Java Encapsulation

Lecture - 8

Tokey Ahmmed

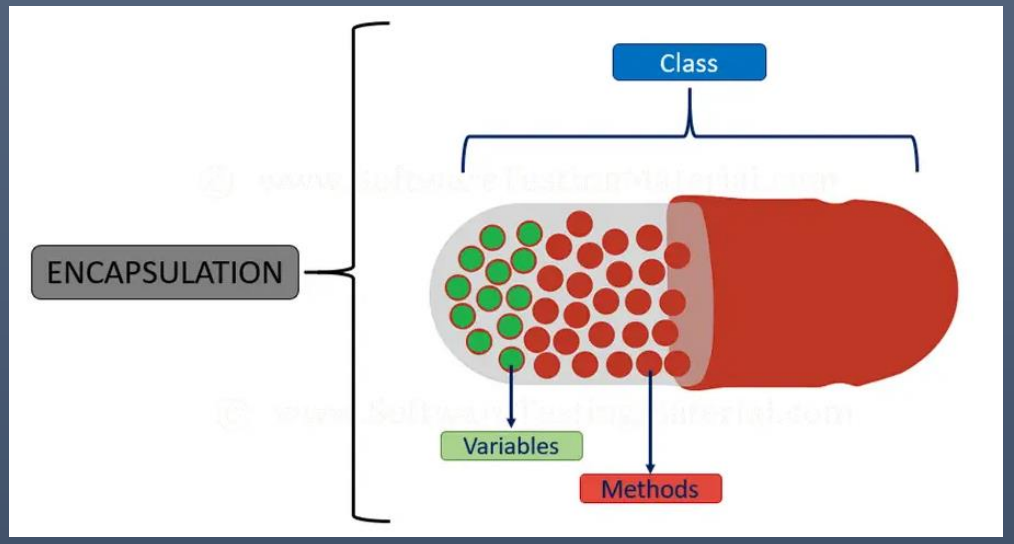
Lecturer, Dept. of CSE

Varendra University

tokey@vu.edu.bd

Encapsulation

- Encapsulation in Java is a process of wrapping code and data together into a single unit.



- In encapsulation, the variables of a class will be hidden from other classes, and can be accessed only through the methods of their current class. Therefore, it is also known as **data hiding**.

Achieving Encapsulation

We can create a fully encapsulated class in Java by making all the data members of the class private. Than using setter and getter methods to set and get the data in it.

- So, To achieve encapsulation in Java –
  - Frist, Declare the variables of a class as private.
  - Then, Provide public setter and getter methods to modify and view the variables values.

```
public class Student {
   private String name;
   private int id;
   private int age;

   public int getAge() {
      return age;
   }
   public String getName() {
      return name;
   }
   public int getId () {
      return id;
   }

   public void setAge( int newAge) {
      age = newAge;
   }
   public void setName(String newName) {
      name = newName;
   }
   public void setId (int newId) {
      id = newId;
   }
}
```

```
public class Test {

   public static void main(String args[]) {
      Student s1 = new Student();

      s1.setName("James");
      s1.setAge(20);
      s1.setIdNum("12343ms");

      System.out.print("Name : " + s1.getName());
   }
}
```

- The public setXXX() and getXXX() methods are the access points of the instance variables of the class.
- Normally, these methods are referred as getters and setters.
- Therefore, any class that wants to access the variables should access them through these getters and setters.

Advantage of Encapsulation

1. By providing only a setter or getter method, you can make the class **read-only or write-only.**

2. It provides you the **control over the data**.

3. It is a way to achieve **data hiding** in Java because other class will not be able to access the data through the private data members.

4. The encapsulate class is **easy to test**. So, it is better for unit testing.