branches Management:** allow entities that have branches to register them too, inherit the parent's menu/product lists, or less, and have managers

- **Category-Based Configuration:** Custom workflows per entity type (e.g., menu vs. fuel station items).

- **Multi-Entity Management:** Super Admin can view and manage all registered businesses.
- **Multi-branch management:** Entity owners can view and manage all registered branches under their business

- **Entity Branding:** Allows upload of logos, descriptions, etc.

- **Subscription Association:** Links each entity to its respective subscription plan.

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4. Role & Access Management Module

Defines how users interact with the system through access control:

- **Role-Based Access Control (RBAC):** Defines permissions for Super Admin, Entity Owner, Manager, Employee, and Customer.

- **Custom Roles:** Entity Owners can define additional internal roles as needed.

- **Authentication & Authorization:** Supports email/phone number, OTP, and 2FA verification.

- **Activity Audit Trails:** Logs all role modifications and access attempts.

- **Session Management:** Automatically logs out idle users to enhance security.

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5. Managers Management Module

Facilitates manager registration, branch assignment:

- **Manager Profiles:** Stores manager information.
- **Assignment:** allows assignment to different branches if available.

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6. Employee Management Module

Facilitates employee registration, assignment, and performance tracking:

- **Employee Profiles:** Stores employee information and dedicated branch if applicable.

- **Performance Monitoring:** Tracks the number of orders handled and the total revenue generated.

- **Availability:** Allows managers to assign tables or orders to available employees.

- **Role Assignment:** Associates employees with specific permissions and departments.

- **Employee Analytics:** Generates daily/weekly summaries on productivity and earnings (including tips).

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7. Menu & Product Management Module

Provides flexible product/menu control tailored to each entity type:

- **Menu Creation:** Allows entities to create and categorize menu or product items.

- **QR & Barcode Integration:** Each item has a scannable code linking to its details and price.

- **Dynamic Pricing:** Supports price updates, discounts, and promotions.

- **Stock Tracking:** Monitors product availability and alerts when stock is low.
- **Customer View Synchronization:** Automatically reflects menu changes in the customer app.

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8. Orders Management Module

Handles the full order lifecycle, from creation to payment and closure:

- **Order Creation:** Employees or customers initiate orders via the web or mobile devices.

- **Status Tracking:** Orders transition through *Incoming → Processing → Served → Paid/Cancelled.*
- *Tips:* while paying for the order, the customer can add a tip for the waiter.

- **Bulk Ordering & Bill Splitting:** Enables multiple customers to share one order and split payments.

- **Manager Approval Workflow:** For cancellations, refunds, or major modifications.

- **Performance Tracking:** Records order handling times for operational analytics.

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9. Receipts Management Module

Ensures transparent and digital record-keeping of all financial transactions:

- **Auto-Generated Receipts:** Automatically created upon payment confirmation.

- **QR-Coded Receipts:** Each receipt includes a scannable QR for verification.

- **Receipt Storage:** Stores digital receipts securely for future access or download.

- **Customer Access:** Customers can view, download, and share receipts.

- **Multi-Format Export:** Export receipts as PDF or CSV for reporting and auditing.

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10. Auditing, Logging & Reporting

Provides accountability and traceability across all user activities:

- **Activity Logs:** Captures all CRUD actions with timestamps, user IDs, and entity IDs.

- **Financial Reports:** Summarizes daily, weekly, or monthly sales per entity.

- **Audit Reports:** Track all sensitive actions, including refunds and subscription changes.

- **Export & Visualization:** Reports exportable in PDF/CSV; visual analytics on dashboards.

- **Access Control on Reports:** Each role has specific visibility scope on reports.

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11. Mobile & Web Applications

Bill Me supports both mobile and web-based interfaces for all user classes:

- **Cross-Platform Compatibility:** Android, iOS, and all modern web browsers.

- **Customer Mobile App:** Enables ordering, payment, and access to digital receipts.

- **Employee Mobile Interface:** For waiters/gas workers to manage assigned orders.

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12. Technology Stack

- **Frontend (Web):** NextJS (React framework)

- **Mobile Application:** React Native (cross-platform)

- **Backend:** NestJS (Node.js Framework)

- **Database:** PostgreSQL / MySQL (Relational DB)

- **APIs:** RESTful APIs

- **Security:** JWT authentication, TLS encryption, and audit logging

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NON-FUNCTIONAL REQUIREMENTS

1. Scalability & Performance

- Multi-tenant design supporting multiple entities concurrently.

- Response time <5 seconds for primary operations.

- Load balancing for large-scale concurrent usage.

- Query optimization/pagination or caching for fast queries.

2. Security & Compliance

- End-to-end encryption (TLS/SSL, AES-256).

- Role-based permissions.

- Compliance with GDPR and local data protection laws.

- Full audit logging of system events.

3. Availability & Reliability

- 99% uptime.

- Automated daily backups and recovery protocols.

- Auto-healing server mechanisms.

- Cloud redundancy for high availability.

4. Usability & Accessibility

- User-friendly UI/UX design for all roles.

- Multi-language support (English & French).

- Responsive design for mobile and desktop.

5. Maintainability & Extensibility

- Modular architecture enabling independent updates.

- API-first approach for third-party integrations.

- Automated CI/CD pipelines for deployment.

- Configurable workflows for custom business processes.

6. Logging, Monitoring & Reporting

- Real-time monitoring of entity activity and transactions.

- Centralized logging for debugging and audit trails.

- Customizable reports by date, entity, or user role.

- Performance analytics dashboards.

7. Integration & Interoperability

- Payment gateways (e.g., Paystack, Flutterwave, MTN Mobile Money).

- API endpoints for third-party access.

8. Legal & Compliance Considerations

- GDPR-compliant data handling.

- Right to erasure and consent management.

- Full audit trail for financial compliance.

ANNEX-1: System Process Flow

Typical Order Lifecycle

1. **Customer:** Logs in → Selects Entity → Chooses Menu Items → Places Order → Pays → Receives Digital Receipt.

2. **Employee:** Receives Assigned Order → Processes/Serves → Confirms Payment → Marks Complete.

3. **Manager:** Monitors Orders and Employee Activity→ Approves Modifications or Refunds → Reviews Daily Reports.

4. **Entity Owner:** Monitors Sales, Subscriptions, and Employee Activity → Generates Reports.

5. **Super Admin:** Oversees Global Metrics → Manages Subscriptions → Audits Activities.