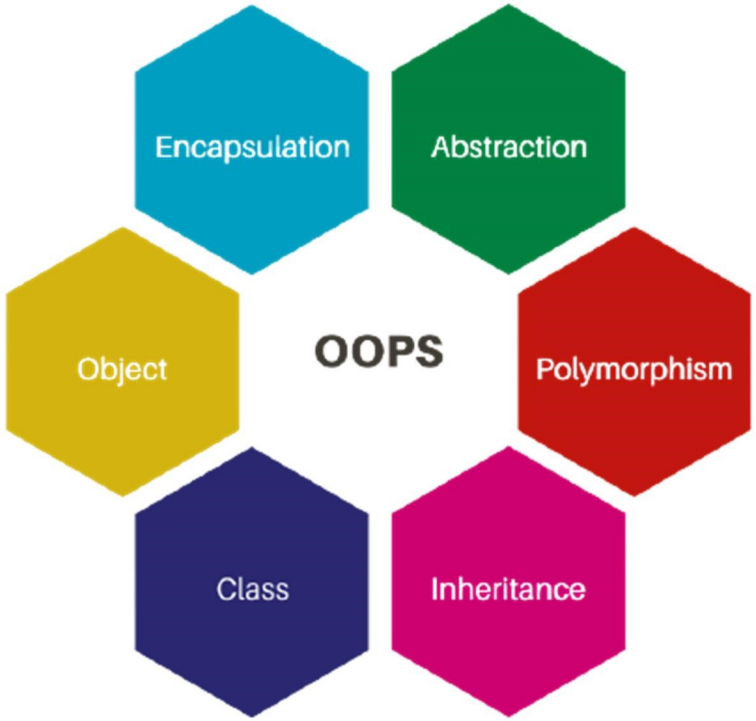

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Java™

Instance, Static Variable and Method

Instance Variable

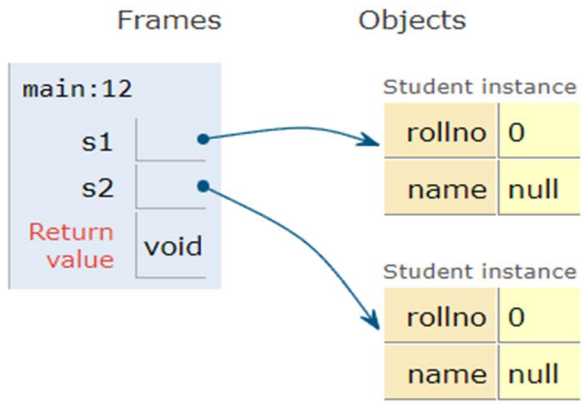
- Instance variable are declared in a class, but outside a method, constructor or any block
- It belongs to the instance of a class or you can say it belong to the object.
- Instance variable have separate value of each and every instance of the class.

Instance Variable

Java 8
known limitations

```
1  class Student{
2    int rollno;
3    String name;
4  }
5
6
7
8  public class demo {
9      public static void main(String[] args) {
10       Student s1 = new Student();
11       Student s2 = new Student();
12     }
13 }
```

Instance Variable



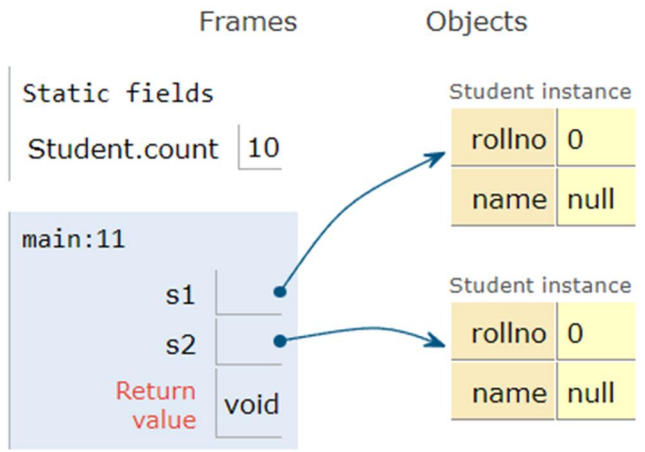
Class Variable / Static Variable

- Static variables are declared in a class, but outside a method, constructor or any block.
- Static Variable belongs to class not an individual object or instance.
- A static variable is created by adding the “static” keyword before the variable.
- The static variables can be accessed in all types of methods: static or non-static.

Class Variable / Static Variable

Java 8
known limitations

```
1  class Student{
2    static int count=10;
3    int rollno;
4    String name;
5  }
6
7  public class demo {
8      public static void main(String[] args) {
9        Student s1 = new Student();
10       Student s2 = new Student();
11     }
12 }
```



How to access Static Variable

- We can use class name or object for accessing static variables.
- e.g.

```
Student.count;
        or
s1.count;
```

Local Variable

- A local variable is a variable that’s declared within the body of a method, constructor or any block.
- they are not visible to other method.

Method

- A java method is a collection of Statements that are grouped together to perform an operation.
- A class can contain any number of methods.
- methods can be with parameter and without parameter.

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Method

- Instance Method
- Static Method / Class Method

Instance Method

- Instance methods can access instance variables and instance methods directly.
- Instance methods can access a static variables and static methods directly.
- we can’t define static variables inside the instance method.

Instance Method without Parameter

Syntax –

```
Modifier  return_type  method_name (){

    // Method Body
}
```

Modifier – It defines the access type of the method and it is optional.

Instance Method with Parameter

Syntax –

```
Modifier  return_type  method_name (parameter1, parameter2){

    // Method Body
}
```

```
Modifier  return_type  method_name (type … par){

    // Method Body
}
```

Calling Instance Method

- **Calling Instance Method through object -**

reference_variable.method_name()

```
class Student{
int roll;
String Name;
void display1(){
System.out.println("I am in display-1");
}
}
```

```
public class demo {
public static void main(String[] args) {
Student s1 = new Student();
s1.display1();
}
}
```

Calling Instance Method

- **Calling Instance Method in Instance Method**
  - **Instance methods can call an instance method directly.**
  - **There is no need to use objects.**

```
class Student{
int roll;
String Name;
void display1(){
        System.out.println("I am in display-1");
}
void display2(){
        display1();
}
}
```

```
public class demo {
public static void main(String[] args) {
Student s1 = new Student();
s1.display2();
}
}
```

Calling Instance Method

- **Calling Instance Method in Static Method -**
  - **We can not call an instance method in a static method directly.**
- **Example will be discussed in later slide**

Static Method / Class Method

- A static method belongs to the class rather than the object of a class.
- A static method can be invoked without the object of the class.
- The static method can access static data members and can change their value of it.
- The static method can not use non-static data members.

Syntax to declare the static method

```
Access_modifier static  void methodName()
{



}
```

Syntax to call static method

```
className.methodName();
```

Example - static method

```
1  class Student{
2    static void display(){
3      System.out.println("I am in static");
4    }
5  }
6
7  public class YourClassNameHere {
8      public static void main(String[] args) {
9      Student s1 = new Student();
10     s1.display();
11     Student.display();
12     }
13 }
```

Print output (drag lower right corner to resize)

```
I am in static
I am in static
```

Static Block

- The static block is a block of statements inside a Java class that will be executed when a class is first loaded into the JVM.
- A static block helps to initialize the static data members, just like constructors help to initialize instance members.

```
class Test{
 static {
 //Code goes here
 }
}
```