## 1. Introduction

The Endeavour Buddhilal Higher Education Management Information System (HEMIS) is a customizable platform specially designed to meet the requirements of Buddhilal Bidya Munar Campus, in line with the guidelines of the University Grant Commission (UGC).

HEMIS serves as a centralized system for collecting, processing, storing, and reporting higher education data. It enables the college to manage a variety of functions, including student data, library resources, faculty and staff records, campus resources, and billing.

In the future, the system will also allow students and teachers to manage tasks such as class schedules, assignments, and more.

A real-time data synchronization feature connects the system to the UGC server. Additionally, HEMIS supports academic, financial, operational, and administrative decision-making, aiding institutional policy development.

## 2. Objectives

* Streamline data management across higher education institutions.
* Ensure accurate, real-time reporting for better insights.
* Support academic planning, student tracking, billing, and other administrative processes.

## 3. System Architecture

HEMIS follows a multi-tier architecture, separating presentation, business logic, and data management layers:

* **Presentation Layer**: Web-based interface accessible by staff, administrators, and users.
* **Application Layer**: Handles business processes such as enrollment, course registration, HR management, billing, and resource management.
* **Data Layer**: Centralized relational database (MySQL) ensuring secure and efficient data storage and retrieval.

## 4. Key Features and Modules

### Student Management Module (SMM)

This module captures and manages data throughout a student's academic journey — from admission to graduation (or dropout). It continuously tracks academic progress and updates student records.

**Student Enrollment:**

* **Student Registration (Data Capture)**:
  + Personal Information: Name, date of birth, gender, nationality, photo, contact details.
  + Address Details: Permanent and local address.
  + Parental and Guardian Information.
  + Academic Information: Program, course selection, academic history.
  + Supporting Documents: Uploads of academic and identification documents.

**Tracking Student Academic Progress:**

* Current Academic Year: Tracks the year or semester the student is enrolled in.
* Course Enrollment: Tracks registered courses each semester.
* Current Status: Identifies students as continuing, dropout, or graduated.

**Update Academic Term:**

* Promotes students to the next academic term (e.g., Semester 1 to Semester 2).
* Updates student records accordingly.
* Manages course enrollments for the new term.

**Upgrade Academic Status:**

* Marks students as **Dropouts**, **Academic Year Completed**, or **Graduates** based on their performance.
* Continuing students automatically move to the next academic year without manual update.

### Personnel Information Module(PIM)

The Personnel Information Module records and tracks comprehensive details of teachers and staff, including:

* Personal Information
* Contact Information
* Spouse Information
* Permanent and Current Address
* Job Information (designation, department, employment status)
* Academic Information (qualifications, certifications)
* Research and Publications
* Supporting Document Uploads (e.g., ID, certificates)

### Student Billing System (SBS)

Manages all aspects of student financial transactions:

1. **Generate Bill**:
   * Automatically calculates student bills based on enrolled courses, applicable fees, and additional charges.
2. **Manage Discounts and Scholarships**:
   * Assign discounts or scholarships to eligible students, adjusting their bills accordingly.
3. **Print Bill**:
   * Allows easy printing of generated bills.
4. **Payment Receipt**:
   * Generates and prints payment receipts after fee transactions.
5. **Student Ledger**:
   * Maintains a record of all billing and payment transactions for each student, including dues and payments made.

### Library Management Module (LBM)

Handles the complete library operations:

1. **Add New Book**:
   * Add books with complete details (title, author, publisher, ISBN, category).
2. **Book Issue**:
   * Records details when books are issued to students or staff, including due dates.
3. **Book Return**:
   * Tracks returned books and updates inventory, checking for overdue items.

### Administration Module

Manages users and institutional settings:

1. **Create User**:
   * Create user accounts with assigned roles and access permissions.
2. **Manage User**:
   * Change passwords and manage feature-wise access control.
3. **Manage Level/Program**:
   * Define academic levels (e.g., undergraduate, postgraduate) and programs.
4. **Manage Faculty**:
   * Create and update faculty profiles, roles, and departments.
5. **Manage Subjects**:
   * Create and organize subject lists for each program.
6. **Campus and Other Parameters Setup**:
   * Set up campus locations, facilities, and operational parameters.

## 5. Technologies Used

* **Backend**: PHP
* **Frontend**: Bootstrap, AJAX, jQuery
* **Database**: MySQL

## 6. Data Flow and Integration

* **Data Sources**: University departments, HR units, examination offices, research centers.
* **ETL Process**: Data is extracted, transformed, and loaded into a centralized repository.
* **Integration Points**: Linked with National ID databases, accreditation bodies, and financial institutions.

(Note: A Data Flow Diagram (DFD) can be added if needed.)

## 7. Challenges

* **Data Standardization**: Ensuring consistency across departments.
* **Legacy System Migration**: Managing transition challenges, especially in billing and old dues.
* **User Training**: Ensuring staff proficiency in using the system.
* **Scalability**: Designed to scale with institutional growth and peak periods.

## 8. Conclusion

HEMIS is a critical infrastructure for modernizing higher education management. A well-implemented system supports data-driven decisions, enhances transparency, and improves academic and administrative efficiency.

Future enhancements should focus on student and teacher module so that student access the information through this system like class, billing and other related information and integrating advanced analytics, and ensuring scalable, secure architectures to meet evolving educational demands.