

Session-11 Static Keyword

Sunday, July 10, 2022 1:03 PM

Today's Topic

- Use of Java Static keyword
- What is Static Variable & advantage of Static variable
- What is Static Methods & restrictions for static method
- What is Java Static block
- Can we execute program without main method
- Why is Java main method static

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1. use of static keyword in Java
It is used for memory management

- a) static variable
- b) static methods
- b) static blocks

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1. use of static keyword in Java
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- a) static variable
- b) static methods
- b) static blocks

static variables

static variables gets memory only once during class loading. static members of the class are shared with all the object. Static variables are memory efficient or it saves memory.

scenario : store data of 500 students of "Bharti college"

```
class student
{
//class variable
int roll; //non - static, unique for each student
string studentName; //non - static, unique for each student
static string collegeName; //static
}
```

```
Students.java X
//class variables
6 int roll; //non-static variables, unique for each student
7 String studentName; //non-static variables, unique for each student
8
9 static String collegeName = "Bharti College"; //static variables, memory allocated only once during class l
10
11
12 public static void main(String[] args) {
13     // TODO Auto-generated method stub
14     Students student1 = new Students();
15     student1.studentName = "Amit";
16     student1.roll = 101;
17
18     System.out.println(student1.studentName + ", " + student1.roll + ", " + student1.collegeName);
19
20
21
22
23 }
```

```

24
25 }
26
Counter.java x
3 public class Counter {
4
5     //class variable
6     int count =0; //non-static variable, will get memory every time object of the class is created
7
8     Counter()//constructor without parameter
9     {
10         count++; //increment by 1
11         System.out.println(count);
12     }
13
14     public static void main(String[] args) {
15         // TODO Auto-generated method stub
16
17         Counter obj1 = new Counter();
18         Counter obj2 = new Counter();
19         Counter obj3 = new Counter();
20
Console x
<terminated> Counter [Java Application] C:\Program Files\Java\jdk-17.0.1\bin\javaw.exe (Nov 22, 2021, 12:05:48 PM – 12:05:48 PM)
1
1
1

```

```

Counter.java x
1 package session11;
2
3 public class Counter {
4
5     //class variable
6     //int count =0; //non-static variable, will get memory every time object of the class is created
7
8     static int count=0; //memory will be allocated only once
9     Counter()//constructor without parameter
10    {
11        count++; //increment by 1. retain its value
12        System.out.println(count); //count=1, 2,3
13    }
14
15    public static void main(String[] args) {
16        // TODO Auto-generated method stub
17
18        Counter obj1 = new Counter();
19
Console x
<terminated> Counter [Java Application] C:\Program Files\Java\jdk-17.0.1\bin\javaw.exe (Nov 22, 2021, 12:09:29 PM – 12:09:29 PM)
1
2
3

```

```

}

```

3. static methods

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.

Restriction to use static methods

- 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.

```

New_040_Met... New_040_Met... New_040_Met... New_041_Con... New_041_Con... New_042_Sta... New_042_Sta... *New_042_Sta... x
5 public class New_042_Static2 {
6
7     int roll;
8     String studentname;
9
10    static String collegename = "bharti college";
11
12    New_042_Static2(int rollno, String name){
13        roll= rollno;
14        studentname=name;
15    }
16
17    void display() {
18        System.out.println(studentname + ", " + roll + " " + collegename);
19    }
20
21    static void changevalue() {
22        collegename = "du";
23    }

```

```

24     }
25     public static void main(String[] args) {
26
27         New_042_Static2 obj1 = new New_042_Static2(101,"ask1");
28         New_042_Static2 obj2 = new New_042_Static2(101,"ask2");
29
30         obj1.display();
31     }

```

Console × Problems Debug Shell Coverage TestNG
 <terminated> New_042_Static2 [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (24-Aug-2022, 1:07:53 am – 1:07:53 am) [pid: 8372]
 ask1,101'bharti college
 ask2,101'bharti college
 ask1,101' du
 ask2,101' du

```

15     }
16
17     void display() {
18
19         System.out.println(studentname + "," + roll + "" + collegename);
20     }
21
22     static void changevalue() {
23         collegename = " du";
24     }
25     public static void main(String[] args) {
26
27         New_042_Static2 obj1 = new New_042_Static2(101,"ask1");
28         New_042_Static2 obj2 = new New_042_Static2(101,"ask2");
29
30         obj1.display();
31         obj2.display();
32         changevalue();
33
34         obj1.display();
35         obj2.display();
36
37     }
38 }
39
40 }
41

```

Console × Problems Debug Shell Coverage TestNG
 <terminated> New_042_Static2 [Java Application] C:\Program Files\Java\jdk-17.0.2\bin\javaw.exe (24-Aug-2022, 1:07:53 am – 1:07:53 am) [pid: 8372]
 ask1,101'bharti college
 ask2,101'bharti college
 ask1,101' du
 ask2,101' du

3. static methods

A static method belongs to the class rather than the object of a class.
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Restriction to use static method

- 1) The static method can not use non static data member or call non-static method directly.
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4. Java static blocks

- a) static blocks are used to initialise static data members.
- b) static blocks is invoked before main method during class loading

5.Can we execute program without main method?

Ans. No. till JDK1.6 it was possible by using static block, but since JDK 1.7 class cannot be executed with out main method.

6. Why main method is static in java

it is static because we need not create object to call static methods. If main method has been non static, everytime to call main method Jvm need to create object to call method which would lead extra memory allocation.

