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COLLEGE OF ENGINEERING
An Autonomous Institution
Permanently Affiliated to Anna University Chennai, Approved by AICTE New Delhi,
ISO 9001:2015, 14001:2015 certified institution, Accredited by NBA and with A grade by NAAC
Samayapuram, Tiruchirappalli – 621 112, Tamilnadu, India.

A PROJECT REPORT

on

HR MANAGEMENT SYSTEM IN IT COMPANY

Submitted in partial fulfillment of requirements for the award of the course of

ECA1121 – PYTHON PROGRAMMING

Under the guidance of

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Submitted By

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K. RAMAKRISHNAN COLLEGE OF ENGINEERING
(An Autonomous Institution, affiliated to Anna University Chennai
and Approved by AICTE, New Delhi)

SAMAYAPURAM – 621 112
MAY 2024

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BONAFIDE CERTIFICATE

Certified that this project report titled "HR MANAGEMENT SYSTEM IN IT COMPANY BY PYTHON" is the bonafide work **SIVANAGARAJAN G (8115U23EC105),** who carried out the project work under my supervision. Certified further, that to the best of my knowledge the work reported here in does not form part of any other project report or dissertation on the basis of which a degree or award was conferred on an earlier occasion on this or any other candidate.

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INTERNAL EXAMINER **EXTERNAL EXAMINER**

DECLARATION

I jointly declare that the project report on **"HR MANAGEMENT SYSTEM IN IT COMPANY BY PYTHON"** is the result of original work done by us and best of our knowledge, similar work has not been submitted to "ANNA UNIVERSITY CHENNAI" for the requirement of Degree of BACHELOR OF ENGINEERING. This project report is submitted on the partial fulfillment of the requirement of the award of degree of BACHELOR OF ENGINEERING.

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Date:

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VISION

To achieve a prominent position among the top technical institutions

MISSION

- To bestow standard technical education par excellence through state of the art infrastructure, competent faculty and high ethical standards.
- To nurture research and entrepreneurial skills among students in cutting edge technologies.
- To provide education for developing high-quality professionals to transform the society.

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VISION

To create eminent professionals of Computer Science and Engineering by imparting quality education.

MISSION

- To provide technical exposure in the field of Computer Science and Engineering through state of the art infrastructure and ethical standards.
- To engage the students in research and development activities in the field of Computer Science and Engineering.
- To empower the learners to involve in industrial and multi-disciplinary projects for addressing the societal needs.

PROGRAMME EDUCATIONAL OBJECTIVES (PEOs)

PEO1: Analyse, design and create innovative products for addressing social needs.

PEO2: Equip themselves for employability, higher studies and research.

PEO3: Nurture the leadership qualities and entrepreneurial skills for their successful career.

PROGRAM OUTCOMES (POs)

Engineering students will be able to:

1. **Engineering knowledge:** Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.
2. **Problem analysis:** Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.
3. **Design/development of solutions:** Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.
4. **Conduct investigations of complex problems:** Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.
5. **Modern tool usage:** Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.
6. **The engineer and society:** Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.
7. **Environment and sustainability:** Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.
8. **Ethics:** Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.
9. **Individual and team work:** Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.
10. **Communication:** Communicate effectively on complex engineering

activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

11. **Project management and finance:** Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.
12. **Life-long learning:** Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

PROGRAM SPECIFIC OUTCOMES (PSOs)

PSO1: Apply the basic and advanced knowledge in developing software, hardware and firmware solutions addressing real life problems.

PSO2: Design, develop, test and implement product-based solutions for their career enhancement.

ABSTRACT

The Human Resources (HR) management system in an IT company is designed to streamline and automate various HR processes, enhancing efficiency and employee satisfaction. This system encompasses modules for recruitment, onboarding, payroll, performance evaluation, training, and employee self-service. It leverages advanced technologies such as cloud computing, artificial intelligence (AI), and data analytics to optimize HR functions. The system automates job postings, candidate screening, and interview scheduling, reducing time-to-hire and ensuring a smooth onboarding experience. Automated payroll processing, integrated with attendance and leave management, ensures accurate and timely salary disbursements. The system also manages employee benefits, including health insurance and retirement plans. Regular performance evaluations and feedback are facilitated through digital tools, promoting continuous improvement and alignment with organizational goals. The system supports goal setting, progress tracking, and performance reviews.

The HR management system identifies skill gaps and recommends personalized training programs, fostering continuous learning and career development. E-learning platforms and training schedules are integrated to enhance employee competencies.

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CHAPTER 1 - INTRODUCTION

1.1 Introduction

In the rapidly evolving landscape of the information technology (IT) industry, managing human resources (HR) efficiently has become more critical than ever. An effective HR management system (HRMS) is essential for IT companies to attract, retain, and develop talent, ensuring that the workforce is engaged, productive, and aligned with the company's strategic goals.

Purpose and Importance

The Python’s extensive libraries and frameworks enable the automation of routine HR tasks such as data entry, payroll processing, and performance tracking, significantly reducing the manual workload.

A doubly linked list is a data structure that consists of nodes, where each node contains data and two pointers – one pointing to the next node in the sequence and another pointing to the previous node. This bidirectional linkage allows for easy traversal in both directions, making it a suitable choice for applications that require frequent insertions, deletions, and modifications.

In the context of a phone directory application, a doubly linked list can be employed to create a dynamic and flexible structure for managing contact details. Each node in the list can represent an entry in the phone directory, storing information such as name, phone number, address, and any other relevant data.

1.2 Objectives

1. Contact Management
2. Efficient Data Handling
3. User-Friendly Interface:
4. Scalability
5. Robustness

1.3 Project Summarization

The HR Management System (HRMS) for an IT company using Python is designed to streamline and automate various HR functions, enhance operational efficiency, and improve employee satisfaction. The system leverages Python's powerful libraries and frameworks to handle tasks ranging from recruitment and onboarding to performance management and employee engagement.

1. **Recruitment and Talent Acquisition:**

- **Job Posting and Application Tracking:** Automate job postings across various platforms and track applications in a centralized database.
- **Resume Parsing:** Use Natural Language Processing (NLP) to extract key skills and qualifications from resumes and match them with job requirements.
- **Candidate Management:** Maintain a database of candidates, schedule interviews, and track interview feedback.

2. **Employee Onboarding:**

- **Document Management:** Manage and store employee documents securely.
- **Onboarding Checklist:** Create and manage checklists to ensure all onboarding steps are completed.
- **Welcome Emails and Training Schedules:** Automate the sending of welcome emails and initial training schedules.

3. **Performance Management:**

- **Goal Setting and Tracking:** Enable managers and employees to set, track, and update performance goals.
- **Performance Reviews:** Facilitate regular performance reviews and provide tools for 360-degree feedback.
- **Analytics and Reporting:** Generate performance reports and visualizations using libraries like Matplotlib and Seaborn.

4. **Training and Development:**

- **Training Programs:** Manage and track employee participation in training programs.
- **Skill Gap Analysis:** Use data analytics to identify skill gaps and recommend training.
- **E-learning Integration:** Integrate with e-learning platforms for seamless training delivery.

5. **Compensation and Benefits:**

- **Payroll Management:** Automate payroll calculations and disbursements.
- **Benefits Administration:** Manage employee benefits, including health insurance, retirement plans, and other perks.

6. **Employee Self-Service Portal:**

- **Profile Management:** Allow employees to update personal information and view employment details.
- **Leave Management:** Enable employees to apply for leave and track leave balances.
- **Feedback and Surveys:** Conduct employee satisfaction surveys and gather feedback.

7. **Compliance and Legal:**

- **Policy Management:** Store and manage company policies and ensure employees acknowledge them.
- **Regulatory Compliance:** Automate compliance checks and generate necessary reports

CHAPTER 2

PROJECT METHODOLOGY

1.1 Introduction to System Architecture

System architecture refers to the conceptual model that defines the structure, behavior, and more views of a system. It serves as a blueprint for both the system and the project developing it. In the context of the HR Management system in IT, the system architecture outlines how various components interact and work together to achieve the desired functionality.

1.1.1 High-Level System Architecture

The high-level system architecture for the HR Management system in IT company typically consists of several key components:

(i) User Interface (UI)
(ii) Application Logic

1.1.2 Components of the System Architecture

a. User Interface (UI)

The User Interface is the layer with which the end-users interact. It can be a command-line interface (CLI) or a graphical user interface (GUI). The UI component handles user inputs and displays the results. The input handling is the processes user inputs such as adding, updating, deleting, and searching Employees inormation. The Output display shows the results of user actions, such as search results or confirmation messages.

b. Application Logic

The Application Logic is the core of the application where all processing is done. This layer handles the business logic of managing contacts.

HR Management system in IT in company: Functions to add, update, delete, and search for Employess information. Validation: Ensures data integrity and correctness (e.g., valid phone numbers and email addresses).

c. Data Management Layer

The Data Management Layer is responsible for managing the data st

1.2 Detailed System Architecture Diagram

Include a diagram that visually represents the system architecture. The diagram should depict how each component interacts with the others. For example, it can show the User Interface sending requests to the Application Logic, which in turn interacts with the Data Management Layer and the Storage Layer.

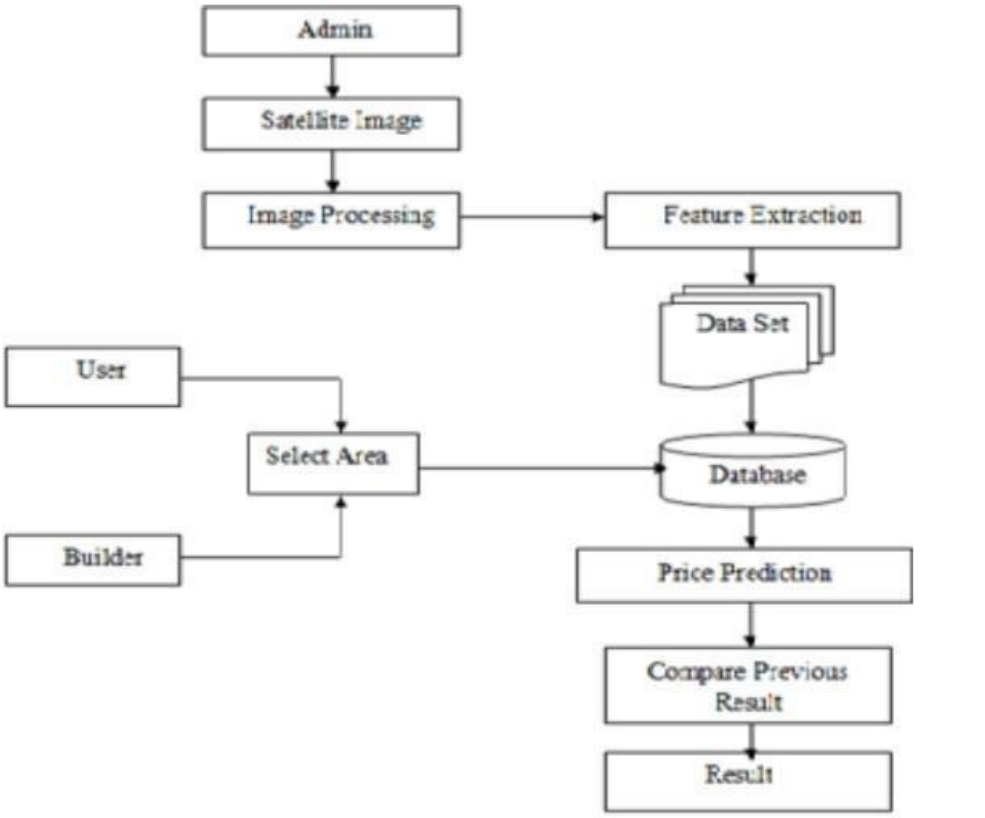

Fig 2.1 : Architecture Diagram

CHAPTER 3

PYTHON PREFERENCE

3.1 Explanation of why a doubly linked list was chosen

Python is a dynamic, high-level, free open source, and interpreted programming language. It supports object-oriented programming as well as procedural-oriented programming. In Python, we don't need to declare the type of variable because it is a dynamically typed language. For example, x = 10 Here, x can be anything such as String, int, etc. In this article we will see what characteristics describe the python programming language

Features in Python

1. Free and Open Source: Python language is freely available at the official website and you can download it from the given download link below click on the Download Python keyword. Download Python Since it is open-source, this means that source code is also available to the public. So you can download it, use it as well as share it.

2. Easy to code: Python is a high-level programming language. Python is very easy to learn the language as compared to other languages like C, C#, Javascript, Java, etc. It is very easy to code in the Python language and anybody can learn Python basics in a few hours or days. It is also a developer-friendly language. 3. Easy to Read

4. Object-Oriented Language: One of the key features of Python is Object-Oriented programming. Python supports object-oriented language and concepts of classes, object encapsulation, etc.

5. GUI Programming Support: Graphical User interfaces can be made using a module such as PyQt5, PyQt4, wxPython, or Tk in Python. PyQt5 is the most popular option for creating graphical apps with Python.

6. High-Level Language: Python is a high-level language. When we write programs in Python, we do not need to remember the system architecture, nor do we need to manage the memory.

7. Large Community Support: Python has gained popularity over the years. Our questions are constantly answered by the enormous StackOverflow community. These websites have already provided answers to many questions about Python, so Python users can consult them as needed.

8. Easy to Debug: Excellent information for mistake tracing. You will be able to quickly identify and correct the majority of your program's issues once you understand how to interpret Python's error traces. Simply by glancing at the code, you can determine what it is designed to perform.

9. Python is a Portable language: Python language is also a portable language. For example, if we have Python code for Windows and if we want to run this code on other platforms such as Linux, Unix, and Mac then we do not need to change it, we can run this code on any platform.

10. Python is an Integrated language: Python is also an Integrated language because we can easily integrate Python with other languages like C, C++, etc.

11. Interpreted Language: Python is an Interpreted Language because Python code is executed line by line at a time. like other languages C, C++, Java, etc. there is no need to compile Python code this makes it easier to debug our code. The source code of Python is converted into an immediate form called bytecode.

12. Large Standard Library : Python has a large standard library that provides a rich set of modules and functions so you do not have to write your own code for every single thing. There are many libraries present in Python such as regular expressions, unit-testing, web browsers, etc

13. Dynamically Typed Language: Python is a dynamically-typed language. That means the type (for example- int, double, long, etc.) for a variable is decided at run time not in advance because of this feature we don’t need to specify the type of variable.

14. Frontend and backend development: With a new project py script, you can run and write Python codes in HTML with the help of some simple tags <py-script>, <py-env>, etc. This will help you do frontend development work in Python like javascript. Backend is the strong forte of Python it’s extensively used for this work cause of its frameworks like Django and Flask.

15. Allocating Memory Dynamically: In Python, the variable data type does not need to be specified. The memory is automatically allocated to a variable at runtime when it is given a value.

CHAPTER -4

DATA STRUCTURE METHODOLOGY

4.1 String

String is a data structure in Python Programming that represents a sequence of characters. It is an immutable data type, meaning that once you have created a string, you cannot change it. Python String are used widely in many different applications, such as storing and manipulating text data, representing names, addresses, and other types of data that can be represented as text.

4.2. List:

Lists are the simplest containers that are an integral part of the Python language. Lists need not be homogeneous always which makes it the most powerful tool in Python. A single list may contain DataTypes like Integers, Strings, as well as Objects. Lists are mutable, and hence, they can be altered even after their creation.

Creating a List in Python

Lists in Python can be created by just placing the sequence inside the square brackets[]. Unlike Sets, a list doesn't need a built-in function for its creation of a list.

4.3 Dictionary

Dictionary is used to store contact details with keys as attributes and corresponding values. **A Python dictionary** is a data structure that stores the value in key:value pairs. Dictionaries in Python is a data structure, used to store values in key:value format. This makes it different from lists, tuples, and arrays as in a dictionary each key has an associated value.

In Python, a dictionary can be created by placing a sequence of elements within curly **{}** braces, separated by a 'comma'.

The dictionary holds pairs of values, one being the Key and the other corresponding pair element being its Key:value. Values in a dictionary can be of any data type and can be duplicated, whereas keys can't be repeated and must be immutable. Note – Dictionary keys are case sensitive, the same name but different cases of Key will be treated distinctly. The addition of elements can be done in multiple ways. One value at a time can be added to a Dictionary by defining value along with the key e.g. Dict[Key] = 'Value'. Updating an existing value in a Dictionary can be done by using the built-in update() method. Nested key values can also be added to an existing Dictionary. Note- While adding a value, if the key-value already exists, the value gets updated otherwise a new Key with the value is added to the Dictionary. To access the items of a dictionary refer to its key name. Key can be used inside square brackets. The items of the dictionary can be deleted by using the del keyword as given below.

4.3 Class

Definition:

A class in Python is a user-defined blueprint or template that defines the structure and behavior of objects. It serves as a blueprint for creating objects, encapsulating both data (attributes) and behaviors (methods).

Key Points:

Blueprint: It provides a blueprint or prototype for creating objects. It defines the attributes (data) and methods (functions) that the objects will possess.

Encapsulation: A class encapsulates data and methods into a single unit. Data is stored as attributes within the class, and methods operate on this data.

Object Creation: Once a class is defined, objects (instances) of that class can be created. Each object created from a class is an independent entity with its own set of attributes and methods.

Reuse and Extensibility: Classes promote code reuse and extensibility. Once a class is defined, it can be reused to create multiple objects with similar characteristics. Inheritance allows for extending the functionality of existing classes.

CHAPTER5

MODULES

1. **Employee Module:**

- **Description:** This module defines the Employee class, which represents an individual employee with attributes such as employee ID, name, designation, and department.
- **Steps:**
- Define the **Employee** class with attributes **emp_id**, **name**, **designation**, and **department**.
- Implement the **__init__** method to initialize these attributes when an Employee object is created.

2. **HRManagementSystem Module:**

- **Description:** This module defines the **HRManagementSystem** class, which manages employee-related operations such as adding, updating, and displaying employee details.
- **Steps:**
- Define the **HRManagementSystem** class with methods to add, update, and display employee details.
- Implement the **__init__** method to initialize an empty list to store Employee objects.
- Implement methods to add an employee, update employee details, and display all employees.

Steps for the Program:

1. **Create Employee Object:**

- Collect employee details such as ID, name, designation, and department.
- Create an Employee object using these details.

2. **Add Employee:**

- Call the **add_employee** method of the **HRManagementSystem** class.
- Pass the employee details to the method.
- The method creates an Employee object and adds it to the list of employees.

3. **Update Employee:**

- Call the **update_employee** method of the **HRManagementSystem** class.
- Provide the employee ID to identify the employee to be updated.
- Enter the new details for the employee (name, designation, department).
- The method searches for the employee with the provided ID and updates their details if found.

4. **Show Employee Details:**

- Call the **show_employee** method of the **HRManagementSystem** class.
- This method displays the details of all employees stored in the system.

5. **Menu Interaction:**

- Present a menu to the user with options to add, update, or show employee details, and to exit.
- Based on the user's choice, perform the corresponding action by calling the appropriate methods of the **HRManagementSystem** class.

6. **Loop and Exit:**

- Continue displaying the menu in a loop until the user chooses to exit.
- Upon selecting the exit option, terminate the program.

CHAPTER 6

ERROR MANAGEMENT

6.1. Input Validation

Input validation plays a pivotal role in software development, ensuring the reliability, security, and stability of applications. In the context of error management, robust input validation mechanisms are crucial for handling and preventing potential issues arising from incorrect, malformed, or malicious user inputs. Within the realm of software development using tools like Visual Studio, implementing effective input validation strategies involves scrutinizing and verifying user inputs to ensure they meet predefined criteria and conform to expected formats before processing.

This process involves various techniques such as range checks, data type validation, length validation, format validation (e.g., email addresses, phone numbers), and input sanitization to prevent injection attacks like SQL injection or cross-site scripting (XSS). For instance, Visual Studio supports the integration of validation libraries and frameworks, enabling developers to perform comprehensive checks on user inputs, reducing the likelihood of vulnerabilities and improving the overall robustness of the application.

By applying stringent input validation mechanisms throughout the codebase, developers can fortify their applications against potential errors, exceptions, and security threats stemming from invalid inputs. Furthermore, incorporating error handling routines and providing informative feedback to users when invalid inputs are detected not only enhances user experience but also aids in diagnosing and rectifying input-related issues, contributing to the overall reliability and resilience of software systems developed within the Visual Studio environment.

Ultimately, meticulous input validation serves as a critical component of error management, preemptively addressing potential pitfalls related to user inputs and reinforcing the integrity and security of software applications.

6.2 Exception handling

Exception handling in data structures is a critical aspect of software development, addressing unforeseen errors that may occur during operations. It encompasses various error types, such as array out-of-bounds access or operations on empty data structures. By throwing exceptions in response to errors, developers can prevent runtime failures and enable graceful recovery. Utilizing try-catch blocks allows for the isolation of error-prone code and the implementation of custom strategies for handling exceptions. This not only enhances the overall stability of the application but also facilitates debugging and maintenance by providing informative error messages. Additionally, custom exceptions can be defined for specific scenarios, offering more granular control over error handling. Well-documented exception handling practices guide developers on effectively addressing errors, contributing to the creation of robust, reliable, and user-friendly software systems.

6.3 Test Cases

6.3.1 Positive Test Cases

- Employee added successfully
- Employee updated successfully.

6.3.2 Negative Test Cases

- Invalid choice ! Please enter a valid option

CHAPTER – 7

RESULT AND DISCUSSION

7.1 Results

7.1.1 Employee details (Code tantra screen shot)

```
HR Management System Menu:
1. Add Employee
2. Update Employee
3. Show Employee
4. Exit
Enter your choice: 3
Employee Details:
ID: 01, Name: Joe, Designation: manager, Departme
nt: website
ID: 02, Name: Allwin, Designation: developer, Dep
artment: website
```

```
HR Management System Menu:
1. Add Employee
2. Update Employee
3. Show Employee
4. Exit
Enter your choice: 1
Enter Employee ID: 01
Enter Employee Name: Joe
Enter Employee Designation: manager
Enter Employee Department: website
Employee added successfully!
```

7.1.2 Display Contacts

```
HR Management System Menu:
1. Add Employee
2. Update Employee
3. Show Employee
4. Exit
Enter your choice: 1
Enter Employee ID: 01
Enter Employee Name: Joe
Enter Employee Designation: manager
Enter Employee Department: website
Employee added successfully!
```

7.2 Discussion

The phone directory application, implemented using a doubly linked list, serves as a practical and dynamic solution for managing contacts efficiently. The choice of a doubly linked list allows for seamless insertion, deletion, and bidirectional traversal, essential for a user-friendly contact management system. The application encompasses key functionalities, including adding, updating, and deleting contacts, ensuring the integrity of the contact directory. Exception handling enhances the robustness of the system by addressing unforeseen errors, preventing runtime failures, and enabling graceful recovery. The user interface provides a clear and intuitive experience, displaying contact information and allowing users to search, edit, and delete contacts seamlessly. This project not only showcases proficiency in data structure implementation but also emphasizes the importance of user-centric design and exception handling for creating a reliable and user-friendly phone directory application.

CHAPTER 8

CONCLUSION & FUTURE SCOPE

8.1 Conclusion

In summary, the Python program presents a straightforward HR Management System enabling users to add, update, and display employee details through a menu-driven interface. The modular design, leveraging separate modules for defining the Employee class and the HRManagementSystem class, enhances code organization and maintainability. Users interact with the system via a looping menu, facilitating intuitive navigation, while the program's object-oriented approach ensures scalability and extensibility for future enhancements. Overall, the system provides a solid foundation for managing employee data efficiently within an organization, with potential for further customization to meet specific requirements.

8.2 Future Scope

Looking ahead, there are several avenues for enhancing and extending the functionality of the HR Management System. Firstly, incorporating additional features such as leave management, performance evaluations, and employee scheduling could offer a more comprehensive solution for HR departments. Introducing role-based access control and implementing security measures would ensure data integrity and confidentiality. Additionally, integrating with external systems like payroll software or time-tracking applications could streamline processes and improve efficiency further.

Furthermore, embracing emerging technologies such as machine learning and natural language processing could enable advanced capabilities such as automated resume screening and predictive analytics for talent acquisition and employee retention. Leveraging cloud-based solutions would enhance scalability and accessibility, allowing for remote access and real-time updates.

Moreover, adopting a mobile-first approach with dedicated mobile applications would cater to the evolving needs of a mobile workforce, offering convenience and flexibility in accessing HR services on the go. By embracing these advancements, the HR Management System can evolve into a robust, intelligent, and user-friendly platform, empowering organizations to effectively manage their human capital and drive organizational success.

REFERENCES

1. **Book: "Automate the Boring Stuff with Python" by Al Sweigart**

- Description: This book offers practical Python programming techniques for automating repetitive tasks, making it a valuable resource for developing automation solutions in HR management systems.
- Link: Automate the Boring Stuff with Python

2. **Online Course: "Python for Data Science and Machine Learning Bootcamp" on Udemy**

- Description: This comprehensive course covers Python programming fundamentals, data analysis, and machine learning techniques, providing essential skills for implementing data-driven HR management solutions.
- Link: Python for Data Science and Machine Learning Bootcamp

3. **Research Paper: "Trends and Research Issues in Human Resource Information Systems" by Tanya Bondarouk and Huub Ruël**

- Description: This academic paper discusses emerging trends and research topics in Human Resource Information Systems (HRIS), offering valuable insights for designing and developing advanced HR management systems.
- Link: Trends and Research Issues in Human Resource Information Systems

4. **Article: "Best Practices in Software Development" on Atlassian**

- Description: This article provides an overview of software development best practices, including agile methodologies, version control, and code review processes, which are essential for building robust and maintainable HR management systems.
- Link: Best Practices in Software Development

APPENDIX

```
class Employee:
    def __init__(self, emp_id, name, designation, department):
        self.emp_id = emp_id
        self.name = name
        self.designation = designation
        self.department = department

class HRManagementSystem:
    def __init__(self):
        self.employees = []

    def add_employee(self, emp_id, name, designation, department):
        emp = Employee(emp_id, name, designation, department)
        self.employees.append(emp)
        print("Employee added successfully!")

    def update_employee(self, emp_id, name, designation, department):
        for emp in self.employees:
            if emp.emp_id == emp_id:
                emp.name = name
```

```
            emp.designation = designation
            emp.department = department
            print("Employee details updated successfully!")
            return
        print("Employee not found.")

    def show_employee(self):
        print("Employee Details:")
        for emp in self.employees:
            print(f"ID: {emp.emp_id}, Name: {emp.name}, Designation:
{emp.designation}, Department: {emp.department}")

def main():
    hr_system = HRManagementSystem()
    while True:
        print("\nHR Management System Menu:")
        print("1. Add Employee")
        print("2. Update Employee")
        print("3. Show Employee")
        print("4. Exit")
        choice = input("Enter your choice: ")
```

```
if choice == '1':
    emp_id = input("Enter Employee ID: ")
    name = input("Enter Employee Name: ")
    designation = input("Enter Employee Designation: ")
    department = input("Enter Employee Department: ")
    hr_system.add_employee(emp_id, name, designation, department)
elif choice == '2':
    emp_id = input("Enter Employee ID to update: ")
    name = input("Enter New Name: ")
    designation = input("Enter New Designation: ")
    department = input("Enter New Department: ")
    hr_system.update_employee(emp_id, name, designation, department)
elif choice == '3':
    hr_system.show_employee()
elif choice == '4':
    print("Exiting...")
    break
```

```
        else:
            print("Invalid choice! Please enter a valid option.")

if__name__== "__main__":
    main()
```