Java 8,9,11 Interview Questions

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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.

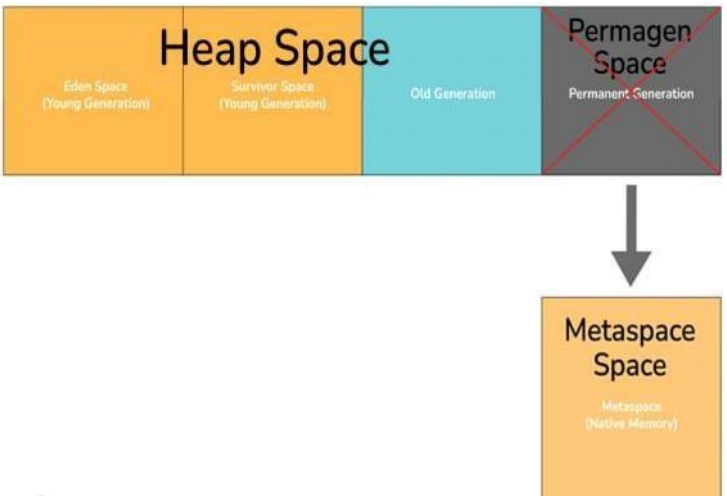
- **What is the advantage of Stream ?**
  - It can be used to perform operation on the collection.
- **How to create the stream ?**
  - Stream.of(array)
  - CollectionObject.stream()
  - Stream.of(directly providing the array values)
- **What are the changes introduced in collection in Java 8 ?**
  - 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.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.summerizingInt())
  - 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 elemnts
  - Skip will skip elements and do the operation afterwards
- **What is optional ?**
  - Optional is a class in Java 8 which is introduced to over come 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("karthgik"))
- **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 lamda 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**);**long**count =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**);**int**max =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, Evaulate, Print, Loop
- **What are the advantages of Jshell ?**
  - Developer firendly
- **What is snippet in Jshell ?**
  - Any valid java statement, variable declarion 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 create 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 contains ?**
  - 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 requires PackageName

- **What is the difference between requires and requires transitive ?**
  - Requires transistive-> 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 mdoules
  - 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, bufferReader 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 -> if 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 dopwhile 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(arguements);
  - Set.of(arguements)
- **What happens if you perform add or remove on immutable collection ?**
  - Runtime Exception-> Unsupported Exception
- **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
```