**Interview Questions**

**JAVA**

* What is random() class and how can we use it
* What is serializable and why random class implements serializable
* Diff between comparable and comparator
* What is static keyword. Why do we need that
* Can static variables/ methods be accessed through className
* Can non-static variables be accessed directly inside static methods
* Where static variables/methods memory is allocated
* What is static block. When is it gets executed
* Why/when do we need to give final keyword for variables, methods, classes
* Why/ when do we use abstract keyword(abstraction). Can we use it for classes, methods,variables
* Can abstract classes have normal methods. Can normal classes have abstract methods.
* Can we create an object for abstract classes.
* Can we give final and abstract for same class or method. If not why
* What is Singleton class in java. Why we need that. How to define that
* What is polymorphism. When do overriding of methods happen (run-time or compile-time polymorphism)
* What is inheritance. Can we extend two classes at same time (multiple inheritance). Why cant we do multiple inheritance.
* What is encapsulation. Why do have to do that.
* why do we need getter and setter methods in java when we can give variables as public( not private)
* What are data structures in java
* Difference between && and & operator? Compare
* using Boolean && and Boolean &
* What is wrong with Array, why List

**Collections framework:**

* Why collections . Advantages
* When are we using extends and implements keywords and why
* Which collection extends/implements which interface/class - hieararchy diagram of collection , Map , Object
* What are the common methods we use in collections& common exceptions we can get
* What is thread safety & synchronization under collections, classes and methods
* How to create a thread and how to start and run that thread
* What is runnable interface
* What is AtomicInteger / AtomicBoolean …. and why do we need those
* What is arrayList/ Advantages.
* How to create an ArrayList. How to add and get a value from arrayList
* What are generics and why do we have to add it. Is is mandatory to give generics
* What is virtual capacity and physical capacity in ArrayList. What is the default virtualCapacity value and can we change it?
* What are wrapper classes. Can we give normal int instead of wrapper class for generics
* What is autoboxing
* In how many ways u can print ArrayList (typical for loop, foreach, stream lambda, iterator)
* What is foreach loop and how to use that
* What are streams and advantages. Why they introduced streams
* What is lambda expression. How to write that
* Can we pass another ArrayList while declaring a ArrayList. How to do that
* How to add two arrays?. Add element at nth index?. Clear the Array?
* How to do Array cloning. Use of .contains, .indexOf, .lastIndexOf, .remove, .removeIf, .retainAll
* How to create new ArrayList using sublist of another Array
* How to change ArrayList to an Array
* How to remove duplicates from ArrayList using LinkedHashSet and using streams
* What is Synchronized Array List and how to create one
* When can we use synchronized keyword (explicit synchronization) for add, remove, fetching/update should we have to use explicit synchronized.
* What is copyOnWriteArrayList (class or interface?). How to write one
* LinkedList implements from?
* What are the three types of LinkedList. What are the internal working of Singly, Doubly and Circular LinkedList?
* Can we create our own LinkedList and how to create
* Why we need LinkedList and Advantages of LinkedList
* How to iterate LinkedList and using forEach. Use of add, AddAll, addFirst, addLast, remove, removeAll, removeFirst, removeLast, clear
* How to print in reverse order ( use of descendingIterator)
* How to sort the LinkedList directly (use of Collections.sort)
* What is Map interface? How to create a Map
* Different ways of Creating Map – Using HashMap, Using static way(static HashMap),immutable map with single entry(singleton Map), Creating two dimension array of String and collecting in the form of Map
* Diff ways of Creating of Map using .MapOf (in java jdk 9)
* What is HashMap and why we need it. Duplicates, Null values, key-value, Thread safe?
* HashMap hierarchy which class it extends to. And How is it connected to Map interface
* How does HashMap works internally?
* How to create a HashMap? How to iterate it?
* Can we use direct iterator with HashMap? Use of .keySet? How to loop it and get values?
* How to get pair of key,value from iterator? Use of .entrySet? How to loop it and get values?
* Using forEach to get key value pairs?. Use of .remove?
* How can you compare two HashMaps (use of .equals method)
* How to compare HashMaps if they have same keys?
* How to find extra keys when comparing two HashMaps?
* How to compare HashMaps if they have same values? (when duplicates are allowed and not allowed)
* How to convert HashMap to ArrayList
* What is LinkedHashMap
* Why do we need LinkedHashMap and diff between LinkedHashMap and HashMap
* Is HashMap synchronized? What is synchronized HashMap? How can we create synchronized HashMap
* What is concurrentHashMap? How it works internally (working of threads)? How to create concurrentHashMap?
* What is HashTable? Advantages of HashTable? How to create HashTable?
* How HashMap Works internally?
* What is treeMap? Advantages of TreeMap? How to create TreeMap?
* How TreeMap internally works?
* How treeMap sorting happens when we have Strings in key place and when we have numbers in key place.
* How to sort in reverse order of TreeMap? (use of Comparator.reverseOrder)
* Doubts while coding
* How to add two objects as a list directly like(List.of(course,course1))

**MultiThreading:**

* What is thread and multithreading
* Diff between process and thread, multiProcessess and multithreading (Is the application we create is a process)
* What are Thread class and runnable interface. Diff between them
* In how many ways you can create a thread. (creating thread using runnable and Thread. Which is better way)
* What is thread lifecycle. What are diff states in that.
* What are important thread methods
* Diff between run() and start() methods. Why & How to use getName(), setName(), sleep(), stop(), wait(), join(), getId(), interrupt()
* How main thread is linked to threads we created. What is work of main thread.
* What is synchronized keyword. Where do we give that. What happens when we use that.
* What is interThread communication. Check producer, consumer example
* What happens when we call wait() and notify() methods.
* What is Daemon Thread. Example of daemon thread
* How many maximum of threads can be created

**Spring**

* Why do we need spring framework? Advantages of Spring?
* What is dependency injection? Why do we need that?
* What is use of Spring container? Where do spring creates/ stores objects?
* Is spring container inside JVM? When does it gets created?
* What are the types of scopes for object creation?
* Explain singleton and prototype scopes? Bydefault Spring uses which Scope? how can we change the scope?
* Use of @Component? Use of @Scope?
* Use of @AutoWired? Why do we need Autowired annotation?
* When does object gets created in Spring container? (new Laptop() , @Component, @AutoWired)
* Advantages of dependency injection?
* What is maven? Why do we need it? Uses of maven?
* What is pom.xml. Can we have multiple pom.xml’s in a project?
* How can we do packaging when we have multiple pom.xml’s?
* How can we access other module classes when we have multiple modules in maven project?
* What is groupId and artifactId for project / any dependencies
* What is Scope in depencies of pom.xml? types of scopes?

**Spring MVC**

* Why Spring mvc? Advantages
* What is DIspatcherServlet? Why do we need web.xml? What and all will be there in that?
* What is @Controller and @RequestMapping annotations ? Why do we need that?
* How to redirect from controller method to another jsp page?
* How to send data from jsp to controller method? And how to fetch from java method to jsp page?
* What is expression language? How to use it in jsp?
* How can we configure java class instead of using web.xml and servlet.xml?
* What is @Configuration and @ComponentScan annotations? Why do we use them?
* What is webInitializer class? Why do we need it? How to give configure class and mapping “/” in this class file?
* How can we avoid giving .jsp ? What is internalViewResolver? How to add it in configure class?
* What is @Bean annotation in configure class
* Use of @RequestParam annotation?
* Use of @EnableWebMvc?

**Spring boot**

* What is spring?
* What is dependency injection?
* Why SpringToolSuite?
* What is Autowired annotation and relation with dependency injection?
* Where do u put index.jsp and how to display it
* Where do u put index.jsp and how to display it controller class?
* How to make tomcat to recognize jsp files (use of tomcat-jasper dependency)
* How to use application.properties to connect to database?
* How to config index.jsp file in properties file if we change its location
* How to send data to client/jsp page & get data from client(using HttpRequest and HttpResponse)
* How to send/receive data to client using ModelAndView
* How to configure H2 database (adding h2 dependency) and how to enable it
* How to open/use h2 database through browser and check
* Use of entity and id annotation
* How to make an interface as repository. Use of Crud repository
* Use of annotations like @Controller, @RequestMapping, @ResponseBody, @RestController,@PathVariable, @RequestParam
* Inbuilt methods for saving objects and getting all data through object
* How to get details based on other variables using inbuilt methods
* Using custom methods with custom queries (use of Query annotation)
* Inbuilt methods like findAll, findById etc…
* Use of postman. How to send data from postman(use of @PostMapping). Getting data to postman(use of GetMapping)
* Update data from postman (use of @PostMapping). Delete data through postman (use of @DeleteMapping)
* Use of getOne inbuilt method
* What is the default format of data returning from controller. How to return in Json format.
* How to send data in xml format also. (use of Jackson xml dependency). Will adding this make data to be sent in both json and xml fomat
* How to restrict data format if it is going in both json and xml formats/ multiple formats (use of consumes and produces)
* How to restrict in Postman to accept/send data in particular data.(use of headers in postman)\
* What is Spring Rest Api?
* Can we do the basic operations without controller. (use of JpaRepository and @RepositoryRestResource) how to use these
* How to request for all operations(get,post,put,delete) from postman when using RestApi

**Spring JPA**

* Can we
* How to

**JPA**

**Hibernate**

* What is persistant
* what is hibernate and why should we use it
* dependency needs to be added to make hibernate work
* what is the hibernate xml file used and what should we give in that
* how to add database connection through hibernate xml file
* what are Service Registry and addAnnotatedClass in hibernate
* how will hibernate connects to database (configuration,sessionfactory,beginTransaction,session……)
* diff between properties update and create and how to give in hibernate xml file
* can we display sql queries generated by hibernate and how
* use of entity annotation
* use of id annotation, is it mandatory
* use of Transient annotation
* annotations & properties used to change table name and column name of a table
* use of annotation embeddable
* what are hibernate relations and annotations used
* use of annotations OneToOne , OneToMany , ManyToOne, ManyToMany
* can we get rid of creating separate table while using nested objects
* What is default fetch type in hibernate and how can we change it (what is fetchType EAGER)
* What is hibernate caching
* What are 1st level and 2nd level cache in hibernate
* Which level cache is there bydefault in hibernate.
* What are the dependencies, properties in xml file, annotations to add for 2nd level cache in hibernate.
* Which 3rd party library supports 2nd level cache
* What is 2nd level cache with query and how to achive that. Property to add for this
* What is hql and why we need hql
* Main diff between sql query and hql query
* How to write hql query and execute it
* While fetching the data from query we use uniqueResult() and list() what is the diff between them
* What is the return type when using uniqueResult() & list()
* How to write hql select queries in hql and what is the return type when getting uniqueResult() and list(). How to display the returned data
* How to pass parameters into a hql query
* What are native queries. How to use sql queries directly in hql
* How to fetch and display the native queries in hql.
* What is addEntity and why to use it while executing native queries
* How to fetch the data when fetching few columns in a table. Why/How to use setResultTransformer
* What are hibernateObject states
* Diff between transient, persistant, detach and remove states
* When we set a value to object after save(), will it get updated into database
* Diff between get() and load() while fetching data
* Which one is best when it comes to exception handling
* What are nameQuery and namedQueries annotations. Why do we need those

**Spring boot MicroServices**

**SQL**

https://www.youtube.com/watch?v=a3ngELoA9h0&list=PLtPFQl\_0853oNyMPC2Fd0K1uW9x41KQn6

**Scala**

* What is scala. Why should we learn that and use it
* Is scala works with java. Is scala functional programming or object oriented programming
* Diff between functional programming or object oriented programming
* Diference between classes and objects in scala. Where should we write main method. Can we write main method in class.
* How to define a variable and methods in scala. Also when it is returning something
* How to write loops( for loop, forEach, while ) in scala. Use of until & to in for loop
* What is match expression and how to write that
* How to do filtering from for loop. Use of yield keyword
* Can we use x++, x--in scala
* How to create List, set , Map in scala. How to retrieve values from them
* Inheritance in scala. Can we achieve multiple inheritance in scala. If not how to achieve that
* What are abstract class, traits in scala. Diff between abstract class & traits. Diff between java Interface and scala traits.
* Can we use implements keyword in scala
* What are Higher order functions
* Function composition
* Lambda function
* Anonymous function
* Function currying
* Partially applied function
* Implicit parameters
* Nested functions
* Call by value & Call by name
* Closures
* Tuples
* Options