JAVA ASSIGNMENT

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Unit&Topic – ‘3’ & Static Method

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Static Method In Java

Static methods

Static methods symbolize the behavior of entire class. An instance of a class just isn't required to execute static methods. They are often called using class name.

Syntax:

```
ClassName.methodName
```

EX.

```
class DisplayTest {
        public static void display(){
                System.out.println("Hello World");
        }
}
public class StaticMethodExample {
        public static void main(String args[]){
                DisplayTest.display();
        }
}
```

Output

Hello World

Why We Use Static Class in Java?

In Java, static is a keyword that can be used with variables, classes, blocks, and methods.

In Java, the static keyword is primarily used for memory management.

it means that specified member belongs to a type itself. In other words, an instance of a static member is created and shared across all the instances of the class.

we will use **static** keyword with the **Java class** and also understand **why we use a static class?**

Features of static method:

- A static method in Java is a method that is part of a class rather than an instance of that class.
- Every instance of a class has access to the method.
- Static methods have access to class variables (static variables) without using the class's object (instance).
- Only static data may be accessed by a static method. It is unable to access data that is not static (instance variables).
- In both static and non-static methods, static methods can be accessed directly.

Static Class

We can declare a class static by using the static keyword. A class can be declared static only if it is a **nested class**. It does not require any reference of the outer class.

To understand the concept of static class first we need to understand the concept of **inner, outer,** and **nested** class.

Inner class

The classes that are non-static and nested are called **inner classes**. Note that we cannot create an instance of the inner class without creating an instance of the outer class.

Outer Class

The class in which nested class is defined is called **outer class**.

Nested Class

Java allows us to define a class within a class that is known as a **nested class**. It may be static non-static. The major difference between static and non-static class is that:

- An instance of the static nested class can be created without creating an instance of its outer class.
- The static and non-static members of an outer class can be accessed by an inner class.
- The static members of the outer class can be accessed only by the static class.

Why is the main method in Java static

It's because calling a static method isn't needed of the object. If it were a non-static function, JVM would first build an object before calling the main() method, resulting in an extra memory allocation difficulty.

Rules for Static Methods

- Static methods cannot access a class's non-static members (variables or methods).
- Static methods cannot be overridden.
- We cannot use the "this" keyword inside the static method.
- The main benefit of static methods is that they are more efficient than standard methods.

Difference Between the static method and instance method

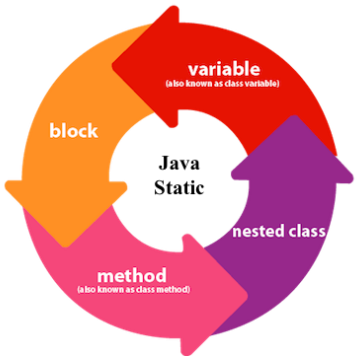
Instance Methods	Static Methods
It requires an object of the class.	It doesn't require an object of the class.
It can access all attributes of a class.	It can access only the static attribute of a class.
The methods can be accessed only using object reference.	The method is only accessed by class name.
Syntax: Objref.methodname()	Syntax: className.methodname()
It's an example of pass-by-value programming.	It is an example of pass-by-reference programming.

Java static keyword

The **static keyword** in Java is used for memory management mainly.The static keyword belongs to the class than an instance of the class.

The static can be:

1. Variable (also known as a class variable)
2. Method (also known as a class method)
3. Block



1) Java 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.

2) Java 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.

3) Java static block

- Is used to initialize the static data member.
- It is executed before the main method at the time of classloading.

Static Function in Java

In Java, the **static** keyword can be used with variable, constant, and functions. The main purpose of using the **static** keyword is to manage the memory so that we can use the memory efficiently. A method can have any number of parameters or arguments.

If the **static** keyword is prefixed before the function name, the function is called a **static function**.

When a function is **static**, it is really part of the class and not part of the individual objects in the class. It means that static functions exist even before creating any objects

❖ The best example of a static method is the **main()** method.

Properties of Static Function

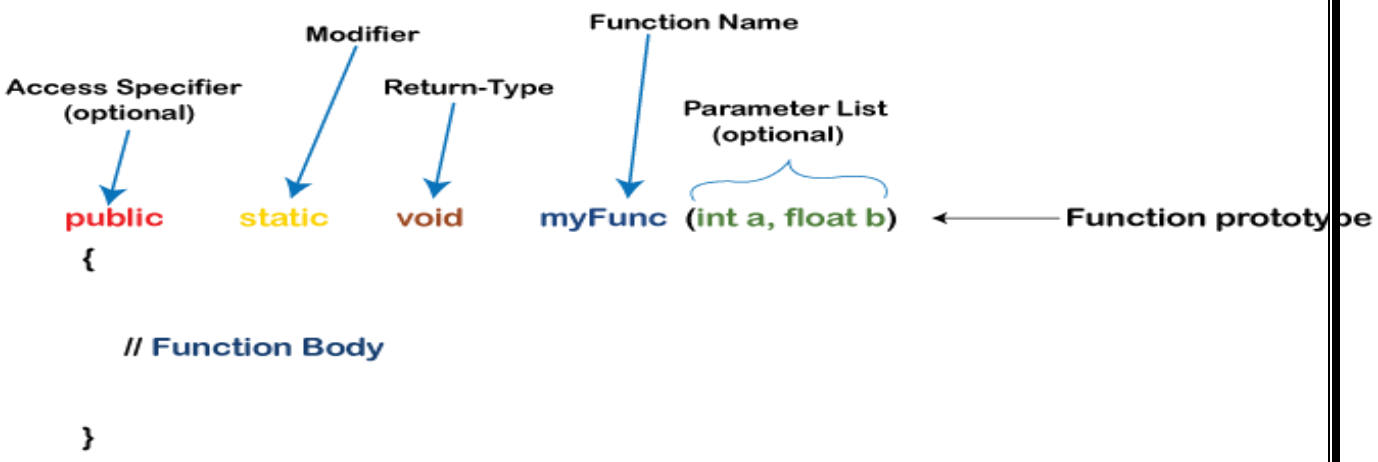
- It can access only static members.
- It can be called without an instance.
- It is not associated with the object.
- Non-static data members cannot be accessed by the static function.

Declaring a Static Function

The declaration of a static function in Java is the same as the declaration of a method. The function has two parts function **prototype** and **body** of the function.

The **function prototype** contains the function signature that includes the function name, return type, access specifier, and the parameters list. The **function body** contains the logic or functionality to be performed.

Static Function in Java



Java MCQ

1. Number of primitive data types in Java are?
Ans. 8 types

2. What is the size of float and double in java?
Ans . 32 and 64.

3.Select the valid statement.
Ans . char[] ch = new char[5]

4. When an array is passed to a method, what does the method receive?

Ans . a reference of the array

5. Arrays in java are-

Ans . objects

6. When is the object created with new keyword?

Ans . At run-time.

7. In which of the following is toString() method defined?

Ans. java.lang.Object.

8. compareTo() returns

Ans . an int value

9. Total constructor string class have?

Ans. 13 constructors.

10. . Identify the return type of a method that does not return any value.

Ans . void

11. Identify the modifier which cannot be used for constructor.

Ans Static

12. When is the finalize() method called

Ans before garbage collection..

13. Exception created by **try** block is caught in which block

Ans . catch block.

14. Where is System class defined?

Ans java.lang.package.

15. Which of the following statements are true about finalize() method?

Ans. Zero or one times.

16 Which of these are selection statements in Java?

Ans if() is a looping statement.

17 What is the numerical range of a char data type in Java?

Ans 0 to 65535

18 Which class provides system independent server side implementation?

Ans ServerSocket

19 Which exception is thrown by read() method?

Ans IOException

20 A single try block must be followed by which of these?

Ans catch or finally

21 Thread priority in Java is represented as?

Ans int

22 What is the extension of java code files?

Ans .java

23 Which of the following is not an OOPS concept in Java?

Ans Compilation

24 . What is Truncation in Java?

Ans Floating-point value assigned to an integer type

25 Which of the following is true about servlets?

Ans Servlets execute within the address space of web server, platform independent and uses the functionality of java class libraries

26 Which of the following is not a Java features?

Ans Which of the following is not a Java features?

27 The \u0021 article referred to as a

Ans Unicode escape sequence

28 What does the expression float a = 35 / 0 return?

Ans Infinity

29 Which of the following for loop declaration is not valid?

Ans for (int i = 99; i>=0; i / 9)

30 Which of the following is true about the anonymous inner class?

Ans It has no class name

31 Which of the following is a reserved keyword in Java?

Ans strictfp

32 Which keyword is used for accessing the features of a package?

Ans import

33 Which of the given methods are of Object class?

Ans notify(), notifyAll(), and wait()

34 Which of the following is a mutable class in java?

Ans java.lang.StringBuilder

35 What is meant by the classes and objects that dependents on each other?

Ans Tight Coupling

36 How many threads can be executed at a time?

Ans Multiple threads

37 If a thread goes to sleep

Ans It does not release any locks.

38. In character stream I/O, a single read/write operation performs _____.

Ans Two bytes read/write at a time.

39. What is the default encoding for an OutputStreamWriter?

Ans Default encoding of the host platform

40. Choose the correct identifier for a method name in Java.

Ans $hide

41. A "this" operator used inside a Java method refers to ___ variable.

Ans Instance variable

42. In Java, local variables are stored in __ memory and instance variables are stored in ___ memory.

Ans. Stack, Heap

43. Java does not allow nesting of methods. (TRUE / FALSE)

Ans. TRUE

45 The value of one primitive variable is assigned to another primitive variable by ___ in Java.

Ans Pass by value