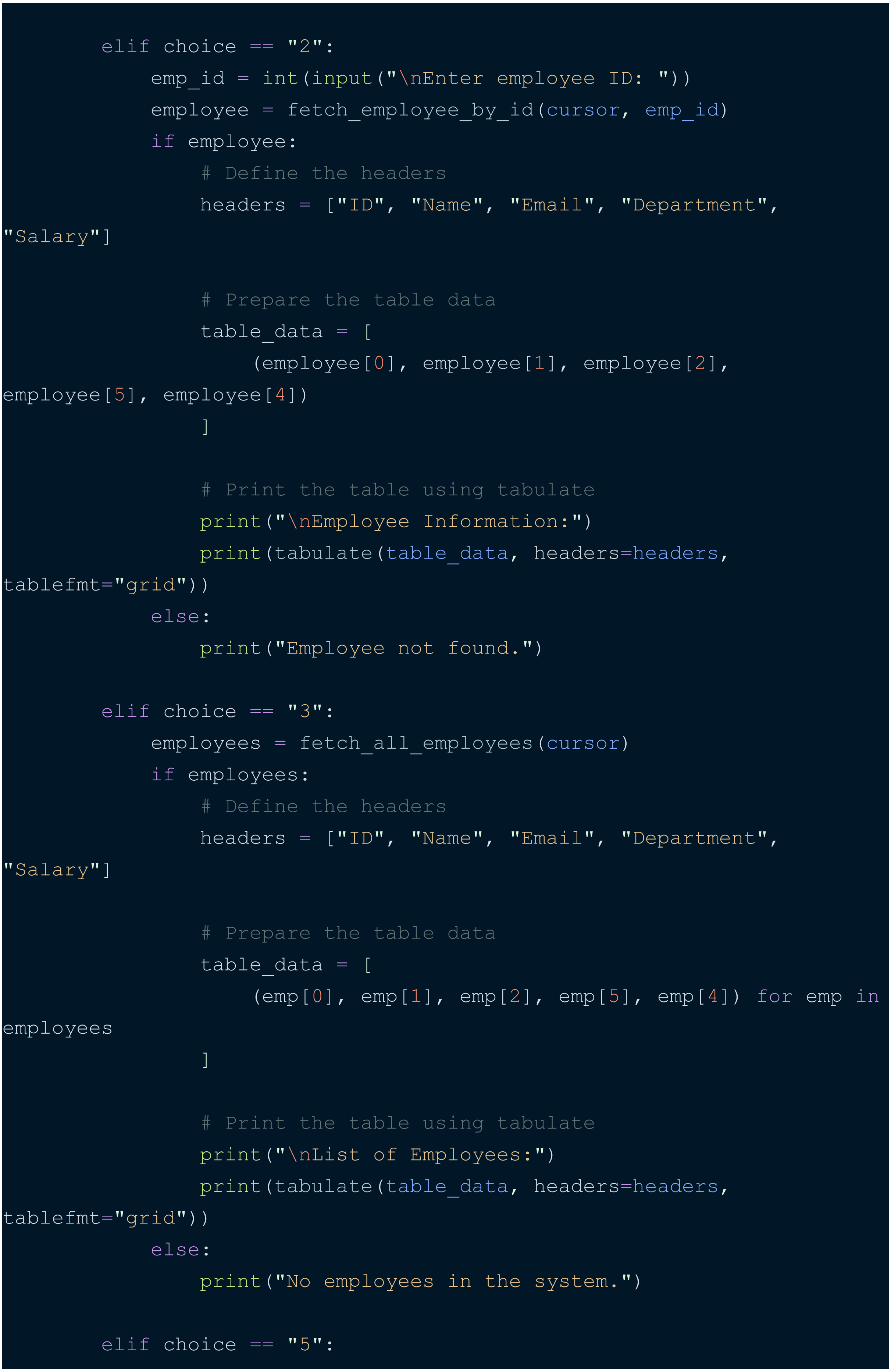
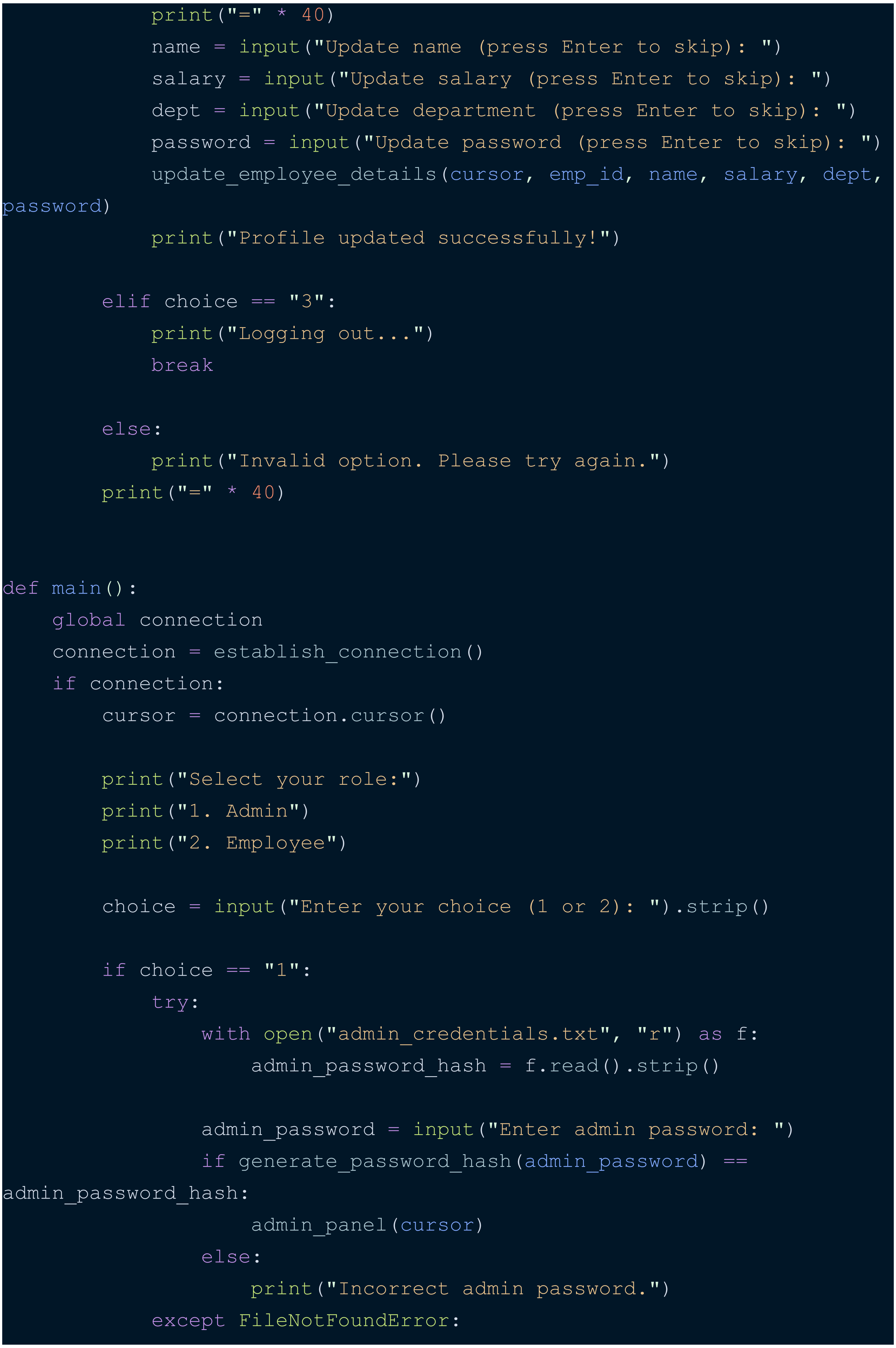
Employee Management System

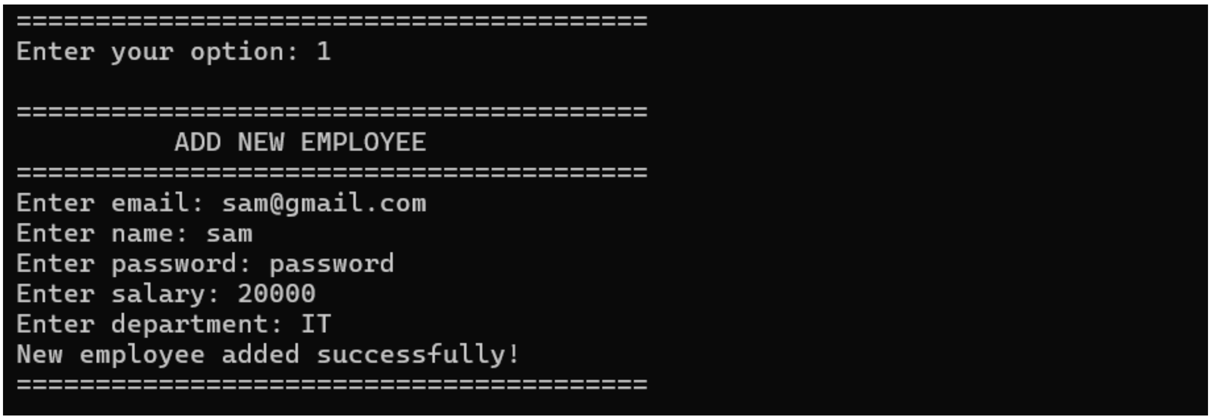
```python
import mysql.connector
from mysql.connector import Error
import hashlib
from tabulate import tabulate


def establish_connection():
    """Establishes a connection to the MySQL database."""
    try:
        connection = mysql.connector.connect(
            host="localhost",
            user="root",
            password="root",
            database="employee_management_system",
        )
        if connection.is_connected():
            return connection
    except Error as e:
        print(f"Error: {e}")
        return None


def generate_password_hash(password):
    """Hashes the provided password using SHA-256."""
    return hashlib.sha256(password.encode()).hexdigest()


def validate_employee_login(cursor, email, password):
    """Validates employee credentials and returns the employee data."""
    hashed_password = generate_password_hash(password)
    query = "SELECT * FROM employees WHERE email = %s AND password = %s"
    cursor.execute(query, (email, hashed_password))
    return cursor.fetchone()


def fetch_employee_by_id(cursor, emp_id):
    """Fetches and displays employee details by their ID in a tabular format using 'tabulate'."""
    query = "SELECT * FROM employees WHERE id = %s"
    cursor.execute(query, (emp_id,))
    return cursor.fetchone()


def fetch_all_employees(cursor):
    """Fetches and displays all employees in a tabular format using 'tabulate'."""
    query = "SELECT * FROM employees"
    cursor.execute(query)
    return cursor.fetchall()


def update_employee_details(
    cursor, emp_id, name=None, salary=None, dept=None, password=None
):
    """Updates employee information with any of the provided fields."""
    fields_to_update = []
    params = []

    if name:
        fields_to_update.append("name = %s")
        params.append(name)
    if salary:
        fields_to_update.append("salary = %s")
        params.append(salary)
    if dept:
        fields_to_update.append("dept = %s")
        params.append(dept)
    if password:
        fields_to_update.append("password = %s")
        params.append(generate_password_hash(password))

    params.append(emp_id)

    if fields_to_update:
        query = f"UPDATE employees SET {', '.join(fields_to_update)} WHERE id = %s"
        cursor.execute(query, tuple(params))
        connection.commit()


def register_new_employee(cursor, email, name, password, salary, dept):
    """Registers a new employee into the database."""
    hashed_password = generate_password_hash(password)
    query = "INSERT INTO employees (email, name, password, salary,
dept) VALUES (%s, %s, %s, %s, %s)"
    cursor.execute(query, (email, name, hashed_password, salary, dept))
    connection.commit()


def remove_employee(cursor, emp_id):
    """Removes an employee from the database."""
    query = "DELETE FROM employees WHERE id = %s"
    cursor.execute(query, (emp_id,))
    connection.commit()


def admin_panel(cursor):
    """Admin operations panel with improved console view."""
    while True:
        print("\n" + "=" * 40)
        print(" " * 10 + "ADMIN DASHBOARD")
        print("=" * 40)
        print("1. Register Employee")
        print("2. View Employee Details")
        print("3. List All Employees")
        print("4. Update Employee Details")
        print("5. Delete Employee")
        print("6. Reset Admin Password")
        print("7. Logout")
        print("=" * 40)

        choice = input("Enter your option: ").strip()

        if choice == "1":
            print("\n" + "=" * 40)
            print(" " * 10 + "ADD NEW EMPLOYEE")
            print("=" * 40)
            email = input("Enter email: ")
            name = input("Enter name: ")
            password = input("Enter password: ")
            salary = float(input("Enter salary: "))
            dept = input("Enter department: ")
            register_new_employee(cursor, email, name, password,
salary, dept)
            print("New employee added successfully!")
```



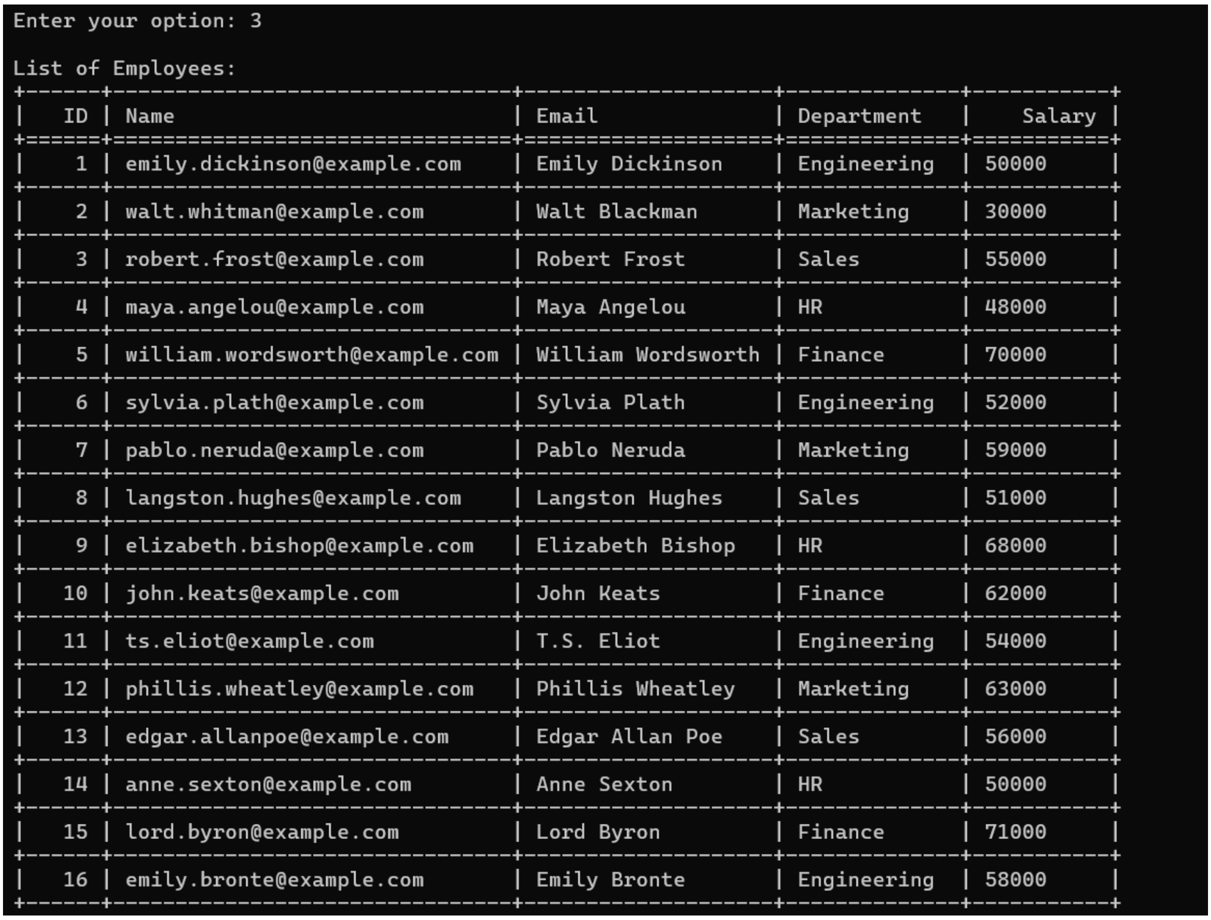
```
        elif choice == "2":
            emp_id = int(input("\nEnter employee ID: "))
            employee = fetch_employee_by_id(cursor, emp_id)
            if employee:
                # Define the headers
                headers = ["ID", "Name", "Email", "Department",
"Salary"]

                # Prepare the table data
                table_data = [
                    (employee[0], employee[1], employee[2],
employee[5], employee[4])
                ]

                # Print the table using tabulate
                print("\nEmployee Information:")
                print(tabulate(table_data, headers=headers,
tablefmt="grid"))
            else:
                print("Employee not found.")

        elif choice == "3":
            employees = fetch_all_employees(cursor)
            if employees:
                # Define the headers
                headers = ["ID", "Name", "Email", "Department",
"Salary"]

                # Prepare the table data
                table_data = [
                    (emp[0], emp[1], emp[2], emp[5], emp[4]) for emp in
employees
                ]

                # Print the table using tabulate
                print("\nList of Employees:")
                print(tabulate(table_data, headers=headers,
tablefmt="grid"))
            else:
                print("No employees in the system.")

        elif choice == "5":
            emp_id = int(input("\nEnter employee ID to remove: "))
            employee = fetch_employee_by_id(cursor, emp_id)
            if employee:
                remove_employee(cursor, emp_id)
                print("Employee removed successfully.")
            else:
                print("Employee not found. Cannot remove.")

        elif choice == "4":
            emp_id = int(input("\nEnter employee ID to modify: "))
            employee = fetch_employee_by_id(cursor, emp_id)
            if employee:
                print("\n" + "=" * 40)
                print(" " * 10 + "MODIFY EMPLOYEE DETAILS")
                print("=" * 40)
                name = input("Enter new name (press Enter to skip): ")
                salary = input("Enter new salary (press Enter to skip): ")
                dept = input("Enter new department (press Enter to skip): ")
                password = input("Enter new password (press Enter to skip): ")
                update_employee_details(cursor, emp_id, name, salary, dept, password)
                print("Employee details successfully updated.")
            else:
                print("Employee not found. Cannot modify details.")

        elif choice == "6":
            new_password = input("\nEnter new admin password: ")
            confirm_password = input("Confirm new password: ")
            if new_password == confirm_password:
                with open("admin_credentials.txt", "w") as f:
                    f.write(generate_password_hash(new_password))
                print("Admin password reset successfully!")
            else:
                print("Passwords do not match. Try again.")

        elif choice == "7":
            print("Logging out...")
            break

        else:
            print("Invalid input. Please try again.")
        print("=" * 40)


def employee_panel(cursor, emp_id):
    """Employee operations panel with improved console view."""
    while True:
        print("\n" + "=" * 40)
        print(" " * 10 + "EMPLOYEE DASHBOARD")
        print("=" * 40)
        print("1. View Profile")
        print("2. Update Profile")
        print("3. Logout")
        print("=" * 40)

        choice = input("Select an option: ").strip()

        if choice == "1":
            print("\n" + "=" * 40)
            print(" " * 10 + "VIEW PROFILE")
            print("=" * 40)
            employee = fetch_employee_by_id(cursor, emp_id)
            if employee:
                # Define the headers
                headers = ["ID", "Name", "Email", "Department",
"Salary"]

                # Prepare the table data
                table_data = [
                    (employee[0], employee[1], employee[2],
employee[5], employee[4])
                ]

                # Print the table using tabulate
                print("\nEmployee Information:")
                print(tabulate(table_data, headers=headers,
tablefmt="grid"))
            else:
                print("Employee not found.")

        elif choice == "2":
            print("\n" + "=" * 40)
            print(" " * 10 + "MODIFY PROFILE")
```



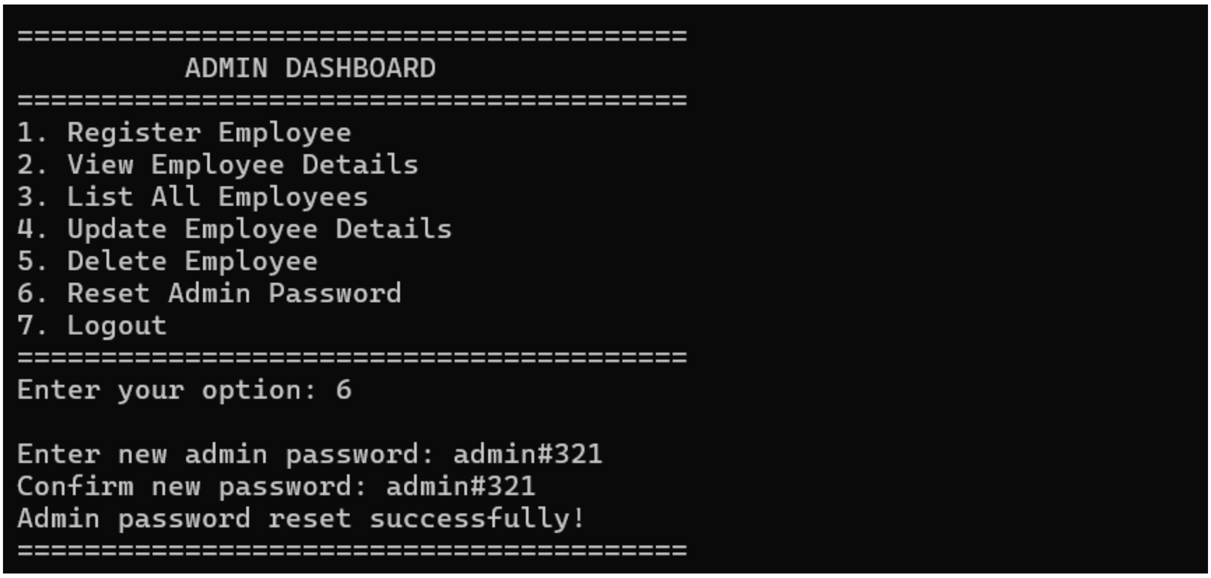
```
            print("=" * 40)
            name = input("Update name (press Enter to skip): ")
            salary = input("Update salary (press Enter to skip): ")
            dept = input("Update department (press Enter to skip): ")
            password = input("Update password (press Enter to skip): ")
            update_employee_details(cursor, emp_id, name, salary, dept,
password)
            print("Profile updated successfully!")

        elif choice == "3":
            print("Logging out...")
            break

        else:
            print("Invalid option. Please try again.")
        print("=" * 40)


def main():
    global connection
    connection = establish_connection()
    if connection:
        cursor = connection.cursor()

        print("Select your role:")
        print("1. Admin")
        print("2. Employee")

        choice = input("Enter your choice (1 or 2): ").strip()

        if choice == "1":
            try:
                with open("admin_credentials.txt", "r") as f:
                    admin_password_hash = f.read().strip()

                admin_password = input("Enter admin password: ")
                if generate_password_hash(admin_password) ==
admin_password_hash:
                    admin_panel(cursor)
                else:
                    print("Incorrect admin password.")
            except FileNotFoundError:
                print("Admin credentials file not found. Reset the password.")

        elif choice == "2":
            email = input("Enter your email: ")
            password = input("Enter your password: ")
            employee = validate_employee_login(cursor, email, password)
            if employee:
                emp_id = employee[0]
                print("Welcome, Employee!")
                employee_panel(cursor, emp_id)
            else:
                print("Invalid login credentials.")

        else:
            print("Invalid choice. Please enter 1 for Admin or 2 for Employee.")

        cursor.close()
        connection.close()


if __name__ == "__main__":
    main()
```



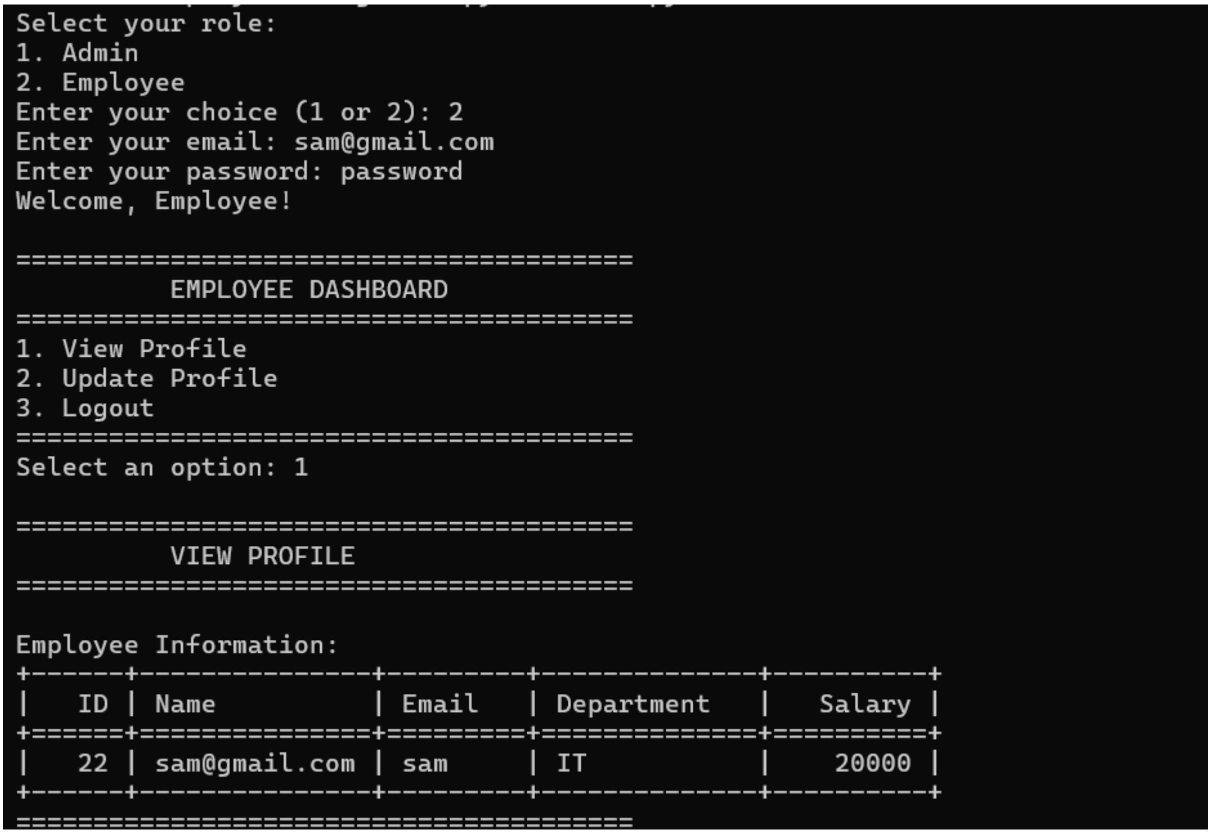
```
========================================
Enter your option: 1

========================================
          ADD NEW EMPLOYEE
========================================
Enter email: sam@gmail.com
Enter name: sam
Enter password: password
Enter salary: 20000
Enter department: IT
New employee added successfully!
========================================
```



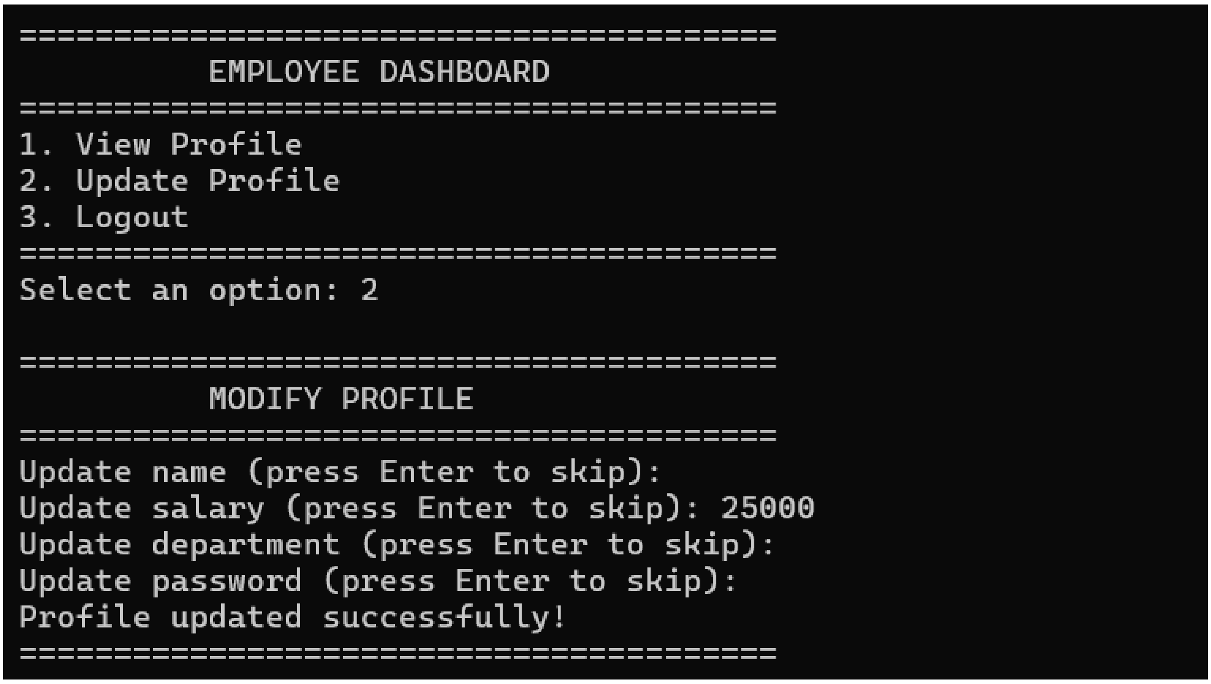
```
Enter your option: 3

List of Employees:
+------+--------------------------------+--------------------+--------------+-----------+
|   ID | Name                           | Email              | Department   |    Salary |
+======+================================+====================+==============+===========+
|    1 | emily.dickinson@example.com    | Emily Dickinson    | Engineering  | 50000     |
+------+--------------------------------+--------------------+--------------+-----------+
|    2 | walt.whitman@example.com       | Walt Blackman      | Marketing    | 30000     |
+------+--------------------------------+--------------------+--------------+-----------+
|    3 | robert.frost@example.com       | Robert Frost       | Sales        | 55000     |
+------+--------------------------------+--------------------+--------------+-----------+
|    4 | maya.angelou@example.com       | Maya Angelou       | HR           | 48000     |
+------+--------------------------------+--------------------+--------------+-----------+
|    5 | william.wordsworth@example.com | William Wordsworth | Finance      | 70000     |
+------+--------------------------------+--------------------+--------------+-----------+
|    6 | sylvia.plath@example.com       | Sylvia Plath       | Engineering  | 52000     |
+------+--------------------------------+--------------------+--------------+-----------+
|    7 | pablo.neruda@example.com       | Pablo Neruda       | Marketing    | 59000     |
+------+--------------------------------+--------------------+--------------+-----------+
|    8 | langston.hughes@example.com    | Langston Hughes    | Sales        | 51000     |
+------+--------------------------------+--------------------+--------------+-----------+
|    9 | elizabeth.bishop@example.com   | Elizabeth Bishop   | HR           | 68000     |
+------+--------------------------------+--------------------+--------------+-----------+
|   10 | john.keats@example.com         | John Keats         | Finance      | 62000     |
+------+--------------------------------+--------------------+--------------+-----------+
|   11 | ts.eliot@example.com           | T.S. Eliot         | Engineering  | 54000     |
+------+--------------------------------+--------------------+--------------+-----------+
|   12 | phillis.wheatley@example.com   | Phillis Wheatley   | Marketing    | 63000     |
+------+--------------------------------+--------------------+--------------+-----------+
|   13 | edgar.allanpoe@example.com     | Edgar Allan Poe    | Sales        | 56000     |
+------+--------------------------------+--------------------+--------------+-----------+
|   14 | anne.sexton@example.com        | Anne Sexton        | HR           | 50000     |
+------+--------------------------------+--------------------+--------------+-----------+
|   15 | lord.byron@example.com         | Lord Byron         | Finance      | 71000     |
+------+--------------------------------+--------------------+--------------+-----------+
|   16 | emily.bronte@example.com       | Emily Bronte       | Engineering  | 58000     |
+------+--------------------------------+--------------------+--------------+-----------+
```



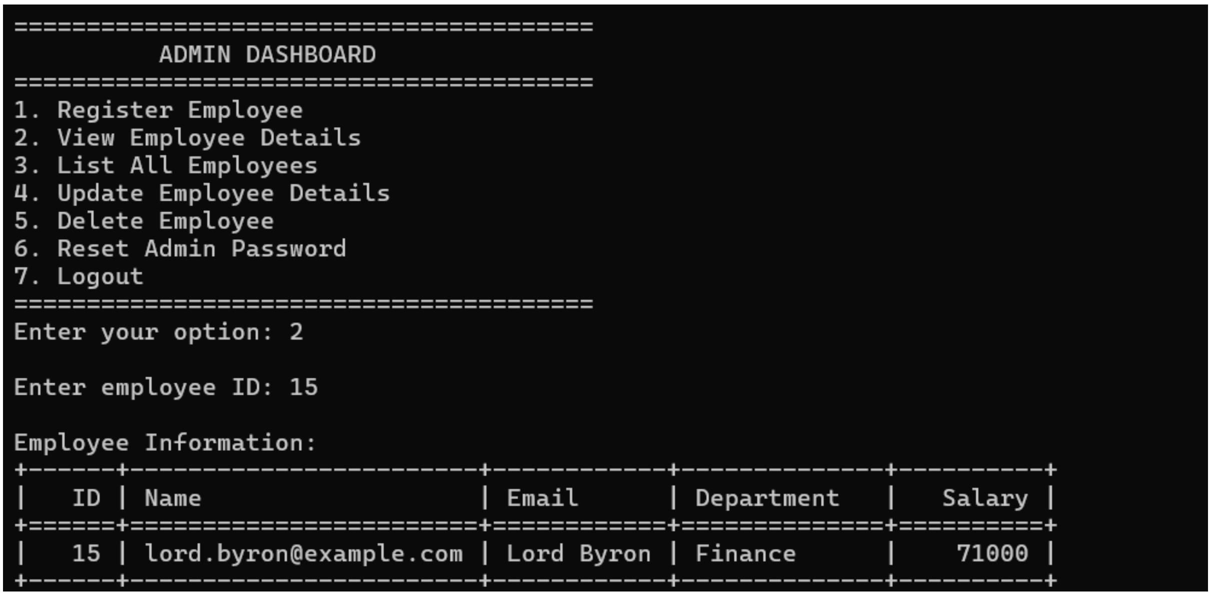
```
========================================
          ADMIN DASHBOARD
========================================
1. Register Employee
2. View Employee Details
3. List All Employees
4. Update Employee Details
5. Delete Employee
6. Reset Admin Password
7. Logout
========================================
Enter your option: 6

Enter new admin password: admin#321
Confirm new password: admin#321
Admin password reset successfully!
========================================
```



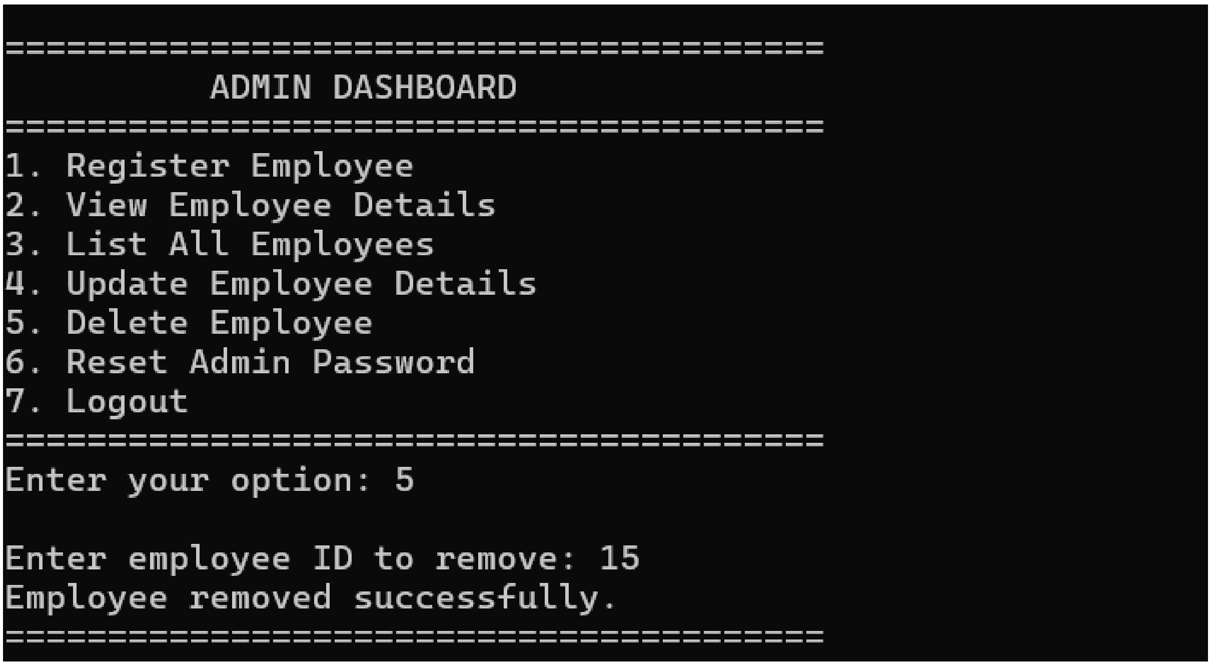
```
Select your role:
1. Admin
2. Employee
Enter your choice (1 or 2): 2
Enter your email: sam@gmail.com
Enter your password: password
Welcome, Employee!

========================================
          EMPLOYEE DASHBOARD
========================================
1. View Profile
2. Update Profile
3. Logout
========================================
Select an option: 1

========================================
          VIEW PROFILE
========================================

Employee Information:
+------+---------------+---------+--------------+----------+
|   ID | Name          | Email   | Department   |   Salary |
+======+===============+=========+==============+==========+
|   22 | sam@gmail.com | sam     | IT           |    20000 |
+------+---------------+---------+--------------+----------+
========================================
```



```
========================================
          EMPLOYEE DASHBOARD
========================================
1. View Profile
2. Update Profile
3. Logout
========================================
Select an option: 2

========================================
          MODIFY PROFILE
========================================
Update name (press Enter to skip):
Update salary (press Enter to skip): 25000
Update department (press Enter to skip):
Update password (press Enter to skip):
Profile updated successfully!
========================================
```



```
========================================
          ADMIN DASHBOARD
========================================
1. Register Employee
2. View Employee Details
3. List All Employees
4. Update Employee Details
5. Delete Employee
6. Reset Admin Password
7. Logout
========================================
Enter your option: 2

Enter employee ID: 15

Employee Information:
+------+------------------------+------------+--------------+----------+
|   ID | Name                   | Email      | Department   |   Salary |
+======+========================+============+==============+==========+
|   15 | lord.byron@example.com | Lord Byron | Finance      |    71000 |
+------+------------------------+------------+--------------+----------+
```



```
========================================
          ADMIN DASHBOARD
========================================
1. Register Employee
2. View Employee Details
3. List All Employees
4. Update Employee Details
5. Delete Employee
6. Reset Admin Password
7. Logout
========================================
Enter your option: 5

Enter employee ID to remove: 15
Employee removed successfully.
========================================
```