-------------------------------------- Testing --------------------------------------------------

Q. What is Waterfall Model?

Q. What is Spiral/Iterative Model?

Q. What is VV model?

* The V-Model, also known as the Verification and Validation model, is a type of
* Software Development Life Cycle (SDLC) model.
* Verification involves static analysis of documents by Review, Walkthrough and Inspection. Validation evaluates whether specified requirements are met.
* It is represented by a 'V shape' with 2 legs: left leg-development phases right leg-testing phases
* Phases: Requirement Analysis, Design, Implementation, Testing, Deployment, Maintenace.
* Used for safety critical systems.
* Testing is done parallelly in every stage.
* No feedback from customer so less scope of change.

Q. Verification and Validation?

* Verification is done before product is built while Validation is done after product is built.
* Verification involves static testing of documentation while Validation ensures that the specified requirements is met or not.
* Reviews, Walkthroughs and Inspection- Verification. Unit testing, Integration testing, System testing, User Acceptance testing- Validation

Q. Black Box testing?

* Examines external behaviour of application with considering internal logic.
* Knowledge of code is not required. Done by testers. Testing is done based on customer req.
* Ex: System testing

Q. What is system testing?

* System testing verifies the end-to-end behavior of a software application.
* Its goal is to identify errors, gaps, or missing requirements in the overall functionality of the software.
* Typically conducted after unit and integration tests are completed.
* Ex: Performance testing, Security testing, Usability testing, Compatibility testing.

Q. White Box testing?

* Examines internal logic and code of software.
* Requires knowledge of code. Done by developers.
* Ex: Unit and Integration testing.

Q. What is functional testing?

* It is a type of software testing where we check the functional requirements and specifications are met or not. It mainly involves Black Box Testing.
* Types of functional testing are Unit Testing, Smoke Testing, UAT, Integration testing, Regression testing.

Q. Functional vs Non functional testing?

* Functional testing focuses on what the product does while Non-Functional testing checks aspects like performance, reliability and scalability.
* Functional testing concentrates on user requirement while Non functional testing concentrates on user expectations.
* Functional testing takes place before Non functional testing.

Q. Examples of Non-Functional testing?

1. Performance testing- Load testing,stress testing, volume testing
2. Security testing- Penetration testing, Authentication testing, Authorization testing
3. Usability testing
4. Reliability testing
5. Compatibility testing- forward compatibility, backward compatibility and hardware compatibility.
6. Configuration testing
7. Recovery testing- Check system change from abnormal to normal.

Q.

1. Unit testing- A unit is a single component or module of a software. We check the functionality of this particular unit.
2. Smoke testing- Also known as Build Acceptance Testing. It checks if the build we received is stable or not and the most critical functions are working or not.
3. UAT
4. Integration testing- It checks whether different components are working together seamlessly or not. It checks communication between the different modules.
5. Re-Testing – Whenever a developer fixes a bug we will test the bug fix to see if it is working or not.
6. Sanity testing- It checks if the crucial feature and functionality of the application are working or not without going much deeper.
7. Globalization and Localization Testing
8. Regression testing- Testing is done on modified build to make sure that the existing functionality isn’t affected by these changes or modifications. Whenever a bug is fixed we must check that this fix has not affected the existing functionality.
   1. Unit Regression Testing- Testing only the changes or modifications made by the developers.
   2. Regional regression testing- Testing the modified module along with the affected modules
   3. Full Regression testing- Testing the main functionalities along with the other parts of the application.

Q. Smoke vs Sanity testing?

* Smoke testing checks if the software is stable or not. Sanity testing checks the crucial features of the application without going much deeper.
* Smoke testing is done by both developers and testers while Sanity testing is done only by testers.
* Smoke testing is done on initial builds and Sanity is done on stable builds.
* Smoke testing builds may be stable or not stable but Sanity testing builds are usually stable.

Q. What is performance testing?

1. Load testing- We gradually increase load of the application then check the speed of the application.
2. Stress testing- Suddenly increase load of the application then check speed of the application.
3. Volume testing- Check how much data our app can handle.

Q. Examples of Informal, Random testing?

1. Exploratory testing-
2. Adhoc testing
3. Monkey/Gorilla testing

Q. What is exploratory testing?

* We must explore the application. Understand it and then test it.

Q. What is Adhoc testing?

* We test the app randomly without any test cases or requirements. Tester should have previous knowledge of the application.

Q. What is Monkey/Gorilla testing?

* Testing the app randomly without any test cases or requirements. Tester has no previous knowledge of the application. Suitable for gaming applications.
* Positive testing: Testing app with valid inputs.
* Negative testing: Testing app with invalid inputs.

------------------------------------ Java -------------------------------------------------------

Q. What is a DESTRUCTOR in java

Q. What is lambda expression in java?

-> Used to represent instance of functional interface

-> Makes working with functional interface easier

->Functional interface is an interface which contains exactly

one abstract method. Blueprint from lambda expression.

Q.What is JVM?

JVM-> Java virtual machine

Q.What are the different types of variables?

* Local and Global variables are the 2 type of variables

Q.What are Non-primitive data types?

* Primitive are pre-defined and Non-Primitive data types are user defined

Q. Can you tell the Different Data types in Java along with its size?

1. byte- 1 byte
2. short, char- 2 byte
3. int, float- 4 byte
4. long, double- 8 byte

Q. What is the difference between float and double datatypes?

* Float- 6-7 decimal digits
* Double- 15-16 decimal digits

Q. What is the difference between an Integer and int in Java?

* int is primitive data type. Integer is non-primitive.
* Integer has a lot of built in methods while int does not. Ex:Integer.parseInt, toBinaryString()
* We can directly cast a String to Integer but not to int.
* Integer can be used with collections but int cannot.

Q.What is an Array?

* Array is a collection of similar data types.

Q. Is it possible to declare an Array without Array size?

* Yes we can declare array without size but we cannot initialize it without size.

Q.Can you write how to declare array? -> int[] arr, int arr[]

Q.When do you use BREAK statement in java?

Q.Explain super keyword in Java?

Q.What is the use of the final keyword?

Q.What is class?

Q.What is the base class of all classes?

Q.What is the purpose of THIS keyword?

Q.What do you mean by the Object in java?

Q.How many characteristics an Object possess? What are they?

Q.What are the different ways to create objects in Java?

Q.Explain ways to pass the arguments in Java?

Q.What is static variable in java?

Q.What is static block?

Q.What are Packages in Java?

* Collection of classes is a package.

Q.What is the abstraction in java?

Q.What do you mean by inheritance in java?

Q.What is a constructor?

Q.What are the different types of constructors?

Q.What is default and parameterized constructors?

Q.What is polymorphism in java?

Q.What do you mean by the method overloading?

* + Compile time polymorphism
  + Method with same name different parameters
  + Inheritance not always required.
  + Return type can be same but parameters can vary
  + int add(int x, int y), int add(int x,int y,int z)

Q. What do you mean by the method overriding in java?

* + Method with same name and parameter in parent and child class
  + Run time polymorphism
  + Inheritance is always required
  + Return type has to be same
  + toString(): We override toString() to provide a custom representation of data.

Q.What is an abstract class in Java?

Q.What is Interface in java?

Q.What is an implementation class of Interface?

Q.Describe constructor vs method?

Q.What are the differences between abstract class and interface?

Q.What are the differences between static and non-static methods?

Q. What is a wrapper class in Java?

* **wrapper class** is a class that encapsulates or wraps around a **primitive data type**. We can store primitive data types in object of wrapper class. Wrapper class allows us to convert primitive data type into objects. ArrayList, HashMap, Set only accepts objects so these are very useful.
* **Objects allow us to call methods like toString(), equals(), compareTo()**

Q. What is a path and classPath in Java?

* **path** is an **environment variable** used by the **operating system (OS)** to locate **executable files**.
* The **classpath** is an **environment variable** used by the **Java compiler** and the **Java Virtual Machine (JVM)**. It helps to locate and load Java Bytecode.

Q. What is Type casting in Java?

Typecasting is conversion of one data type into another. It is of 2 types.

* **Widening type casting** involves converting a **lower data type** into a **higher one**. It is done automatically by compiler. It is known as casting down or implicit conversion.

Ex: int to long

* **Narrowing type casting** involves converting a **higher data type** into a **lower one**. It is manually done by programmer. This known as explicit conversion or casting up.

Ex: long to int

Q. Explain the access modifiers that can be applied to the inner classes?

Q.What is the difference between Error and Exception?

Errors are usually caused by serious problems that are outside the control of the program, such as running out of memory or a system crash. Errors are represented by the Error class and its subclasses.Ex: StackOverflowError

Exceptions, on the other hand, are used to handle errors that can be recovered from within the program. Exceptions are represented by the Exception class and its subclasses. Ex: IOException

Q.What are the types of exceptions?

* **Checked Exceptions**: Must be explicitly handled (e.g., IOException, SQLException).
* **Unchecked Exceptions (Runtime Exceptions)**: Not required to be caught (e.g., NullPointerException, ArrayIndexOutOfBoundsException).

Q. What is throw keyword in exception handling?

Q. What is throws keyword?

* the throws keyword is used to declare exceptions in a method or constructor. It is mainly used to handle checked exception. Compiler forces us to handle checked exceptions explicitly.

Q.Difference between throw and throws in Java?

* Throws is used to declare exceptions that might be thrown by a method during execution. It has to identify the checked exceptions which the method might throw.
* Throw keyword is used to explicitly throw exceptions within the method body.

---------------------------------------- SQL -------------------------------------------

Physical data dependence-> ability to modify physical schema without modifying logical schema.

Instance-> Actual value of data at a point in time.

DDL-> Data Definition Language allow us to define the DB structure or schema. Ex: CREATE, ALTER, DROP, TRUNCATE

DML-> Data Manipulation Language is used for accessing and manipulating data. Also known as query language. Ex: SELECT, INSERT, UPDATE, DELETE

Superkey-> A key K is superkey of R if values of K are sufficient to uniquely identify every tuple of each possible reln.

Candidate Key-> Superkey K is a candidate key if there is no subset of K that can also uniquely identify every tuple of each possible reln.

Primary Key-> One of the candidate keys is selected to be a primary key.

Secondary keys-> All candidate keys that not selected as primary key

Composite Key-> Key consists of more than one attribute that can uniquely identify an entity.

Q. What is RDBMS?

Q. What is a schema? ->Logical way in which data is organized.

Q. List the different types of relationships in SQL.

* In a **one-to-one relationship**, each record in **Table A** corresponds to exactly one record in **Table B**. Ex: One person has only one aadhaar card.
* In a **one-to-many relationship**, one record in **Table A** is related to one or more records in **Table B**. Ex: Each customer can place multiple orders.
* In **many-to-one relationship-** multiple records in **Table A** are related to a single record in **Table B**. Ex: multiple employees report to single manager.
* In a **many-to-many relationship**, multiple records in **Table A** can be related to multiple records in **Table B**. Ex: Students can enroll in many courses in a university and courses can have many students.
* A **self-referencing relationship** occurs when a single table is involved. Ex: An employee can report to an employee in the same table.

Row is known as record and Column is known as Fields.

Q. What are tables and Fields?

Table is a structured collection of data store in a DabaBase.

Fields are known as columns which define the attributes of data stored in a table.

Q. What is a primary key?

* Superkey K is a candidate key if there is no subset of K that can also uniquely identify every tuple of each possible reln.
* One of the candidate keys is selected to be a primary key.

Q. What is a unique key?

* Maintains data integrity by preventing duplicate values.
* Ex: UNIQUE constraint

Q. What is a foreign key? -> An attribute in one table is a key for another table.

Q. What is the difference between CHAR and VARCHAR datatype in SQL?

* -> CHAR-Fixed length, Waste of space,We know max size of input, faster
* -> VARCHAR- Variable length, No waste of space, Slower

Q. What is a ‘constraint’?

* Set of rules that can be applied to the data within the table.

Ex: NOT NULL(column cannot have null value),

UNIQUE (Values in a Column cannot be duplicate)

PRIMARY KEY (NOT NULL, UNIQUE)

FOREIGN KEY

CHECK (ensure value in a col staisfy a specific condition)

Q. Explain the constraints available in SQL? ->

Q. What is the main reason to add constraints to a table? ->

Q. What is the difference between primary key and unique constraints?

Primary key uses both UNIQUE and NOT NULL

Q. What is an index?

* Index is used to enhance performance of a DB
* Index contains keys built from one or more columns
* Ex: Clustered Index, Non Clustered Index

Q. What is Auto Increment? ->

Q. What is the purpose of aggregate functions? ->

Q. Explain the aggregate functions available in SQL.

Aggregate functions are used to do operations from the values of the column and a single value is returned.

Ex: AVG(), COUNT(), FIRST(),LAST(), MAX(), MIN(), SUM()

Q. What are the scalar functions in SQL? Give an example?

* Scalar functions are a type of user-defined functions that return a single scalar value based on the input parameters passed to it. It takes one or more input values and returns a single value.
* Ex: UCASE(), LCASE(), MID(), LEN(), ROUND(), NOW(), FORMAT()

Q. What is the SELECT statement?

SELECT is used to retrieve data from DataBase.

Q. What is CLAUSE?

* Built in function that helps us fetch the required records from a DB table.
* Ex: WHERE, HAVING, SELECT, ORDER BY

Q. What are some common clauses used with SELECT query in SQL? ->

Q. Which SQL clause is used to restrict the rows returned by a query?

-> LIMIT

Q. Which clause should you use to exclude group results?

-> HAVING: filters grouped results based on aggregate function values

Q. Explain how GroupBy is used in query?

It groups rows together based on the values of one or more columns. It aggregates the data withing these rows.

Q. Diff b/w HAVING and WHERE?

* The WHERE clause filters individual rows before grouping.
* The HAVING clause filters grouped rows after aggregation.

Q. How “Having” clause will work? ->

Q. What is the relationship between Having & GroupBy clause ->

Q. Explain how OrderBy is used in query? ->

Q. Which operator is used in query for pattern matching? Explaing with examples ->

Q. What is the difference between BETWEEN and IN operators in SQL? ->

Q. Are NULL values same as blank space?

* NULL value is absence of any value
* Blank space is a character usually a whitespace character.

Q. What is a join?

Joins allow us to retrieve data from multiple tables by joining them.

Q. What is Inner Join? ->

Q. How “Outer Join” works? ->

Q. What is Full Join? ->

Q. What is Self-Join? In what situation you will use Self Join? ->

Q. What is a Natural Join?

A **natural join** in SQL combines rows from two or more tables based on the common columns names and types without explicitly defining them

Q. What is subquery? ->

Q. What are the types of subquery? ->

1. Scalar subquery: Returns a single value(one row and one col)
2. Multiple-Row subquery: Returns one or more rows.
3. Multiple-Column subquery: Returns one or more columns
4. Correlated Subqueries: References columns from the outer SQL statement. Executed once for each row in outer query.
5. Nested subquery: subquery withing another query.

Q. What are similarities between Subqueries & Joins?

Both subqueries and joins use data from 2 or more different tables.

Q. What are differences between Subqueries & Joins?

* JOIN: Combines records from 2 or more tables based on Specific condition. Used in FROM clause in a query.
* If it is omitted, then a Cartesian Product (cross join) is used.
* Ex: INNER JOIN, OUTER JOIN,LEFT JOIN, RIGHT JOIN.
* Faster than subqueries
* Less Readable
* SUBQUERIES: Also known as inner queries or nested queries.
* Returns data that is used as a condition to filter results from main query.

Q. What is the difference between DELETE and TRUNCATE commands? ->

DELETE is DDL. TRUNCATE is DML.

DELETE removes specific rows from table. TRUNCATE removes all rows from table.

WHERE can be used with DELETE but not with TRUNCATE.

Q. What is the difference between TRUNCATE and DROP statements?

Both are DDL operations.

DROP removes entire table while TRUNCATE removes all rows from table.

Q. What are Entities and Relationships? ->

Q. What is data Integrity? ->

Q. What is de-normalization, and when do you go for it? ->

Q. What is a Stored Procedure? ->

-------------------------------------- Selenium -------------------------------------------------

Q. What is selenium?

Q. Difference between click() and submit()?

* In both the case we have to find the selector of the submit button of the form. If the submit button is inside the form then we can use both .click() and .submit() but if the button is outside the form then we need to use .click() only.

Q. How many types of frameworks in selenium?

* Data driven framework
* Keyword driven framework
* Hybrid driven framework

Q. Why is selenium framework preferred for testing?

Q. Difference b/w driver.get() & driver.navigate().to()?

* to() internally calls the get() method.
* to() can accept URL and string type but get() can accept only string
* We can use navigate.forward() and navigate.back() with .to() but not with .get()

Q. What are the components of Selenium?

* Selenium is a powerful web browser automation tool. It consists of 4 major components:

1. 1) Selenium IDE: It is a complete integrated development environment for Selenium tests. It records and plays back a user’s actions while interacting with a web browser.
2. Selenium RC(Remote Control): Selenium RC is a server written in Java that accepts commands for the browser via HTTP. It enables writing automated tests for web applications in any programming language.
3. Selenium WebDriver: It is a web framework. It is used for browser automation. It is the successor to Selenium RC. Unlike Selenium RC, WebDriver directly starts a browser instance and controls it without requiring a special server.
4. Selenium Grid: It facilitates parallel execution of tests across multiple machines or browsers. Selenium grid works with WebDriver to execute tests remotely.

Q. What is Selenium IDE?

* + It is a complete integrated development environment for Selenium tests.
  + It records and plays back a user’s actions while interacting with a web browser

Q. What is Selenium WebDriver?

Q. How do you specify browser configurations with Selenium WebDriver?

* ChromeOptions class allows us to configure the behaviour of ChromeDriver.
* ChromeOptions options=new ChromeOptions()
* Options.addArguments(“--headless”)
* WebDriver driver=new ChromeDriver(options)

Q. Which web driver implementation is fastest?

* + HTMLUnitDriver is the fastest. It is a headless browser.
  + Out of Chrome, Firefox, Edge, etc ChromeDriver is the fastest.

Q. Can you show me one code example of setting Selenium Webdriver?

System.setProperty(“webdriver.chrome.driver”,”/User/……./chromedriver.exe”)

System.setProperty(“webdriver.gecko.driver”,”/User/……./geckodriver.exe”)

Q. What are all different element locators are available with Selenium?

-> By.classname()

-> By.id()

-> By.linkText()

-> By.partialLinkText()

-> By.name()

-> By.tagName()

-> By.xpath()

-> By.cssSelector()

Q. How to maximize the window using Selenium webdriver?

-> driver.manage().window().maximize()

Q. How do I clear content of a text box in Selenium webdriver?

* .clear()

Q. How to execute JavaScript function in Selenium webdriver?

-> JavascriptExecutor Interface has an executeScript() method which executes the desired

javascript function by passing it as an argument

-> org.openqa.selenium.JavascriptExecutor

-> JavascriptExecutor js=(JavascriptExecutor) driver;

-> js.executeScript(“arguments[0].click”,element);

-> Ex: .click(), .setAttribute (‘value’,’ john’), (window.scrollBy(0,3000), ”” )

Q. How to select a drop-down value using Selenium webdriver?

* + Select select=new Select(dropdown)
  + select.selectByVisibleText()
  + select.selectByValue()
  + select.selectByIndex()
  + List<WebElement> list=select.getOptions()

Q. Explain about select class and its methods?

Q. How to automate radio button in Selenium Webdriver?

Q. How do you submit a form using Selenium?

* submitButton.click() or submitButton.submit() if inside form

Q. difference between findElement and findElements methods?

Q. How to count total number of links in a page using Selenium Webdriver?

Q. How to capture page title using Selenium Webdriver?

* driver.getTitle()

Q. How to store Current page URL using Selenium Webdriver?

* driver.getCurrentUrl()

Q. How do you simulate browser back and forward?

* driver.navigate().forward()
* driver.navigate().back()

Q. What is the difference between single and double slash in Xpath?

Q. How to handle dynamic xpath?

Q. There is id, name, XPath, CSS locator, which one should I use?

Q. How to assert text of webpage using Selenium Webdriver?

Q. How to get element attribute using Selenium Webdriver?

Q. How to double click on element using Selenium Webdriver?

Q. How to perform drag and drop in Selenium Webdriver?

Q. How to synchronize application window and Selenium?

Q. Explain implicit and explicit wait ?

-> The Implicit Wait is used to tell the web driver to wait for an element to appear on a page for a certain amount of time before throwing a “No Such Element Exception.” Applied globally to all elements.

-> Explicit wait tells the driver to wait until a condition is true and throws TimeoutException on timeout. Can be applied specifically to each element.

Q. Is it possible to handle multiple windows in selenium?

Q. My application has lots of pop-up window, how do I work with them?

Q. How to mouse hover on an element?

Q. How to capture screen shot in webdriver?

Q. How do you connect Data base from selenium?

->

Q. How do you get the data from an excel sheet? \

-> FileInputStream to read data from file

-> XSSFWorkbook

-> XSSFSheet

-> XSSFRow

-> XSSFCell

->

->

Q. How do you get the data from a properties file?

Q. What are the types of automation framework?

Q. What is Data driven framework & Keyword Driven?

->

Q. What is Selenium Grid, How Selenium Grid works?

->

Q.What is the default Port Id in Grid?

->

Q. What is POM, what are the advantages of POM in selenium?

Q. What is Page Factory?

Q. What are the advantages of using TestNG?

Q. What are the basic annotations used to run TestNG tests in Selenium?

Q. What is the difference between @beforemethod and @beforeclass?

Q. How to run test cases with dependent in Selenium using TestNG?

Q. How to run the test cases in group in Selenium using TestNG?

Q. What is the default priority of a test method in TestNG?

Q. What is the importance of testng.xml file?

Q. How to pass parameters from testng.xml into test case

Q. What is the use of @Listener annotation in TestNG?

------------------------------------------------- BDD CUCUMBER ---------------------------------

Q. What is BDD? How does Behavioural Driven Development work?

Q. What is Cucumber? and list its advantages?

Q. What are the main files required to run a Cucumber test scenario?

Q. What is meant by a feature file?

Q. What are the various keywords that are used in Cucumber for writing a scenario?

Q. What is the purpose of a Scenario Outline in Cucumber?

Q. What is the purpose of the Step Definition file in Cucumber?

Q. What is the use of the Background keyword in Cucumber?

Q. What is meant by hooks in Cucumber?

Q. How do you run multiple scenarios in Cucumber?

-------------------------------------------------- GIT ---------------------------------------

Q. What is Git?

Q. What do you understand by the term ‘Version Control System’?

Q. Name a few Git commands with their function.

Q. What is the process for creating a repository in Git?

Q. What is the git push command?

-------------------------------------------------- MAVEN -----------------------------------------

Q. What is Maven Tool?

Q. Why should we use Maven?

Q. What is a Maven POM file?

Q. What are the repositories in Maven?

Q. What is a Maven dependency?

Q. What is the use of Maven clean?

------------------------------------- CI/CD and Jenkins ------------------------------------------------

Q. What is continuous integration and deployment?

Q. What are CI Tools?

Q. What is a CI CD pipeline?

Q. What is Jenkins?

Q. Why do we use Jenkins with selenium?

Q. How do you create a Job in Jenkins?

Q. How do you configure automatic builds in Jenkins?

---------------------------------------------- Apache POI -----------------------------------------------------

Q. What is Apache poi?

->Apache POI,  where POI stands for (Poor Obfuscation Implementation)  is an API that offers a collection of Java libraries that helps us to read, write, and manipulate different Microsoft files such as excel sheets, power-point, and word files.

Q. Difference between XLS and XLSX?

Q. What is workbook? Interface

Q. What are different interfaces in Apache POI?

Q. How to read and write data?