Introduction and Fundamentals

# What is SDLC?

* The Software Development Life Cycle (SDLC) is a systematic process used to develop software applications. It consists of several stages, each contributing to the successful delivery of high-quality software. Here’s a detailed breakdown of the SDLC phases:

1. **Planning**
2. **Requirements Gathering and Analysis**
3. **Design**
4. **Development**
5. **Testing**
6. **Deployment**
7. **Maintenance**
8. **Evaluation (Optional)**

# What is software testing?

**1. Definition**: A systematic process to evaluate software functionality, performance, and quality.

**2. Objectives:**

* + Software requirements.
  + Quality and reliability.
  + Confirm user satisfaction.

**3. Types of Testing:**

* + Functional Testing: Validates software against functional requirements.
  + Non-Functional Testing: Assesses performance, usability, security, etc.

# What is OOPS?

* It stands for Object Oriented Programming language.
* The purpose of OOPS is to deal with real time entity using programming language.
* OOPS enables programmers to arrange code into reusable, manageable parts and more naturally describe complicated systems.

# Write Basic Concepts of OOPS?

* **Class**:
  + It is a collection of objects & it doesn’t take any space or memory. It is also called blueprint.
* **Object**:
  + It is an instance of class that execute the class.
* **Encapsulation**:
  + It wraps the data.
* **Inheritance**:
  + Child class use the functionality of parent class using extend keyword.
* **Polymorphism**:
  + One interface and multiple implementations.
* **Abstraction**:
  + It is a collection of abstract class and abstract method.

# What is object?

* Object is the instance of the class that execute the class.
* It is the one kind of container that store non primitive data type. That made up of class, array and interface.
* Syntax: - class name [Class name] object name [Object Reference] =

new keyword [DMA] class name [Constructor] ().

* The DMA (Dynamic Memory Allocation) will allocate memory dynamically based on how much memory is needed for processing data according to the logic of our class.

# What is class?

* It is a collection of objects & it doesn’t take any space or memory
* It is also called blueprint.
* Class has 2 types.

- pre-defined

- user defined

* User-defined: - Cat, A, Test, Demo.
* Syntax of class: - Access modifier Class Keyword Class name

Scope of class:

{

//Datatype, variable, constructor, method

}

# What is encapsulation?

* Encapsulation is a mechanism through which we can wrapping the data members and member’s method of class in a single unit is called encapsulation.
* **Flow of encapsulation:**

Class 🡪 Method 🡪 Data

* This is typically achieved by using access modifier like public, private and protected.

# What is inheritance?

* Child class use functionality of parent class using extend keyword.
* We cannot access the private members of class through inheritance.
* Advantages:

- Code reusability.

- Code optimization.

**Types of inheritance:**

* **Single:** 
  + Single child and single parent.
* **Multiple:** 
  + Single child and multiple parents. (it does not support java)
* **Multi-level:** 
  + In multi-level inheritance we have only one super class and multiple sub classes is called multi-level inheritance.
* **Hierarchical:** 
  + Single parent multiple children.
* **Hybrid:** 
  + Combination of two inheritances.

# What is polymorphism?

* The meaning of polymorphism is ploy means many and morphism means forms whose meaning is same object and different behaviour.
* It has single interface and multiple implementations.
* Type of Polymorphism:

- Method overriding

- Method overloading

* **Method overriding**:

- Same method and same argument. (different type, number, or order)

* **Method overloading**:

- Same method but different argument.

# 10.Write SDLC phases with basic introduction?

* Software development life cycle is a process used by software industry to design, develop and test software.
* **Requirement Analysis**
* **Design**
* **Development**
* **Testing**
* **Deployment**
* **Maintenance**