Core Java Interview Questions and Answers

1.What is java?

- Java is a simple and most widely used programing language.
- Java is fast,reliable and secure

2.Why are we go for java?

- Freeware and opensource
- It is platform independent i.e program written in one operating system is capable of running in all other operating systems due to bytecode concept.
- It runs multiple application at a time.

3.What are the main features of java?

*Java has more features,

- 1. Platform independent
- 2. Open source
- 3. Multithreading
- 4. More secure
- 5. Portable

4.What is platform independent?

- During the compilation the java program is converted into byte code(not machine specific).
- Bytecode can be runned by jvm of any platform.
- So code developed in one platform is capable of running in all other platform.

5.What is mean by Open Source?

- A program in which source code is available to the general public for use and/or modification from its original design at free of cost is called open source.

6.What are IDE/tools availabe in market for java?

- Notepad
- Netbeans
- Eclipse

- JDeveloper(oracle)
- RAD(IBM)

7.What are difference between JDK,JVM,JRE?

JDK:

- Java Development Kit.
- If we want to create any applications in java JDK have to be installed in our system.
- JDK versions: 1.0 to 1.14.

JRE:

- Java Runtime Environment.
- It is a pre-defined class files (i.e.) library files.

JVM:

- Java Virtual Machine.
- It is mainly used to allocate the memory and compiling.

8.What is mean by oops?

- OOPS is Object Oriented Programming Structure.
- OOPS is a method of implementation in which programs are organised as collection of objects, class and methods.

9.What are the coding Standard used in java?

- Pascal notation: Every word's first letter ,must be a capital letter
- Example:GreensTechnology
- Camel notation: First word's first letter should be a small letter, all the other suceeding word's first letter should be a capital letter.
- Example:greensTechnology

10.What is mean by class,method,object?

Class:

- Class is a collection of objects and methods
- Class contains attributes(variables and methods) that are common to all the objects created in a class.

Method:

- Method defines the set of action to be performed.

Object:

- Object is the run time memory allocation.
- Using object we call any methods.

11.What is mean by Encapsulation?

- It is the structure of creating folders.
- It wraps the data and code acting on data together in to a single unit.
- Example of encapsulation is POJO class.
- It is otherwise called Data hiding.

12.What are the datatypes used in java?

- byte
- short
- int
- long
- float
- double
- boolean
- char
- String

13.What is byte size and range of int datatypes?

- Size of byte is 1 byte (8 bit)
- Range formula =[-2^(n-1)] to [(2^(n-1))-1] for int n=32

14.What is mean by Wrapper class?

- Classes of data types is called wrapper class.

A Wrapper Class in Java is used to convert primitive data types into objects. Since Java is an object-oriented language, sometimes primitives need to be treated as objects, especially when working with collections (like ArrayList, HashMap) that only work with objects.

- It is used to convert any data type into an object.
- All classes and wrapper classes default value is null.

15.What is the main use of Scanner class?

- To get the inputs from the user at the run time.

16.What are the methods available in Scanner Class?

- nextByte();
- nextShort();
- nextInt();
- nextLong();
- nextFloat();
- nextDouble();
- next().charAt(0);
- next();
- nextLine();
- nextBoolean();

17.What is mean by inheritance?

- Accessing one class Properties in another class without multiple object creation.
- It avoids time and memory wastage.
- It ensures code reusability

18.What are the ways to access the methods /data from another class?

- We can access the another class methods either by creating object or using extends keyword.

19.What is mean by polymorphism?

- Poly-many.
- Morphism-forms.
- Taking more than one forms is called polymorphism or one task implemented in many ways.

20.What are the difference between method overloading and overriding?

Method overloading(static binding/compile time polymorphism):

When we have multiple methods with same method name but differs only based on its datatype,datatype count and order.

- Class-name
- Method-same
- Argument-differ based on datatype,order,number

Method overriding(dynamic binding/run time polymorphism):

When you are not satisfied with the logic of your super class method,you can create the same method(with exact same
method name) in your sub-class and you can write your required business logic.When you create object for sub-class,sub class
method only will get executed.so here child class method overriding parent class method.

- Class name-differ(using extends)
- Method-same
- Argument-same

21.What are the types of inheritance?

- Single Inheritance
- Multilevel Inheritance
- Multiple Inheritance
- Hybrid Inheritance
- Hierarchical Inheritance

22.Why multiple inheritance is not supported in java?

- Compilation error/syntax error-After extends keyword we can mention only one classname(, not allowed)
- Priority problem-When multiple parent classes has methods with same name and arguments,compiler will not know
  which method should be called.

23.What are the difference between Multiple and Multilevel inheritance?

Multiple inheritance:

- More than one parent class directly supporting into same child class.
- Multiple inheritance not supported in java due to Compilation problem and priority problem

- We have achieve multiple inheritance in java through interface.

Multilevel inheritance:

- More than one parent class supporting into one child class in tree level structure.
- It is supported in java

24.What is mean by access specifier?

- It defines the scope or level of access for variables,methods and classes

25.What are the difference between public and protected?

Public:

- It is global level access(same package + different package).

Protected:

- can access Inside package (object creation + extends)

26.What is mean by Abstraction?

- Hiding the implementation part or business logic is called abstraction.

27.What are the types of Abstraction?

- 1. Partially abstraction(using abstract class).
- 2. Fully abstraction(using interface).

28.Can we create Object for Abstract class?

- No, we cant create object for abstract class.

29.What is mean by Interface?

- It will support only abstract method(without business logic), won't support non abstract method(method with business logic)
- In interface "public abstract" is default.

- using "implements" keyword we can implement the interface in a class where we can write the business logic for all
  unimplemented methods.

30.What are the difference between Abstract and Interface?

Abstract class:

- Using Abstract class,we can acheive partial abstraction.
- It support both abstract method and non-abstract method.
- using "extends" keyword you can inherit an abstract class.
- For any abstract method we need to mention "public abstract".

Interface:

- Using interface,we can acheive full abstraction.
- It supports only abstract method.
- It is using "implements" keyword.
- "public Abstract" is default, no need to mention it explicitly.

31.What is mean by String?

- Collection of characters or words enclosed within double quotes is called as String.
- String is a class in java
- String is index based
- Example : "greenstechnology".

32.What are the method available in string?

- equals();
- equalsignorecase();
- contains();
- split();
- toUpperCase();
- toLowerCase();
- subString();
- isEmpty();
- identifyHashCode();

- startsWith();
- endsWith();
- CompareTo();
- charAt();
- indexOf();
- lastIndexOf();
- replace();

33.What is mean by constructor?

- Constructor is a special method which is called by default when object is created for that particular class.(implicit call)
- Class name and constructor name must be same.
- It doesn't have any return type.
- It supports method overloading but won't support method overriding.
- purpose of constructor:It is used to initialise the values to variables.

34.Explain the types of constructor?

- Parameterized constructor
- Non parameterized constructor

35.Do constructors have any return type?

- No,constructor can't have any return type.

36.Write a syntax for creating constructor?

Access specifier classname(){

}

37.What are the rules for defining a constructor?

- Class name and constructor name must be same.
- It should not have any return type.

38.Why a return type is not allowed for constructor?

- constructor is not directly called by your code, its called by memory allocation and object initialisation in the run time.
- Its return value is opaque to the user so we cant mention it.

39.Can we declare constructor as 'private'?

- Yes,we can declare constructor as private.

40.Why a compiler given constructor is called as default constructor?

- If we didnt create a constructor explictly it will take the default constructor.

41.What is constructor chaining and how can it be achieved in Java?

- The process of calling one constructor from another constructor with respect to current object is called constructor chaining.
- By using this() and super() methods we can achieve constructor chaining.

42.What are the difference between this() and super()?

- this() is used to call class level constructor.
- super() is used to call the parent class constructor.

43.What is the super class of all java?

- Object is the super class of all classes in java.

44.What are the types of variable?

- Local level variable.
- Global/Class level variable.
- Static variable.
- Final variable

45.What is meant by local variable,instance variable,class/static variable?

- Static Variable-It is shared by all the objects in the class.
- Local Variable-A variable declared inside a method/block.Level of access:only inside the block
- Class variable-A variable declared outside all methods but inside class. Level of access is only with in object

46.What is mean by static keyword in java?

- The static keyword is mainly used for memory management.
- It is used to share the same variable or method by objects of given class.

47.Can we override static method in java?

- No,we can't override the static method because it is part of a class rather than an object.

48.Can we overload static method in java?

- Yes, we can overload the static method in java.

49.What is mean by static variable?

- When a variable is declared as static,then a single copy of variable is created and shared among all object at class level.
- Static variable are essentially global variable.
- All the instance of the class share the same static variable.

50.What is mean by static method?

- When a method is declared as static,we need not create object to call the paticular method.We can call as Classname.methodname()
- Static method in java belong to the class(not to an object).
- They use no instance variables and will usually take the input from the parameters and perform action on it,then return some result.

51.What is mean by final keyword and what's happend when we declare final as in class,method,variable?

- Final is a non access modifier applicable to a variable, method or a class.
- When a variable is declared with final keyword,its value can't be modified.
- When a method is declared as final we can prevent method overriding.
- When a class is declared as final we can prevent inheritance.

52.What is difference between final and finally keyword?

Final:

- Final varaible can't be modified.
- Final method can't be overrided.
- Final class can't be inherited.

Finally:

- Code given inside finally block will always get executed whether exception occurs or not.

53.Where local,static and class variables stores in jvm?

- Static variables are stored in the permGen section of heap memory.
- Local variables are stored in stack.
- Class variables are stored in heap memory.

54.What is Exception?

- Exception is an unexpected event which when occurs in a program,your program will terminate abnormally.
- We can avoid this abnormal termination using exception handling mechanisms(try,catch,finally,throw,throws)

55.Explain about types of Expection?

- Unchecked exception(Run time exception)
- Checked exception(Compile time exception)

56.What are the difference between checked expection and unchecked expection?

Unchecked exception:

- It will occur at the Run time.

Checked exception:

- Checked exception will occur at the Compile time.

57.What is the super class for Exception and Error?

- Throwable
- Exception

58.Can we have try block without catch block?

- Yes we can have try block without catch block.But in that case finally block must be present.(There will be no syntax error)
- Possible but we will not able to handle the exception without catch block.

59.Can we write multiple catch blocks under single try block?

- Yes,we write multiple catch blocks under single try block.

60.How to write user defined exception or custom exception in java?

First customised exception must come under Exception class.

```
access_specifier method_name() throws customException {
throw new customException();
}
```

61.What are the different ways to print exception message on console?

- ref.printStackTrace() method is used to print the exception message in the console.

62.What are the differences between final finally and finalize in java?

Final:

- A final class variable whose value cannot be changed.
- A final method is declared in class level, they cannot be inherited.
- A class declared as final can't be inherited.

Finally:

- It's a block of statement that definitely executes after the try catch block.
- Exception occurs or not,finally block always get executed.

Finalize:

- It will clean up unused memory space.

63.What are the differences between throw and throws?

Throw:

- Throw is a keyword, using which we can throw any any exception.This keyword always given inside the method.

- At a time we can throw only one exception using throw keyword.

Throws:

- Throws is a keyword, it is used to handle the exception(given in method level).
- we can handle more than one exception using throws keyword.

64.Explain Java Exception Hierarchy?

Exception

Unchecked exception(Run time exception)	Checked exception(Compile time exception)
ArithmeticException	IOException
NullPointerException	SQLException
InputMismatchException	FileNotFoundException
ArrayIndexOutOfBoundExcepion	ClassNotFoundException
StringIndexOutOfBoundExcepion	
IndexOutOfBoundExcepion	
NumberFormatException	

65.What is mean by throw and throws?

- Throw is a keyword,used to explicitly throw an exception
- Throws is a keyword, it is used to handle the exceptions(in method level).

66.What is mean by array?

- Storing multiple values of similar datatype in a single variable.
- It is index based one.

67.What are the advantages and disadvantages of array?

Advantage:

- In a single variable we can store multiple values.

Disadvantages:

- It support only similar data types.
- Size fixed at compile time.
- Memory wastage is high.

68.Different ways to intialise array?

- Datatype refName[]= new Datatype[size];
- Datatype[] refname={ value1,value2,....};

69.Can we change the memory size of array after intialization?

- No,we can't change the memory size of array after intialization.

70.What is collection ?

- It will support storage of multiple values with dissimilar data types.
- It is dynamic memory allocation.
- No memory wastage like array.

71.What is the difference between ArrayList and Vector?

ArrayList:

- Asynchronized
- It is not a thread safe

Vector:

- Synchronized
- Thread safe

72.What is the difference between ArrayList and LinkedList?

LinkedList:

- Insertion and deletion is a best one.
- Searching/retrieving is a worst.
- It's makes performance issue.

ArrayList:

- In Arraylist retrieve/searching is a best one
- In ArrayList deletion and insertion is a worst one because if we delete/insert one index value after all the index move to forward/backward.
- It makes performance issue.

73.Difference between Collection and Collections

- Collection-Collection is an interface under which we have list,set,queue
- Collections-is an utility class in which we have lots of predefined methods which we can apply over collection objects.
  Eg:Collections.min(),Collections.max(),Collections.sort()

74.Describe the Collections type hierarchy ? What are the main interfaces ?

Collection:

- List
- Set

Map----doesnt come under collection,it is a separate interface in java

Hierarchy:

List:

- ArrayList
- LinkedList
- Vector

Set:

- Hashset
- LinkedHashSet
- Treeset

Map:

- HashMap
- LinkedHashMap
- Hashtable
- TreeMap
- ConcurrentHahMap

75.What is difference between set and List?

Set:

- It is a value based one.
- It prints in random order.
- It won't allow duplicates.

List:

- It is a Index based one.
- It prints in insertion order.
- It allow duplicates.

76.What is the difference between HashSet and TreeSet ?

HashSet:

- It prints in random order.

TreeSet:

- Treeset prints in ascending order

77.How to convert List into Set?

- By addAll() we can convert List into set.(all the elements in list will get added to set)

78.What is map?

- It is key and value pair.
- Here key+value is one entry.
- Key ignore the duplicate value and value allow the duplicates.

79.What is difference between Hash Map and Hash Table?

HashMap:

- Key allows single null.
- Asynchronised(not thread safe).

Hashtable:

- Key and value won't allow null.
- Synchronised(thread safe).

80.What is difference between set and Map?

Set:

- It is a value based one.
- It print in random order.
- It won't allow duplicates.

Map:

- It is key and value pair.
- Here key+value is one entry.
- Key ignore the duplicate value and value allow the duplicates.

81.Can we iterator the list using normal for loop?

- Yes,we can iterate the list using both normal and enhanced for loop.

82.What are the methods available in list But not in set?

- indexOf();
- get();
- lastIndexOf();

83.Explain about user defined Map?

- It is key and value pair.
- Here key+value is one entry.
- Key ignore the duplicate value and value allow the duplicates.

84.How much null allows in below maps:

- HashMap :k?,v?
- LinkedHashMap:k?,v?
- TreeMap :k?,v?
- HashTable :k?,v?
- HashMap :k-1 null,v- n null
- LinkedHashMap:k-1 null,v- n null
- TreeMap :k-ignore null,v- allow null
- HashTable :k-ignore null,v- ignore null

85.How to Iterate Map?

- We can iterate the map by using entrySet() method.

86.What is the return type of entrySet?

- Set<Entry<key,value>>

87.Write the methods to get the key only and value only?

- For key only keySet() method is used.
- For value only values() method is used.

88.What is mean by File? In which package it is available?

- File is a class and it is used to achieve the file operation.

- It is available in java.io package.

89.What are the methods available in File ?

- mkdir();
- mkdirs();
- list();
- createNewFile();
- isDirectory();
- isFile();
- isHidden();

90.While creating a file if we not mention the format then under which format it will save the file?

- If we do not mention the file format it will automatically take format as file.

91.What are the difference between append and updating the file?

For updating the file:

It will replace the old contents of the file.

For appending the file:

It will add the contents at the end of the file.

92.What is mean by Enumerator,Iteratorand List Iterator?

Enumeration:

- It is an interface used to iterate only legacy class or interface.
- Only iterates in forward direction

Iterator:

- It is an interface used to iterate the collection objects
- Only iterates in forward direction

List Iterator:

- It is an interface used for iterating list type classes
- iterates in forward as well as backward direction

93.Difference between Enumurator,Iterator and List Iterator?

Enumerator:

- applicable only for legacy class and interface
- no remove method is available.
- no Backward direction is possible

Iterator:

- It is an Interface used to iterate the collection objects
- remove method is available.
- no Backward direction is possible.

ListIterator:

- It is an interface used for iterating list type classes
- remove method is available.
- Backward direction is possible.

94.What are the methods available in Enumerator,Iteratorand List Iterator?

Enumerator Methods:

- hasMoreElements();
- nextElement();

Iterator Methods:

- hasNext();
- next();
- remove();

ListIterator Methods:

- hasNext();
- next();
- remove();
- hasPrevious();
- previous();

95.Explain JDBC connection steps?

- Import JDBC packages.
- Load and register the JDBC driver.
- Open a connection to the database.
- Create a statement object to perform a query.
- Execute the statement object and return a query resultset.
- Process the resultset.
- Close the resultset and statement objects.
- Close the connection.

96.What are control statement?

- Statement which has control over the loop or program is called control statements.
- Example:if,if else,for,while,dowhile etc

97.Different control statements available in java

Break:

- It is used to terminate the loop

Continue:

- It is used to skip the current iteration.

while and do while

While:

- It is entry check loop.

Do While:

- It is a exit check loop.

if and if else
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if
--

- executes only when the condition becomes true.

if else

- executes the else part when the condition becomes false and executes if part when condition becomes true.

98.Difference between immutable and mutable string

immutable and mutable string
==========

Immutable string:

- Once created,we cant change the value in memory
- In concatenation, it will create new memory

mutable string:

- After creation,we can modify the value in reference(memory)

- In concetanation, its takes same memory

99.Difference between Remove all() and Retain all

Remove all() and Retain all
==========

removeAll():

- removeAll() is a method , it is used to compare the 2 lists and remove all the common values

retainAll():

- retainAll() is a method, it is used to compare both lists and retains only the common values

100.Difference between Literal String and Non literal string

Literal String and Non literal string
==========

Literal String:

- In case of String duplicates,it will share the same memory address
- Its stored inside the heap memory(string pool or string constant).
- It share the memory if same value (duplicate value)

Non literal string:

- Even incase of String duplicates,it will have different memory address.
- It's stored in the heap memory.
- Its create a new memory every time even if it is a duplicate value(same value)

101.Difference between Heap and stack memory

Heap and stack memory
==========

Heap memory:

- Heap is used for dynamic memory allocation.
- Memory access is slow.

Static memory:

- Stack is used for static memory allocation.
- Variables allocated on the stack are stored directly to the memory and access will be very fast.

102.What is the default Package in java?

- java.lang

103.What are the difference between equals() & hashcode()?

equals:

- Used to compare the two string.

Hashcode:

- Used to return the address where it stored.

104.How can we make Array list As a synchronized?

- collections.SynchronisedList(refName of array);