07 & 08 Feb’23 Static Keyword Assignment - 15

1. Why do we need static keyword in Java Explain with an example?
Ans: It makes our program more efficient, as every object doesn't allocate separate memory to a static variable.

Static Method
A static method is a method that belongs to a class rather than an instance of a class. This means you can call
a static method without creating an object of the class. Static methods are sometimes called class methods.

There are a few other reasons why you might want to use static methods:
You can access static methods from outside of the class in which they are defined. This is not possible with
non-static methods.
Subclasses can override static methods, but non-static methods cannot.
Static methods are executed when an instance of the class is created, whereas non-static methods are not.
Static methods can be used to create utility classes that contain general-purpose methods.

2. What is class loading and how does the Java program actually executes?
Ans: Class Loading:
In Java, classloading is the process of loading class files into the JVM (Java Virtual Machine) at runtime. It is responsible for loading classes from various sources, such as the file system, network, and databases, and making them available to the JVM for execution.

The class loading process in Java is divided into three phases: loading, linking, and initialization.

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1. Loading: In the loading phase, the classloader locates the class file using the fully qualified class name, reads the class file, and converts it into a Class objects The Class object contains the metadata of the class, such as the fields, methods, and constructors.

2. Linking: In the linking phase, the JVM performs several operations in the Class object, such as verifying the class file's integrity, resolving symbolic references, and allocating memory for the class variables.

3. Initialization: In the initialization phase, the JVM initializes the class variables with their default values, and runs the class's static initialization block (if any).

3. Can we mark a local variable as static
Ans: No, because the local variable has scope just inside the method and the static variable is connected to a class which can be called directly without any object reference which can't be done with the local variable.

4. Why is the static block executed before the main method in java?
Ans: It is used to initialize static data members It is used to initialize before the main method at the time of class loading. It gets executed Only Once when the class gets loaded. It is not necessary to execute it again when creating different Objects after the first time.

5. Why is a static method also called a class method?
Ans: A static method is a method that belongs to a class rather than an instance of a class. This means you can call a static method without creating an object of the class. Static methods are sometimes called class methods.

6. What is the use of static blocks in java?
Ans: It is used to initialize static data members It is used to initialize before the main method at the time of class loading. It gets executed only once

when the class gets loaded. It is not necessary to execute it again when creating different objects after the first time.

7. Different between Static and Instance variables

Ans: A Java program consists some of Members are:

1. Instance Member
2. Static Member

Instance Member: An instance member is essentially anything within a class that is not marked as static. That is, that it can only be used after an instance of the class has been wade (with the new keyword). This is because instance members belong to the object, whereas static members belong to the class.

Static Member: Static members are those which belong to the class and you can access these members without instantiating the class. The static keyword can be used with wethods, fields, classes (inner/nested), blocks.

8. Different between static and non static members

Ans: Difference with respect static and non static members of a class static:

- These variables are called "class variables".
- These variables will get memory in the method area.
- If the value does not change from object to object then we need to use static variables.
- Inside a static area we can access static variables only
- Static variables are created using static keywords.

Non-static

- These variables are called "instance variables".
- These variables will get memory in the heap area.
- If the value changes from object to object then we need to use "non-static" variables.
- Inside a nonstatic area we can access both static and non-static variables.

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- Non-static variables are created without using the “static” keyword.