Software Requirements Specification

For

Online Electricity Bill Management System (OEBMS)

Version 1.0 Approved

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1. Introduction

1.1 Purpose

This document specifies the requirements for the **Online Electricity Bill Management System (OEBMS),** a web-based solution for automating billing, payment processing, and customer management for power distribution companies in Bangladesh. The system will be developed using **PHP** and **MySQL**.

1.2 Document Conventions

- Bold text: Key system features.
- Italic text: References to external documents.
- REQ-XX: Unique requirement identifiers.
- Priorities: High (H), Medium (M), and Low (L).

1.3 Intended Audience and Reading Suggestions

- **Developers:** Focus on Sections 3 (System Features) and 4 (Interfaces).
- **Project Managers:** Review Sections 1 (Introduction) and 2 (Overall Description).
- **Admin or Billing Staff:** Refer to Sections 3.2 (Customer Management) and 3.4 (Billing).

1.4 Project Scope

The OEBMS will:

- Automate bill calculation using **BERC-approved tariff slabs**.
- Support prepaid/postpaid payment models.
- Integrate with bank payment gateways (SSLCommerz).
- Generate real-time reports (revenue, arrears, consumption).
- Provide SMS/email notifications for bills and outages.

1.5 References

- Bangladesh Energy Regulatory Commission (BERC) Tariff Guidelines 2023.
- Bangladesh Data Protection Act 2023.
- IEEE SRS 830-1998 Standard.

2. Overall Description

2.1 Product Perspective

The OEBMS is a new system designed to replace manual billing processes. It interfaces with:

- **Payment gateways** (**SSLCommerz:** ONLINE PAYMENT BY VISA, MASTERCARD ETC.).
- **SMS services** (SSL Wireless API).
- **Legacy meter-image or reading devices** (via user's mobile).

2.2 Product Features

- User role management (Admin or Billing Staff and Customer).
- Real-time bill calculation with arrears.
- Automated payment status updates.
- Multilingual support (Bangla/English).

2.3 User Classes and Characteristics

User Class	Characteristics
Administrator or Staff	Manges user roles, tariffs, and system configurations, technical expertise required. Generate bills, resolves disputes, familiar with billing policies.
Customer	Views/pays bills online. Basic tech literacy

2.4 Operating Environment

- **Frontend:** PHP, HTML5, JavaScript, Bootstrap.
- **Backend:** MySQL.
- **Server:** Apache/Nginx on Linux/Windows.
- **Browsers:** Chrome, Firefox, Edge.

2.5 Design and Implementation Constraints

- Compliance with BERC tariff structures.
- Support for Bangla Unicode fonts.
- Use of MVC architecture for PHP code modularity.

2.6 User Documentation

- **User Manuals:** guides for admins and customers (Bangla/English) to display on the Dashboard.
- **API Documentation:** Swagger/OpenAPI specs for developers.

2.7 Assumptions and Dependencies

- Stable internet connectivity for payment processing.
- Third-party APIs remain available.

3. System Features

3.1 User Management (Priority: H)

3.1.1 Description

Admins can create, modify, or disable user accounts with role-based permissions.

3.1.2 Functional Requirements

- **REQ-1:** Admin must assign roles (Admin or Staff, Customer) during user creation.
- **REQ-2:** Audit logs for login attempts and account changes.

3.2 Billing Calculation (Priority: H)

3.2.1 Description

Automatically or Manual calculate bills using BERC's tiered tariff rates.

3.2.2 Functional Requirements

- **REQ-3:** Apply rates (e.g., 0-50 units @ Tk 3.5/unit).
- **REQ-4:** Include arrears penalties.

3.3 Payment Processing (Priority: H)

3.3.1 Description

Integrate with visa, mastercard and americanexpress card for online payments.

3.3.2 Functional Requirements

- **REQ-5:** Auto-update payment status in the database.
- **REQ-6:** Send SMS receipts via SSL Wireless API.

4. External Interface Requirements

4.1 User Interfaces

- **Admin Dashboard:** Role management, tariff configuration.
- **Customer Portal:** Bill history, payment options, usage charts, upload images, and notifications.

4.2 Hardware Interfaces

Android/iOS devices for meter images to submit data.

4.3 Software Interfaces

- **Payment Gateway:** SSLCOMMERZ API .
- **SMS Service:** SSL Wireless API (HTTPS).

4.4 Communications Interfaces

- HTTPS for secure data transmission.
- JSON format for API requests/responses.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

- Support 10,000+ concurrent users.
- Bill generation in <2 seconds.

5.2 Security Requirements

- **Authentication:** First Sign up then login with usernane and password for customers.
- **Encryption:** AES-256 for sensitive data.

5.3 Software Quality Attributes

- **Maintainability:** Modular PHP code with MVC.
- **Availability:** 99.9% uptime with daily backups.

6. Other Requirements

- **Legal Compliance**: Bangladesh Data Protection Act 2023.
- **Testing:** Unit tests (PHPUnit), UAT with real customer data.

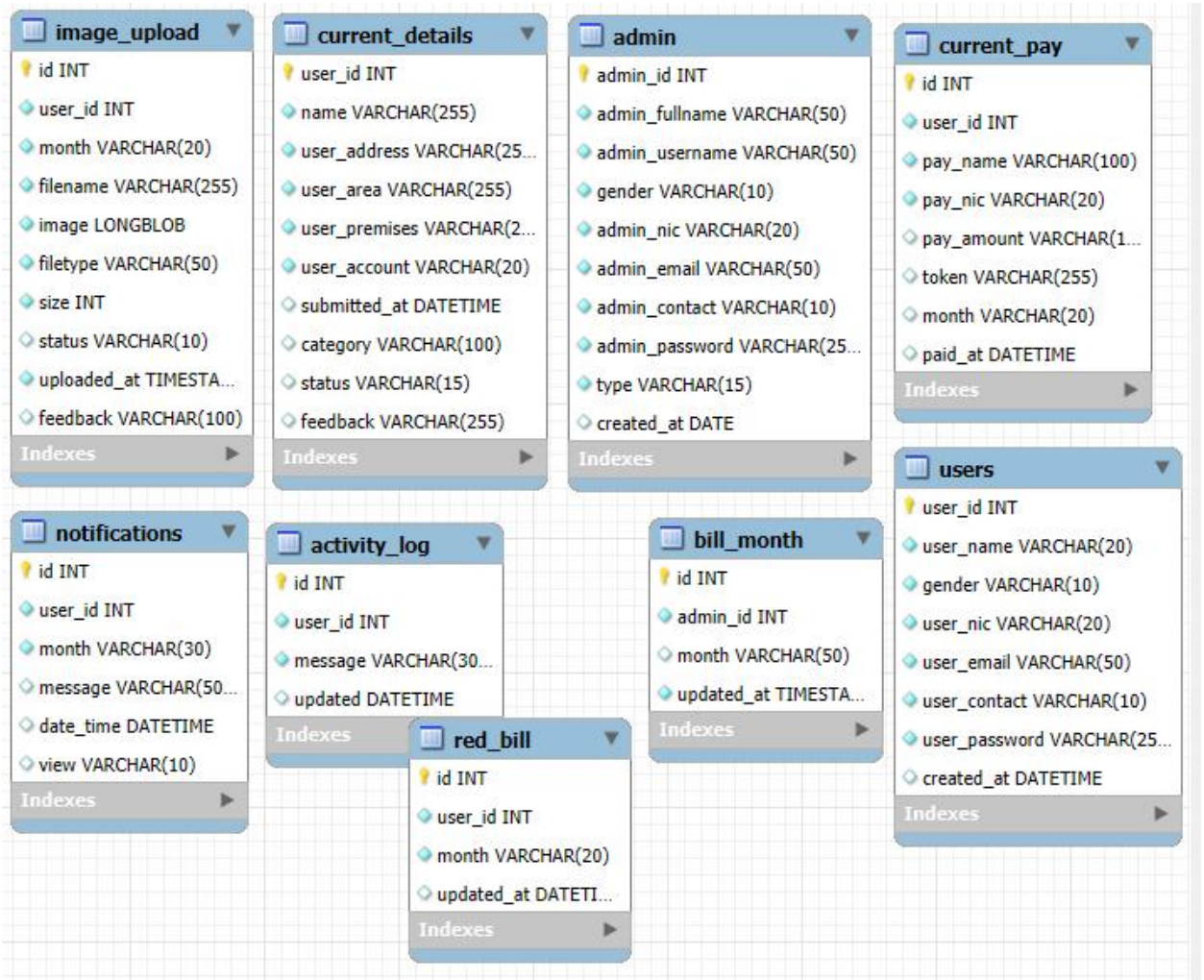
7. Appendices

Appendix A: Glossary

- **BERC:** Bangladesh Energy Regulatory Commission.
- **NID:** National ID Card (used for customer registration).
- **Premises ID:** Uniquely identify the zone office.

Appendix B: Analysis Models

- **Database Schema: Here all database tables**



Appendix C: Issues List

Issue	Status
Bangla font compatibility	Solve

Approval Signatures

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