

# Java 8,9,11 Interview Questions

20, July 2024

Created By: Radhakrishna Rawat

## Java-8

- **What are the changes done to Java 8 interface?**
  - ◆ Introduction of Static and default methods
- **What is the need or what is the advantage of having the default methods in interface in Java 8?**
  - ◆ Backward compatibility.
- **Can we override default method of interface ?**

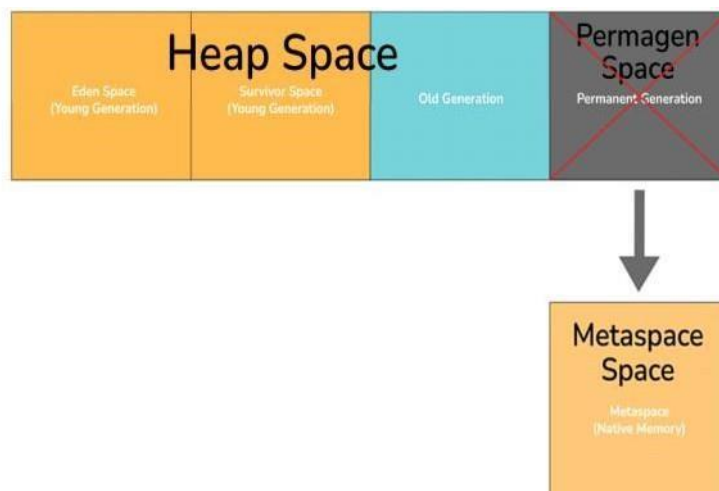
class can override a default interface method and call the original method by using super
- **What is the advantage of static methods in Java 8 interface ?**
  - ◆ Utility method or null check.
- **How to call default method present in interface ?**
  - ◆ InterfaceName.super.methodName()
- **How to call static method present in interface ?**
  - ◆ InterfaceName.methodName()
- **What is functional interface ?**
  - ◆ It's an interface which has 1 abstract method and it can have any number of static and default methods also it should be annotated with @functional Interface
- **What is lamda and what are the advantages of Lamda ?**
  - ◆ Lamda enables functional programming
  - ◆ Anonymous inner class can be replaced by lamda
  - ◆ Reduced code
- **What is functional programming ?**
  - ◆ Passing the functionality as method argument
- **What happens when we write more than 1 abstract in interface for which already lamda expression is present (If the interface is annotated with @functional interface)?**
  - ◆ Compilation error during writing the second abstract method
  - ◆ If there is no @functional interface annotation then it allows to write more than 1 abstract method but compilation at the place lamda expression
- **What is the difference between interface and functional interface ?**
  - ◆ Difference is only in number of abstract methods. Functional interface will have only 1 abstract method, where as interface can have any number of abstract methods.
  - ◆ Both can have any number of default and static methods
- **What are the different functionals interfaces introduced in Java 8.**
  - ◆ Predicate, Supplier, Consumer, Function
- **What is Stream ?**

- ◆ Java.util.Stream -> it's an interface.
- **What is the advantage of Stream ?**
  - ◆ It can be used to perform operation on the collection.
- **How to create the stream ?**
  - ◆ Stream.of(array)
  - ◆ CollectionObject.stream()
  - ◆ Stream.of(directly providing the array values)
- **What are the changes introduced in collection in Java 8 ?**
  - ◆ forEach, removeIf
- **Write a stream code to delete the duplicates from array List.**
  - ◆ Here List object is h-> h.stream().distinct().collect(Collectors.toList())
- **Write a stream code to delete the duplicates from array list which has Department object.**
  - ◆ Here List object is h-> h.stream().distinct().collect(Collectors.toList())  
and override hash code and equals method
- **Write a program to sort the Array List which has user defined data (Department Object)?**

```
h.stream.sorted((d,d1)->d.getDepId()  
<d1.getDepId()).collect(Collectors.toList())
```
- **Write a Stream program to convert the array into List.**
  - ◆ Array is int[] x={10,11,2,4,5,6,7};
  - ◆ Stream.of(x).collect(Collectors.toList());
- **Write a Stream program to convert the Employee Array into Map (Map should have key as Emp id and value as Emp Object).**

```
Employee[] e={new Employee("Radhakrishna",10),new  
Employee("Shivam",13)}  
Stream.of(e).collect(Collectors.toMap(p->p.getId(),p->p))
```
- **What is the difference between map and flat Map ?**
  - ◆ Map provides one to one mapping
  - ◆ flatMap provides one to many mapping
  - ◆ If you want to convert List<List<Employee>> to List<employee> - then u go for flat map
  - ◆ List<Employee> -> EmpId as key and value as emp Object then go for Map
- **Write a stream program to get minimum, maximum, average salary of an employee (given employee array).**
  - ◆ l.stream().min(comparator).get() -> Min salary
  - ◆ l.stream().max(comparator).get() -> Max salary Or
  - ◆ l.stream().collect(Collectors.summarizingInt())
  - ◆ DoubleSummaryStatistics d  
=empList.stream().collect(Collectors.summarizingDouble((e)->e.getEmpSalary()));
- **What is difference between intermediate operation and terminal operation?**
  - ◆ Intermediate operation doesn't provide output until terminal operation is called
- **What is short circuit operation ?**

- ◆ It comes under terminal operation and based on the value it stops the execution immediately
- **What is the difference forEach and forEachOrdered ?**
  - ◆ forEach is not ordered in case of parallel stream
  - ◆ forEachOrdered is ordered in case of parallel Stream
  - ◆ For the foreachOrdered method if the input is ordered object output is ordered else it can follow any order
- **What are the examples of intermediate operation ?**
  - ◆ Filter, map, sorted, distinct
- **What are the examples of terminal operation ?**
  - ◆ forEach, collect, min, count, max
- **What is the difference between limit and skip methods of Stream ?**
  - ◆ Limit will limit the elements
  - ◆ Skip will skip elements and do the operation afterwards
- **What is optional ?**
  - ◆ Optional is a class in Java 8 which is introduced to overcome null pointer exception
- **How to create the optional object ?**
  - ◆ Optional.ofNullable(null or not null value):
  - ◆ Optional.ofNullable(null)
  - ◆ Optional.ofNullable(10)
  - ◆ Optional.ofNullable(new Employee("karthik"))
- **What is Local Date Time or Local Date or Local Date ?**
  - ◆ New Date and time objects in java 8
- **How to get current date and time using the LocalDateTime class ?**
  - ◆ LocalDateTime.now()
- **Array List consists of 5 employees and Write a lambda to sort the employee by last name.**
  - ◆ Collections.sort(l,(e1,e2)->e1.getLastName().compareTo(e2.getLastName()));
- **Print all the employees whose name starts with c ?**
  - ◆ l.stream().filter(p->p.startsWith("c")).forEach(p->sysout(p))
- **Print all the employees using the enhanced collections in Java 8.**
  - ◆ forEach
- **What is MetaSpace? How does it differ from PermGen?**



**PremGen:** MetaData information of classes was stored in PremGen (Permanent-Generation) memory type before Java 8. PremGen is fixed in size and cannot be dynamically resized. It was a contiguous Java Heap Memory.

**MetaSpace:** Java 8 stores the MetaData of classes in native memory called 'MetaSpace'. It is not a contiguous Heap Memory and hence can be grown dynamically which helps to overcome the size constraints. This improves the garbage collection, auto-tuning, and de-allocation of metadata

➤ **What are functional or SAM interfaces?**

- ◆ Functional Interfaces are an interface with only one abstract method. Due to which it is also known as the Single Abstract Method (SAM) interface. It is known as a functional interface

➤ **Can a functional interface extend/inherit another interface?**

- ◆ A functional interface cannot extend another interface with abstract methods as it will violate the rule of one abstract method
  - ◆ It can extend only marker interface (or) if it extends any other functional interface which has 1 abstract method then in child we should not write any abstract method
  - ◆ Out of n interfaces if we are performing inheritance then only 1 abstract method should be present
- It can extend other interfaces which do not have any abstract method and only have the default, static, another class is overridden

➤ **Given a list of integers, find out all the even numbers exist in the list using Stream functions?**

- ◆ `List<Integer>myList=Arrays.asList(10,15,8,49,25,98,32);myList.stream().filter(n ->n%2==0).forEach(System.out::println);`

➤ **Given a list of integers, find out all the numbers starting with 1 using Stream functions?**

- ◆ `List<Integer>myList=Arrays.asList(10,15,8,49,25,98,32);myList.stream()  
.map(s ->s + "")// Convert integer to String  
.filter(s -> s.startsWith("1")).forEach(System.out::println);`

➤ **Given a list of integers, find the total number of elements present in the list using Stream functions?**

- ◆ `List<Integer>myList  
=Arrays.asList(10,15,8,49,25,98,98,32,15);longcount  
=myList.stream().count();System.out.println(count);`

- **Given a list of integers, find the maximum value element present in it using Stream functions?**
  - ◆ `List<Integer>myList =Arrays.asList(10,15,8,49,25,98,98,32,15);intmax =myList.stream().max(Integer::compare).get();System.out.println(max);`
- **Write a Lamda to Sort the given numbers ?**
  - ◆ `List<Integer> list = Arrays.asList(57, 38, 37, 54, 2);list.stream().sorted() .forEach(System.out::println);`
- **Write a Program to sort the elements in decending order ?**
  - ◆ `List<String>strings=Arrays.asList("Radhakrishna","Shivam","on","Rohit");strings.stream().sorted( (s1, s2) -> s2.length() - s1.length() ) .forEach(System.out::println);`
  - ◆ `Strings.stream().sorted(collections.reverseOrder()).forEach()`
- **How to write the method reference for a Static method ?** `ClassName::MethodName`
- **How to write method reference for instance method ?**
  - ◆ `ObjectName::MethodName`
- **How to write method reference for constructor ?**
  - ◆ `ClassName::New`
- **How to create local date with values ?**
  - ◆ `Of()` method of `LocalDate`
- **Is the Local date class immutable ?**
  - ◆ yes
- **What is the advantage of `orElse()` or `OrElseGet()` method of `Optional` class ?**
  - ◆ If we want to replace the Null with a specific String value then we go for `OrElse()`
  - ◆ You can get the default value using `OrElseGet(supplier)`
- **What is the difference between `findAny()` and `findFirst()` ?**
  - ◆ If it is ordered then first element will be returned by `findFirst` or `findANY`
  - ◆ If it is not ordered output can be anything.
- **Write a Program to sort hashmap by keys using Stream ?**
  - ◆ Refer to the code mentioned in telegram group
- **Write a program to Sort hashmap by values using Stream ?**
  - ◆ Refer to the code mentioned in telegram group

## Java-9

- **What is Jshell ?**
  - ◆ Jshell is Repl tool
- **Why Java 9 doesn't have rt.jar ?**
  - ◆ Because from Java 9 onwards java follows modular approach
- **What is the difference between module and Jar ?**
  - ◆ Module contains extra file called module-info.java
- **What principle does Jshell follow ?**
  - ◆ REPL: Read, Evaluate, Print, Loop
- **What are the advantages of Jshell ?**
  - ◆ Developer friendly
- **What is snippet in Jshell ?**
  - ◆ Any valid java statement, variable declaration or method, or interface or class
- **What is the command to know all the snippets in Jshell?**
  - ◆ /list -all
- **What is scratch variable ?**
  - ◆ It is something which is created by Jshell
- **What is the command to see all the methods in Jshell ?**
  - ◆ /methods
- **How to delete the method or variable in Jshell ?**
  - ◆ /drop snippetId
- **What is inactive snippet ?**
  - ◆ /list - Active snippets
  - ◆ /list -all - inactive
- **What is the command to see all the interfaces and classes present in Jshell ?**
  - ◆ /types
- **How to edit the content in Jshell ?**
  - ◆ /edit
- **How Many modules present in Jdk 9 ?**
  - ◆ 98
- **What is the base module in Jdk 9 ?**
  - ◆ Java.base
- **What does module-info.java contain ?**
  - ◆ Module description, exports, requires etc
- **Explain the project architecture with multiple module ?**
  - ◆ Look at the example code
- **How to access one module code in another module ?**
  - ◆ Exports packageName in 1 module and which ever module is using then it should require PackageName

- **What is the difference between requires and requires transitive ?**
  - ◆ Requires transitive-> compile time
  - ◆ Requires both compile and run time
- **What is the difference between Qualified export and exports ?**
  - ◆ Export PackageName -> will be visible for all the modules
  - ◆ Export packageName to module1, module2 -> this package will be visible for only module 1 and module 2 packages
  - ◆ To reduce the visibility of a module we go for Qualified exports.
- **What is try with resource ?**
  - ◆ Generally we close the resource in finally block, but with the help of try with Resource JVM will close the resource automatically without mention finally block
- **What is the change performed in try with resource in Java 1.9 ?**
  - ◆ Local variable reference can be accepted in Java 1.9 try() block
  - ◆ BufferRead r1, BufferedReader r2
  - ◆ Try(r1,r2) -> This is possible in java 1.9
- **What is the change performed for diamond operator in java 1.9 ?**
  - ◆ We can use diamond operator for Anonymous innerclass
- **What is takeWhile() ?**
  - ◆ Same as Limit method but the difference is limit will take number and takewhile will accept predicate -> it performs the operation till the condition is satisfied. Once the condition is failed it will stop
- **What is dropWhile()?**
  - ◆ Same as Skip() but the difference is skip() will take number and dropwhile will take predicate -> it ignores the data till the predicate is satisfied once fails then does the operation
- **Write a Stream program to display the employees whose salary is <10000 using takeWhile().**
  - ◆ empList.Stream.takeWhile(p->p.getSalary>10000).forEach() ->
- **What is the difference between takeWhile and filter?**
  - ◆ Filter will execute through out the stream.
  - ◆ Takewhile will execute till the predicate is true. Once the predicate fails then it will stop the execution and doesn't apply that condition to the rest of the stream.
- **Write a program to create the immutable collection object without Java 9?**
  - ◆ List<Integer> c= new ArrayList<Integer>();
  - ◆ c.add(10);c.add(20);
  - ◆ I want make C as immutable object ->Collections.unmodifiableList();
- **Write a program to create the immutable collection object with Java 9?**
  - ◆ List.of(arguments);
  - ◆ Set.of(arguments)
- **What happens if you perform add or remove on immutable collection ?**
  - ◆ Runtime Exception-> UnsupportedOperationException
- **Is it possible to declare same package in different modules ?**
  - ◆ No.

- **What is the advantage of modularity or module-info.java in Java 9 ?**
  - ◆ Security,
  - ◆ Jar size will be reduced.
  - ◆ JVM will check for dependencies before start of the program so there is no way we get no class def error from Java 9
- **Write a program to close the specific task ?**
  - ◆ Process API->
  - ◆ ProcessHandler pr=ProcessHandler.of(taskId)
  - ◆ Pr.destory();
- **Write a program to display all the running processes ?**
  - ◆ ProcessHandler pr=ProcessHandler.allProcesses()
- **Write a program to open eclipse using java program or start the process using java 9 Process API?**
  - ◆ ProcessBuilder("exepath").start()
- **What is the advantage of having the private methods in interface ?**
  - ◆ Reusability of code present in interface
- **Can you access interface private method outside of interface ?**
  - ◆ No

## **Java-11**

- **Can you execute a program without compilation ?**
  - ◆ Yes from java 11, we can execute the program using the below command and it does the compilation internally
  - ◆ Java className.java (Example: java Test.java)
- **What is the difference between trim() and strip() method in Java 11.**
  - ◆ strip() method uses Character.isWhitespace() method to check if the character is a whitespace. This method uses Unicode code points whereas trim() method identifies any character having codepoint value less than or equal to 'U+0020' as a whitespace character.
- **What are the changes to predicate in Java 11 ?**
  - ◆ A static not method has been added to the Predicate interface.
- **What are the file changes ?**
  - ◆ readString and Write String
- **What are the String API changes ?**
  - ◆ isBlank(), isEmpty(), Strip(), leadingString(), tralingStrip(), lines()
- **What are the collection API changes ?**
  - ◆ toArray()
- **What is local variable var and how can we use it in lamda ?**

var allows type inference for local variables, including within lambda expressions, simplifying code by letting the compiler infer the type.

```
List<String> names = Arrays.asList("Radhe", "Rohit", "Shivam");
names.forEach((var name) -> System.out.println(name)); // Using var in lambda expression
```