PUZZLES

You have a set of 3 light switches outside a closed door. One of them controls the light inside the room. With the door closed from outside the room, you can turn the light switches on or off as many times as you would like. You can go into the room - one time only - to see the light. You cannot see the whether the light is on or off from outside the room, nor can you change the light switches while inside the room. No one else is in the room to help you. The room has no windows. Based on the information above, how would you determine which of the three light switches controls the light inside the room?

Puzzle 1 : 9 cards are there. u have to arrange them in a 3*3 matrix. cards are of 4 colors.they are red,yellow,blue,green. conditions for arrangement: one red card must be in first row or second row.2 green cards should be in 3rd column. Yellow cards must be in the 3 corners only. Two blue cards must be in the 2nd row. Atleast one green card in each row.

Answer :

Yello	Red	Green
Blue	Blue	Green
Yellow	Green	Yellow

Puzzle 2 : In a soap company a soap is manufactured with 11 parts. For making one soap you will get 1 part as scrap. At the end of the day u have 251 such scraps. From that how many soaps can be manufactured?

Answer : 22 + 2+ 1 = 25.

Puzzle 3 : There are five thieves, each loot a bakery one after the other such that the first one takes 1/2 of the total no. of the breads plus 1/2 of a bread. Similarly 2nd, 3rd,4th and 5fth also did the same. After the fifth one no. of breads remained are 3. Initially how many breads were there?

Answer : 31

Puzzle 4 : Two candles of equal lengths and of different thickness are there. The thicker one will last of six hours. The thinner 2 hours less than the thicker one. Ramesh light the two candles at the same time. When he went to bed he saw the thicker one is twice the length of the thinner one. For how long did Ramesh lit two candles .

Answer : 3 hours

Puzzle 5 : There are 5 persons who have won top 5 places in an event Olympics one of them asks all the 5 regarding their positions they reply as a: I am not the last b: c is in third place c: e is behind a d: b is in 1st place e: d is not the first find positions in order.
Answer : bdcae

Puzzle 6 : If one tyre of a car suddenly gets stolen…. and after sometime u find the tyre without the screws how will u make ur journey complete?
Answer : Open 3 screws, 1 from each tyre and fix the tyre.

Puzzle 7 : How will you recognize the magnet & magnetic material & non-magnetic material?
Answer : Drag one piece of material over another. There is no attractive force in the middle portion of the magnet. OR Get a piece of thread and tie up with the one bar and check for poles. If it iron bar then it moves freely and if it is magnetic bar then it fix in one direction according to poles.

Puzzle 8 : You are given a cake; one of its corner is broken. How will u cut the rest into Two equal parts?
Answer : Slice the cake

Puzzle 9 : What is the height of room if after entering the room with a watch ur head strikes a hanging bulb?
Answer: Oscillate the hanging bulb. Calculate the time period for one complete oscillation by Simple Harmonic Motion (SHM) of the handing bulb. Put it in the
formula $T = 2 * 3.14 * (L/G)^{1/2}$

L will be the length of the hanging thread.
Add the L with ur height to get the height of the room.

OR
Drop it from the room and find the time at which it strikes the floor. Using physics formula $s = (at^2)/2$ (IM NOT SURE ABOUT THIS ONE)
Puzzle 10 : Can u make 120 with 5 zeros?
Answer : Factorial (factorial (0)+factorial (0)+factorial (0)+factorial (0)+factorial (0)) = 120

Puzzle 11 : There are three people A, B, C. Liars are of same type and Truth speaking people are of same type. Find out who is speaking truth and who is speaking false from the following statements:

a) A says: B is a liar.
b) B says: A and C are of same type.

Answer : lets assume A is speaking truth. It means B is a liar then it means A and C are not of same type.

Puzzle 12 : Ann, Boobie, Cathy and Dave are at their monthly business meeting. Their occupations are author, biologist, chemist and doctor, but not necessarily in that order. Dave just told the biologist that Cathy was on her way with doughnuts. Ann is sitting across from the doctor and next to the chemist. The doctor was thinking that Boobie was a goofy name for parent's to choose, but didn't say anything. What is each person's occupation?

Answer: Since Dave spoke to the biologist and Ann sat next to the chemist and across the doctor, Cathy must be the author and Ann the biologist. The doctor didn't speak, but David did, so Bobbie is the doctor and Dave the chemist.

13. You are given two candles of equal size, which can burn 1 hour each. You have to measure 90 minutes with these candles. (There is no scale or clock). Also u r given a lighter.
Ans: 1. First light up the two ends of the 1st candle. When it will burn out light up one end of the second candle.   (30+60=90)

14. Try the similar problem to measure 45 minutes.
Ans: First light-up the two ends of the 1st candle and one end of the 2nd candle.
When the 1st candle will burn out ,then light up the both ends of the 2nd candle (15+30=45)

15. How it is possible to place four points that are equidistance from each other?
OR
U r a landscape designer and your boss asked u to design a landscape such that you should place 4 trees equidistance from each other.
(Distance from each tree to the other must be same)
Ans: Only 3 points can be equidistant from each other. But if u place points in the shape of a pyramid then its possible

16. You are given a cake; one of its corner is broken. How will u cut the rest into Two equal parts?
Ans: Slice the cake
17. How will you recognize the magnet & magnetic material & non-magnetic material?
Ans: Drag one piece of material over another. There is no attractive force in the middle portion of the magnet. OR
Get a piece of thread and tie up with the one bar and check for poles. If it iron bar then it moves freely and if it is magnetic bar then it fix in one direction according to poles.
18. If one tyre of a car suddenly gets stolen.... and after sometime u find the tyre
without the screws how will u make ur journey complete?
Ans: Open 3 screws, 1 from each tyre and fix the tyre.
19. Color of bear.... if it falls from 1m height in 1s.
Ans: We get 'g' perfect 10 which is only in poles...hence polar bear...color White
20. How will you measure height of building when you are at the top of the building? And if you have stone with you.
Ans: Drop the stone and find the time taken for the stone to reach the ground. find height using the formula
s = a + gt (s = height, a= initial velocity=0, g=9.8m/s, t = time taken)

21. Can u make 120 with 5 zeros?

Ans: Factorial (factorial (0)+factorial (0)+factorial (0)+factorial (0)+factorial (0)) = 120

22.There are three people A, B, C. Liars are of same type and Truth speaking people are of same type. Find out who is speaking truth and who is speaking false from the following statements:

a)   A says: B is a liar.

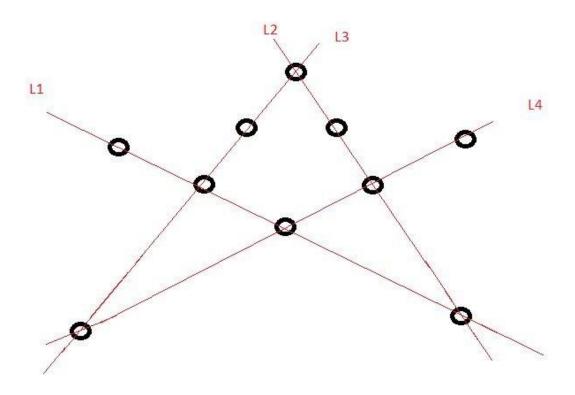b)   B says: A and C are of same type.

Ans: lets assume A is speaking truth. It means B is a liar then it means A and C are not of same type.

23. Value of (x-a)(x-b). . . . (x-z)

Ans: 0 as there's X-X term

24. With just six weights and a balance scale, you can weigh any unit number of kgs from 1 to 364. What could be the six weights?

25. **How do you cut a circular cake into eight equal pieces in just 3 cuts?**

26. You have 10 coins....arrange them in 4 straight lines such that each line contains 4 coins, without picking up the pencil.

27) If I remove one from eleven it becomes Ten and if i remove one from nine also becomes Ten. **How? (Hint: Roman numeral)**

28)

3 Baskets And 4 Balls Puzzle

Puzzle: You have 3 baskets and each basket contains exactly 4 balls, each balls is of the same size. Each ball is either red, black, yellow, or orange, and there is one of each color in each basket.
If you were blindfolded, and lightly shook each basket so that the balls would be randomly distributed, and then took 1 ball from each basket, what chance is there that you would have exactly 2 red balls?

Solution:
There are 64 different possible outcomes, and in 9 of these, exactly 2 of the balls will be red. There is thus a slightly better than 14% chance [(9/64)*100] that exactly 2 balls will be red.
A other way to solve the problem is to look at it this way.
There are 3 scenarios where exactly 3 balls are red:
1 2 3
———

R R X
R X R
X R R

X is any ball that is not red.

There is a 4.6875% chance that each of these situations will occur.

Take the first one, for example: 25% chance the first ball is red, multiplied by a 25% chance the second ball is red, multiplied by a 75% chance the third ball is not red. Because there are 3 scenarios where this outcome occurs, you multiply the 4.6875% chance of any one occurring by 3, & you get 14.0625%

Total Possible Outcomes: Box1(4 ways) x Box2(4 ways) x Box3(4 ways) = 64 total outcomes
Out of this 64 total outcomes there are 9 favourable outcomes where exactly 2 of the balls will be red.

R	R	X	=	3	chances	(R	R	B,	R	R	Y,	R	R	O)
R	X	R	=	3	chances	(R	B	R,	R	Y	R,	R	O	R)
X	R	R	=	3	chances	(B	R	R,	Y	R	R,	O	R	R)

Probablility =9/64 = 14.06 %

29) Mismatched Joe is in a pitch dark room selecting socks from his drawer. He has only six socks in his drawer, a mixture of black and white. If he chooses two socks, the chances that he draws out a white pair is 2/3. What are the chances that he draws out a black pair?

Answer

He   has   a   ZERO   chance   of   drawing   out   a   black   pair.

Since there is a 2/3 chance of drawing a white pair, then there MUST be 5 white socks and only 1 black sock. The chances of drawing two whites would thus be: 5/6 x 4/5 = 2/3 . With only 1 black sock, there is no chance of drawing a black pair.

30)

Pairs Of Blue, Brown And Black Socks

In your sock drawer, you have a ratio of 3 pairs of blue socks, 4 pairs of brown socks, and 5 pairs of black socks.

In complete darkness, how many socks would you need to pull out to get a matching pair of the same color?

Four Test Cases-Frequently Discussed in Interviews on Software Testing

Test Case – 1: Test Case for ATM

1) Insertion of ATM card with success.

2) Incorrect ATM Card Insertion – Leading to unsuccessful operation.

3) ATM Card of an invalid account – Leading to unsuccessful operation.

4) Successful feeding of ATM PIN Number.

5) Incorrect ATM PIN Number feeding 3 times - Leading to unsuccessful operation.

6) Selection of language of operation, with success.

7) Selection of Type of Bank Account with success.

8) Incorrect Bank Account type Selection in respect to the type of ATM Card inserted - Leading to unsuccessful operation.

9) Selection of withdrawal option with success.

10) Selection of Amount to be withdrawn with success.

11) Incorrect Currency denominations - Leading to unsuccessful operation.

12) Successful completion of withdrawal of money.

13) Amount to be withdrawn in excess of the available Balance - Leading to unsuccessful operation.

14) Shortage of Currency Notes in ATM - Leading to unsuccessful operation.

15) Amount to be withdrawn in excess of the daily withdrawal limit - Leading to unsuccessful operation.

16) ATM link to the Bank Server not available at the moment - Leading to unsuccessful operation.

17) Clicking of the Cancel button after inserting the ATM card - Leading to unsuccessful operation.

18) Clicking of the Cancel button after feeding the ATM PIN Number - Leading to unsuccessful operation.

19) Clicking of the Cancel button after selection of language of operation - Leading to unsuccessful operation.

20) Clicking of the Cancel button after selection of Type of Bank Account - Leading to unsuccessful operation.

21) Clicking of the Cancel button after selection of Amount of withdrawal - Leading to unsuccessful operation.

22) Clicking of the Cancel button after feeding the amount to be withdrawn - Leading to unsuccessful operation.

Test Case – 2: Test Case for a Cell Phone

1) Check the correct insertion of the Battery in the cell phone.

2) Check the proper operation of Switch ON and Switch OFF functions of the cell phone.

3) Check the correct insertion of the SIM Card in the cell phone.

4) Check the correct insertion of one contact name and phone number in the Address book.

5) Check the successful operation of the Incoming call.

6) Check the successful operation of the outgoing call.

7) Check the successful operation of sending and receiving of Short Messages.

8) Check the correct selection & display of all Numbers and special characters.

9) Check the successful deletion of contact name and phone number from the Address book.

10) Check the successful capturing of the home Network from the service provider.

11) Check the successful connectivity of the GPRS facility – if supported on the cell phone.

12) Check the successful connectivity of the EDGE facility – if supported on the cell phone.

Test Case – 3: Test Case for a Traffic Signal

1) Check the presence of three lights like Green, Yellow & Red on the traffic light post.

2) Check the switching sequence of the lights.

3) Check the defined time delay between the switching of lights of defined colors.

4) Check the possibility and accuracy of adjustment in defining the time delay between the switching of various lights depending upon the traffic density.

5) Check the switching ON of light of one color at one particular time.

6) Check the switching of lights from some type of sensor.

Test Case – 4: Test Case for an Elevator

1) Check the capability of Upward & Downward movement.

2) Check the proper stopping at each and every floor.

3) Check the stoppage exactly at the floor whose corresponding number is pressed.

4) Check the automatic upward movement when called by someone from some floor at higher level.

5) Check the automatic downward movement when called by someone from some floor at lower level.

5) Check the proper functioning of the wait function till Close button is pressed.

6) Check the automatic opening of the door in the event of someone trying to step in while the closing of the door is in progress.

7) Check the motion of the elevator without any jerks.

8) Check the load limit prescribed for the elevator – Warn if load limit exceeds.

9) Check the presence & proper functioning of auto descent facility in case of power failure.

10) Check the presence & proper functioning of the communication system in case of power failure.

11) Check the presence & proper functioning of the ventilation system provided.

12) Check the presence & proper functioning of the fire fighting system in case of emergency

Write test cases of fan?

There are numerous **test cases of** fan which are given below:

Test case 1: Check whether it moves or not.

Description: Ensure that fan should moves properly.

Expected result: Fan should be moving.

Test case 2: Check it should have minimum 3 blades.

Description: Ensure that length of fan blades should be considered to 3 blades.

Expected result: Length of fan blades should not be shorter than 3 blades.

Test case 3: Check it should be on when electric button (switch) is on.

Description: Ensure that fan should start working when electric switch is on.

Expected result: Fan should be on when electric button (switch) is on.

Test case 4: Check whether Speed of the fan definitely be controlled by the regulator.

Description: Ensure that speed of fan should be controlled.

Expected result: Fan speed should be controlled by the regulator.

Test case 5: Check it should be stop working once the electric switch off.

Description: Ensure that fan should stop working once the electric switch is off.

Expected result: Fan should be off once electric switch is off.

Test case 6: Check the proper "company name" should be displayed on fan or not.

Description: Always ensure that name of company should be properly displayed on fan.

Expected result; Proper name of company should be displayed on fan.

Test case 7: Check Fan should always work in **clock-wise direction**.

Description: Ensure that direction of fan should be in clock-wise.

Expected result: Fan should work in clock-wise direction.

Test case 8: Check the color of the fan blades.

Description: Always ensure that all the blades of fan have same color.

Expected result: Color of all the blades of fan should be of same color.

Test case 9: Check the fan during (while) in motion should not vibrate.

Description: Ensure that the fan during (while) in motion should not vibrate.

Expected result: Fan should not vibrate.

Test case 10: Check whether the blades should have decent distance from the ceiling.

Description: Ensure that fan blades should have decent distance from the ceiling.

Expected result: Fan blades should have decent distance.

Test case 11: Check the size of the fan blades.

Description: Always ensure that all the blades of fan have same size.

Expected result: **Size of all the blades** of fan should be of same size.

Test case 12: Check whether it operates in low voltage.

Description: Ensure that fan should properly operate in low voltage.

Expected result: Fan should be properly operated on low voltage.

Test case 13: Check whether speed varies when regulator adjusted.

Description: Ensure that **speed of fan varies** when we adjust the regulator.

Expected result: Speed of fan varies while adjusting the regulator.

Conclusion:

At end we conclude that above mentioned **test cases** are not based on any requirements or specifications. These **test cases** are without specifications and requirements.

SQL Interview Questions

Ques. What is database testing?

Ans. Database testing is checking the integrity of actual data in the front end with the data present in the database. It involves validating the data in the

database, checking that there are no orphan records (record with a foreign key to a parent record that has been deleted"), no junk records are present, updating records in database and verify the value in the front end.

Ques. What are the different types of SQL commands?

Ans. SQL commands are the set of commands used to communicate and manage the data present in the database. The different type of SQL commands are-

1. **DDL**-DDL refers to Data Definition Language, it is used to define or alter the structure of the database. The different DDL commands are-
    - CREATE - Used to create table in the database
    - DROP - Drops the table from the database
    - ALTER - Alters the structure of the database
    - TRUNCATE - Deletes all the records from the database but not its database structure
    -
    - RENAME - Renames a database object
2. **DML**-DML refers to Data Manipulation Language, it is used for managing data present in the database. Some of the DML commands are-select, insert, update, delete etc.
3. **DCL**-DCL refers to Data Control Language, these commands are used to create roles, grant permission and control access to the database objects. The three DCL commands-
    - GRANT - Grants permission to a database user

- o REVOKE - Removes access privileges from a user provided with the GRANT command
- o Deny - Explicitly prevents a user from receiving a particular permission(e.g. preventing a particular user belonging to a group to receive the access controls

4. **TCL**-TCL refers to Transaction Control Language, it is used to manage the changes made by DML statements. These are used to process a group of SQL statements comprising a logical unit.
   - o COMMIT - Commit write the changes to the database
   - o SAVEPOINT - Savepoints are the breakpoints, these divide the transaction into smaller logical units which could be further roll-backed.
   - o ROLLBACK - Rollbacks are used to restore the database since a last commit.

Ques. What are difference between having and where clause?

Ans. A 'where' clause is used to fetch data from database that specifies a particular criteria (specified after the where clause). Whereas a 'having' clause is used along with 'groupby' to fetch data that meets a particular criteria specified by the aggregate function. For example-

```
Emp_Project

-------------------------

|Employee| Project |
```

```
-------------------------
|A              | P1        |
|B              | P2        |
|C              | P3        |
|B              | P3        |
-------------------------
```

In the above query if we want to fetch Employee working in project P2, we will use 'where'   clause-

```
Select Employee from Emp_Project where Project = P2;
```
1

Now if we want to fetch Employee who is working on more than one project, for this we will first have to group the Employee column along with count of project and than the 'having' clause can be used to fetch relevant records-

```
Select Employee from Emp_Project groupby Employee having count(Project)>1;
```
1

Ques. Can we use 'where' clause with 'groupby'?

Ans. Yes, we can use 'where' clause with 'groupBy'. The rows that doesn't meet the where conditions are removed first and then the grouping is done based on the groupby column.

```
Emp_Project

--------------------------

|Employee| Project |

--------------------------

|A              | P1          |

|B              | P2          |

|C              | P3          |

|B              | P3          |

--------------------------
```

```
 SELECT Employee, Count(Project )
1FROM Emp_Project
2WHERE Employee != 'A'
3GROUP BY Project;
4
```

Ques. Write a query to rename a table name.

Ans. Rename oldTableName to newTableName

Ques. What is the difference between unique key and primary key?

Ans. A unique key allows null value(although only one) but a primary key doesn't allow null values. A table can have more than one unique keys columns while there can be only one primary key. A unique key column creates non-clustered index whereas primary key creates a clustered index on the column.

Ques. What is the difference between delete, truncate and drop command?

Ans.

- o Delete command is a DML command, it removes rows from table based on the condition specified in the where clause, being a DML statement we can rollback changes made by delete command.
- o Truncate is a DDL command, it removes all the rows from table and also frees the space held unlike delete command. It takes lock on the table while delete command takes lock on rows of table.
- o Drop is a DDL command, it removes the complete data along with the table structure(unlike truncate command that removes only the rows).

Ques. What are orphan records?

Ans. Orphan records are the records having foreign key to a parent record which doesn't exist or got deleted.

Ques. How can we remove orphan records from a table?

Ans. In order to remove orphan records from database we need to create a join on the parent and child tables and then remove the rows from child table where id IS NULL.

```
 DELETE PT
1FROM ParentTable PT
2LEFT JOIN ChildTable CT
3ON PT.ID = CT.ID
4WHERE PT.ID IS NULL
5
```

*Remember: Delete with joins requires name/alias before from clause in order to specify the table of which data is to be deleted.

Ques. What is a View in SQL?

Ans. A view is virtual table, it is a named set of SQL statements which can be later referenced and used as a table.

```
1CREATE VIEW VIEW_NAME AS
2SELECT COLUMN1, COLUMN2
3FROM  TABLE_NAME WHERE CONDITION;
```

Ques. What is the difference between cross join and full outer join?

Ans. A cross join returns cartesian product of the two tables, so there is no condition or on clause as each row of tabelA is joined with each row of tableB whereas a full outer join will join the two tables on the basis of condition specified in the on clause and for the records not satisfying the condition null value is placed in the join result.

Ques. Write SQL query to find the 3rd highest salary from table.

Ans. Solution 1- Using Top keyword (SQL Server)

```
SELECT TOP 1 Salary
FROM (
    SELECT DISTINCT TOP 3 Salary
    FROM Employee
    ORDER BY Salary DESC
    )
ORDER BY Salary ASC
```

Solution 2- Using limit clause-

```
SELECT Salary FROM Employee ORDER BY Salary DESC LIMIT 2,1;
1
```

Ques. Write SQL query to find the 3rd highest salary from table without using TOP/limit keyword.

Ans. The below SQL query make use of correlated subquery wherein in order to find the 3rd highest salary the inner query will return the count of till we find that there are two rows that salary greater than other distinct salaries.

```
SELECT Salary
1 FROM Employee Emp1
2 WHERE 2 = (
3               SELECT COUNT( DISTINCT ( Emp2.Salary ) )
4               FROM Employee Emp2
5               WHERE Emp2.Salary >= Emp1.Salary
6           )
7
```

Ques. Define the select into statement.

Ans. Select into statement is used to directly select data from one table and insert into other, the new table gets created with same name and type as of the old table-

```
SELECT * INTO newtable FROM oldTable;
1
```

TESTING QUESTIONS

Ques.1.   What   is   software   testing?

Ans. Software testing is evaluating a system to check if it satisfies the business requirement. It measures the overall quality of the system in terms of attributes like correctness, completeness, usability, performance etc.

Ques.2.   Why   is   Testing   required?

Ans. We need software testing for following reasons-

- Testing provides an assurance to the stakeholders that product works as intended
- Avoidable defects leaked to the end user/customer without proper testing adds bad reputation to the development company
- Separate testing phase adds a confidence factor to the stakeholders regarding quality of the software developed
- Defects detected earlier phase of SDLC results into lesser cost and resource utilisation of correction

- Saves development time by detecting issues in earlier phase of development
- Testing team adds another dimension to the software development by providing a different view point to the product development process

Ques.3.   When   should   we   stop   testing?

Ans. Testing can be stopped based on the following conditions -

1. On completion of all the scripted test cases.
2. Once the testing deadline is met.
3. When the code coverage reaches a certain threshold.

Ques.4.   What   is   Quality   Assurance?

Quality assurance is a process driven approach which checks if the process of developing the product is correct and conforming to all the standards.

Ques.5.   What   is   Quality   Control?

Ans. Quality control is product driven approach which checks that the developed product conforms to all the specified requirements.
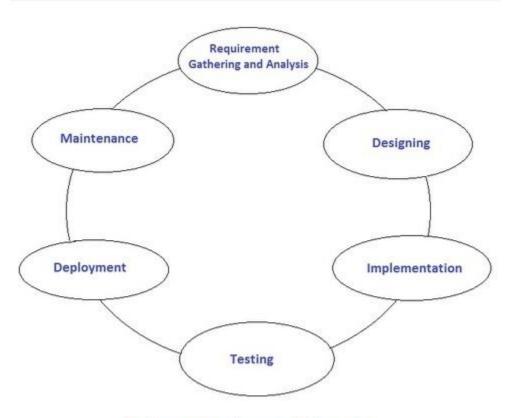
Ques.6.   What   is   validation?

Ans. Validation is the process of validating that the developed software product conforms to the specified business requirements. It involves dynamic testing of software product by running it.

Ques.7. What is verification?

Ans. Verification is the process of evaluating the artifacts of software development in order to ensure that the product being developed will comply to the standards. It is static process of analysing the documents and not the actual end product.

Ques.8. What is SDLC?

Ans. Software Development Life Cycle refers to all the activities that are performed during software development including- requirement analysis, designing, implementation, testing, deployment and maintenance phases.

Software Development Lifecycle

Ques.9. Explain STLC - Software Testing life cycle.
Software testing life cycle refers to all the activities performed during testing of a software product. The phases include-

- Requirement analyses and validation - In this phase the requirements documents are analysed and validated and scope of testing is defined.
- Test planning - In this phase test plan strategy is defined, estimation of test effort is defined along with automation strategy and tool selection is done.
- Test Design and analysis - In this phase test cases are designed, test data is prepared and automation scripts are implemented.
- Test environment setup - A test environment closely simulating the real world environment is prepared.
- Test execution - The test cases are prepared, bugs are reported and retested once resolved.
- Test closure and reporting - A test closure report is prepared having the final test results summary, learnings and test metrics.

Ques.10. What are the different types of testing?
Testing can broadly be defined into two types-

- **Functional testing** - In functional testing, the system is tested for validity of the functional specification or it involves validating the functionality of the system
- **Non Functional testing** - Non functional testing includes testing the non-functional requirements of the system like performance, security, scalability, portability, endurance etc.

Going by the way the testing is done, it can be categorized as-

- **Black box testing** - In black box testing, the tester need not have any knowledge of the internal architecture or implementation of the system. The tester interact with the system through the interface providing input and validating the received output.
- **White box testing** - In white box testing the tester analyses the internal architecture of the system as well as the quality of source code on different parameters like code optimization, code coverage, code reusability etc.
- **Gray box testing** - In gray box testing, the tester has partial access to the internal architecture of the system e.g. the tester may have access to the design documents or database structure. This information helps tester to test the application better.

Ques.11.   What   is   a   bug?
Ans. A bug is a fault in a software product detected at the time of testing, causing it to function in an unanticipated manner.

Ques.12.   What   is   a   defect?
Ans, A defect is non-conformance with the requirement of the product detected in production by the end user.

Ques.13.   What   is   alpha   testing?
Ans. Alpha testing is the testing done by a group of potential end users or some independent test team at the developer site.

Ques.14.   What   is   defect   density?

Ans. Defect density is the measure of density of the defects in the system. It can be calculated by dividing number of defect identified by the total number of line of code(or methods or classes) in the application or program.

Ques.15.   What   is   defect   priority?

Ans. A defect priority is the urgency of the fixing the defect. Normally the defect priority is set on a scale of P0 to P3 with P0 defect having the most urgency to fix.

Ques.16.   What   is   defect   severity?

Ans. Defect severity is the severity of the defect impacting the functionality. Based on the organisation we can different levels of defect severity ranging from minor to scritical or show stopper.

Ques.17. Give an example of Low priority-Low severity, Low priority-High severity, High priority-Low severity, High priority-High severity defects.

Ans.

1. **Low priority-Low severity** - A spelling mistake in a page not frequently navigated by users.
2. **Low priority-High severity** - Application crashing in some very corner case.
3. **High priority-Low severity** - Slight change in logo color or spelling mistake in company name.
4. **High priority-High severity** - Issue with login functionality.

Ques.18.   **What**   **is**   **a**   **blocker?**

Ans. A blocker is a bug of high priority and high severity. It prevents or blocks testing of some other major portion of the application as well.

Ques.19.   **What**   **is**   **a**   **critical**   **bug?**

Ans. A criticla bug is a bug that impacts a major functionality of the application and the application cannot be delivered without fixing the bug. It is different from blocker bug as it doesn't affect or blocks the testing of other part of the application.

Ques.20.   **What**   **is**   **a**   **test**   **plan?**

Ans. A test plan is a formal document describing the scope of testing, the approach to be used, resources required and time estimate of carrying out the testing process.

Ques.21.   **What**   **is**   **a**   **test**   **scenario?**

Ans. A test scenario is a high level documentation for a use case. A single test scenario can cater multiple test cases.

Ques.22.   **What**   **is**   **a**   **test**   **case?**

Ans. A test case is set of conditions with given pre-requisites, input values and expected results in a documented form which covers a particular test scenario.

Ques.23.   What   are   some   attributes   of   a   Test   case?

Ans. A test case can have following attributes-

1. TestCaseId - A unique identifier of the test case.
2. Test Summary - Oneliner summary of the test case.
3. Description - Detailed description of the test case.
4. Prerequisite or pre-condition - A set of prerequisites that must be followed before executing the test steps.
5. Test Steps - Detailed steps for performing the test case.
6. Expected result - The expected result in order to pass the test.
7. Actual result - The actual result after executing the test steps.
8. Test Result - Pass/Fail status of the test execution.
9. Automation Status - Identifier of automation - whether the application is automated or not.
10.   Date - The test execution date.
11.   Executed by - Name of the person executing the test case.

Ques.24.   What   are   some   Defect   Reporting   attributes?

Ans. Some of the attributes of a Defect resport are-

1. Defect Summary
2. Defect Description
3. Steps to reproduce
4. Expected Result
5. Actual Result
6. Defect Severity

Ques.25. **What is a test script?**

Ans. A test script is an automated test case written in any programming langauge.

Ques.38. What are the different levels of the testing?

Ans. Testing can be performed at different levels during the development process. Performing testing activities at multiple levels help in early identification of bugs. The different levels of testing are -

1. Unit Testing
2. Integration Testing
3. System Testing
4. Acceptance Testing

Ques.39. **What is unit testing?**

Ans. Unit testing is the first level of testing and it involves testing of individual modules of the software. It is usually performed by developers.

Ques.40. **What is integration testing?**

Ans. Integration testing is performed after unit testing. In integration testing we test the group of related modules. I aims at finding interfacing issues between the modules.

Ques.41. What are the different types of integration testing?

Ans. The different type of integration testing are-

1. Big bang Integration Testing - In big bang integration testing, testing starts only after all the modules are integrated.

2. Top-down Integration Testing - In top down integration, testing/integration starts from top modules to lower level modules.

3. Bottom-up Integration Testing - In bottom up integration, testing starts from lower level modules to higher level module up in the heirarchy.

4. Hybrid Integration Testing - Hybrid integration testing is the combination of both Top-down and bottom up integration testing. In this approach the integration starts from middle layer and testing is carried out in both the direction

For details check Integration testing.

Ques.42. What is stub?
Ans. In case of Top-down integration many a times lower level modules are not developed while beginning testing/integration with top level modules. In those cases Stubs or dummy modules are used that simulate the working of modules by providing hardcoded or expected output based on the input values.

Ques.43. What is driver?
Ans. In case of Bottom up integration drivers are used to simulate the working of top level modules in order to test the related modules lower in the heirarchy.

Ques.44. What is a test harness? Why do we need a test harness?
Ans. A test harness is a collection of test scripts and test data usually associated

with unit and integration testing. It involves stubs and drivers that are required for testing software modules and integrated components.

Ques.45.   What   is   system   testing?

Ans. System testing is the level of testing where the complete software is tested as a whole. The conformance of the application with its business requirements is checked in system testing.

Ques.46.   What   is   acceptance   testing?

Ans. Acceptance testing is a testing performed by the potential end user or customers to check if the software conforms to the business requirements and can be accepted for use.

Ques.47.   What   is   alpha   testing?

Ans. Alpha testing is a type of acceptance testing that is performed end users at the developer site.

Ques.48.   What   is   beta   testing?

Ans. Beta testing is the testing done by end users at end user's site. It allows users to provide direct input about the software to the development company.

Ques.49. **What** **is** **adhoc** **testing?**

Ans. Adhoc testing is an unstructured way of testing that is performed without any formal documentation or proper planning.

Ques.50. **What** **is** **monkey** **testing?**

Ans. Monkey testing is a type of testing that is performed randomly without any predefined test cases or test inputs.

Ques.51. How is monkey testing different from adhoc testing?

Ans. In case of adhoc testing although there are no predefined or documented test cases still testers have the understanding of the application. While in case of monkey testing testers doesn't have any understanding of the application.

Ques.52. **What** **is** **exploratory** **testing?**

Ans. Exploratory testing is a type of testing in which new test case are added and updated while exploring the system or executing test cases. Unlike scripted testing, test design and execution goes parallely in exploratory testing.

Ques.53. **What** **is** **performance** **testing?**

Ans. Performance testing is a type of non-functional testing in which the performance of the system is evaluated under expected or higher load. The various performance parameters evaluated during performance testing are - response time, reliability, resource usage, scalabilty etc.

Ques.54. **What** **is** **load** **testing?**

Ans. Load testing is a type of performance testing which aims at finding

application's performance under expected workload. During load testing we evaluate the response time, throughput, error rate etc parameters of the application.

Ques.55.   What   is   stress   testing?

Ans. Stress testing is a type of performance testing in which application's behaviuor is monitored under higher workload tehn expected. Stress testing is done to find memory leaks, robustness of the application as it is subjected to high workload.

Ques.56.   What   is   volume   testing?

Ans. Volume testing is a type of performance testing in which the performance of application is evaluated with large amount of data. It checks the scalability of the application and helps in identification of bottleneck with high volume of data.

Ques.57.   What   is   endurance   testing   or   Soak   testing?

Ans. Endurance testing is a type of performance testing which aims at finding issues like memory leaks when an application is subjected to load test for a long period of time.

Ques.58.   What   is   spike   testing?

Ans. Endurance testing is a type of performance testing in which the application's performance is measured while suddenly increasing the number of active users during the load test.

Ques.59.   What   is   usability   testing?

Ans. Usability testing is the type of testing that aims at determining the extent to which the application is easy to understand and use.

Ques.60.   What   is   Accessibility   testing?

Ans. Accessibility is the type of testing which aims at determining the ease of use or operation of the application specifically by with disabilities.

Ques.61.   What   is   compatibity   testing?

Ans. Testing software to see how compatible the software is with a particular environment - Operating system, platform or hardware.

Ques.62.   What   is   configuration   testing?

Ans. Configuration testing is the type of testing used to evaluate the configurational requirements of the software along with effect of changing the required configuration.

Ques.63.   What   is   localisation   testing?

Ans. Localisation testing is a type of testing in which we evaluate the application's customization(localized version of application) to a particular culture or locale. Generally the content of the application is checked for updation(e.g. content language).

Ques.64.   What   is   globalisation   testing?

Ans. Globalisation testing is a type of testing in which application is evaluated for its functioning across the world.

Ques.65. **What** **is** **negative** **testing?**

Ans. Negative testing is a type of testing in which the application's robustness(graceful exiting or error reporting) is evaluated when provided with invalid input or test data.

Ques.66. **What** **is** **security** **testing?**

Ans. Security testing is a type of testing which aims at evaluating the integrity, authentication, authorization, availabilty, confidentiality and non-repudation of the application under test.

Ques.67. **What** **is** **penetration** **testing?**

Ans. Penetration testing or pen testing is a type of security testing in which application is evaluated(safely exploited) for different kinds of vulnerabilities that any hacker could expolit.

Ques.68. **What** **is** **robustness** **testing?**

Ans. Robustness testing is a type of testing that is performed to find the robustness of the application i.e. the ability of the system to behave gracefully in case of erroneous test steps and test input.

Ques.69. **What** **is** **A/B** **testing?**

A/B testing is a type of testing in which the two variants of the software product are exposed to the end users and on analysing the user behaviour on each variant the better variant is chosen and used thereafter.

**Ques.70.		What		is		concurrency		testing?**

Ans. Concurrency testing is a multi-user testing in which an application is evaluated by analyzing application's behaviour with concurent users acccessing the same functioanity.

**Ques.71.		What		is		all		pair		testing?**

Ans. All pair testing is a type of testing in which the application is tested with all possible combination of the values of input parameters.

**Ques.72.		What		is		failover		testing?**

Ans. Failover testing is a type of testing that is used to verify application's ability to allocate more resources(more servers) in case of failure and transfering of the processing part to back-up system.

**Ques.73.		What		is		fuzz		testing?**

Ans. Fuzz testing is a type of testing in which large amount of random data is provided as input to the application in order to find security loopholes and other issues in the application.

**Ques.74.		What		is		UI		testing?**

Ans. UI or user interface testing is a type of testing that aims at finding Graphical User Interface defects in the application and checks that the GUI conforms to the specifications.

Ques.75.   What   is   risk   analysis?

Ans. Risk analysis is the analysis of the risk identified and assigning an appropriate risk level to it based on the impact of the risk over the application.

SQL query to find second maximum salary of Employee

In this section we will write SQL query to get second highest salary of Employee. Before writing query its good to be familiar with schema as well as data in table. Here is the Employee table we will be using this SQL example:

```
mysql> SELECT * FROM Employee;
+--------+-----------+---------+--------+
| emp_id | emp_name  | dept_id | salary |
+--------+-----------+---------+--------+
| 1      | James     | 10      |   2000 |
| 2      | Jack      | 10      |   4000 |
| 3      | Henry     | 11      |   6000 |
| 4      | Tom       | 11      |   8000 |
+--------+-----------+---------+--------+
4 rows IN SET (0.00 sec)
```

If you look data, you will find that second maximum salary in this case is 6000 and employee name is Henry. Now let's see some SQL example to find out this second maximum salary.

Second maximum salary using sub query and IN clause

Sub queries in SQL are great tool for this kind of scenario, here we first select maximum salary and then another maximum excluding result of subquery. To learn more about Subquery see correlate and non-correlate subquery in SQL

```
mysql> SELECT max(salary) FROM Employee WHERE salary NOT IN (SELECT max(salary) FROM E
mployee);
+-------------+
| max(salary) |
+-------------+
|        6000 |
+-------------+
1 row IN SET (0.00 sec)
```

Here is another SQL query to find second highest salary using subquery and < operator instead of IN clause:

```
mysql> SELECT max(salary) FROM Employee WHERE salary < (SELECT max(salary) FROM Employ
ee);
+-------------+
| max(salary) |
+-------------+
|        6000 |
+-------------+
1 row IN SET (0.00 sec)
```

Both of above SQL example will work on all database including Oracle, MySQL, Sybase and SQL Server as they are written using standard SQL keywords. But sometime you can also use database specific features like TOP keyword of SQL Server or Sybase database to find out second highest salary of Employee.

Second highest salary using TOP keyword of Sybase or SQL Server database

TOP keyword of Sybase and SQL Server database is used to select top record or row of any result set, by carefully using TOP keyword you can find out second maximum or Nth maximum salary as shown below.

```
SELECT TOP 1 salary FROM ( SELECT TOP 2 salary FROM employees ORDER BY salary DESC) AS
 emp ORDER BY salary ASC
```

Here is what this SQL query is doing : First find out top 2 salary from Employee table and list them in descending order, Now second highest salary of employee is at top so just take that value. Though you need to keep in mind of using distinct keyword if there are more than one employee with top salary, because in that case same salary will be repeated and TOP 2 may list same salary twice.

Second maximum salary using LIMIT keyword of MYSQL database

LIMIT keyword of MySQL database is little bit similar with TOP keyword of SQL Server database and allows to take only certain rows from result set. If you look at below SQL example, its very much similar to SQL Server TOP keyword example.

```
mysql> SELECT salary
 FROM (SELECT salary FROM Employee ORDER BY salary DESC LIMIT 2) AS emp ORDER BY salar
y LIMIT 1;
+--------+
| salary |
+--------+
|   6000 |
+--------+
1 row IN SET (0.00 sec)
```

That's on How to find second highest salary of Employee using SQL query. This is good question which really test your SQL knowledge, its not tough but definitely tricky for beginners. As follow up question you can ask him to find third maximum salary or Nth maximum salary as well.

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