**Overview**

* How to start learning Java
* Setting up the environment
* The Hello World Example (Practice)
* Java Naming Conventions
* JVM
* JVM Stack Area
* JVM Shutdown Hook
* Java Class File
* Differences between JDK, JRE and JVM
* Does JVM create object of Main class?
* How is Java platform independent?
* JDBC Drivers
* Is main method compulsory in Java?
* File names and class names
* How to run java class file which is in different directory?
* Microservices Introduction
* Using predefined class name as Class or Variable name in Java
* How do I become a good Java programmer?

**Basics**

* Java Identifiers
* Data types
* How to define our own data type in java(enum)
* Enum with Customized Value
* StringBuffer appendCodePoint() Method
* Variables
* Scope of Variables
* Final variables
* Bounded Type Parameters
* Loops in Java(Practice)
* For-each loop in Java
* For Loop in Java | Important points
* Decision Making(if, if-else, switch, break, continue, jump)(Practice)
* Switch Statement in Java(Practice)
* String in Switch Case in Java
* Forward declarations
* Widening Primitive Conversion
* Type conversion in Java
* Comments in Java
* Does Java support goto?
* Interesting facts about null in Java
* Using \_ (underscore) as variable name
* Currying Functions in Java with Examples
* Using underscore in Numeric Literals
* Binary search in Java
* Sorting in Java

**OOP concepts**

* Classes and Objects
* Java object storage
* Different ways to create objects in Java
* How to swap or exchange objects
* Inheritance in Java
* Encapsulation in Java
* Abstraction in Java
* Run-time Polymorphism in Java
* Association, Composition and Aggregation
* Access and Non-Access Modifiers in Java
* Access Modifiers
* this reference
* Method Overloading
* Output of Java program | Set 22 (Overloading)
* Method Overriding
* Output of Java program | Set 18 (Overriding)
* Understanding “static” in “public static void main” in Java
* Overloading or Overriding static methods
* Shadowing of static methods (Also called Method Hiding)
* Static methods vs Instance methods in Java
* Assigning values to static final variables in Java
* Covariant return types
* Object class
* Static class in Java
* Flexible nature of java.lang.Object
* Overriding equals method of Object class
* Overriding toString() method of Object class
* Instance Variable Hiding
* Static blocks in Java
* initializer block in java
* instance initializer block in java(non-static block)
* Static vs Dynamic Binding
* Why Java is not a purely Object-Oriented Language?
* Understanding Classes and Objects in Java

**Inheritance**

* Inheritance in Java
* Multiple Inheritance
* Why Java does’nt support Multiple Inheritance – The Diamond Problem
* Java Object Creation of Inherited Class
* Inheritance and constructors
* Interfaces and Inheritance
* Using final with Inheritance
* Accessing Grandparent’s member
* Override private methods
* More restrictive access to a derived class method in Java
* Parent and Child classes having same data member
* Object Serialization with Inheritance
* Referencing Subclass objects with Subclass vs Superclass reference
* Does overloading work with inheritance
* Output of Java Program | Set 20 (Inheritance)

**Operators**

* All Operators
* Bitwise operators in Java
* new operator
* Bitwise right shift operators
* Java instanceof operator and its applications
* Autoboxed Integer objects
* Addition and Concatenation
* Numeric Promotion in Conditional Expression

**Input and Output**

* Character Stream Vs Byte Stream
* DoubleStream mapToObj() in Java
* Command Line arguments
* Scanner Class
* Scanner and nextChar()
* Scanner vs BufferReader Class
* Formatted output
* Fast I/O for Competitive Programming
* Reading input from console

**Strings in Java**

* String Class(Practice)
* StringBuffer Class
* StringBuilder Class
* StringTokenizer class – Set 1, Set 2
* StringJoiner in Java8

**Implementations**:

* Initialize and Compare Strings
* String vs StringBuilder vs StringBuffer
* When to use StringJoiner over StringBuilder?
* Integer to String Conversions
* String to Integer– parseInt()
* Swap two Strings without using third variable
* Searching characters and substring in a String
* Compare two Strings in Java
* Reverse a string in Java (5 Different Ways)
* Remove Leading Zeros From String in Java
* Trim (Remove leading and trailing spaces) a string
* Counting number of lines, words, characters and paragraphs in a text file using Java
* Check if a string contains only alphabets in Java using Lambda expression
* Remove elements from a List that satisfy given predicate in Java
* Check if a string contains only alphabets in Java using ASCII values
* Check if a string contains only alphabets in Java using Regex

**Arrays in Java**

* Arrays in Java(Practice)
* Default Array values
* Util Arrays Class (Contains utility functions for Arrays)
* Reflect Array class in Java
* util.Arrays vs reflect.Array in Java
* Final arrays
* Interesting facts about Array assignment in Java
* Jagged Array
* Array IndexOutofbounds Exception
* Array vs ArrayList in Java

**Implementations**:

* Compare two arrays
* ArrayList to Array Conversion
* Merge arrays into a new object array in Java

**Stream in Java**

* Java Stream

**Implementations**:

* 10 Ways to Create a Stream in Java
* How to print elements of a Stream in Java 8
* Program to Iterate over a Stream with Indices in Java 8
* How to get ArrayList from Stream in Java 8

**Important Keywords**

* List of all Java Keywords
* Important Keywords in Java
* this keyword
* super Keyword
* static keyword
* final keyword
* final, finally and finalize in Java
* abstract Keyword
* transient keyword in Java
* volatile keyword in Java
* strictfp keyword

**Methods in Java**

* Methods
* Parameters passing
* Returning Multiple values
* Throwable fillInStackTrace() method in Java
* Valid variants of main()
* Variable Arguments (Varargs) method
* Method Overloading
* Different ways of Method Overloading in Java
* Method overloading and null error
* Method Overloading with Autoboxing and Widening
* Method Overloading and Ambiguity in Varargs
* Overloading main()
* Overriding equals method
* Overriding toString() method
* Private and final methods
* Java is Strictly Pass by Value
* Clone() method
* Remote Method Invocation
* Default Methods
* Passing and Returning Objects in Java
* Date after() method in Java
* System.exit() method

**Constructors**

* Constructors in Java
* Default constructor
* Assigning values to static final variables
* Copy Constructor
* Constructor Chaining
* Private Constructors and Singleton Classes
* **Java Interview Questions on Constructors**
* Singleton Class
* Constructor Overloading
* Output of Java Programs | Set 14 (Constructors)

**Exception Handling**

* Exceptions
* OutOfMemoryError Exception
* 3 Different ways to print Exception messages in Java
* flow control in try-catch-finally
* Types of Exceptions
* Catching base and derived classes as exceptions
* Checked vs Unchecked Exceptions
* Throw and Throws
* User-defined Custom Exception
* Infinity or Exception?
* Multicatch
* Chained Exceptions
* Null Pointer Exception
* Output of Java program | Set 12(Exception Handling)

**Interfaces and Abstract Classes**

* Interfaces
* Access specifier for methods in interfaces
* Access specifiers for classes or interfaces
* Abstract Classes
* Difference between Abstract Class and Interface in Java
* Comparator Interface
* Java Interface methods
* Nested Interface
* Nested Classes in Java
* Inner class in java
* Local Inner Class in Java
* Anonymous Inner Class in Java
* Functional Interfaces
* What is a Marker interface
* Questions on Abstract Classes and Interfaces
* Output of Java program | Set 15 (Inner Classes)
* Static method in Interface in Java
* Function Interface in Java with Examples

**Java Packages**

* Packages Introduction
* java.io package
* java.lang package
* java.util package

**Collection in Java**

* Collection:
* AbstractCollection
* Collections Class in Java
* Enumeration, Iterators and ListIterators
* Convert an Iterable to Collection in Java
* Using Iterators
* Iterator vs Foreach
* Types of iterator
* Creating Sequential Stream from an Iterator in Java
* Implementations:
* Output of Java Program | Set 13(Collections)
* Double Brace Initialization
* List:
* AbstractList
* AbstractSequentialList
* ArrayList (Practice)
* LinkedList
* Immutable List in Java (Guava)
* java.util.Concurrent:
* CopyOnWriteArrayList
* Implementations:
* Custom ArrayList in Java
* Java Collection| Difference between Synchronized ArrayList and CopyOnWriteArrayList
* Queue:
* **Implementations**:
  + Internal working of Set/HashSet
  + Merge two sets in Java
  + Disjoint Set Data Structures (Java Implementation)
  + Map:
  + EnumMap
  + HashMap
  + SortedMap
  + WeakHashMap
  + ImmutableMap (Guava)
  + LinkedHashMap
  + IdentityHashMap
  + Dictionary
  + java.util.Concurrent:
  + ConcurrentHashMap
  + Implementations:
  + Working of HashMap
  + Traverse through a HashMap in Java
  + Program to Convert HashMap to TreeMap in Java
  + HashTable
  + Stack
  + Vector

**Collection Interview FAQ’s**

* Vector vs ArrayList
* ArrayList vs LinkedList
* Comparable vs Comparator
* Differences between TreeMap, HashMap and LinkedHashMap
* HashMap vs HashTable
* Hashmap vs WeakHashMap in Java
* How to Synchronize ArrayList in Java
* ArrayList and LinkedList remove() methods
* How to Remove an element from ArrayList

**Java.nio**

* ByteBuffer methods in Java

**Java.Security**

* Signature methods in Java
* SecureRandom methods in Java
* KeyPairGenerator methods in Java
* KeyFactory methods in Java
* AlgorithmParameterGenerator methods in Java
* Provider methods in Java

**Multithreading**

* Multithreading
* Lifecycle and states of a thread
* Main thread
* Methods to prevent thread execution
* inter thread communication
* Java.lang.Thread class
* Start() function in multithreading
* Java Thread Priority
* Joining Threads in Java
* Naming a thread and fetching name of current thread in Java
* Synchronization
* Method and Block Synchronization
* Producer-Consumer solution
* Thread Pools in Java
* Semaphore in Java
* Java.util.concurrent.Semaphore class in Java
* CountDownLatch
* Deadlock in java
* Daemon thread
* Callable and Future in Java
* Runtime Class
* Output of Java program | Set 16 (Threads)

**Garbage Collection**

* Garbage Collection
* How to make object eligible for garbage collection in Java?
* Automatic Resource Management
* Output of Java programs | Set 10 (Garbage Collection)
* Iterator vs Collection in Java

**Wrapper Classes**

* Wrapper Classes in Java
* Primitive Wrapper Classes are Immutable in Java
* Number Class
* Integer class
* Byte class
* Short class
* Long class
* Float class
* Double class
* Boolean Class
* Character Class
* Autoboxing and Unboxing in Java

**Reflection in Java**

* Reflection in Java
* Method Class in Java
* Reflect Array class in Java
* util.Arrays vs reflect.Array in Java
* new operator vs newInstance()
* instanceof operator vs isInstance()

**File Handling**

* File class
* Ways of Reading a text file in Java
* file permissions in java
* Moving a file from one directory to another using Java
* Copying file using FileStreams
* Delete a file using Java
* Java program to delete duplicate lines in text file
* Java program to merge two files alternatively into third file
* Java program to List all files in a directory and nested sub-directories | Recursive approach
* Java program to delete certain text from a file
* Check if a File is hidden in Java
* Redirecting System.out.println() output to a file

**Java Tuple**

* Introduction
* Unit Class in JavaTuples
* Pair Class in JavaTuples
* KeyValue Class in JavaTuples
* Implement Pair Class with Unit Class in Java using JavaTuples

**Useful and/or Advanced Features**

* Generics
* Wildcards in Java
* Assertions
* Annotations
* Serialization and Deserialization
* Lambda Expressions – Java 8
* Stream
* BigInteger Class

**Networking in Java**

* Socket Programming
* Introducing Threads in Socket Programming in Java
* URL class in Java
* HttpURLConnection Class
* Reading from a URL using URLConnection Class
* Inet Address Class
* SHA-1 Hash In Java
* SHA-256 Hash in Java

**Java.Time Package**

* Clock Class in Java
* Duration Class in Java
* Joda
* LocalDate Class in Java
* LocalDateTime Class in Java
* LocalTime Class in Java

**Java.Lang Package**

* Boolean Class in Java
* Byte Class in Java
* Character Class in Java
* Character.Subset Class in Java
* Character.UnicodeBlock Class in Java
* Class Class in Java Set 1, Set 2
* Compiler Class in Java
* Double Class in Java
* Enum Class in Java
* Float Class in Java
* InheritableThreadLocal Class in Java
* Integer Class in Java
* Long Class in Java
* Math Class in Java Set 1, Set 2
* Number Class in Java
* Object Class in Java
* Package Class in Java
* Process Class in Java
* ProcessBuilder Class in Java
* Runtime Class in Java
* Short Class in Java
* StackTraceElement Class in Java
* StrictMath Class in Java Set 1, Set 2
* String Class in Java Set 1, Set 2
* StringBuffer Class in Java
* StringBuilder Class in Java
* System Class in Java
* Thread Class in Java
* ThreadGroup Class in Java
* ThreadLocal Class in Java
* Throwable Class in Java
* Void Class in Java

**Java.Math Package**

* BigDecimal Class in Java
* BigInteger Class in Java

**Simple Maven Project**

What is Maven

Some useful Libraries (Apache, Google)

Memory Management

Dealing with I/O (Streams, NIO)

Multithreading

**Useful Design patterns**

Working with Properties, YAML Files

What is Appserver (JBoss, Tomcat,Jetty)

Spring Modules

Spring Boot

**What is REST**

Some Useful Libraries (Jackson, Guava)

Spring + REST

Spring Batch

**Basics knowledge in DB**

Enterprise DBs

**What is Microservice**

Pros & Cons

Integration Patterns (Apache Camel)

Event Driven Architecture

Service Mesh (Istio)

**Testing**

Functional Testing types

Non - Functional Testing types

Test Automation

Jenkins / Sauce Lab / Sonar

**Enterprise Buzz Words**

What is Kafka

What is Spark

What is Redis

What is SOLR / Elastic

What is Vertx / GraphQL

Logging (Splunk, LogStash)

Monitoring (AppDynamics, Dynatrace, Grafana, Prometheus)