**Module–1**

Introduction and Fundamentals

1. **What is SDLC?**

* SDLC stands for software development life cycle.
* Software development life cycle is a process used by software industry to design, develop and test software.

1. **What is software testing?**

* Software testing is a part of software development process.
* Software testing is an activity to detect and identifty the defects in the software.
* The objective of testing is to realase quality product to the client.

1. **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.

1. **Write Basic Concepts of OOPS?**

* Class: - It is a collection of object & 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.
* Abstraction: - It is a collection of abstract class and abstract method.
* Inheritance: - Child class use the functionality of parent class using extend keyword.
* Polymorphism: - One interface and multiple implementation.

1. **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 object\_name= new keyword class\_name ().

**Class name Object reference DMA 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.

1. **What is class?**

* It is a collection of object & it doesn’t take any space or memory
* It is also called blueprint.
* Class have 2 type.

class

pre- defined user-defined

* Predefined: - Scanner, Console, System.
* User-defined: - Dog, A, Test, Demo.
* Syntax of class: - Access modifier Class Keyword Class name {

//Datatype,variable,constructor,method

} Scope of class.

1. **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**
* This is typically achieved by using access modifier like public, private and protected.

1. **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 parent. (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 child.
* **Hybrid: -** Combination of two inheritances.

1. **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 implementation.

Polymorphism

Method overriding Method overloading

* **Method overriding**: -Same method and same argument.
* **Method overloading**: - Same method but different argument.

1. **Write SDLC phases with basic introduction.**

* Software development life cycle is a process used by software industry to design, develop and test software.
  + 1. **Requirement Analysis: -**  Gathering initial requirement, determining resources, budget, and time line.
    2. **Design: -** Create and architecture and design the software system. Converting the requirement into detailed design. This involves designing the system architecture and the detailed internal components including databases, user interface and modules.
    3. **Development: -** Developer builds the software based on the design specification.
    4. **Testing: -** Ensure the software works as expected and is free of bugs. Conduct various test to identify and fix defect or errors. This phase ensure that software meet with client requirement.
    5. **Deployment: -** Release software to the user. The software is deployed to the production so the end user can access it.
    6. **Maintenance: -** Update, fix and improve the software post-deployment. This phase continues for the software lifecycle, ensuring it remains functional and up-to-date.