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INSTITUTE OF INFORMATION TECHNOLOGY

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Department of Computer Science and Engineering (Artificial Intelligence)

Problem Solving and Python Programming

Subject Code :CA12233
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Comprehensive Report : Employee Management System in Python

1. Introduction

In today's dynamic business landscape, the effective management of human resources is critical for organizational success. The Employee Management System in Python offers a sophisticated solution to streamline the handling of employee data within an organization. By leveraging Python's robust capabilities and employing file handling techniques, this system provides a digital platform for efficiently managing various aspects of employee information.

2. Objective

The primary objective of the Employee Management System is to enhance organizational efficiency by providing a centralized and user-friendly platform for managing employee records. This system aims to automate routine tasks associated with employee data management, such as data entry, retrieval, and updating. By leveraging Python's file handling capabilities, the system ensures data integrity and accessibility, facilitating informed decision-making processes within the organization.

3. Methodology

The Employee Management System is developed using Python programming language, with a focus on modularity and scalability. The system utilizes the `openpyxl` library for interacting with Excel files, allowing seamless manipulation of employee records. The project is structured using a modular approach, with distinct functions implemented for each operation, such as database creation, employee addition, deletion, promotion, and database

deletion. This modular design ensures code readability, reusability, and maintainability.

4. Implementation

[1] Creating Employee Database

The system initializes an Excel workbook titled "Report Of Employees" to serve as the employee database. This Excel workbook acts as a centralized repository for storing employee records. The `openpyxl` library is employed to create and manage the Excel workbook, enabling the addition and deletion of employee records.

[2] Adding an Employee

Users can add new employees to the database by providing relevant details such as name, position, salary, gender, date of joining, age, marital status, and qualification. The system prompts users to input these details through the console interface and appends the entered information to the Excel workbook. Data validation techniques are implemented to ensure the accuracy and integrity of the entered employee information.

[3] Deleting an Employee

Employees can be removed from the database by specifying their unique Employee Number. Upon receiving the Employee Number input, the system locates the corresponding employee record within the Excel workbook and marks it as "Inactive". This approach retains historical employee data while indicating that the employee is no longer active within the organization.

[4] Promoting an Employee

The system allows for the promotion of employees within the organization by updating their position and salary details in the Excel workbook. Users can specify the Employee Number of the employee to be promoted and provide the new position and salary information. The system then updates the corresponding employee record with the new details, reflecting the employee's promotion status.

[5] Displaying Employee Data

Users can retrieve and display the information of a specific employee by entering the Employee Number. The system retrieves the corresponding employee record from the Excel workbook and presents the employee details on the console interface. This functionality provides users with quick access to individual employee information, facilitating decision-making processes.

[6] Displaying Whole Data Set

The system offers the option to display the entire dataset of employees stored in the Excel workbook. All employee records are retrieved from the Excel workbook and presented in a tabular format on the console interface. This functionality enables users to gain a comprehensive overview of all employee information, facilitating data analysis and reporting.

[7] Deleting Database

An option is provided within the system to delete the entire employee database if required. Upon user confirmation, the system deletes the Excel workbook containing all employee records. This functionality offers users the

flexibility to reset the employee database and start afresh, ensuring data integrity and manageability.

Sample Output :

😊 😊 😊 😊 😊 😊 😊 😊 😊 😊 😊 Good Afternoon 😊 😊 😊 😊 😊 😊 😊 😊 😊 😊 😊 😊

>>>>>>>>>>>>>>>Welcome To Our Project<<<<<<<<<<<<<<<<<<<<<<

Made By :

109207 Pavan Gavit

108209 Yash Maske

108216 Chandrkant Thakre

108221 Shubhankar Jakate

This Program Is Able To Create A Data Base Of Employee and Can Perform Some Operations

^^^^^^^^^^^^^^^^^Hit Enter To Continue^^^^^^^^^^^^^^^^^^

Please Select The Operation No You Want To Perform On DataBase

Options Are

1.Create A Database

2.Add An Employee

3.Promote An Employee

4.Remove An Employee

5.Display Information

6.Display Whole Data Set

7.Delete DataBase

8.Exit

These Are The Operations Available

Enter The Operation No You Want To Perform :1

DataBase Created Sucessfully------->

Enter The Operation No You Want To Perform :2

Enter The Name Of Employee :Chandrkant

Enter The Post Of Employee :Manager

Enter The Salary Of Employee :120000

Enter Gender of Employee :Male

Enter The Date of Joining :25 April 2024

Enter The Age Of Employee :18

Enter Marital Status :Single

Enter Qulification Of Employee :HSC Passed

Employee Added Sucessfully--------->

Enter The Operation No You Want To Perform :6

Employee No : 1

Name : Yash

Post : CEO

Salary : 150000

Status : Active

Gender : Male

Date Of Joining : 21 April 2024

Age : 19

Marital Status : Single

Marital Status : Single

Employee No : 2

Name : Pavn

Post : Co-Founder

Salary : 100000

Status : Active

Gender : Male

Date Of Joining : 22 April 2024

Age : 20

Marital Status : Single

Marital Status : Single

Employee No : 3

Name : Chandrkant

Post : Manager

Salary : 120000

Status : Active

Gender : Male

Date Of Joining : 25 April 2024

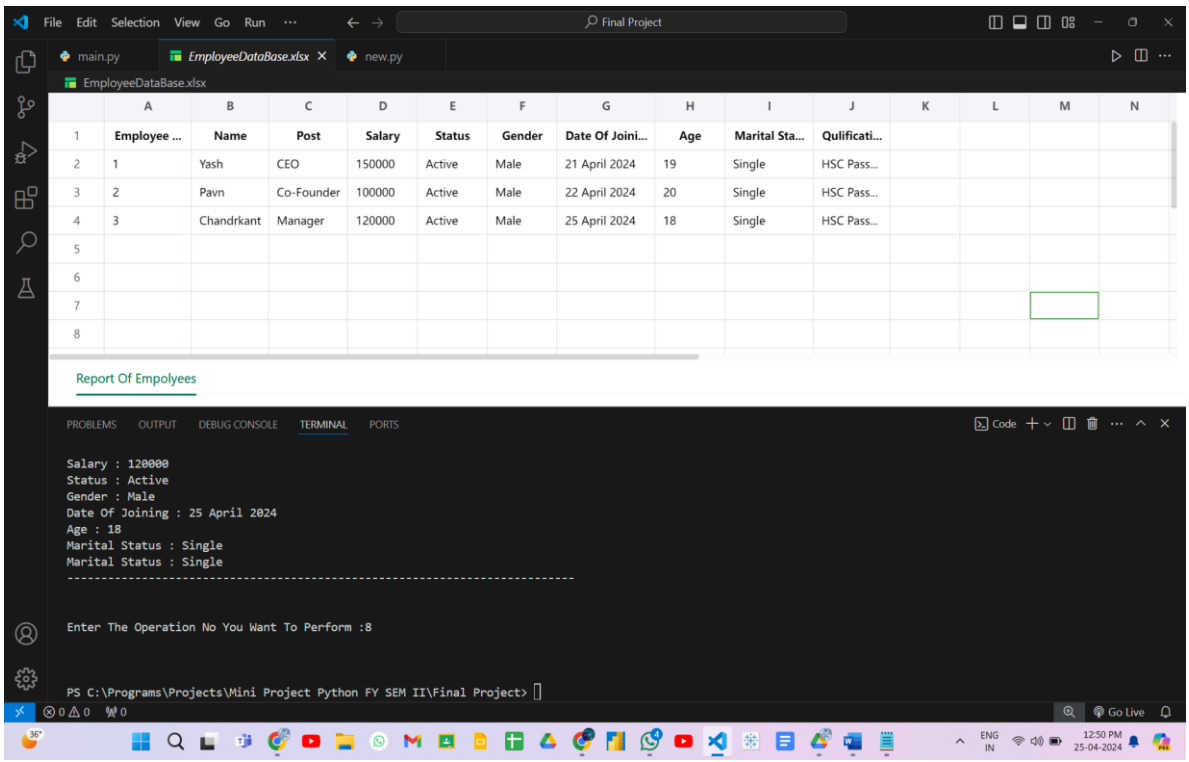
Age : 18

Marital Status : Single

Marital Status : Single

Enter The Operation No You Want To Perform :8

Screenshot Of Excel Sheet :



	A	B	C	D	E	F	G	H	I	J
1	Employee ...	Name	Post	Salary	Status	Gender	Date Of Joini...	Age	Marital Sta...	Qulificati...
2	1	Yash	CEO	150000	Active	Male	21 April 2024	19	Single	HSC Pass...
3	2	Pavn	Co-Founder	100000	Active	Male	22 April 2024	20	Single	HSC Pass...
4	3	Chandrkant	Manager	120000	Active	Male	25 April 2024	18	Single	HSC Pass...
5										
6										
7										
8										

5. Explanation of Python Modules Used

`openpyxl` Module :

Purpose: The `openpyxl` module is used for interacting with Excel files.

Usage: It allows the program to create, read, write, and modify Excel files, enabling the storage and manipulation of employee records in Excel format.

Functions Used: Functions such as `Workbook()`, `append()`, `cell()`, and `save()` are utilized for creating, updating, and saving Excel files.

`os` Module :

Purpose: The `os` module provides functions for interacting with the operating system.

Usage : It enables the program to perform tasks such as file deletion, essential for deleting the employee database file when required.

Functions Used : The `remove()` function is used to delete the employee database file, while exception handling ensures error-free execution.

6. Requirements for Running Python Employee Management System Code

Python Installation :

- Ensure Python is installed on your system.
- Download and install Python from the [official Python website](Download Python | Python.org)

Required Python Modules:

openpyxl:

- Used for working with Excel files (.xlsx).
- Install using pip:

  pip install openpyxl

os :

- Provides functions for interacting with the operating system.
- Used for deleting files.

IDE or Text Editor :

- Use any Python IDE or text editor.
- Examples: PyCharm, VS Code, Sublime Text, Atom, etc.

Operating System:

- Should run on any OS supporting Python and required modules.
- Includes Windows, macOS, and Linux.

Excel Viewer/Editor :

- Install Microsoft Excel or compatible viewer/editor.
- Needed to view the generated Excel files.

7. Conclusion

The Employee Management System in Python provides a comprehensive solution for efficiently managing employee data within an organization. By leveraging Python's capabilities and employing file handling techniques, the system enhances organizational efficiency, productivity, and decision-making processes. The user-friendly interface and modular design of the system contribute to its effectiveness in handling employee information.

8. Future Enhancements

Future enhancements to the Employee Management System could include implementing data analytics capabilities, and integration with other organizational systems such as payroll and human resource management systems. Additionally, features such as user authentication, role-based access control, and data encryption could be explored to enhance the security and usability of the system.

Access Code Here : main.py