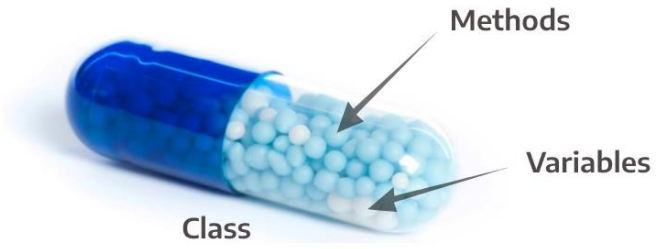
Encapsulation

- The process of wrapping the data and corresponding methods into a single unit is called Encapsulation.
- Examples are Medicine capsule , School Bag.



- If any component follows data hiding and abstraction then it is called encapsulation.
  Encapsulation = Data Hiding + Abstraction

Steps to achieve encapsulation

1. We have to declare variables of class as private. (By declaring variable as private we have achieved data hiding means outside person cannot access this variable).
2. We have to use public getters and setters method to modify and view the variable values.

Few points about encapsulation

- User would never know of what is going on in the background, they would be only aware of update the field by set method and read a field by get method.
- Set and get words used in the method names are only for naming purpose so that programmer should understand which is set and get method.

- **Advantages are :-**
    1. Encapsulated class is easy to test so it is better for doing unit testing.
    2. It provides security.

```java
package encapsulationPkg;

public class EncapsulationTest1 {
    private double balance; //GlobalorInstance

    //Setter
    public void setBalance(double balance) //Local
    {
        this.balance = balance;
    }

    //getter
    public double getBalance()
    {
        return balance;
    }

    public static void main(String[] args) {
        EncapsulationTest1 et = new EncapsulationTest1();
        et.setBalance(120000);
        et.getBalance();

        double z = et.getBalance();
        System.out.println(z);
    }
}
```

Output:

```
Problems  Console ×  @ Javadoc  Declaration  Call Hierarchy
<terminated> EncapsulationTest1 [Java Application] C:\Program Files\Java\jdk-17.0.2\
120000.0
```

Super Keyword

"**super**" keyword is used to access global variable from super class or different class

Example:

Super Class:

```
package superKeywordPckg;

public class Super1 {

    int a = 10;
    int b = 30;

    public void test()
    {
    }
}
```

Sub Class:

```
package superKeywordPckg;

public class Super2 extends Super1{
    int a = 50;
    int b = 100;

    public void test2()
    {
        System.out.println(a-b);
        System.out.println(super.a - super.b);
    }

    public static void main(String[] args) {
        Super2 s = new Super2();
        s.test2();
    }
}
```

Output:

```
Problems  Console ×  @ Javadoc  Declaration  Call Hierarchy
<terminated> Super2 [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe  (Apr 19, 2022, 1:55:51 PM – 1:55:52 PM)
-50
-20
```