

COMP2411 Database Systems (Fall 2024)

Group 8

Banquet Management System

User Guide

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Introduction

The **Banquet Management System (BMS)** is a comprehensive tool designed to streamline the organization and management of banquets. It facilitates the creation and updating of banquet events, manages attendee registrations, provides authentication for administrators and attendees, and generates insightful reports to aid in decision-making.

System Requirements

Before setting up the BMS, ensure your system meets the following requirements:

- **Operating System:** Windows, macOS.
- **Python:** Version 3.6 or higher.
- **MySQL Server:** Version 5.7 or higher.
- **Python Libraries:**
 - mysql-connector-python
 - re
 - datetime
 - os
 - sys

Installation and Setup

Follow these steps to install and configure the BMS on your system.

1. Install Python

Ensure Python is installed on your machine.

- **Windows & macOS:**
 - Download Python from the [official website](#).
 - Run the installer and follow the on-screen instructions.
 - **Important:** During installation, check the box to add Python to your system PATH.

If not installed, use your distribution's package manager.

2. Install MySQL

BMS relies on a MySQL database to store and manage data.

- Download and install MySQL from the [official website](#).
- **Windows:**
 - Use the MySQL Installer, which provides a guided installation process.
- **macOS:**
 - Use the DMG archive installer.

Secure MySQL Installation:

- After installation, secure your MySQL server by setting a root password.

3. Install Necessary Python Libraries

Install the necessary Python libraries using pip.

- mysql-connector-python
- re
- datetime
- os
- sys

4. Configure Database Credentials

Before running the BMS, configure the database connection settings.

1. **Locate the Configuration Section** in the BMS script:

```
# Database configuration
```

```
db_config = {  
    'user': 'root',          # Replace with your MySQL username
```

```
'password': PassWord,      # Replace with your MySQL password
'host': 'localhost',
'database': 'bms_db',      # The database name for BMS
'raise_on_warnings': True
}
```

2. Update Credentials:

- Replace 'user' with your MySQL username (e.g., 'root').
- Replace 'password' with your MySQL password.
- Optionally, change 'database' to a preferred database name.

3. Save the Script after updating the credentials.

5. Initialize the Database

The BMS script is designed to create the necessary database and tables if they do not exist.

1. Run the BMS Script:

- Navigate to the directory containing the BMS script.
- Execute the script using Python
- The script will automatically create the database (bms_db by default) and the required tables (New_banquet, Meal, Attendee, Administrator, Registration).

6. Run the BMS Application

With the setup complete, you can start using the BMS.

1. Execute the Script

2. Run the test_data.sql to import some test data. (optional)

3. Interact with the BMS via the command-line interface as per the guidance in the usage section.

Using the BMS

Upon running the BMS script, you will be greeted with the Main Menu. This section outlines how to navigate and utilize the system effectively.

Main Menu Overview

```
Banquet Management System
Exit Options: Type 'exit.m' to return to the Main Menu.
1. Administrator Login
2. Create Administrator Account
3. Attendee Sign Up
4. Attendee Login
5. Exit
Enter your choice (1-5): █
```

Exit Commands:

- **exit.m**: Return to the Main Menu.
- **exit.p**: Return to the Previous Menu.

Administrator Operations

Administrators have elevated privileges to manage banquets, attendees, and generate reports.

1. Administrator Login

- **Purpose**: Access the Administrator Menu to perform privileged operations.
- **Steps**:
 1. Select option 1 from the Main Menu.
 2. Enter your **Email Address**.
 3. Enter your **Password**.
- **Note**: If you haven't created an administrator account yet, proceed to create one using option 2.

```
Banquet Management System
Exit Options: Type 'exit.m' to return to the Main Menu.
1. Administrator Login
2. Create Administrator Account
3. Attendee Sign Up
4. Attendee Login
5. Exit
Enter your choice (1-5): 1
Email Address: (format: xxx@xxx.xxx): jeffreykam@gmail.com
Password: b6MJ9086█
```

2. Create Administrator Account

- **Purpose:** Set up an administrator account to manage the system.
- **Steps:**
 1. Select option 2 from the Main Menu.
 2. Input the following details when prompted:
 - **First Name:** Must contain only English letters.
 - **Last Name:** Must contain only English letters.
 - **Address:** Cannot be empty.
 - **E-mail Address:** Must follow a valid email format (e.g., name@domain.com).
 - **Password:** Must be strong (minimum 8 characters, including uppercase, lowercase, and numbers).
 - **Mobile Number:** Must be an 8-digit number.
- **Notes:**
 - Ensure your email is unique; duplicate emails are not allowed.
 - Password strength is visually indicated; aim for a "Very Strong" password.

```
Create Administrator Account
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.
First Name: Jeffrey
Last Name: Kam
Address: Somewhere
E-mail Address: (format: xxx@xxx.xxx): jeffreykam
Invalid email address. Please try again or type 'exit.m' to return to the main menu, 'exit.p' to return to the previous menu.
E-mail Address: (format: xxx@xxx.xxx): jeffreykam@gmail.com
Password (minimum 8 characters, include uppercase, lowercase, number): b6MJ9086
Password Strength: [*****] Very Strong
Mobile Number: (format: 8-digit number): 92345678
```

3. Administrator Menu Options

Once logged in, administrators can access the following functionalities:

```
Administrator Menu
Exit Options: Type 'exit.m' to return to the Main Menu.
1. Create a New Banquet
2. Update Existing Banquet
3. Get Attendee Information
4. Generate Reports
5. Logout
Enter your choice (1-5):
```

- **1. Create a New Banquet:**
 - Input banquet details such as name, date, time, location, availability, quota, address, and contact information.
 - Add four meals associated with the banquet, including dish name, type, special cuisine (optional), and price.

```
Create a New Banquet
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.
Banquet Name:
```

- **2. Update Existing Banquet:**

- Modify details of an existing banquet by providing its BIN (Banquet Identification Number).
- Update fields as needed; leaving a field blank retains its current value.

```
Update Existing Banquet
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.
Enter BIN of the banquet to update: █
```

- **3. Get Attendee Information:**

- Retrieve and display information about an attendee using their email address.
- Optionally update the attendee's address and mobile number.

```
Get Attendee Information
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.
Enter attendee's email address: (format: xxx@xxx.xxx): █
```

- **4. Generate Reports:**

- Generate various reports to analyse banquet and attendee data:
 - Registration Status Report
 - Popular Meals Report
 - Attendee Behaviour Report
 - Banquet Popularity Report
 - Attendee Demographics Report
 - Generate All Reports
- Reports are saved as .txt files in the script's directory.

```
Report Generation:
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.
1. Registration Status Report
2. Popular Meals Report
3. Attendee Behavior Report
4. Banquet Popularity Report
5. Attendee Demographics Report
6. Generate All Reports
7. Back to Administrator Menu
Enter your choice: █
```

- **5. Logout:**

- Exit the Administrator Menu and return to the Main Menu.

Attendee Operations

Attendees can sign up, manage their profiles, and register for banquets.

1. Attendee Sign Up

- **Purpose:** Create a new attendee account.
- **Steps:**
 1. Select option 3 from the Main Menu.
 2. Provide the following details:
 - **First Name:** Only English letters.
 - **Last Name:** Only English letters.

- **Address:** Cannot be empty.
 - **Attendee Type:** Choose from 'staff', 'student', 'alumni', or 'guest'.
 - **E-mail Address:** Must be unique and valid.
 - **Password:** Must be strong (minimum 8 characters, including uppercase, lowercase, and numbers).
 - **Mobile Number:** Must be an 8-digit number.
 - **Affiliated Organization:** Choose from 'PolyU', 'SPEED', 'HKCC', or 'Others'.
- **Notes:**
 - Duplicate emails are not allowed.
 - Password strength is visually indicated.

```
Create Attendee Account
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.
First Name: Chris
Last Name: Wong
Address: Somewhere
Attendee Type (staff/student/alumni/guest): guest
E-mail Address: (format: xxx@xxx.xxx): chriswong@gmail.com
Password (minimum 8 characters, include uppercase, lowercase, number): g7B034Dv
Password Strength: [*****] Very Strong
Mobile Number: (format: 8-digit number): 91234567
Affiliated Organization (polyu/speed/hkcc/others): polyu
```

2. Attendee Login

- **Purpose:** Access the Attendee Menu to manage personal information and registrations.
- **Steps:**
 1. Select option 4 from the Main Menu.
 2. Enter your **Email Address**.
 3. Enter your **Password**.

```
Banquet Management System
Exit Options: Type 'exit.m' to return to the Main Menu.
1. Administrator Login
2. Create Administrator Account
3. Attendee Sign Up
4. Attendee Login
5. Exit
Enter your choice (1-5): 4
Email Address: (format: xxx@xxx.xxx): chriswong@gmail.com
Password: g7B034Dv
```

3. Attendee Menu Options

Once logged in, attendees can access the following functionalities:

```
Attendee Menu
Exit Options: Type 'exit.m' to return to the Main Menu.
1. Update Personal Information
2. Register for a Banquet
3. Search Registrations
4. Update Registration
5. Logout
Enter your choice (1-5): █
```

- **1. Update Personal Information:**

- Modify personal details such as email address, password, mobile number, and address.
- Leave fields blank to retain current values.
- Password strength is visually indicated.

```
Update Personal Information
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.

Update Profile Information (leave blank to keep current value):
E-mail Address (chriswong@gmail.com) (format: xxx@xxx.xxx): █
```

- **2. Register for a Banquet:**

- View a list of available banquets.
- Register for a selected banquet by choosing a meal, drink, and adding optional remarks.
- Seat number is automatically assigned based on registration count.

```
Banquets:
BIN: 1, Name: Gala Night 2023, Date: 2023-12-15, Time: 19:00:00, Location: Grand Hall A, Registered: 2/100
BIN: 2, Name: Annual Dinner, Date: 2024-01-20, Time: 18:30:00, Location: Banquet Center, Registered: 2/150
BIN: 3, Name: Spring Fest, Date: 2024-03-10, Time: 17:00:00, Location: Open Grounds, Registered: 2/200
Enter BIN of the banquet to register: █
```

- **3. Search Registrations:**

- Search your banquet registrations by date or banquet name.
- Displays registration details including Registration ID, Banquet Name, Date, and Time.

```
Search Registrations:
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.
1. By Date
2. By Banquet Name
Enter your choice (1/2): █
```

- **4. Update Registration:**

- Modify your banquet registration details such as meal choice, drink choice, and remarks.
- Must specify the Registration ID to update.

```
Update Registration
Exit Options: Type 'exit.m' to return to the Main Menu, 'exit.p' to return to the previous menu.
Enter Registration ID to update: █
```

- **5. Logout:**

- Exit the Attendee Menu and return to the Main Menu.

Functional Features

Banquet Management

- **Create Banquet:** Administrators can add new banquets with comprehensive details and associated meals.
- **Update Banquet:** Modify existing banquet details as needed.

Attendee Management

- **Sign Up:** Attendees can create accounts to participate in banquets.
- **Profile Update:** Attendees can manage their personal information to keep it current.

Registration Management

- **Register for Banquet:** Attendees can register for available banquets, selecting meal and drink preferences.
- **Update Registration:** Modify existing registrations to suit changing preferences.

Reporting

Administrators can generate various reports to gain insights into banquet operations and attendee behaviors:

1. **Registration Status Report:** Overview of banquet registrations and quota statuses.
2. **Popular Meals Report:** Analysis of meal preferences among attendees.
3. **Attendee Behavior Report:** Insights into attendee participation and preferences.
4. **Banquet Popularity Report:** Rankings of banquets based on registration numbers.
5. **Attendee Demographics Report:** Breakdown of attendee types and affiliations.

Navigation and Exit Commands

- **exit.m:** Return to the Main Menu from any sub-menu.
- **exit.p:** Return to the Previous Menu from within a sub-menu.

Usage Examples:

- At any input prompt, typing exit.m will take you back to the Main Menu.
- Typing exit.p will navigate you to the preceding menu level.

Notes:

- During account creation or data entry, these commands provide flexibility to navigate without completing the current operation.

Troubleshooting

Common Issues and Solutions

1. Cannot Connect to MySQL Server:

- **Cause:** MySQL server is not running or credentials are incorrect.
- **Solution:**
 - Ensure the MySQL server is running.
 - Verify the db_config in the BMS script has the correct username, password, and host.

2. Duplicate Email Error:

- **Cause:** Attempting to create an account with an email that already exists.
- **Solution:**
 - Use a different email address for the new account.

3. Invalid Input Formats:

- **Cause:** Entering data that doesn't match the required format (e.g., incorrect email format, non-numeric mobile number).
- **Solution:**
 - Follow the input guidelines provided at each prompt.
 - Use the correct formats as specified.

4. Password Not Strong Enough:

- **Cause:** Passwords not meeting the strength criteria.
- **Solution:**
 - Create passwords with at least 8 characters, including uppercase letters, lowercase letters, and numbers.

5. Scripts Not Creating Tables:

- **Cause:** Errors in the table creation process.
- **Solution:**
 - Check MySQL server logs for errors.
 - Ensure the db_config is correctly set.
 - Verify that the MySQL user has the necessary privileges to create databases and tables.

6. Report Generation Errors:

- **Cause:** Issues writing .txt files (e.g., permission issues).
- **Solution:**
 - Ensure you have write permissions in the script's directory.
 - Run the script with appropriate privileges.

7. Unhandled Exceptions:

- **Cause:** Unexpected errors during execution.
- **Solution:**
 - Review the error message displayed.
 - Ensure all dependencies are installed.

Frequently Asked Questions (FAQs)

Q1: Can I use the BMS without MySQL?

A1: No, the BMS relies on a MySQL database to store and manage all data. Ensure MySQL is properly installed and configured before using the BMS.

Q2: How do I reset my password if I forget it?

A2: If you're an attendee, you can contact an administrator to reset your password. If you're an administrator, you might need to update the password directly in the database or implement a password recovery feature.

Q3: Is the BMS secure for handling sensitive data?

A3: While the BMS includes basic security measures like password strength checks, sensitive information such as passwords are stored in plain text. For enhanced security, consider implementing hashing for passwords and securing database connections.

Q4: Can multiple administrators use the BMS simultaneously?

A4: Yes, multiple administrators can log in and use the BMS concurrently, provided they have unique administrator accounts.

Q5: How are seat numbers assigned during registration?

A5: Seat numbers are automatically assigned based on the current count of registrations for a banquet. The first registrant gets seat number 1, the second gets seat number 2, and so on.

Q6: Can I add more than four meals when creating a banquet?

A6: Currently, the system is designed to accept exactly four meals per banquet. To modify this, you would need to adjust the `create_banquet` function in the script.