**OPPs(Object Oriented Programming)**

Agenda:

Mod-1

1. Data Hiding
2. Abstraction
3. Encapsulation
4. Tightly encapsulated class

Mod -2

1. Is-A relationship
2. Has-A relationship
3. Method signature
4. Method overloading
5. Method overriding

Mod-3

1. Static control flow
2. Instance control flow
3. Constructor
4. Coupling
5. Cohesion
6. Type casting

**Data Hiding:**

Outside person can’t access our internal data directly or our internal data should go out directly, this opp feature is nothing but data hiding. After validation or identification outside person can access our internal data.

By declaring data member (variable) as private we can achieve data hiding

Ex: using getter and setter

The main advantage of data hiding is security.

Note: it is highly recommended to declare data members as private.

**Abstraction:**

Hiding internal implementation and highlight the set of services what we are offering is called abstraction.

Ex: ATM GUI Screen

Advantages:

1. Security
2. Enhancement will become easy
3. Easiness to user
4. Maintainability

Note: By using interfaces and abstract classes we can implement abstraction.

**Encapsulation:**

The process of binding data and corresponding method into a single unit is nothing but encapsulation.

Ex: data member (variable) + behaviour (member function)

If any component follows data hiding and abstraction such type of component is said to be encapsulated component.

Encapsulation = Data hiding + Abstraction

Advantages:

1. Security
2. Enhancement will become easy
3. Maintainability

Disadvantages: It increases length of the code and slows down execution.

**Tightly encapsulated class:**

A class is said to be tightly encapsulated each and every variable declared as private. Whether class containing corresponding getter and setter method or not, and whether these methods declared as public or not we are not required to check.

Note: if the parent class is not tightly encapsulated, then no child class is tightly encapsulated.