Software Engineering Project Report
On
Human Resource Management System

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Department of Computer Science & Engineering
Institute of Computer Technology

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ACKNOWLEDGEMENT

Inter College Projects are golden opportunity for learning and self-development. I consider myself very lucky and honored to have so many wonderful people lead me through in completion of this project. First and foremost, I would like to thank Dr. Hemal Shah, Principal, ICT, and Prof. Dharmesh Darji , Head, ICT who gave us an opportunity to undertake this project. My grateful thanks to Prof. Sejal Patel for her guidance in project work “Human Resources Management System”, who despite being extraordinarily busy with academics, took time out to hear, guide and keep us on the correct path. We do not know where would have been without her help. We choose this moment to acknowledge their contribution gratefully.

ABSTRACT

The goal of this project is to combine Python and MySQL to create a user-friendly human resource management system (HRMS). The system is meant to automate HR operations like payroll management, attendance tracking, and employee information management. It offers unique logins with various functionalities for HR and employees. The HR can access and manage personnel data, attendance, and compensation information. The employees have access to information on their attendance and pay. The solution also offers payroll and employee attendance data visualization. The system is user-friendly, effective, and requires less manual work, enhancing the precision and efficacy of HR operations.

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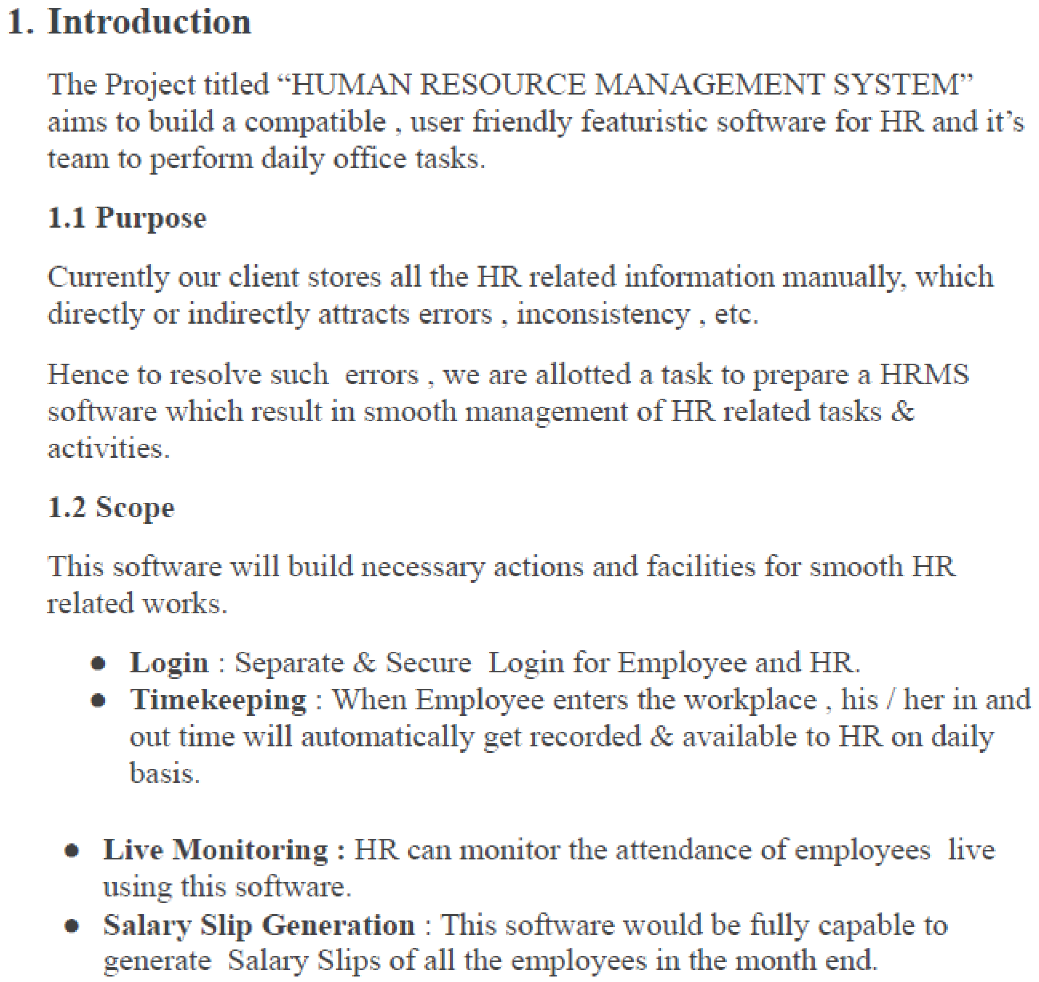
1. SOFTWARE REQUIREMENT SPECIFICATION (SRS)



1. Introduction

The Project titled “HUMAN RESOURCE MANAGEMENT SYSTEM” aims to build a compatible , user friendly featuristic software for HR and it’s team to perform daily office tasks.

1.1 Purpose

Currently our client stores all the HR related information manually, which directly or indirectly attracts errors , inconsistency , etc.

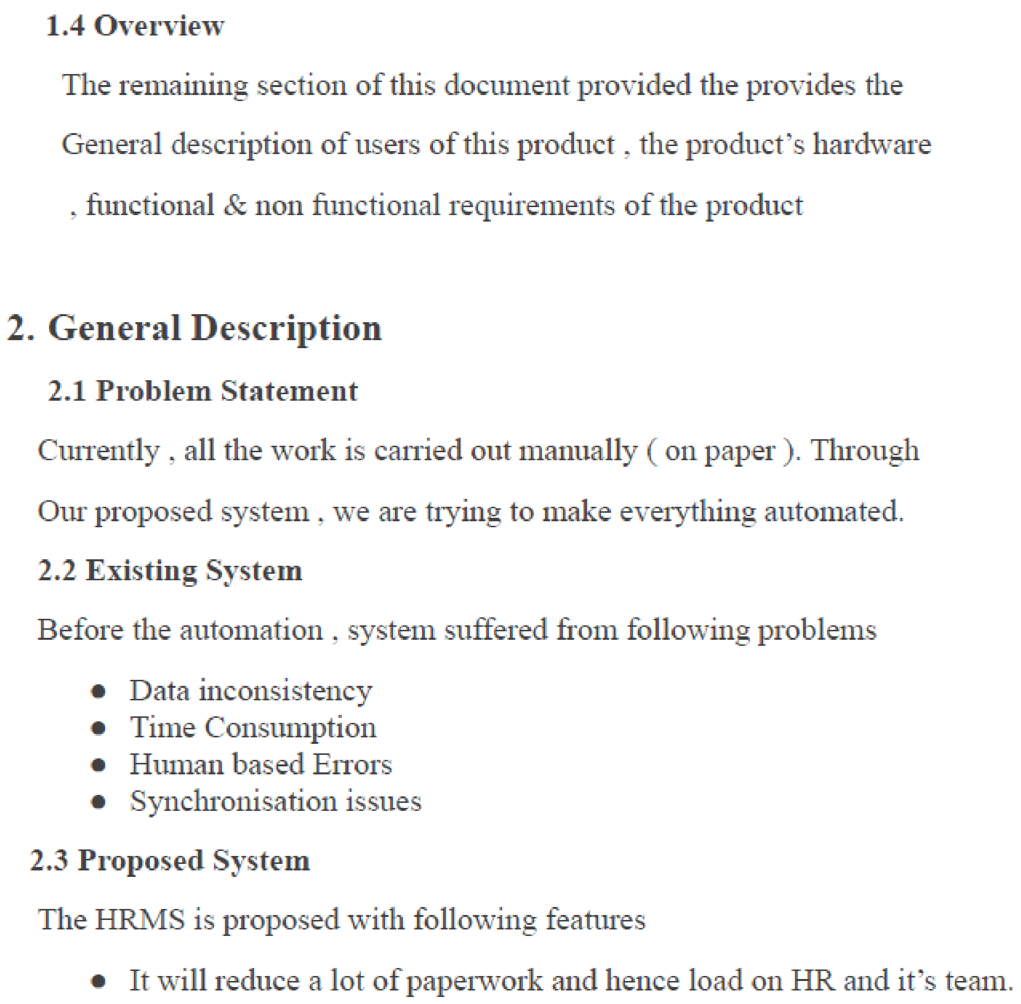
Hence to resolve such errors , we are allotted a task to prepare a HRMS software which result in smooth management of HR related tasks & activities.

1.2 Scope

This software will build necessary actions and facilities for smooth HR related works.

- **Login** : Separate & Secure Login for Employee and HR.
- **Timekeeping** : When Employee enters the workplace , his / her in and out time will automatically get recorded & available to HR on daily basis.

- **Live Monitoring :** HR can monitor the attendance of employees live using this software.
- **Salary Slip Generation** : This software would be fully capable to generate Salary Slips of all the employees in the month end.



1.4 Overview

The remaining section of this document provided the provides the General description of users of this product , the product's hardware , functional & non functional requirements of the product

2. General Description

2.1 Problem Statement

Currently , all the work is carried out manually (on paper). Through Our proposed system , we are trying to make everything automated.

2.2 Existing System

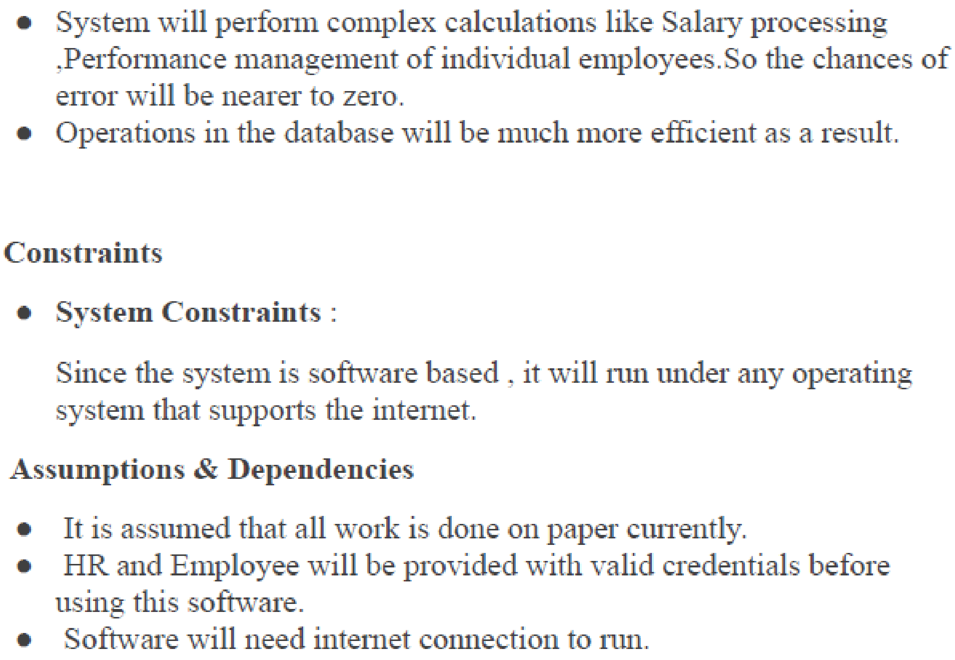
Before the automation , system suffered from following problems

- Data inconsistency
- Time Consumption
- Human based Errors
- Synchronisation issues

2.3 Proposed System

The HRMS is proposed with following features

- It will reduce a lot of paperwork and hence load on HR and it's team.



- System will perform complex calculations like Salary processing ,Performance management of individual employees.So the chances of error will be nearer to zero.
- Operations in the database will be much more efficient as a result.

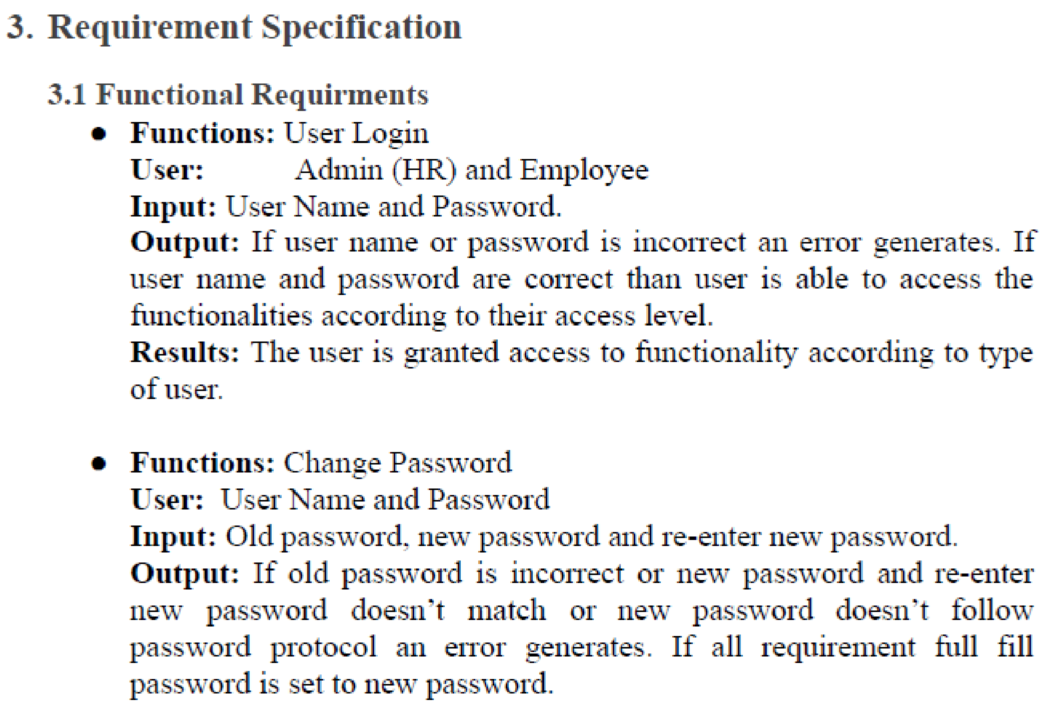
2.4 Constraints

- **System Constraints** :

  Since the system is software based , it will run under any operating system that supports the internet.

2.5 Assumptions & Dependencies

- It is assumed that all work is done on paper currently.
- HR and Employee will be provided with valid credentials before using this software.
- Software will need internet connection to run.

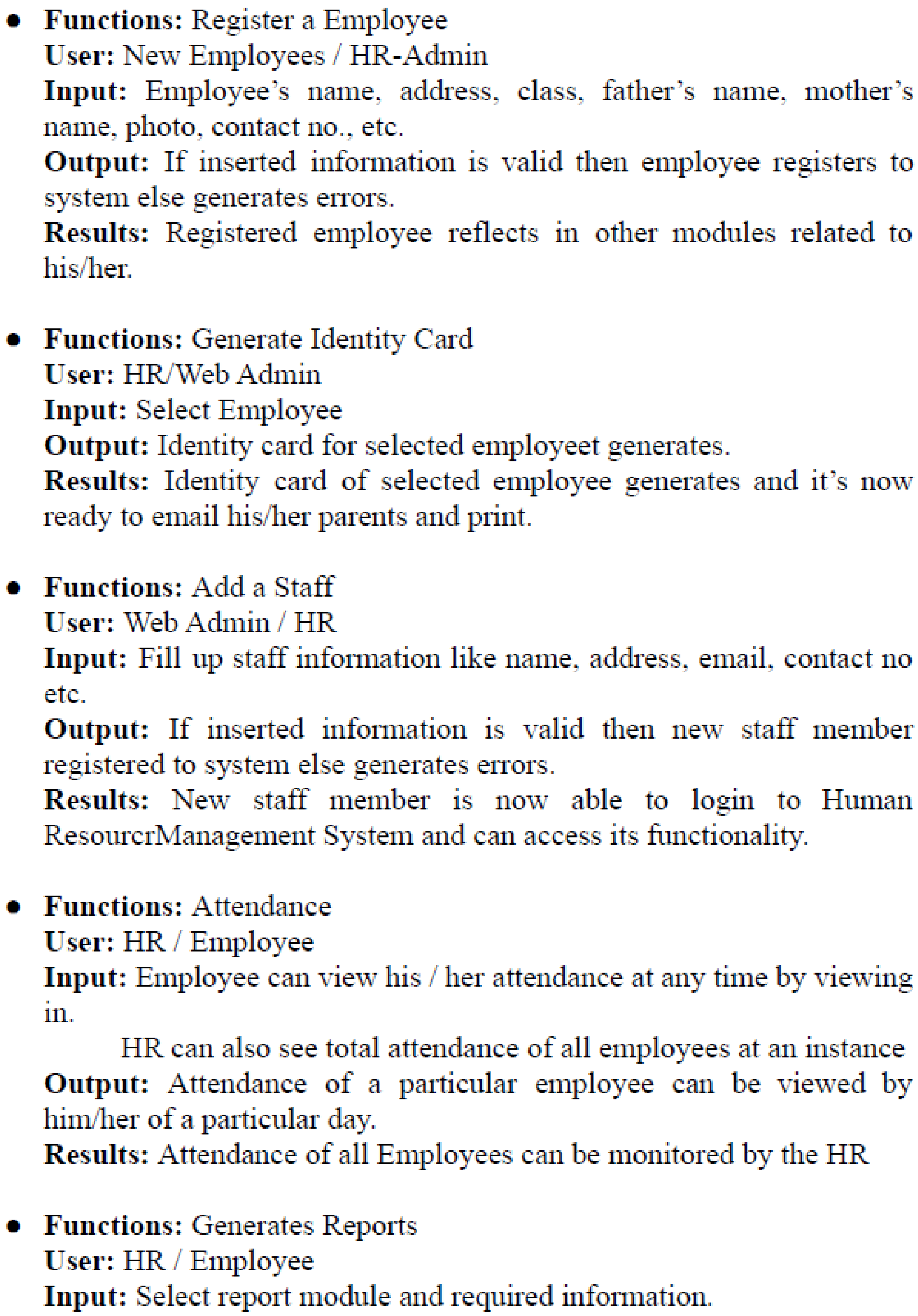


3. Requirement Specification

3.1 Functional Requirments

- **Functions:** User Login
  User: Admin (HR) and Employee
  Input: User Name and Password.
  Output: If user name or password is incorrect an error generates. If user name and password are correct than user is able to access the functionalities according to their access level.
  Results: The user is granted access to functionality according to type of user.

- **Functions:** Change Password
  User: User Name and Password
  Input: Old password, new password and re-enter new password.
  Output: If old password is incorrect or new password and re-enter new password doesn't match or new password doesn't follow password protocol an error generates. If all requirement full fill password is set to new password.



- **Functions:** Register a Employee
  User: New Employees / HR-Admin
  Input: Employee's name, address, class, father's name, mother's name, photo, contact no., etc.
  Output: If inserted information is valid then employee registers to system else generates errors.
  Results: Registered employee reflects in other modules related to his/her.

- **Functions:** Generate Identity Card
  User: HR/Web Admin
  Input: Select Employee
  Output: Identity card for selected employeet generates.
  Results: Identity card of selected employee generates and it's now ready to email his/her parents and print.

- **Functions:** Add a Staff
  User: Web Admin / HR
  Input: Fill up staff information like name, address, email, contact no etc.
  Output: If inserted information is valid then new staff member registered to system else generates errors.
  Results: New staff member is now able to login to Human ResourcrManagement System and can access its functionality.

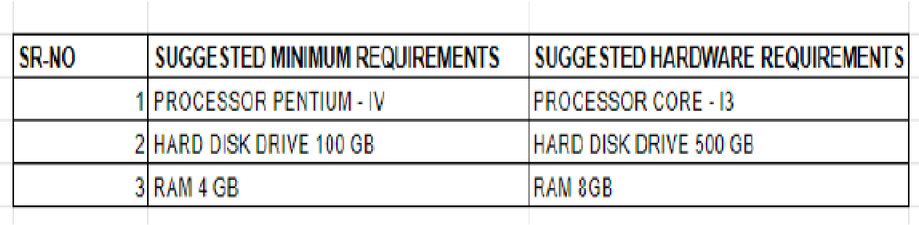
- **Functions:** Attendance
  User: HR / Employee
  Input: Employee can view his / her attendance at any time by viewing in.
  HR can also see total attendance of all employees at an instance
  Output: Attendance of a particular employee can be viewed by him/her of a particular day.
  Results: Attendance of all Employees can be monitored by the HR

- **Functions:** Generates Reports
  User: HR / Employee
  Input: Select report module and required information.

3.2 Performance Requirments

- **Response Time :** Response time for operations is satisfactory
- **Error Handling :** Errors are scarce & properly handled without affecting performance.
- **Simple UI/UX :** System is easy to understand and work with regardless experience of customers.

3.3 Hardware Requirements



SR-NO	SUGGESTED MINIMUM REQUIREMENTS	SUGGESTED HARDWARE REQUIREMENTS
1	PROCESSOR PENTIUM - IV	PROCESSOR CORE - I3
2	HARD DISK DRIVE 100 GB	HARD DISK DRIVE 500 GB
3	RAM 4 GB	RAM 8GB

3.4 Misclleanous Requirements

- EMPLOYEE CREDENTIALS
- SECURITY
- FLEXIBILITY
- EFFICIENCY

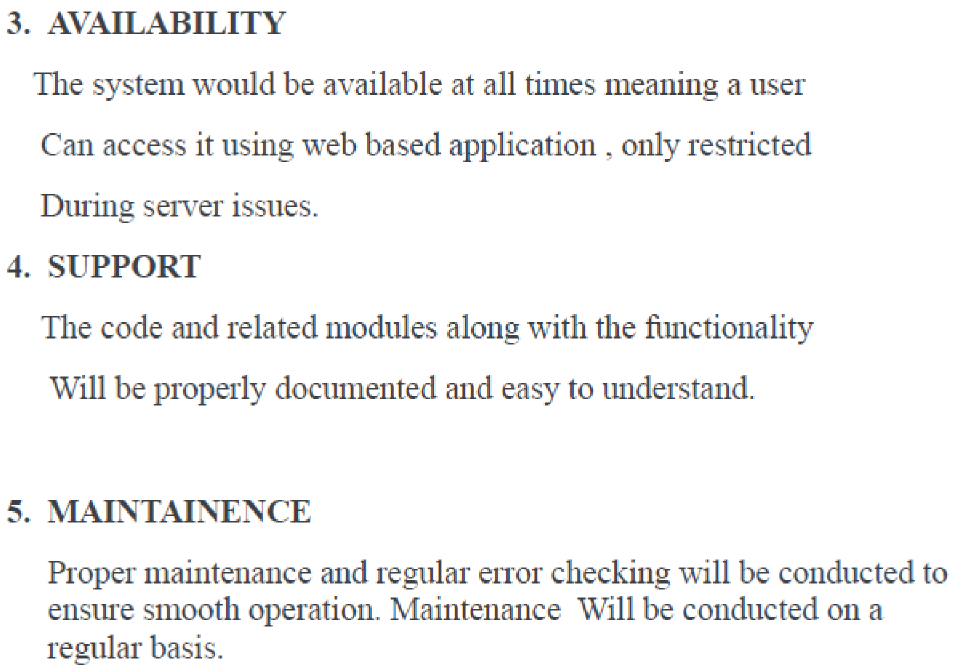
3.5 Non Functional Requirements

1. **SECURITY**

   System will allow access only to company's employees and full access to admins or HR''s.

2. **RELIABILITY**

   The system will be reliable as it be continuously backed up and recent changes shall also be backed up.



3. AVAILABILITY

The system would be available at all times meaning a user

Can access it using web based application , only restricted

During server issues.

4. SUPPORT

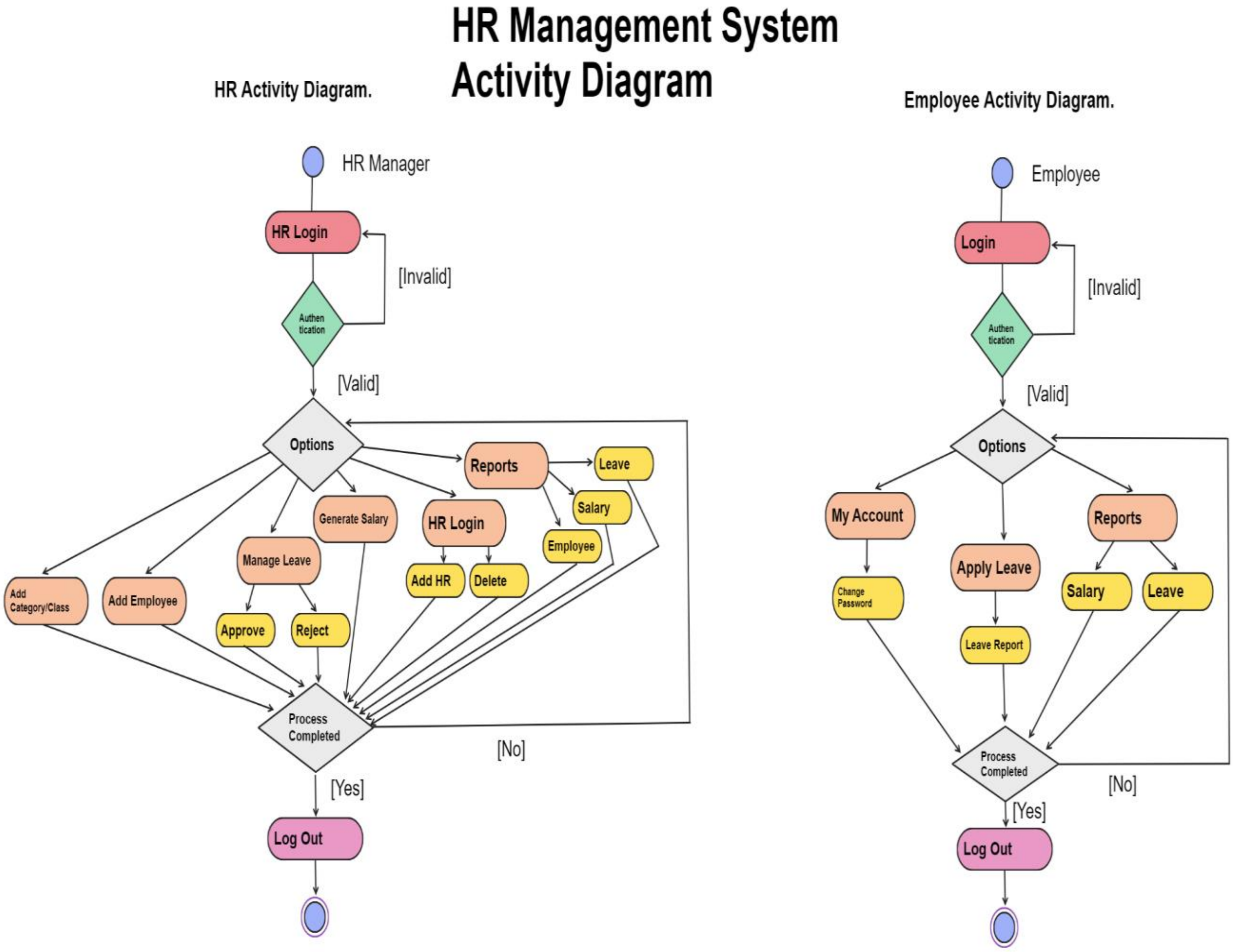
The code and related modules along with the functionality

Will be properly documented and easy to understand.

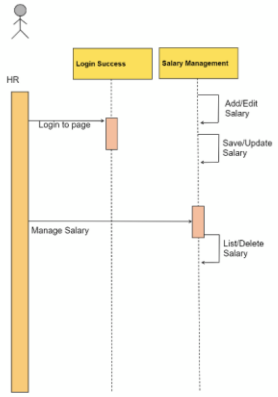
5. MAINTAINENENCE

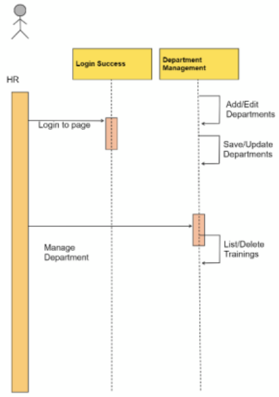
Proper maintenance and regular error checking will be conducted to ensure smooth operation. Maintenance Will be conducted on a regular basis.

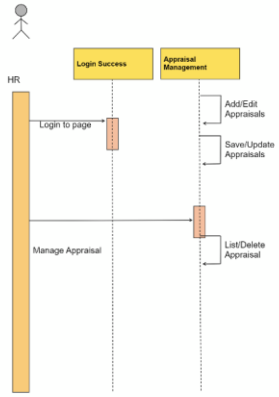
2. ACTIVITY DIAGRAM

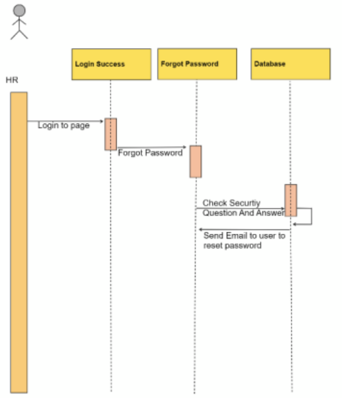


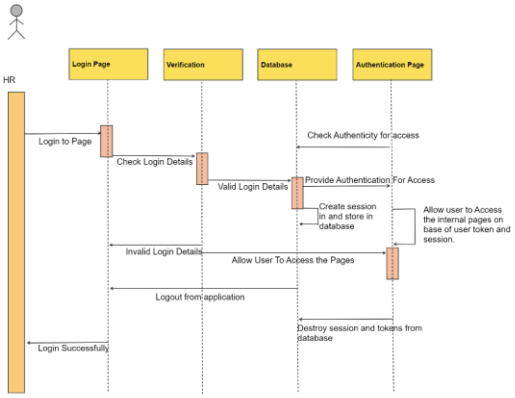
3. SEQUENCE DIAGRAM

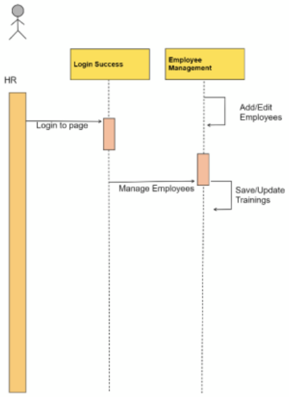


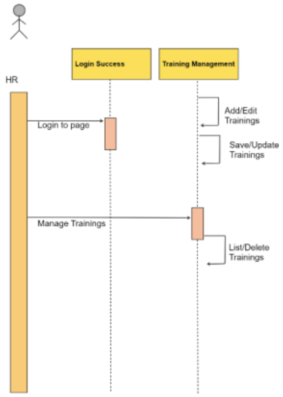




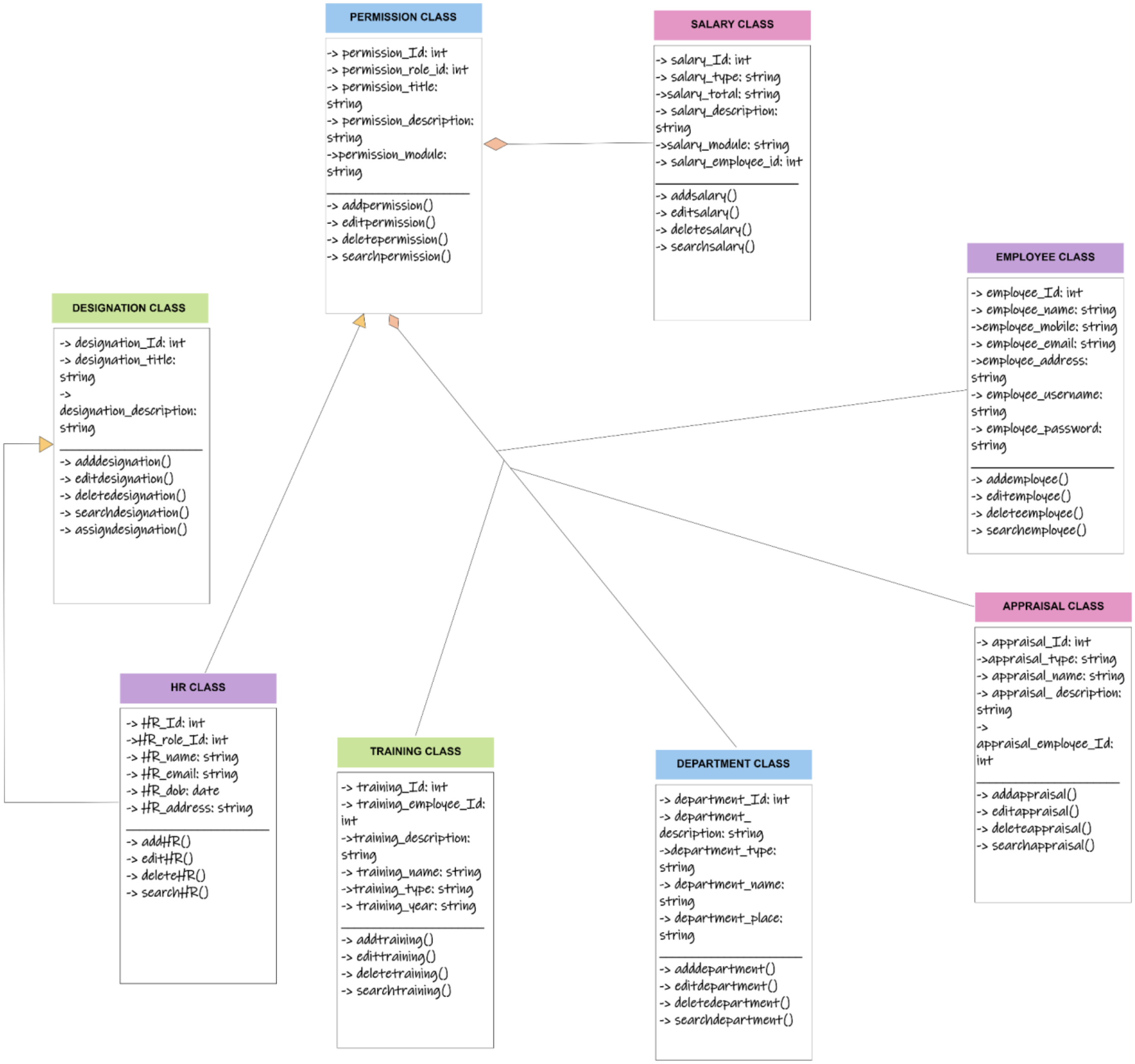

HR
Login Success
Forgot Password
Database
Login to page
Forgot Password
Check Securtiy Question And Answer
Send Email to user to reset password


HR
Login Page
Verification
Database
Authentication Page
Check Authenticity for access
Login to Page
Check Login Details
Provide Authentication For Access
Valid Login Details
Create session in and store in database
Allow user to Access the internal pages on base of user token and session.
Invalid Login Details
Allow User To Access the Pages
Logout from application
Destroy session and tokens from database
Login Successfully

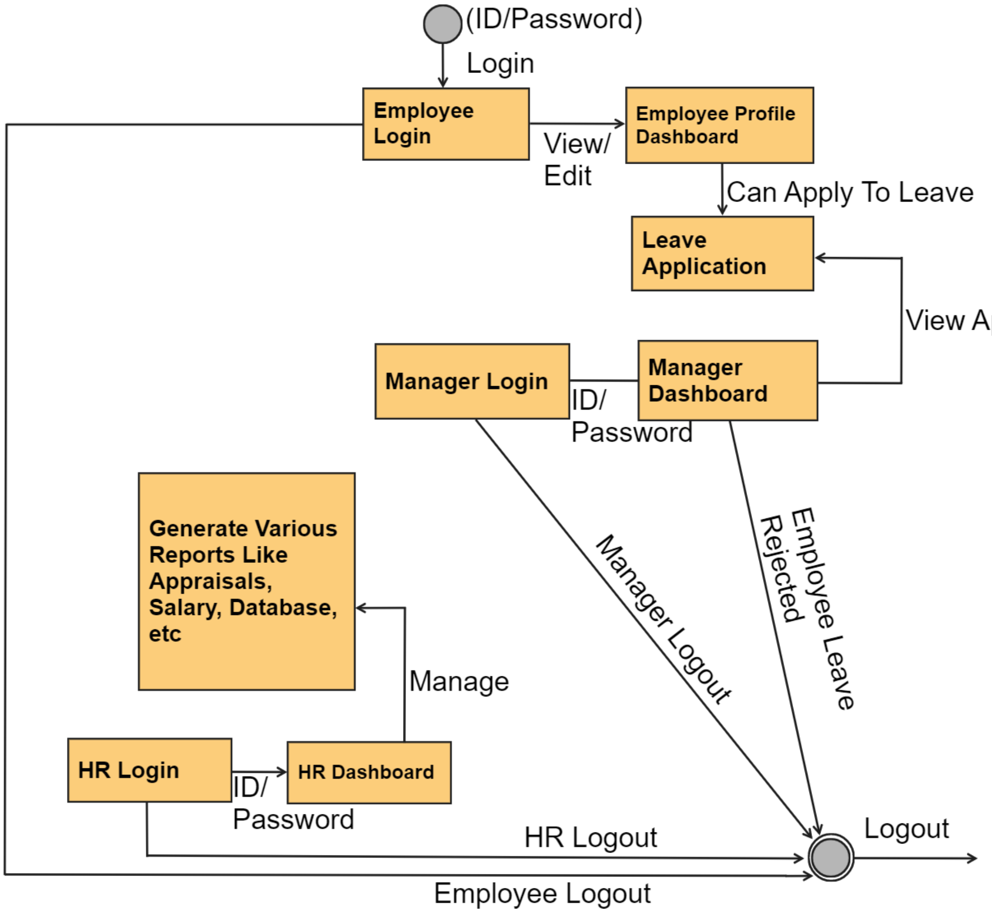




4. CLASS DIAGRAM

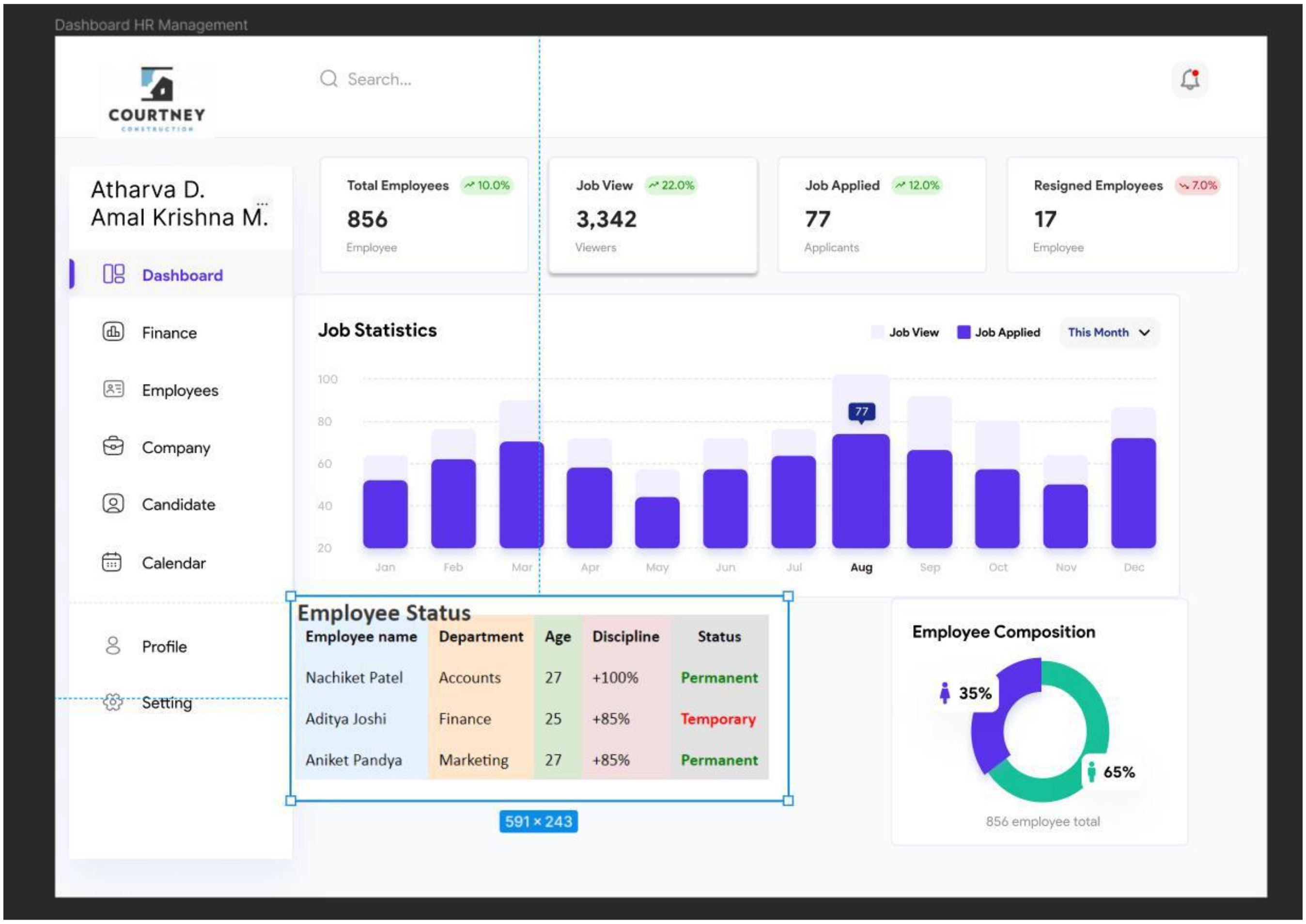


5. STATE DIAGRAM



6. WIREFRAMES SNAPSHOT

HRMS DASHBOARD



Total Employees ↗ 10.0%
856
Employee

Job View ↗ 22.0%
3,342
Viewers

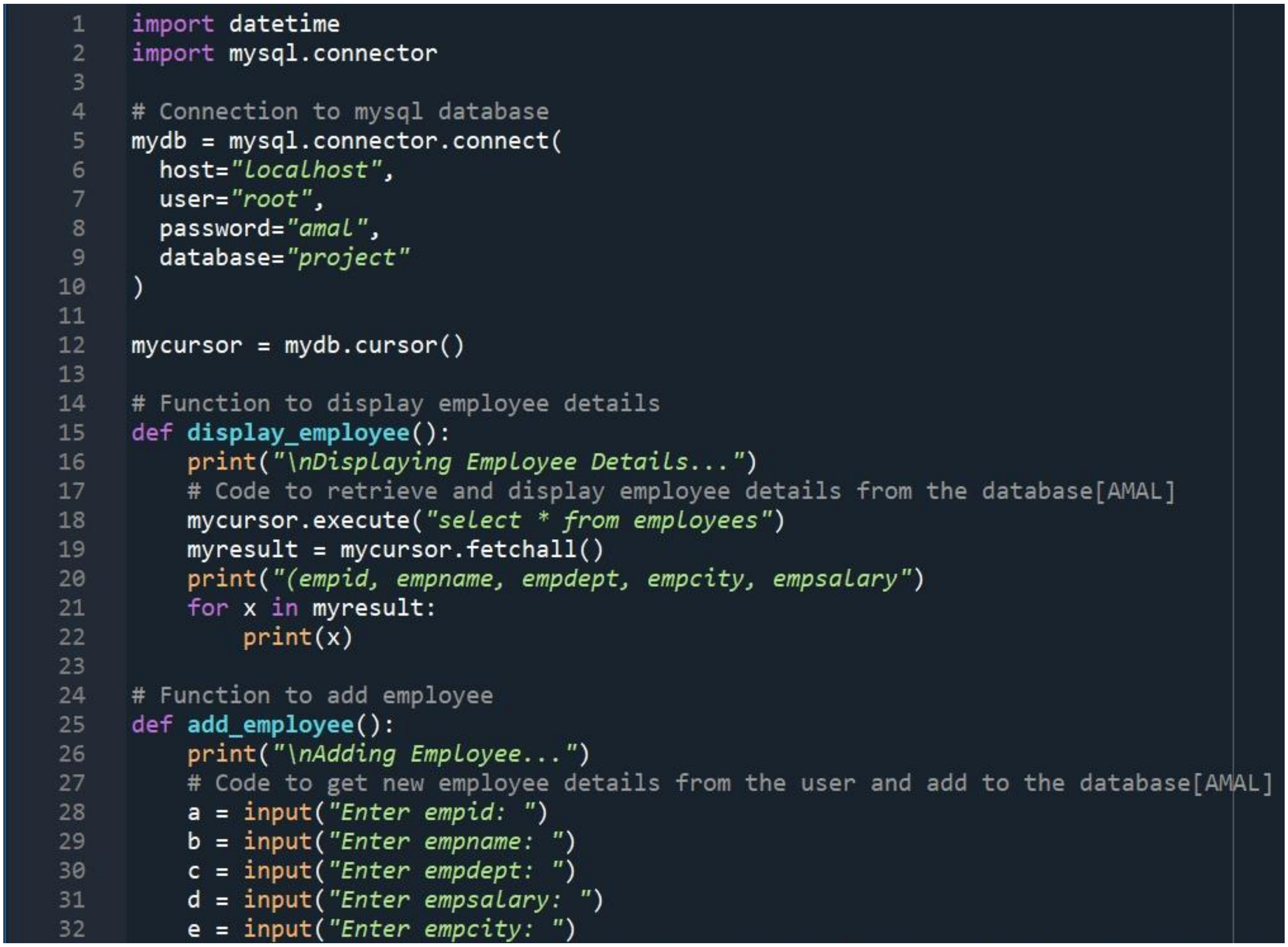
Job Applied ↗ 12.0%
77
Applicants

Resigned Employees ↘ 7.0%
17
Employee

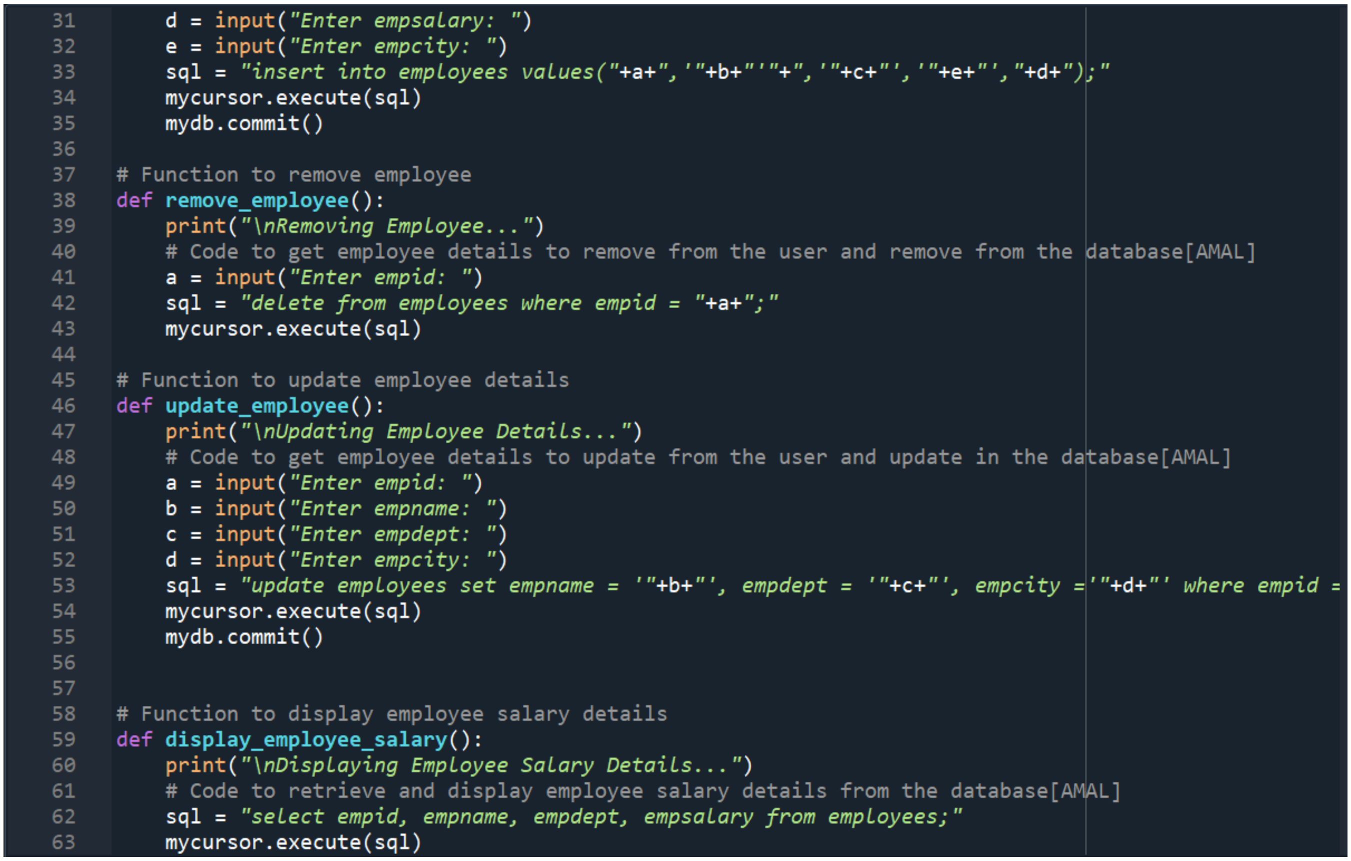
Employee Status

Employee name	Department	Age	Discipline	Status
Nachiket Patel	Accounts	27	+100%	Permanent
Aditya Joshi	Finance	25	+85%	Temporary
Aniket Pandya	Marketing	27	+85%	Permanent

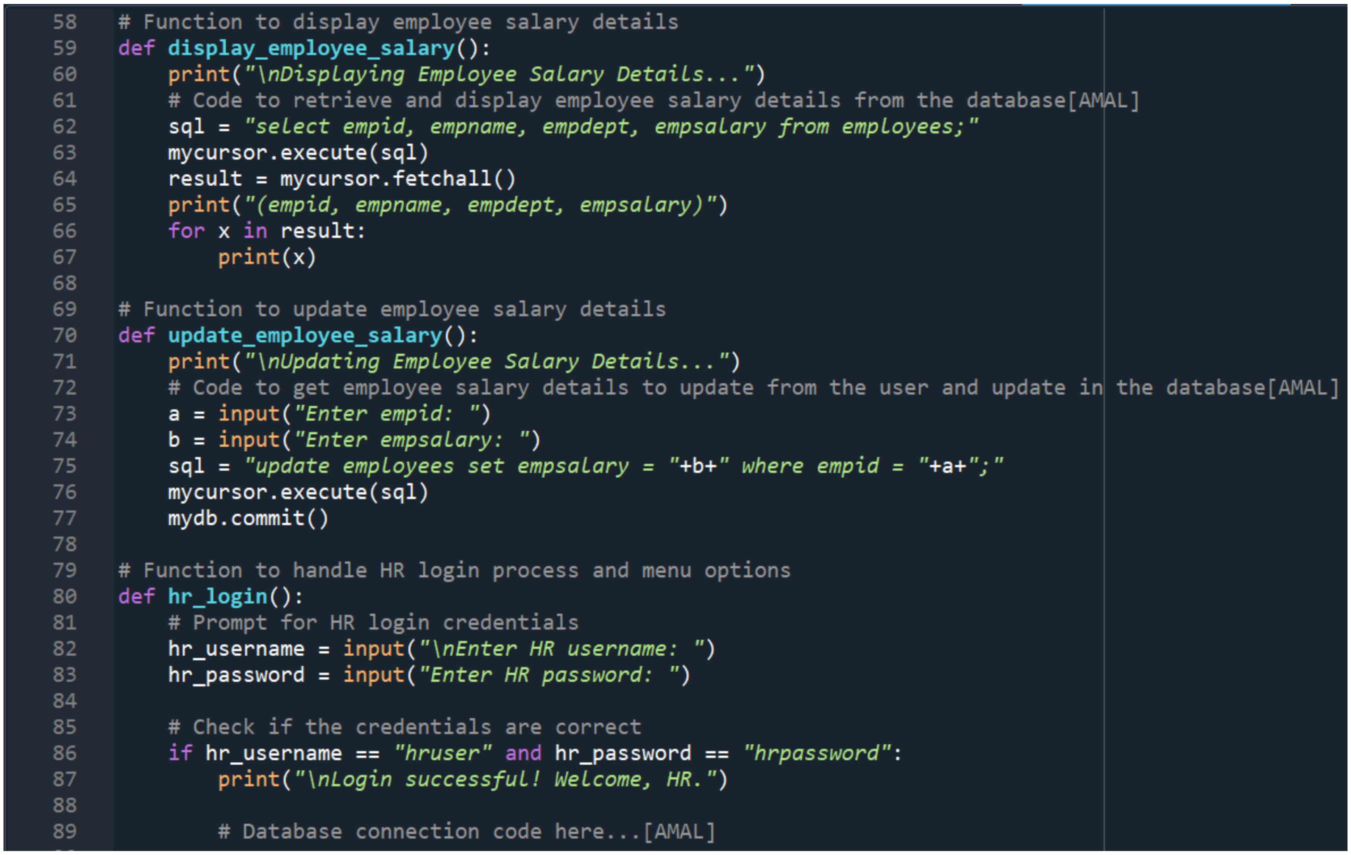
7. CODE SCREENSHOTS



```python
import datetime
import mysql.connector

# Connection to mysql database
mydb = mysql.connector.connect(
  host="localhost",
  user="root",
  password="amal",
  database="project"
)

mycursor = mydb.cursor()

# Function to display employee details
def display_employee():
    print("\nDisplaying Employee Details...")
    # Code to retrieve and display employee details from the database[AMAL]
    mycursor.execute("select * from employees")
    myresult = mycursor.fetchall()
    print("(empid, empname, empdept, empcity, empsalary")
    for x in myresult:
        print(x)

# Function to add employee
def add_employee():
    print("\nAdding Employee...")
    # Code to get new employee details from the user and add to the database[AMAL]
    a = input("Enter empid: ")
    b = input("Enter empname: ")
    c = input("Enter empdept: ")
    d = input("Enter empsalary: ")
    e = input("Enter empcity: ")
```

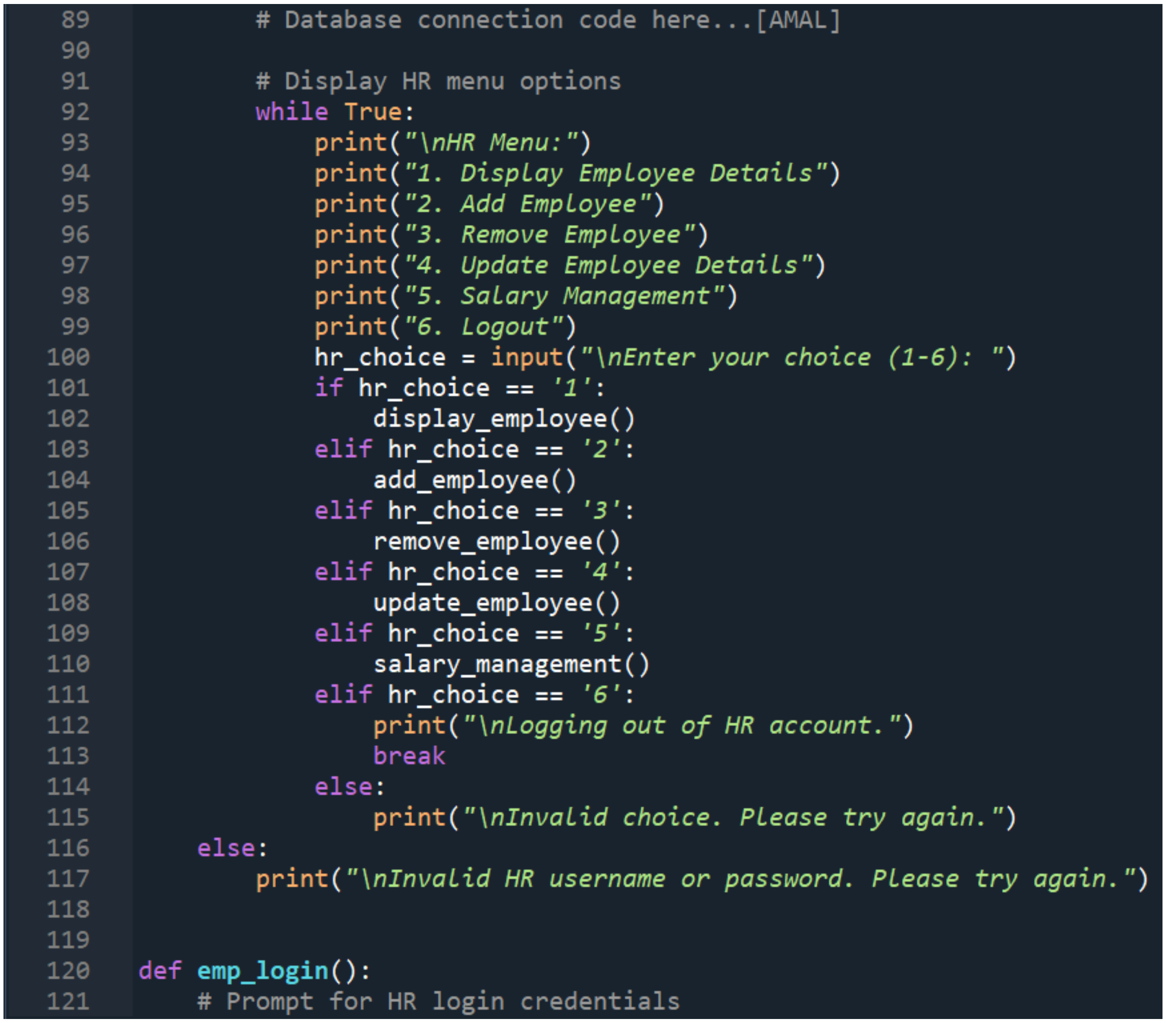


```
    d = input("Enter empsalary: ")
    e = input("Enter empcity: ")
    sql = "insert into employees values("+a+",'"+b+"'"+",'"+c+"','"+e+"',"+d+");"
    mycursor.execute(sql)
    mydb.commit()

# Function to remove employee
def remove_employee():
    print("\nRemoving Employee...")
    # Code to get employee details to remove from the user and remove from the database[AMAL]
    a = input("Enter empid: ")
    sql = "delete from employees where empid = "+a+";"
    mycursor.execute(sql)

# Function to update employee details
def update_employee():
    print("\nUpdating Employee Details...")
    # Code to get employee details to update from the user and update in the database[AMAL]
    a = input("Enter empid: ")
    b = input("Enter empname: ")
    c = input("Enter empdept: ")
    d = input("Enter empcity: ")
    sql = "update employees set empname = '"+b+"', empdept = '"+c+"', empcity ='"+d+"' where empid =
    mycursor.execute(sql)
    mydb.commit()


# Function to display employee salary details
def display_employee_salary():
    print("\nDisplaying Employee Salary Details...")
    # Code to retrieve and display employee salary details from the database[AMAL]
    sql = "select empid, empname, empdept, empsalary from employees;"
    mycursor.execute(sql)
```

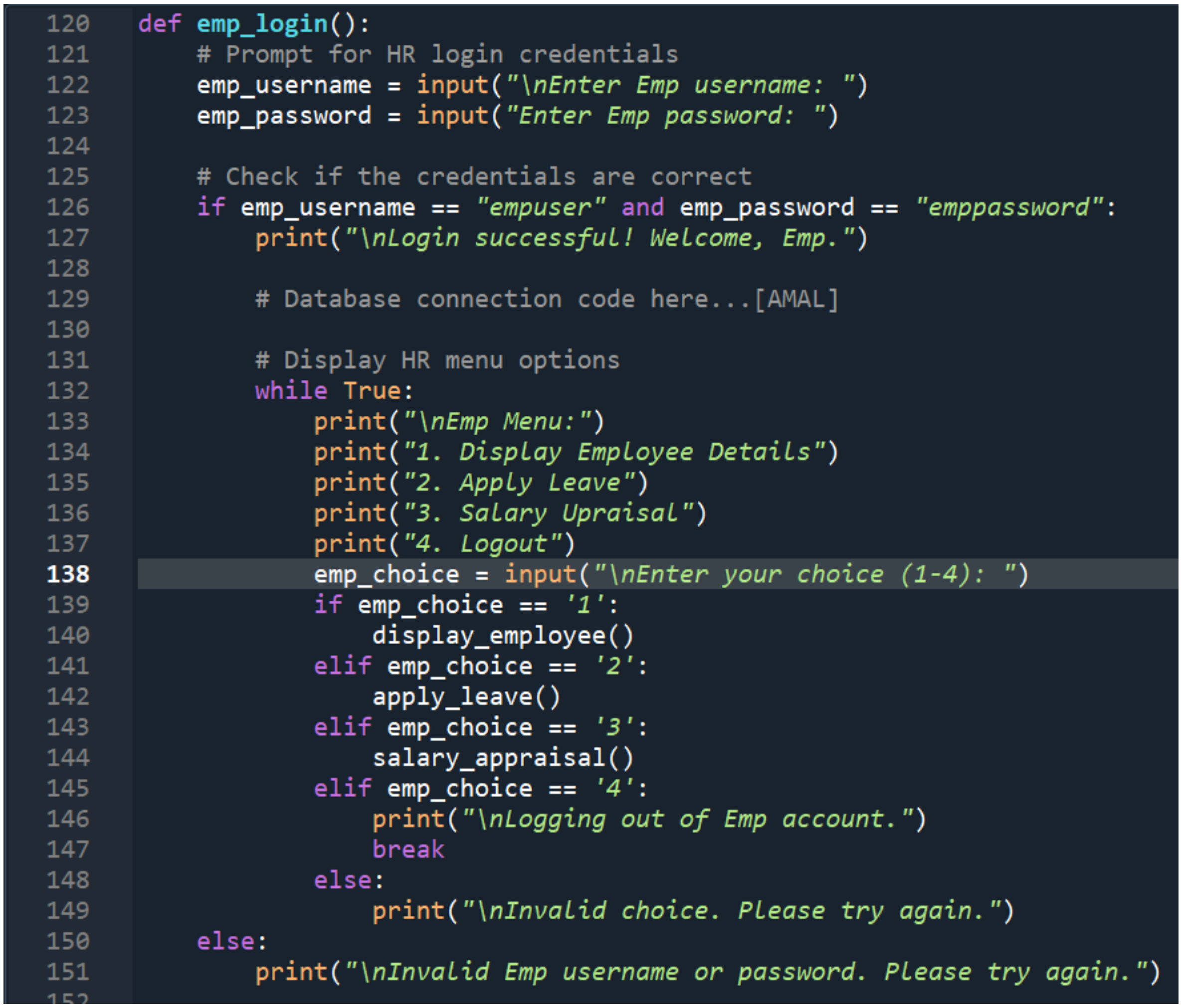


```
# Function to display employee salary details
def display_employee_salary():
    print("\nDisplaying Employee Salary Details...")
    # Code to retrieve and display employee salary details from the database[AMAL]
    sql = "select empid, empname, empdept, empsalary from employees;"
    mycursor.execute(sql)
```

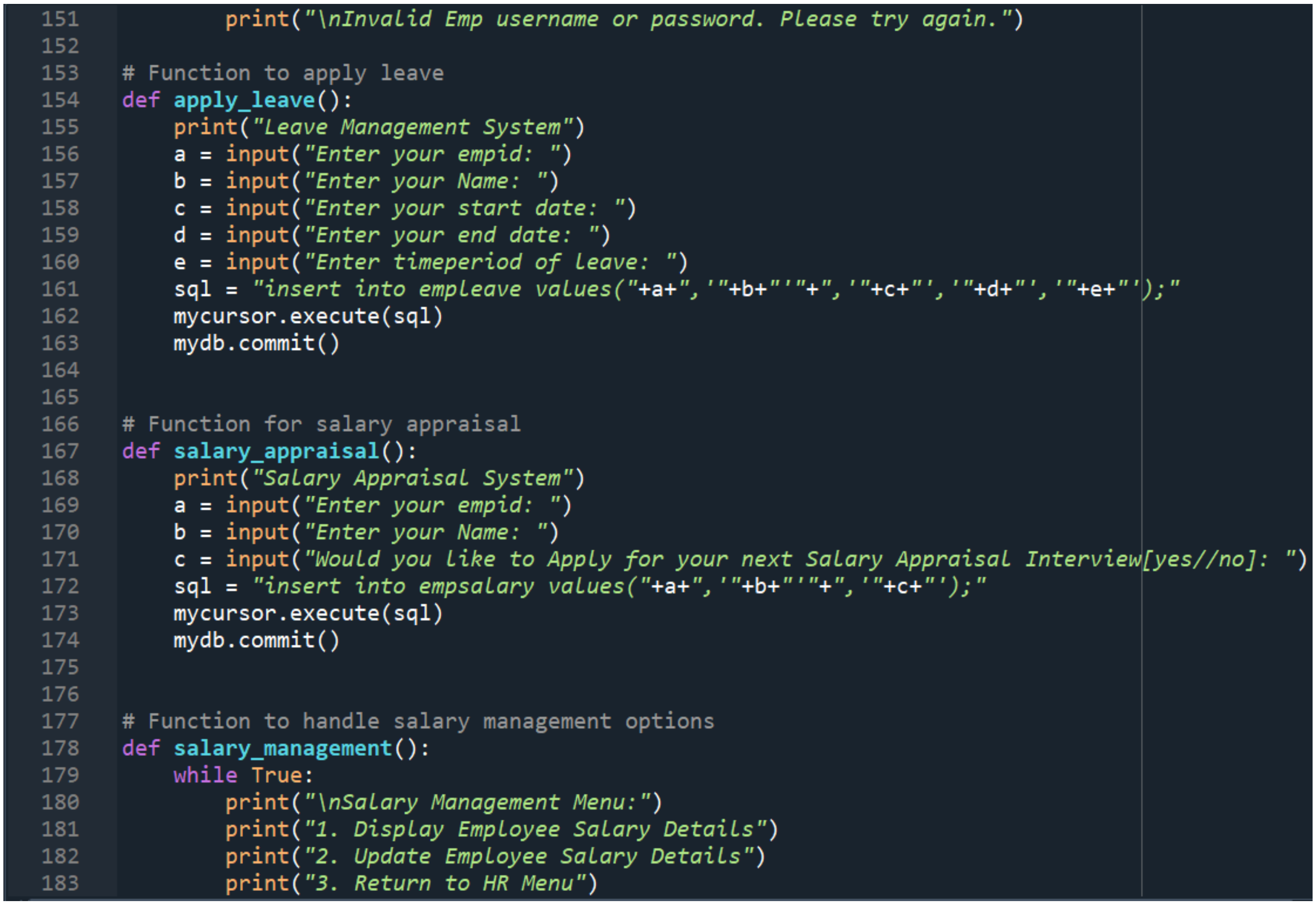
```
    result = mycursor.fetchall()
    print("(empid, empname, empdept, empsalary)")
    for x in result:
        print(x)

# Function to update employee salary details
def update_employee_salary():
    print("\nUpdating Employee Salary Details...")
    # Code to get employee salary details to update from the user and update in the database[AMAL]
    a = input("Enter empid: ")
    b = input("Enter empsalary: ")
    sql = "update employees set empsalary = "+b+" where empid = "+a+";"
    mycursor.execute(sql)
    mydb.commit()

# Function to handle HR login process and menu options
def hr_login():
    # Prompt for HR login credentials
    hr_username = input("\nEnter HR username: ")
    hr_password = input("Enter HR password: ")

    # Check if the credentials are correct
    if hr_username == "hruser" and hr_password == "hrpassword":
        print("\nLogin successful! Welcome, HR.")

        # Database connection code here...[AMAL]
```



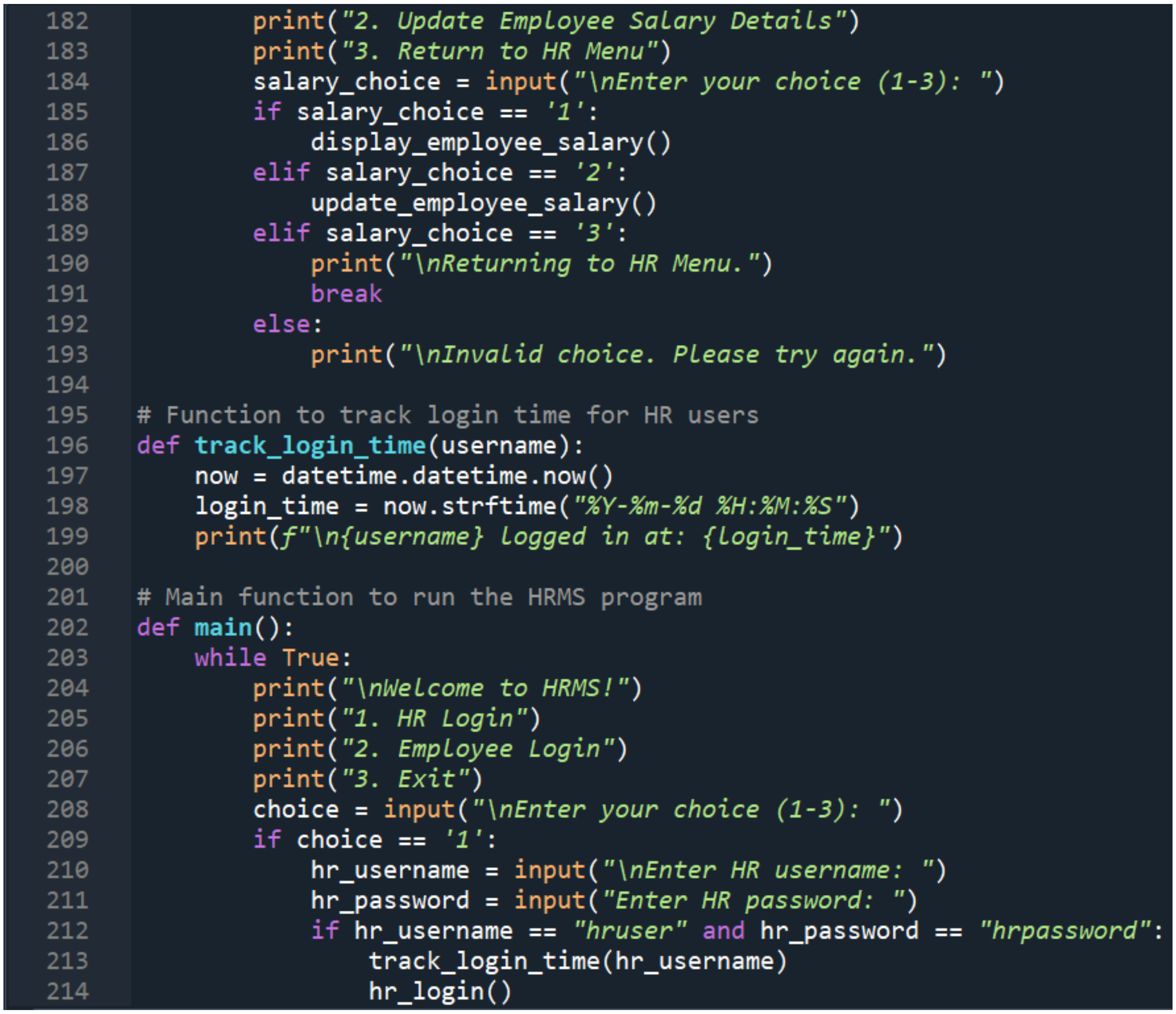
```
        # Database connection code here...[AMAL]

        # Display HR menu options
        while True:
            print("\nHR Menu:")
            print("1. Display Employee Details")
            print("2. Add Employee")
            print("3. Remove Employee")
            print("4. Update Employee Details")
            print("5. Salary Management")
            print("6. Logout")
            hr_choice = input("\nEnter your choice (1-6): ")
            if hr_choice == '1':
                display_employee()
            elif hr_choice == '2':
                add_employee()
            elif hr_choice == '3':
                remove_employee()
            elif hr_choice == '4':
                update_employee()
            elif hr_choice == '5':
                salary_management()
            elif hr_choice == '6':
                print("\nLogging out of HR account.")
                break
            else:
                print("\nInvalid choice. Please try again.")
    else:
        print("\nInvalid HR username or password. Please try again.")


def emp_login():
    # Prompt for HR login credentials
```



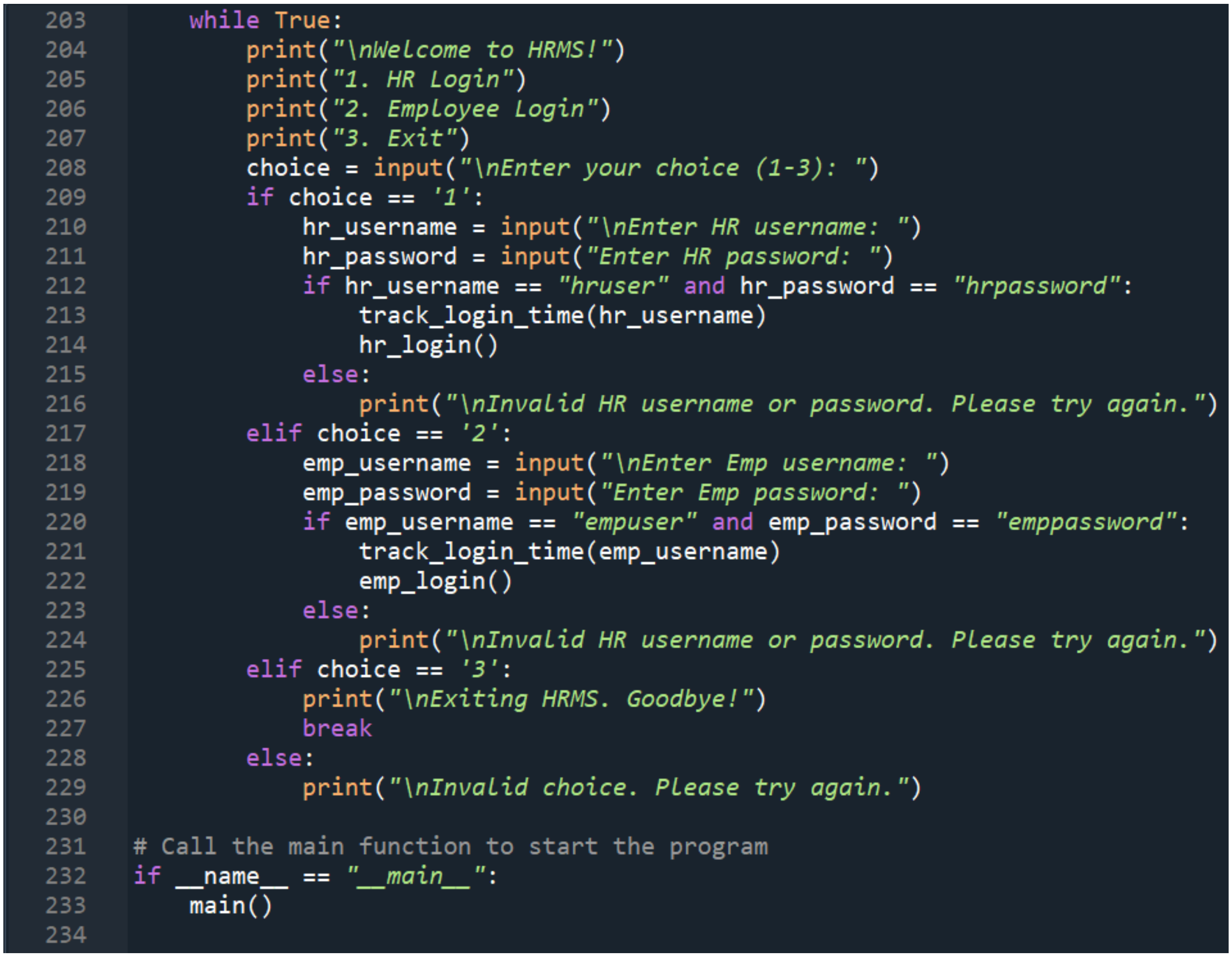
```python
def emp_login():
    # Prompt for HR login credentials
    emp_username = input("\nEnter Emp username: ")
    emp_password = input("Enter Emp password: ")

    # Check if the credentials are correct
    if emp_username == "empuser" and emp_password == "emppassword":
        print("\nLogin successful! Welcome, Emp.")

        # Database connection code here...[AMAL]

        # Display HR menu options
        while True:
            print("\nEmp Menu:")
            print("1. Display Employee Details")
            print("2. Apply Leave")
            print("3. Salary Upraisal")
            print("4. Logout")
            emp_choice = input("\nEnter your choice (1-4): ")
            if emp_choice == '1':
                display_employee()
            elif emp_choice == '2':
                apply_leave()
            elif emp_choice == '3':
                salary_appraisal()
            elif emp_choice == '4':
                print("\nLogging out of Emp account.")
                break
            else:
                print("\nInvalid choice. Please try again.")
    else:
        print("\nInvalid Emp username or password. Please try again.")
```



```
        print("\nInvalid Emp username or password. Please try again.")

# Function to apply leave
def apply_leave():
    print("Leave Management System")
    a = input("Enter your empid: ")
    b = input("Enter your Name: ")
    c = input("Enter your start date: ")
    d = input("Enter your end date: ")
    e = input("Enter timeperiod of leave: ")
    sql = "insert into empleave values("+a+",'"+b+"'"+",'"+c+"','"+d+"','"+e+"');"
    mycursor.execute(sql)
    mydb.commit()


# Function for salary appraisal
def salary_appraisal():
    print("Salary Appraisal System")
    a = input("Enter your empid: ")
    b = input("Enter your Name: ")
    c = input("Would you like to Apply for your next Salary Appraisal Interview[yes//no]: ")
    sql = "insert into empsalary values("+a+",'"+b+"'"+",'"+c+"');"
    mycursor.execute(sql)
    mydb.commit()


# Function to handle salary management options
def salary_management():
    while True:
        print("\nSalary Management Menu:")
        print("1. Display Employee Salary Details")
        print("2. Update Employee Salary Details")
        print("3. Return to HR Menu")
```

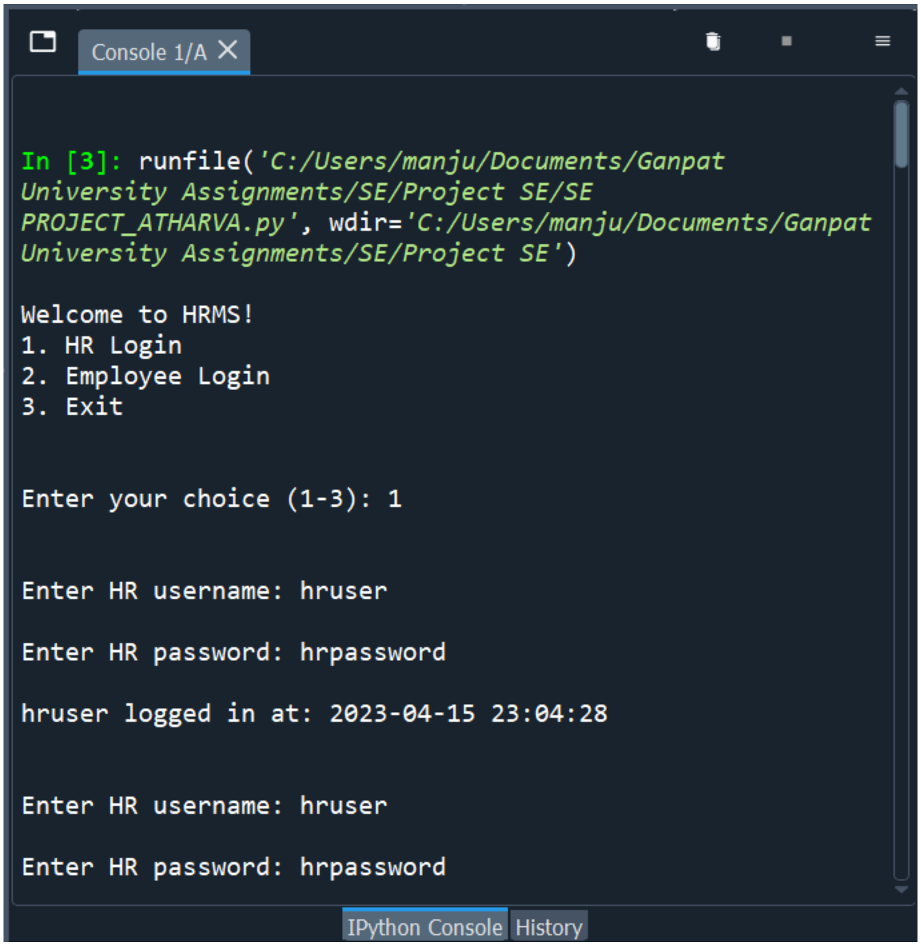


```
        print("2. Update Employee Salary Details")
        print("3. Return to HR Menu")
        salary_choice = input("\nEnter your choice (1-3): ")
        if salary_choice == '1':
            display_employee_salary()
        elif salary_choice == '2':
            update_employee_salary()
        elif salary_choice == '3':
            print("\nReturning to HR Menu.")
            break
        else:
            print("\nInvalid choice. Please try again.")

# Function to track login time for HR users
def track_login_time(username):
    now = datetime.datetime.now()
    login_time = now.strftime("%Y-%m-%d %H:%M:%S")
    print(f"\n{username} logged in at: {login_time}")

# Main function to run the HRMS program
def main():
    while True:
        print("\nWelcome to HRMS!")
        print("1. HR Login")
        print("2. Employee Login")
        print("3. Exit")
        choice = input("\nEnter your choice (1-3): ")
        if choice == '1':
            hr_username = input("\nEnter HR username: ")
            hr_password = input("Enter HR password: ")
            if hr_username == "hruser" and hr_password == "hrpassword":
                track_login_time(hr_username)
                hr_login()
```

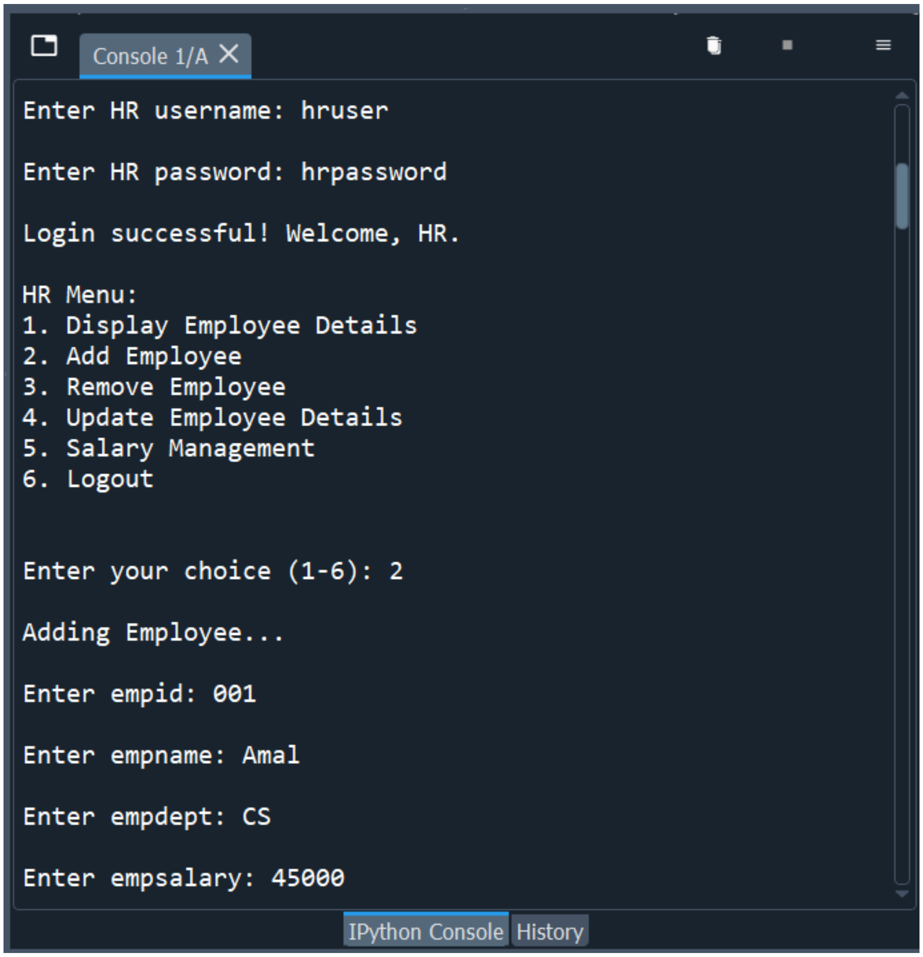


```python
    while True:
        print("\nWelcome to HRMS!")
        print("1. HR Login")
        print("2. Employee Login")
        print("3. Exit")
        choice = input("\nEnter your choice (1-3): ")
        if choice == '1':
            hr_username = input("\nEnter HR username: ")
            hr_password = input("Enter HR password: ")
            if hr_username == "hruser" and hr_password == "hrpassword":
                track_login_time(hr_username)
                hr_login()
            else:
                print("\nInvalid HR username or password. Please try again.")
        elif choice == '2':
            emp_username = input("\nEnter Emp username: ")
            emp_password = input("Enter Emp password: ")
            if emp_username == "empuser" and emp_password == "emppassword":
                track_login_time(emp_username)
                emp_login()
            else:
                print("\nInvalid HR username or password. Please try again.")
        elif choice == '3':
            print("\nExiting HRMS. Goodbye!")
            break
        else:
            print("\nInvalid choice. Please try again.")

# Call the main function to start the program
if __name__ == "__main__":
    main()

```

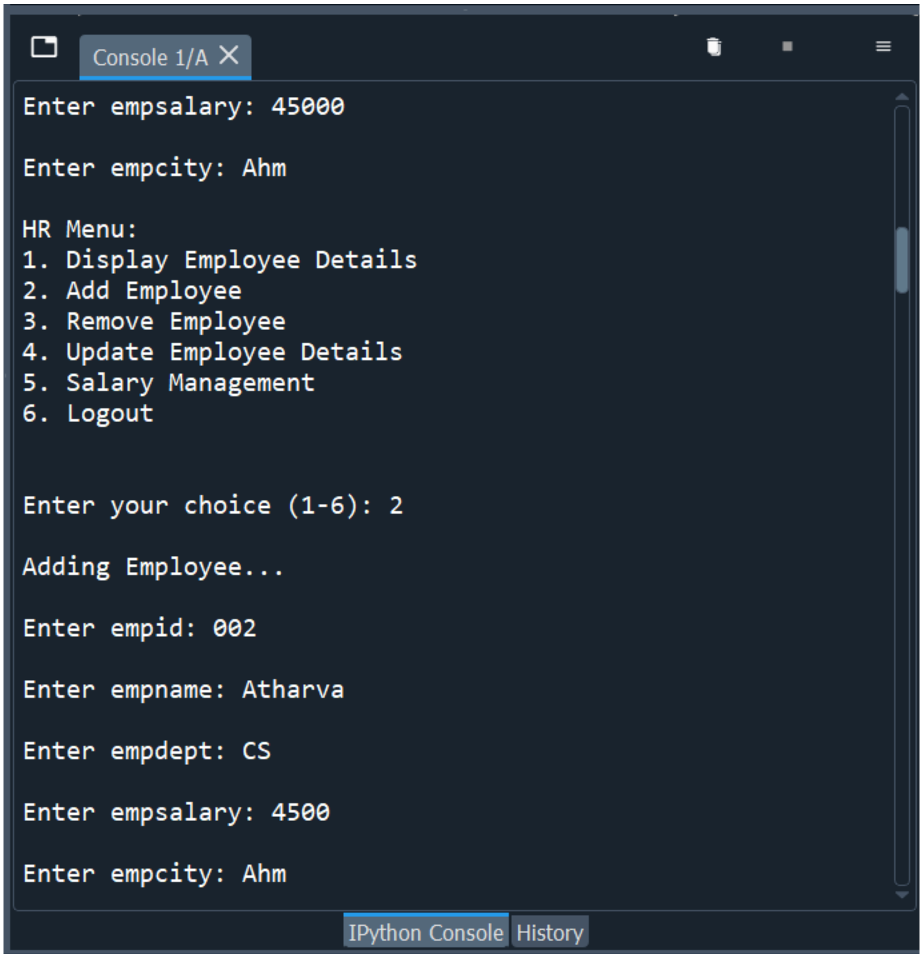
8. TESTING SCREENSHOTS



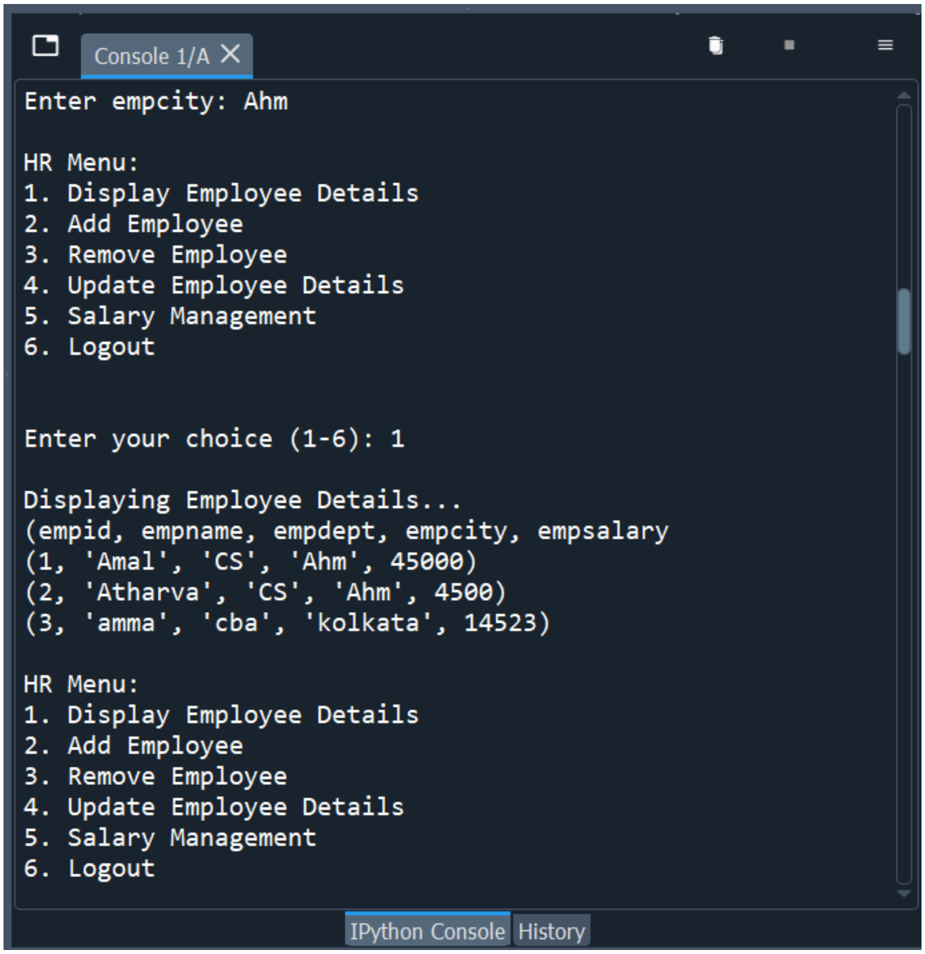
```
In [3]: runfile('C:/Users/manju/Documents/Ganpat
University Assignments/SE/Project SE/SE
PROJECT_ATHARVA.py', wdir='C:/Users/manju/Documents/Ganpat
University Assignments/SE/Project SE')

Welcome to HRMS!
1. HR Login
2. Employee Login
3. Exit


Enter your choice (1-3): 1


Enter HR username: hruser

Enter HR password: hrpassword

hruser logged in at: 2023-04-15 23:04:28


Enter HR username: hruser

Enter HR password: hrpassword
```



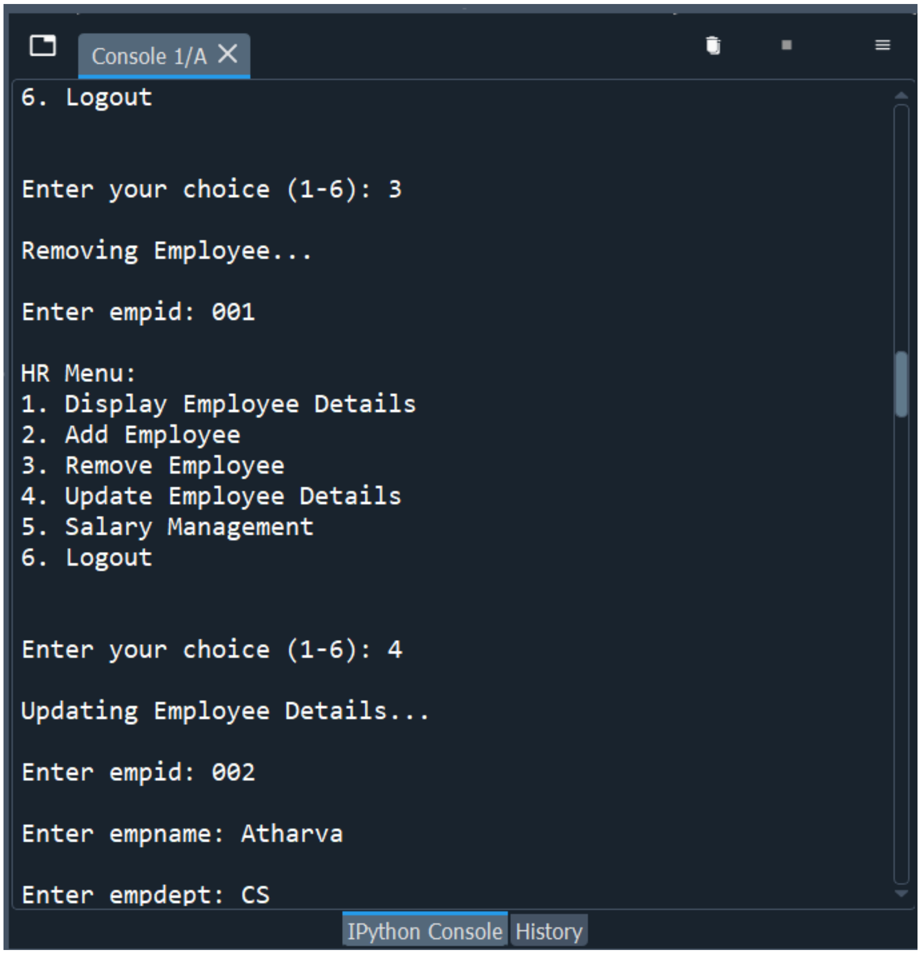
```
Enter HR username: hruser

Enter HR password: hrpassword

Login successful! Welcome, HR.

HR Menu:
1. Display Employee Details
2. Add Employee
3. Remove Employee
4. Update Employee Details
5. Salary Management
6. Logout


Enter your choice (1-6): 2

Adding Employee...

Enter empid: 001

Enter empname: Amal

Enter empdept: CS

Enter empsalary: 45000
```



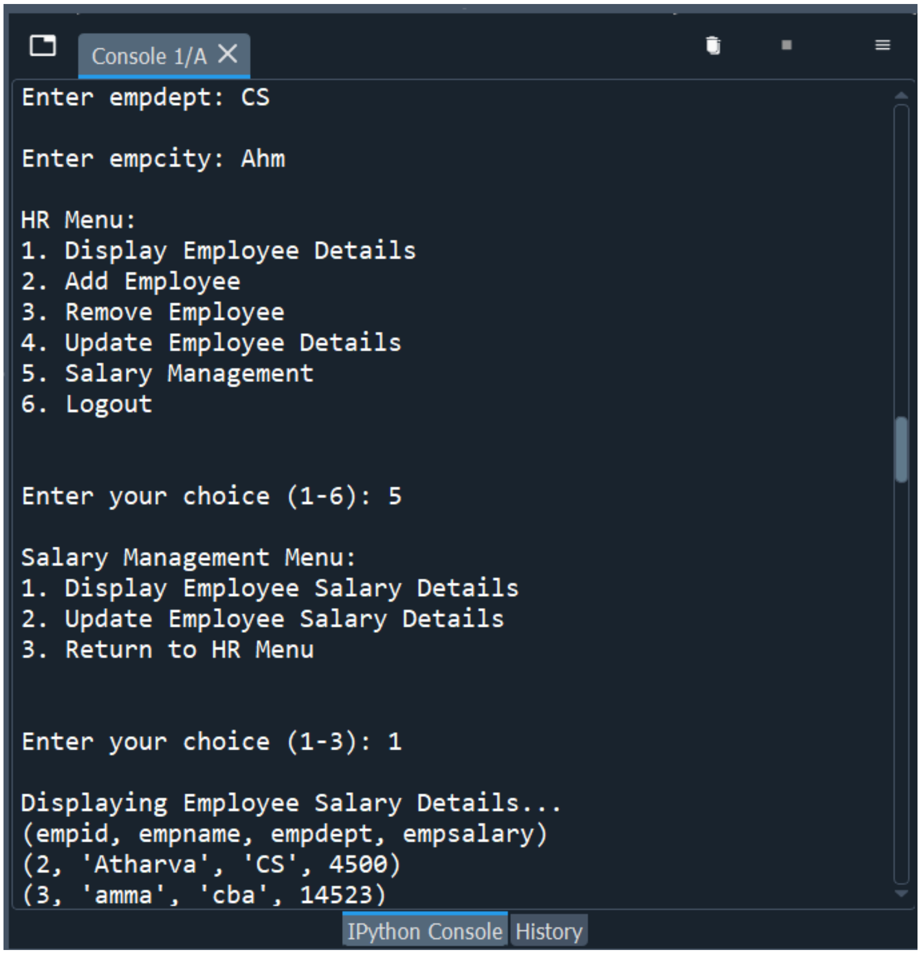
```
Enter empsalary: 45000

Enter empcity: Ahm

HR Menu:
1. Display Employee Details
2. Add Employee
3. Remove Employee
4. Update Employee Details
5. Salary Management
6. Logout


Enter your choice (1-6): 2

Adding Employee...

Enter empid: 002

Enter empname: Atharva

Enter empdept: CS

Enter empsalary: 4500

Enter empcity: Ahm
```



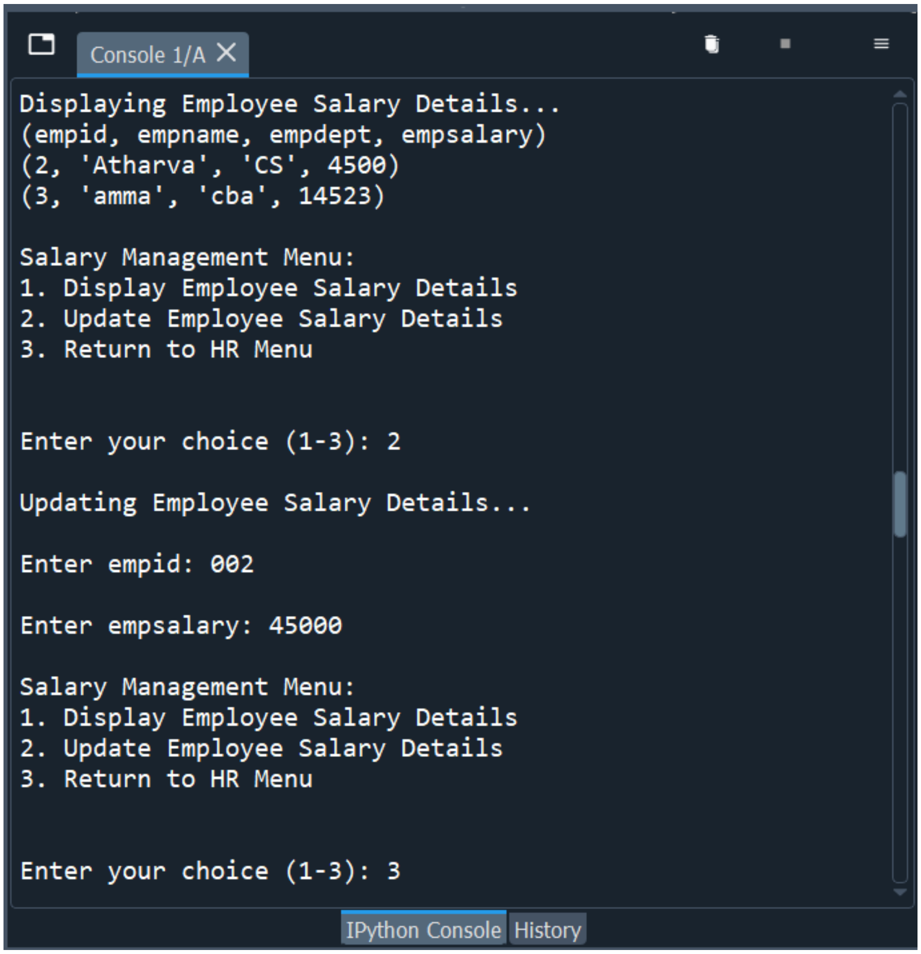
```
Enter empcity: Ahm

HR Menu:
1. Display Employee Details
2. Add Employee
3. Remove Employee
4. Update Employee Details
5. Salary Management
6. Logout


Enter your choice (1-6): 1

Displaying Employee Details...
(empid, empname, empdept, empcity, empsalary
(1, 'Amal', 'CS', 'Ahm', 45000)
(2, 'Atharva', 'CS', 'Ahm', 4500)
(3, 'amma', 'cba', 'kolkata', 14523)

HR Menu:
1. Display Employee Details
2. Add Employee
3. Remove Employee
4. Update Employee Details
5. Salary Management
6. Logout
```



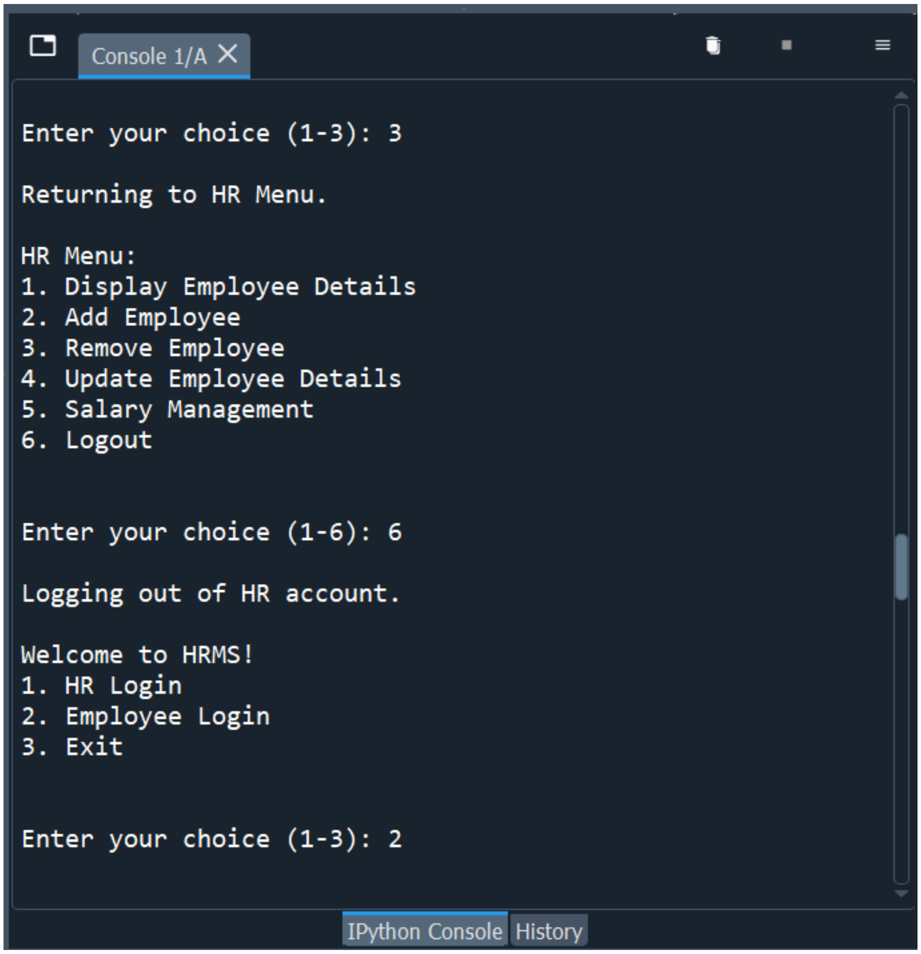
```
6. Logout


Enter your choice (1-6): 3

Removing Employee...

Enter empid: 001

HR Menu:
1. Display Employee Details
2. Add Employee
3. Remove Employee
4. Update Employee Details
5. Salary Management
6. Logout


Enter your choice (1-6): 4

Updating Employee Details...

Enter empid: 002

Enter empname: Atharva

Enter empdept: CS
```



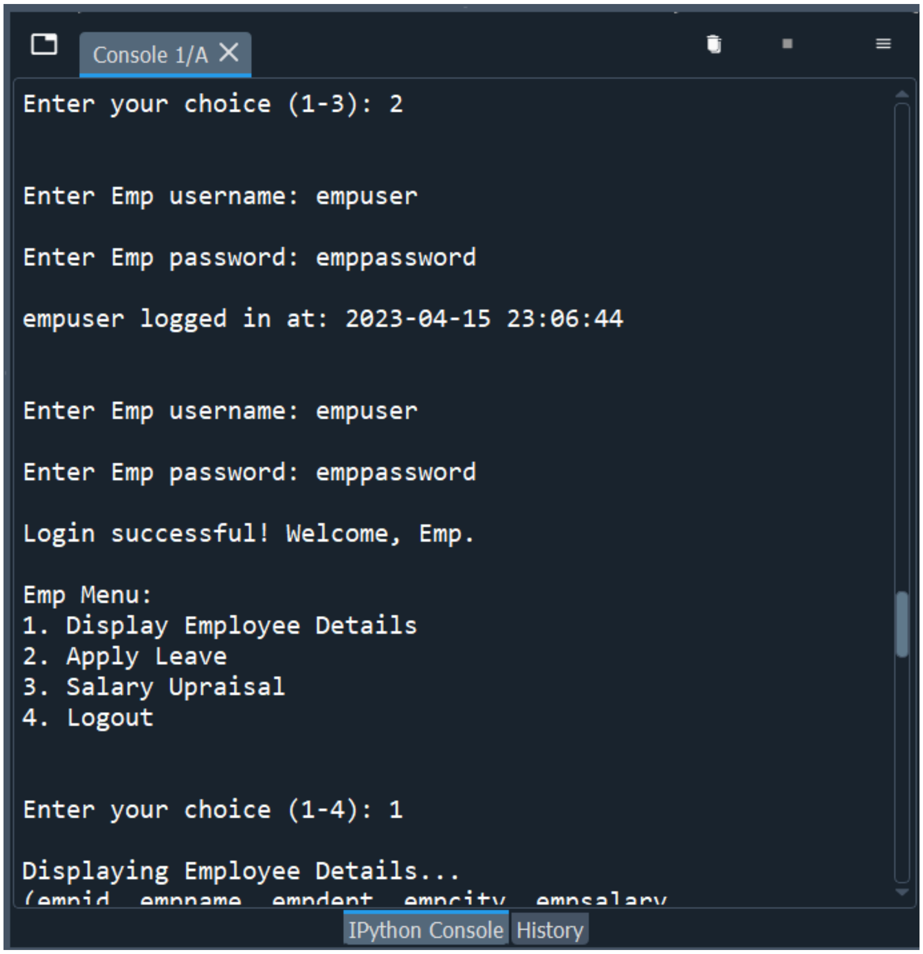
```
Enter empdept: CS

Enter empcity: Ahm

HR Menu:
1. Display Employee Details
2. Add Employee
3. Remove Employee
4. Update Employee Details
5. Salary Management
6. Logout


Enter your choice (1-6): 5

Salary Management Menu:
1. Display Employee Salary Details
2. Update Employee Salary Details
3. Return to HR Menu


Enter your choice (1-3): 1

Displaying Employee Salary Details...
(empid, empname, empdept, empsalary)
(2, 'Atharva', 'CS', 4500)
(3, 'amma', 'cba', 14523)
```



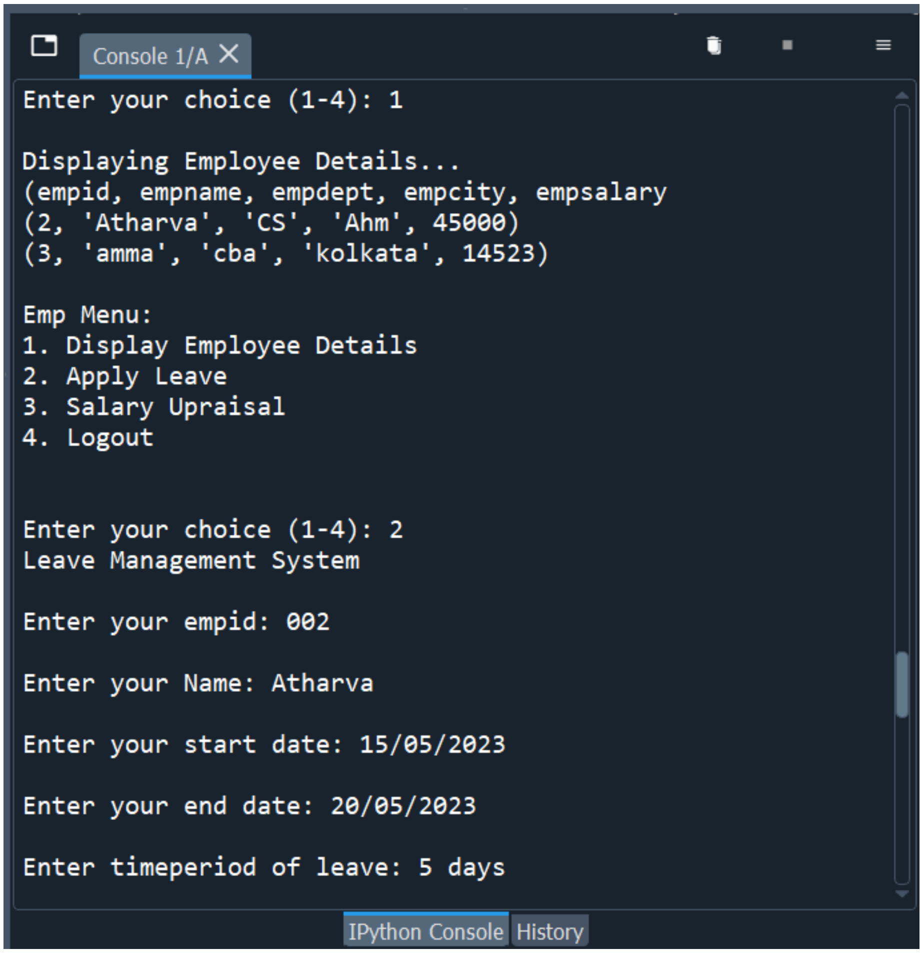
```
Displaying Employee Salary Details...
(empid, empname, empdept, empsalary)
(2, 'Atharva', 'CS', 4500)
(3, 'amma', 'cba', 14523)

Salary Management Menu:
1. Display Employee Salary Details
2. Update Employee Salary Details
3. Return to HR Menu


Enter your choice (1-3): 2

Updating Employee Salary Details...

Enter empid: 002

Enter empsalary: 45000

Salary Management Menu:
1. Display Employee Salary Details
2. Update Employee Salary Details
3. Return to HR Menu


Enter your choice (1-3): 3
```



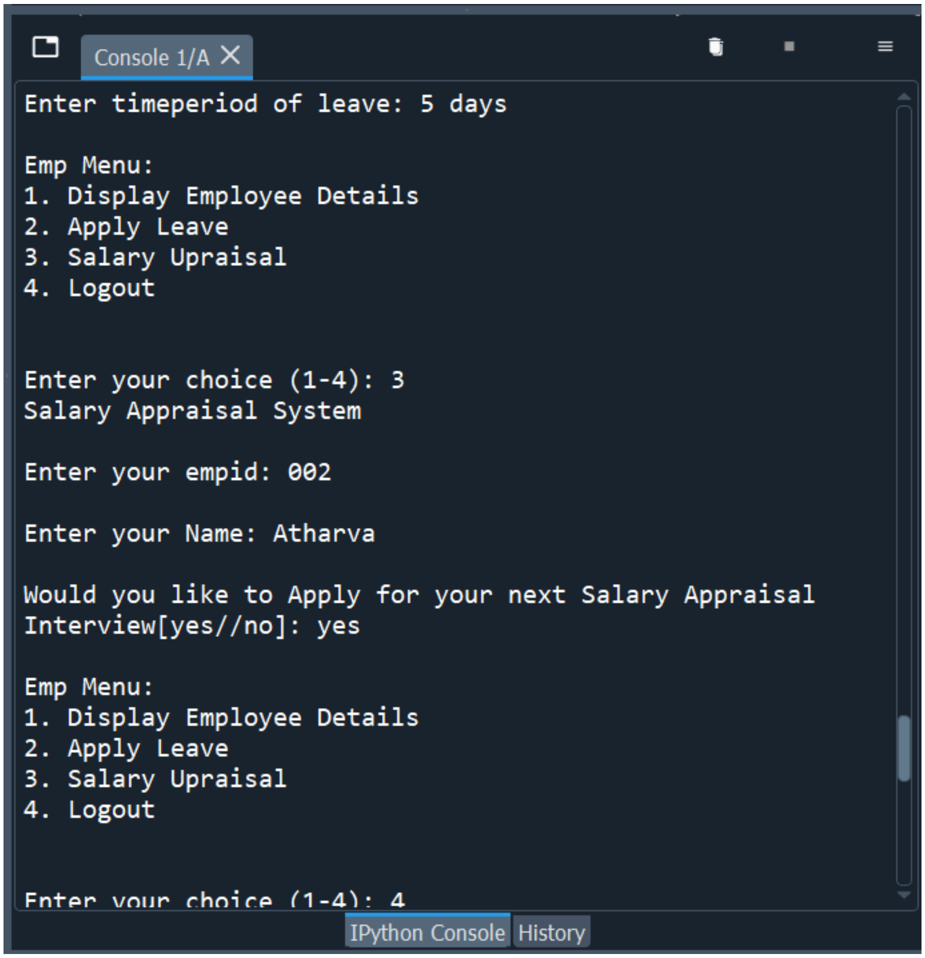
```
Enter your choice (1-3): 3

Returning to HR Menu.

HR Menu:
1. Display Employee Details
2. Add Employee
3. Remove Employee
4. Update Employee Details
5. Salary Management
6. Logout


Enter your choice (1-6): 6

Logging out of HR account.

Welcome to HRMS!
1. HR Login
2. Employee Login
3. Exit


Enter your choice (1-3): 2
```



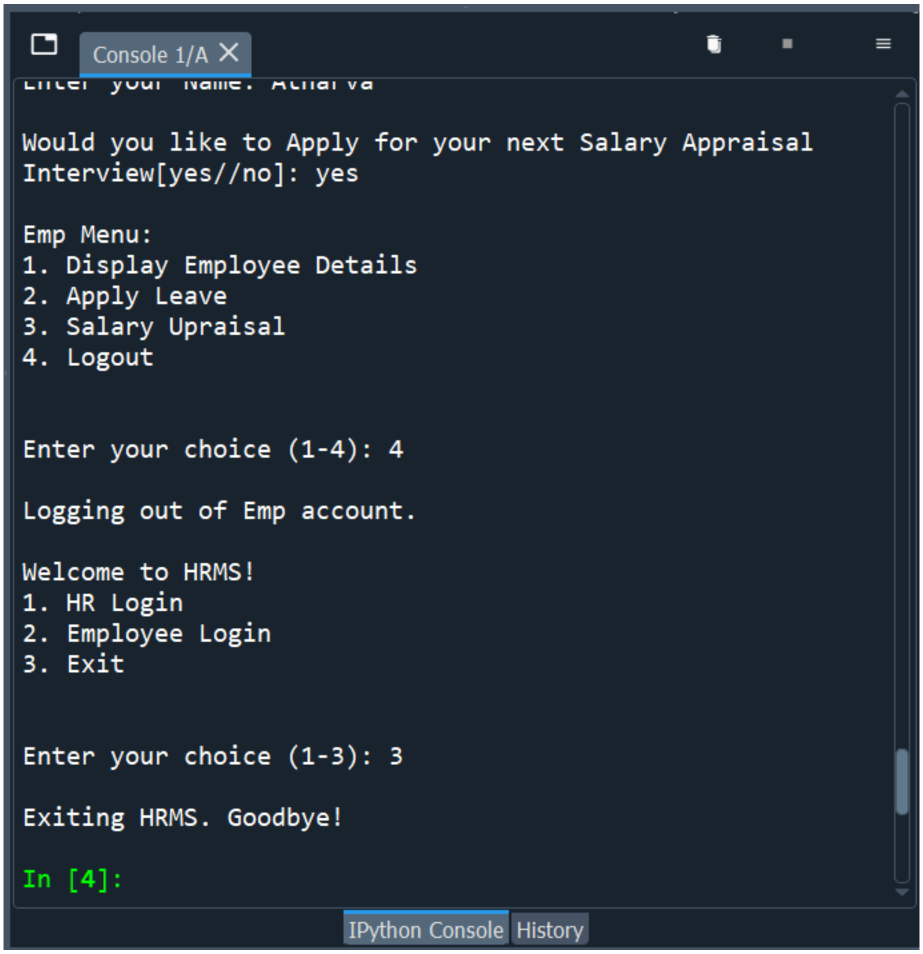
```
Enter your choice (1-3): 2


Enter Emp username: empuser

Enter Emp password: emppassword

empuser logged in at: 2023-04-15 23:06:44


Enter Emp username: empuser

Enter Emp password: emppassword

Login successful! Welcome, Emp.

Emp Menu:
1. Display Employee Details
2. Apply Leave
3. Salary Upraisal
4. Logout


Enter your choice (1-4): 1

Displaying Employee Details...
('empid', 'empname', 'empdept', 'empcity', 'empsalary
```



```
Enter your choice (1-4): 1

Displaying Employee Details...
(empid, empname, empdept, empcity, empsalary
(2, 'Atharva', 'CS', 'Ahm', 45000)
(3, 'amma', 'cba', 'kolkata', 14523)

Emp Menu:
1. Display Employee Details
2. Apply Leave
3. Salary Upraisal
4. Logout


Enter your choice (1-4): 2
Leave Management System

Enter your empid: 002

Enter your Name: Atharva

Enter your start date: 15/05/2023

Enter your end date: 20/05/2023

Enter timeperiod of leave: 5 days
```



```
Enter timeperiod of leave: 5 days

Emp Menu:
1. Display Employee Details
2. Apply Leave
3. Salary Upraisal
4. Logout


Enter your choice (1-4): 3
Salary Appraisal System

Enter your empid: 002

Enter your Name: Atharva

Would you like to Apply for your next Salary Appraisal
Interview[yes//no]: yes

Emp Menu:
1. Display Employee Details
2. Apply Leave
3. Salary Upraisal
4. Logout


Enter your choice (1-4): 4
```



```
Enter your Name: Atharva

Would you like to Apply for your next Salary Appraisal
Interview[yes//no]: yes

Emp Menu:
1. Display Employee Details
2. Apply Leave
3. Salary Upraisal
4. Logout


Enter your choice (1-4): 4

Logging out of Emp account.

Welcome to HRMS!
1. HR Login
2. Employee Login
3. Exit


Enter your choice (1-3): 3

Exiting HRMS. Goodbye!

In [4]:
```