1.Comparison of Procedural Programming and Object-Oriented Programming (OOP):

**Core Concepts**

* **Procedural Programming**: Focuses on functions and procedures to execute a sequence of tasks.
* **OOP**: Centers on objects, which encapsulate data and behaviors (methods).

**Structure**

* **Procedural**: Organized in a linear flow of functions.
* **OOP**: Organized around classes and objects.

**Data Handling**

* **Procedural**: Data and functions are separate; data is passed to functions.
* **OOP**: Data and functions are bundled; methods operate on object data.

**Key Features**

* **Encapsulation**: OOP promotes data hiding and access control; procedural programming has minimal encapsulation.
* **Inheritance**: OOP supports inheritance for code reuse; procedural does not.
* **Polymorphism**: OOP allows method overloading and overriding; procedural has limited support.

**Use Cases**

* **Procedural**: Best for simple scripts and tasks.
* **OOP**: Ideal for complex applications requiring modularity and reusability.

### 2. Real-World Applications

* **Banking Systems**: Many banking applications use Java for secure, scalable, and maintainable systems, managing accounts, transactions, and user interactions.
* **E-commerce Platforms**: Platforms like eBay and Amazon utilize Java to handle extensive product catalogs, user data, and transactions effectively.
* **Healthcare Systems**: Java is used in healthcare applications for managing patient records, scheduling, and billing, ensuring data integrity and security.

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