Java static variable and static methods

If you declare any variable as static, it is known as a static variable.

- The static variable can be used to refer to the common property of all objects (which is not unique for each object), for example, the company name of employees, college name of students, etc.
- The static variable gets memory only once in the class area at the time of class loading.

Advantages of static variable

It makes your program **memory efficient** (i.e., it saves memory).

```
1. //Java Program to demonstrate the use of static variable
2. class Student{
3.    int rollno;//instance variable
4.    String name;
5.    static String college ="ITS";//static variable
6.    //constructor
7.    Student(int r, String n){
8.    rollno = r;
9.    name = n;
10.   }
11.   //method to display the values
12.   void display (){System.out.println(rollno+" "+name+" "+college);}
13.}
14.//Test class to show the values of objects
15.public class TestStaticVariable1{
16. public static void main(String args[]){
17. Student s1 = new Student(111,"Karan");
18. Student s2 = new Student(222,"Aryan");
19. //we can change the college of all objects by the single line of code
20. //Student.college="BBDIT";
21. s1.display();
22. s2.display();
23. }
24.}
```

Program of counter by static variable

```
1. //Java Program to illustrate the use of static variable which
2. //is shared with all objects.
3. class Counter2{
4. static int count=0;//will get memory only once and retain its value
5.
6. Counter2(){
7. count++;//incrementing the value of static variable
8. System.out.println(count);
9. }
10.
11. public static void main(String args[]){
12. //creating objects
13. Counter2 c1=new Counter2();
14. Counter2 c2=new Counter2();
15. Counter2 c3=new Counter2();
16. }
17. }
```

2) Java static method

If you apply static keyword with any method, it is known as static method.

- A static method belongs to the class rather than the object of a class.
- A static method can be invoked without the need for creating an instance of a class.
- A static method can access static data member and can change the value of it.

```
○ //Java Program to demonstrate the use of a static method.
○ class Student{
○     int rollno;
○     String name;
○     static String college = "ITS";
○     //static method to change the value of static variable
○     static void change(){
○     college = "BBDIT";
○     }
○     //constructor to initialize the variable
```

```
    Student(int r, String n){
    rollno = r;
    name = n;
    }
    //method to display values
    void display(){System.out.println(rollno+" "+name+" "+college);}
}
//Test class to create and display the values of object
public class TestStaticMethod{
   public static void main(String args[]){
   Student.change();//calling change method
   //creating objects
   Student s1 = new Student(111,"Karan");
   Student s2 = new Student(222,"Aryan");
   Student s3 = new Student(333,"Sonoo");
   //calling display method
   s1.display();
   s2.display();
   s3.display();
   }
}
```

Another example of a static method that performs a normal calculation

```
1. /Java Program to get the cube of a given number using the static method
2.
3. class Calculate{
4.   static int cube(int x){
5.   return x*x*x;
6.   }
7.
8.   public static void main(String args[]){
9.   int result=Calculate.cube(5);
10.  System.out.println(result);
11.  }
```

```
12. }
```

Restrictions for the static method

There are two main restrictions for the static method. They are:

1. The static method can not use non static data member or call non-static method directly.
2. this and super cannot be used in static context.

Ref: https://www.javatpoint.com/static-keyword-in-java