Case Scenario: XYZ Software Solutions is developing an employee management system using C++. The system should manage employee records, including their names, IDs, and salaries. The company wants to implement Object-Oriented Programming principles such as encapsulation, inheritance, and polymorphism to make the system more efficient and maintainable.

As a software developer, you are required to design and implement the core functionalities of the employee management system using OOP principles in C++.

Assignment Tasks:

1. Introduction (5 Marks)
    - Define Object-Oriented Programming and its significance.
      Object oriented programming is a model that organizes software design around data or objects.
      -It helps model any real world entity into software block.
      -It enhances modularity.
      -It increases productivity in software development.
      -It enhances maintainability.
    - Explain the key OOP principles (Encapsulation, Inheritance, Polymorphism, and Abstraction) with examples.
    - Encapsulation-Restricts data access to objects and allows manipulation
      -Users can interact through the ATM interface while internal details like transaction processing are hidden.
    - Inheritance-Enables code reusability by allowing one class to inherit from another
      -A car, bus and bicycle all fall under vehicle since they have inherited attributes of vehicle class for transport.
    - Polymorphism-Allows same method to have different implementations
      -A single shape function can handle different shapes such as circles, squares or triangle using
      the same method name.
    - Abstraction-Allows hiding implementation details and exposing only necessary functionality
      -Starting the car by pressing the start button, you don’t need to know how the engine is getting started.
2. Analysis of the Case Scenario (5 Marks)
    - Identify the key functional requirements of the employee management system.
      -To support employee type with specific attributes.
      -To manage employee records with attributes such as name, ID and salary.
      -To implement functionalities like search and add off employee details.
    - Discuss how OOP principles can be applied to design the system effectively.

-Encapsulation-Employee attributes are private and are accessible through setter and getter methods
-Inheritance-Manager and Engineer classes inherit common attributes from Employee.
-Polymorphism-Overriding display methods allows customized output for different employees

4. Conclusion and Future Recommendations (5 Marks)

- Summarize the importance of OOP in software development.
  -Scalability- makes it easier to scale a program.
  -It enhances code modularity, and reusability.
  -Maintainability-makes it easier to maintain and update existing code.
  -Provide recommendations on how the employee management system can be further improved.
- Provide recommendations on how the employee management system can be further improved using advanced OOP concepts.
  -Advanced polymorphism-Implement function overloading for better flexibility.
  -File handling-To persist employee data across program executions.
  -Database integration-To store and retrieve employee records efficiently