Cognizant Technical Assessment Round – By Durgesh StudyHub

💻 **Cognizant Technical Assessment Round (GenC Pattern)**

This round tests your **technical and programming knowledge**, and it is the **key step** before the interview stages.
It's generally conducted **online via AMCAT or Superset** and contains **MCQs and coding-based questions** depending on your cluster.

Assessment Overview

Component	Details
Type	Online Technical MCQs (and coding)
Duration	120 minutes
Format	Multiple choice + Coding questions
Difficulty Level	Easy to Moderate
Language Choice	C / C++ / Java / Python
Purpose	To test your understanding of programming, databases, and problem-solving

🧠 Cognizant's "3 Technical Clusters"

Cognizant divides the **technical assessment** into three **skill clusters** that reflect different roles and technology areas.

Cluster	Focus Area	Common Topics
Cluster 1	Programming Fundamentals	C, C++, Java, Python, OOPs, DSA basics
Cluster 2	Database & Web Technologies	SQL, DBMS, HTML, CSS, JavaScript, OS
Cluster 3	Emerging Technologies	Cloud, AI-ML basics, Data Analytics, DevOps, SDLC, Cybersecurity

Cluster 1 – Programming Fundamentals

This is the **most important cluster** — it tests your ability to write, debug, and analyze code.

◇ Key Topics

Programming Basics

- Data types, variables, constants
- Input/Output
- Operators and precedence
- Conditional statements (`if, switch`)
- Loops (`for, while, do-while`)

◇ Functions and Recursion

- Function definition and calling
- Parameter passing
- Recursive vs iterative logic

◇ Arrays & Strings

- 1D and 2D arrays
- String manipulation (`strlen, strcmp`, etc.)
- Sorting and searching

◇ *Object-Oriented Concepts*

- Class, object, constructor, destructor
- Inheritance and polymorphism
- Encapsulation and abstraction
- Method overloading / overriding

◇ *Data Structures (Basic)*

- Stack, Queue (implementation logic)
- Linked List (conceptual)
- Time complexity (Big O basics)

◇ *Sample Questions*

1. What is the output of the following code snippet?
2. Which of the following is a valid constructor in C++?
3. What is the time complexity of linear search?
4. Predict the output of recursive functions.

◈ *Example Coding Problem*

Write a program to reverse a string without using the reverse() function.

Cluster 2 – Database and Web Technologies

This cluster checks if you understand how web applications and databases work together.

◇ **Key Topics**

📇 *Database Management (SQL/DBMS)*

- Keys (Primary, Foreign, Composite)
- Normalization (1NF, 2NF, 3NF)
- Joins (INNER, LEFT, RIGHT)
- SQL Queries (SELECT, UPDATE, DELETE, GROUP BY, HAVING)
- Aggregate Functions (SUM, COUNT, MAX, AVG)

Example Question:

Write an SQL query to find the second highest salary from the Employee table.

🌐 Web Technologies

- **HTML:** Tags, attributes, forms, tables, hyperlinks
- **CSS:** Styling elements, selectors, inline vs internal vs external CSS
- **JavaScript:** Variables, loops, functions, DOM manipulation
- **Responsive Design:** Basic understanding of mobile-friendly layouts

Example Question:

Which HTML tag is used to create a hyperlink?

☑ `<a href="...">`

@ Operating System Basics

- Process vs Thread
- Scheduling Algorithms
- Deadlock
- Memory Management
- File Handling

⚙ Software Engineering & SDLC

- Waterfall, Agile models
- Requirement Analysis
- Testing & Deployment concepts

🤖 Cluster 3 – Emerging Technologies

This cluster focuses on **modern IT concepts** and real-world applications — useful for advanced or "digital" roles.

◇ Key Topics

☁ Cloud Computing

- What is Cloud?
- IaaS, PaaS, SaaS
- Public, Private, Hybrid clouds
- AWS, Azure, or Google Cloud basics

🤖 Artificial Intelligence & Machine Learning

- What is AI, ML, and Data Science?
- Supervised vs Unsupervised Learning
- Examples of ML algorithms (Linear Regression, Decision Tree)
- Real-world applications (Chatbots, Face Recognition)

🔒 Cybersecurity

- Authentication, Encryption, Firewall, VPN
- Phishing, Malware basics

⚙️ DevOps

- CI/CD, Jenkins, Docker, Git
- Benefits of automation

📊 Data Analytics

- Data visualization basics (Tableau, Power BI)
- Python libraries (NumPy, Pandas) – conceptual level

Format of the Technical Assessment (Typical Pattern)

Section	No. of Questions	Difficulty	Type
Programming Logic	15–20	Easy–Moderate	MCQ
Database / SQL	10	Moderate	MCQ
Web / Emerging Tech	10	Easy	MCQ
Debugging / Coding	2	Moderate	Coding (Automata Fix style)

CLUSTER 1: Programming Concepts (C, C++, Java, Python, OOPs)

1. Which of the following is not a valid variable name in C?
   a) *temp b) total3 c) 3total d) total*
   Answer: c) 3total

2. The keyword used to define a function in Python is:
   a) func b) define c) def d) function
   Answer: c) def
3. In C++, which feature allows function names to be reused with different arguments?
   a) Inheritance b) Encapsulation c) Function Overloading d) Polymorphism
   Answer: c) Function Overloading
4. What is the default return type of a function in C if not specified?
   a) void b) int c) float d) undefined
   Answer: b) int
5. Which concept is shown by the statement `class A: public B` in C++?
   a) Abstraction b) Inheritance c) Polymorphism d) Encapsulation
   Answer: b) Inheritance
6. What is the output of:

```
x = [1,2,3]
print(x*2)
```

   a) [2,4,6] b) [1,2,3,1,2,3] c) Error d) [1,4,9]
   Answer: b) [1,2,3,1,2,3]

7. Which of the following is not a Java keyword?
   a) static b) Integer c) final d) super
   Answer: b) Integer
8. In Java, which operator is used to compare two objects?
   a) == b) equals() c) compare() d) compareTo()
   Answer: b) equals()
9. Which of the following is used to handle exceptions in Python?
   a) try-except b) if-else c) switch-case d) catch
   Answer: a) try-except
10. Which function is automatically invoked when an object is created in C++?
    a) Constructor b) Destructor c) Initializer d) Allocator
    Answer: a) Constructor
11. What is encapsulation?
    a) Binding data and methods
    b) Reusing existing code
    c) Overriding base class methods
    d) Hiding implementation
    Answer: d) Hiding implementation
12. Python uses which memory management technique?
    a) Manual allocation
    b) Garbage collection
    c) Reference counting
    d) Paging
    Answer: b) Garbage collection
13. Which OOP concept allows objects to behave differently for the same function call?
    a) Abstraction b) Encapsulation c) Polymorphism d) Inheritance
    Answer: c) Polymorphism
14. In C, which operator has the highest precedence?
    a) ++ b) * c) && d) =
    Answer: a) ++

15. What is the size of `int` in Java?
    a) 2 bytes b) 4 bytes c) 8 bytes d) Depends on OS
    Answer: b) 4 bytes
16. What will `print(2 ** 3 ** 2)` output in Python?
    a) 512 b) 64 c) 16 d) 256
    Answer: a) 512
17. Which of the following is a valid C data type?
    a) byte b) bool c) int d) number
    Answer: c) int
18. What is the output of `len("Cognizant")`?
    a) 9 b) 8 c) 10 d) Error
    Answer: a) 9
19. Which concept hides data from external access?
    a) Abstraction b) Encapsulation c) Inheritance d) Polymorphism
    Answer: b) Encapsulation
20. Which loop is guaranteed to run at least once?
    a) while b) for c) do-while d) foreach
    Answer: c) do-while
21. Which function is called when an object goes out of scope?
    a) Constructor b) Destructor c) Finalizer d) Terminate
    Answer: b) Destructor
22. What will be printed?

```
x = "123"
print(int(x) + 1)
```

    a) 1231 b) 124 c) Error d) 123
    Answer: b) 124

23. What is the output of `print(3>2>1)`?
    a) True b) False c) Error d) None
    Answer: a) True
24. In Java, `System.out.println()` is used for:
    a) Input b) Output c) Exception handling d) Threading
    Answer: b) Output
25. In Python, lists are:
    a) Immutable b) Mutable c) Constant d) Tuple-like
    Answer: b) Mutable
26. The process of deriving one class from another is called:
    a) Polymorphism b) Inheritance c) Abstraction d) Overriding
    Answer: b) Inheritance
27. Which of the following is used for comments in Python?
    a) // b) # c) /* */ d) --
    Answer: b) #
28. Which of these is an entry-controlled loop?
    a) for b) do-while c) Both a and b d) None
    Answer: a) for
29. Which keyword is used to inherit a class in C++?
    a) implement b) derive c) extends d) :
    Answer: d) :

30. The concept of reusability is achieved through:
    a) Encapsulation b) Inheritance c) Polymorphism d) Abstraction
    Answer: b) Inheritance
31. Which of these is a feature of OOP?
    a) Modularity b) Global variables c) Pointers d) None
    Answer: a) Modularity
32. What is the extension of Python files?
    a) .pt b) .pyt c) .py d) .pyth
    Answer: c) .py
33. What is the output of:

```
print("a" * 3)
```

    a) a3 b) aaa c) Error d) 3a
    Answer: b) aaa

34. What is used to define constants in C?
    a) const b) define c) #define d) static
    Answer: c) #define
35. Which of the following is true about constructors?
    a) Have return type
    b) Called automatically
    c) Declared static
    d) Must be virtual
    Answer: b) Called automatically
36. What does `self` refer to in Python?
    a) Object b) Class c) Instance d) Both a and c
    Answer: d) Both a and c
37. The function that ends the program in C is:
    a) end() b) stop() c) exit() d) terminate()
    Answer: c) exit()
38. Which is not a valid C operator?
    a) sizeof b) -> c) === d) %
    Answer: c) ===
39. What is inheritance in OOP?
    a) Hiding data b) Reusing properties of another class
    c) Overriding base methods d) Implementing interfaces
    Answer: b) Reusing properties of another class
40. Python supports which type of typing?
    a) Static b) Dynamic c) Weak d) Manual
    Answer: b) Dynamic
41. Which is used to allocate memory dynamically in C?
    a) malloc() b) new c) create() d) alloc()
    Answer: a) malloc()
42. What is the use of `super` keyword in Java?
    a) Access parent class members
    b) Call static methods
    c) Overload a function
    d) Create multiple objects
    Answer: a) Access parent class members

43. Which of these is an immutable type in Python?
    a) List b) Set c) Tuple d) Dictionary
    Answer: c) Tuple
44. Which concept is achieved using abstract classes?
    a) Encapsulation b) Polymorphism c) Abstraction d) Inheritance
    Answer: c) Abstraction
45. The `continue` statement is used to:
    a) Skip iteration b) Exit loop c) Terminate function d) Restart program
    Answer: a) Skip iteration
46. Which function converts string to integer in C?
    a) stoi() b) atoi() c) parseInt() d) int()
    Answer: b) atoi()
47. What is the output of:

```
print(type([]))
```

    a) list b) dict c) tuple d) set
    Answer: a) list

48. In Java, which of these is a valid access modifier?
    a) private b) package c) closed d) none
    Answer: a) private
49. Which concept allows one interface, multiple methods?
    a) Abstraction b) Polymorphism c) Encapsulation d) Overloading
    Answer: b) Polymorphism
50. Which method is called first when a program executes in Java?
    a) start() b) run() c) main() d) init()
    Answer: c) main()

CLUSTER 2: Database Management System (DBMS) & SQL – 50 MCQs

1. SQL stands for:
   a) Structured Query Language
   b) Simple Query Language
   c) Sequential Query Language
   d) Standard Query Language
   Answer: a) Structured Query Language
2. Which SQL command is used to remove a table from a database?
   a) DELETE b) DROP c) REMOVE d) CLEAR
   Answer: b) DROP
3. Which of the following is not a type of SQL statement?
   a) DDL b) DML c) DCL d) HTML
   Answer: d) HTML
4. The clause used to filter records before grouping is:
   a) WHERE b) HAVING c) ORDER BY d) GROUP BY
   Answer: a) WHERE

5. The clause used to filter groups after aggregation is:
   a) HAVING b) WHERE c) ORDER BY d) LIMIT
   Answer: a) HAVING
6. The command used to delete all rows from a table but keep the structure is:
   a) DELETE b) TRUNCATE c) DROP d) CLEAR
   Answer: b) TRUNCATE
7. Which key uniquely identifies a record in a table?
   a) Candidate key b) Primary key c) Alternate key d) Foreign key
   Answer: b) Primary key
8. Which SQL command is used to modify existing records?
   a) CHANGE b) UPDATE c) MODIFY d) EDIT
   Answer: b) UPDATE
9. What does the FOREIGN KEY ensure?
   a) Referential integrity
   b) Data duplication
   c) Auto increment
   d) None of these
   Answer: a) Referential integrity
10. Which of the following statements creates a new table?
    a) MAKE TABLE b) CREATE TABLE c) ADD TABLE d) BUILD TABLE
    Answer: b) CREATE TABLE
11. What is the purpose of the DISTINCT keyword?
    a) Remove duplicates
    b) Display all rows
    c) Sort data
    d) Filter null values
    Answer: a) Remove duplicates
12. Which aggregate function returns the number of rows?
    a) COUNT() b) SUM() c) MAX() d) TOTAL()
    Answer: a) COUNT()
13. Which of the following is not an aggregate function?
    a) SUM() b) AVG() c) ROUND() d) COUNT()
    Answer: c) ROUND()
14. In SQL, `LIKE '%abc%'` is used for:
    a) Exact match b) Pattern match c) Sorting d) Joining
    Answer: b) Pattern match
15. What is a candidate key?
    a) A field that can be a primary key
    b) A duplicate key
    c) A secondary key
    d) A key for joining tables
    Answer: a) A field that can be a primary key
16. Which of the following is a DML command?
    a) CREATE b) INSERT c) GRANT d) REVOKE
    Answer: b) INSERT
17. Which command is used to change the structure of a table?
    a) MODIFY b) CHANGE c) ALTER d) UPDATE
    Answer: c) ALTER

18. Which operator is used to combine two SELECT statements and remove duplicates?
    a) JOIN b) UNION c) INTERSECT d) MINUS
    Answer: b) UNION
19. Which of the following commands is used to remove rows from a table?
    a) TRUNCATE b) DELETE c) REMOVE d) ERASE
    Answer: b) DELETE
20. What does the term "Normalization" mean?
    a) Reducing redundancy
    b) Increasing redundancy
    c) Creating duplicate data
    d) Merging tables
    Answer: a) Reducing redundancy
21. What is Denormalization?
    a) Splitting tables
    b) Combining tables to improve read performance
    c) Reducing redundancy
    d) None of these
    Answer: b) Combining tables to improve read performance
22. Which of the following statements retrieves data from a table?
    a) GET b) FETCH c) SELECT d) RETRIEVE
    Answer: c) SELECT
23. Which of the following joins returns all records from both tables, matching where possible?
    a) INNER JOIN b) OUTER JOIN c) CROSS JOIN d) NATURAL JOIN
    Answer: b) OUTER JOIN
24. Which constraint ensures that no null value can be inserted in a column?
    a) UNIQUE b) NOT NULL c) PRIMARY KEY d) CHECK
    Answer: b) NOT NULL
25. The command ROLLBACK is used to:
    a) Save changes permanently
    b) Undo changes
    c) End a session
    d) Commit transaction
    Answer: b) Undo changes
26. What is a transaction?
    a) A single unit of work
    b) A row of data
    c) A database connection
    d) A backup process
    Answer: a) A single unit of work
27. ACID property in DBMS stands for:
    a) Atomicity, Consistency, Isolation, Durability
    b) Accuracy, Consistency, Integrity, Durability
    c) Atomicity, Clarity, Integrity, Dependability
    d) None of these
    Answer: a) Atomicity, Consistency, Isolation, Durability
28. The COMMIT command is used to:
    a) Save changes permanently
    b) Undo last changes
    c) Close the table

d) Delete rows
Answer: a) Save changes permanently

29. Which of the following defines a virtual table?
    a) Trigger b) View c) Index d) Schema
    Answer: b) View

30. What is the degree of a table?
    a) Number of columns
    b) Number of rows
    c) Number of keys
    d) Number of tables
    Answer: a) Number of columns

31. Which SQL statement sorts the result?
    a) ORDER BY b) SORT BY c) ARRANGE BY d) GROUP BY
    Answer: a) ORDER BY

32. Which command adds a new column to an existing table?
    a) UPDATE TABLE b) MODIFY TABLE c) ALTER TABLE ADD d) CHANGE
    TABLE
    Answer: c) ALTER TABLE ADD

33. Which join combines each row of one table with each row of another?
    a) INNER JOIN b) OUTER JOIN c) CROSS JOIN d) NATURAL JOIN
    Answer: c) CROSS JOIN

34. What is the default sorting order in SQL?
    a) Descending b) Ascending c) Random d) User-defined
    Answer: b) Ascending

35. The command `CREATE INDEX` is used to:
    a) Delete index
    b) Improve query speed
    c) Reduce redundancy
    d) Define constraints
    Answer: b) Improve query speed

36. Which SQL keyword is used to eliminate duplicates in results?
    a) DISTINCT b) UNIQUE c) ONLY d) DIFFERENT
    Answer: a) DISTINCT

37. Which of the following is true about a foreign key?
    a) It must be unique
    b) It can have null values
    c) It cannot refer to primary key
    d) It must be a primary key in the same table
    Answer: b) It can have null values

38. Which SQL statement is used to rename a table?
    a) CHANGE TABLE b) RENAME TABLE c) ALTER TABLE RENAME d)
    UPDATE TABLE
    Answer: c) ALTER TABLE RENAME

39. What is a schema?
    a) Logical structure of a database
    b) Set of queries
    c) Collection of data
    d) Backup file
    Answer: a) Logical structure of a database

40. Which of these is not a valid SQL data type?
    a) VARCHAR b) NUMBER c) DATE d) STRING
    Answer: d) STRING
41. What is the difference between DELETE and TRUNCATE?
    a) DELETE removes structure, TRUNCATE doesn't
    b) TRUNCATE removes structure, DELETE doesn't
    c) DELETE logs each row, TRUNCATE is faster
    d) Both are identical
    Answer: c) DELETE logs each row, TRUNCATE is faster
42. Which function finds the largest value in a column?
    a) MAX() b) BIG() c) LARGE() d) HIGH()
    Answer: a) MAX()
43. Which command is used to copy data from one table to another?
    a) INSERT INTO SELECT
    b) COPY TABLE
    c) SELECT INTO
    d) CLONE TABLE
    Answer: a) INSERT INTO SELECT
44. Which constraint ensures that values in a column are unique?
    a) PRIMARY KEY b) UNIQUE c) FOREIGN KEY d) DEFAULT
    Answer: b) UNIQUE
45. A stored procedure is:
    a) SQL code stored and executed on demand
    b) Temporary query
    c) Data backup tool
    d) None of these
    Answer: a) SQL code stored and executed on demand
46. What is the command to remove a view?
    a) DROP VIEW b) DELETE VIEW c) REMOVE VIEW d) CLEAR VIEW
    Answer: a) DROP VIEW
47. Which SQL statement groups data?
    a) GROUP BY b) ORDER BY c) SORT BY d) UNION
    Answer: a) GROUP BY
48. What is an index used for?
    a) Speeding up searches
    b) Reducing redundancy
    c) Creating relationships
    d) Backup
    Answer: a) Speeding up searches
49. Which of these is not a DCL command?
    a) GRANT b) REVOKE c) COMMIT d) None
    Answer: c) COMMIT
50. A table can have:
    a) One primary key
    b) Multiple primary keys
    c) No primary key
    d) Unlimited primary keys
    Answer: a) One primary key

Cluster 3: OS, CN & SE — 50 MCQs with Answers

🖥️ Operating Systems (1–17)

1. **Which of the following is not an OS?**
   a) Linux
   b) Windows
   c) Oracle
   d) MacOS
   Answer: c) Oracle

2. **Which scheduling algorithm gives the minimum average waiting time?**
   a) FCFS
   b) SJF
   c) RR
   d) Priority
   Answer: b) SJF

3. **Page replacement algorithms are used in:**
   a) Paging
   b) Segmentation
   c) Virtual memory
   d) Deadlock avoidance
   Answer: c) Virtual memory

4. **In Round Robin scheduling, the time quantum is:**
   a) Variable
   b) Infinite
   c) Fixed
   d) Zero
   Answer: c) Fixed

5. **Thrashing occurs when:**
   a) CPU utilization is low
   b) Page fault rate is high
   c) Both a and b
   d) Memory is sufficient
   Answer: c) Both a and b

6. **Which of the following is not a valid state of a process?**
   a) Running
   b) Ready
   c) Blocked
   d) Terminated and Waiting
   Answer: d) Terminated and Waiting

7. **What is a critical section?**
   a) Portion of code where process accesses shared resources
   b) CPU scheduling unit
   c) Memory allocation area
   d) None
   Answer: a) Portion of code where process accesses shared resources

8. **Which technique prevents deadlocks?**
   a) Mutual exclusion
   b) Circular wait prevention
   c) Hold and wait
   d) Preemption
   Answer: b) Circular wait prevention

9. **Which of the following is not a memory allocation scheme?**
   a) Contiguous
   b) Paging
   c) Segmentation
   d) Indexing
   Answer: d) Indexing
10. **In paging, logical address is divided into:**
    a) Frame + Offset
    b) Page + Offset
    c) Block + Address
    d) Segment + Page
    Answer: b) Page + Offset
11. **Semaphore is used for:**
    a) Process synchronization
    b) Memory allocation
    c) File management
    d) Scheduling
    Answer: a) Process synchronization
12. **What is the use of device drivers?**
    a) To connect user and hardware
    b) To provide I/O interface
    c) To control hardware devices
    d) All of these
    Answer: d) All of these
13. **Spooling is used in:**
    a) CPU scheduling
    b) I/O management
    c) Memory management
    d) File management
    Answer: b) I/O management
14. **Which system call creates a new process?**
    a) fork()
    b) exec()
    c) wait()
    d) create()
    Answer: a) fork()
15. **The banker's algorithm is used for:**
    a) Deadlock prevention
    b) Deadlock avoidance
    c) Deadlock detection
    d) Resource allocation
    Answer: b) Deadlock avoidance
16. **Internal fragmentation occurs in:**
    a) Fixed partitioning
    b) Variable partitioning
    c) Paging
    d) Segmentation
    Answer: a) Fixed partitioning
17. **The part of the OS that interacts directly with hardware is:**
    a) Kernel

b) Shell
c) Application
d) Compiler
Answer: a) Kernel

🌐 Computer Networks (18–34)

18. **Which layer of OSI model is responsible for routing?**
   a) Network layer
   b) Transport layer
   c) Session layer
   d) Data Link layer
   Answer: a) Network layer

19. **The protocol used for email is:**
   a) SMTP
   b) FTP
   c) HTTP
   d) SNMP
   Answer: a) SMTP

20. **IP address 192.168.1.1 belongs to which class?**
   a) A
   b) B
   c) C
   d) D
   Answer: c) C

21. **Which device connects two different networks?**
   a) Hub
   b) Switch
   c) Router
   d) Repeater
   Answer: c) Router

22. **Which of the following is a transport layer protocol?**
   a) TCP
   b) IP
   c) ICMP
   d) ARP
   Answer: a) TCP

23. **Which layer ensures error-free delivery?**
   a) Data Link layer
   b) Network layer
   c) Transport layer
   d) Application layer
   Answer: a) Data Link layer

24. **HTTP operates on which port by default?**
   a) 21
   b) 25
   c) 80

d) 110
Answer: c) 80

25. **What is the full form of DNS?**
    a) Domain Name System
    b) Data Network Service
    c) Domain Node Server
    d) Direct Name Setup
    Answer: a) Domain Name System

26. **Which topology has a single point of failure?**
    a) Mesh
    b) Star
    c) Ring
    d) Bus
    Answer: b) Star

27. **In Ethernet, collision detection is done using:**
    a) CSMA/CD
    b) CSMA/CA
    c) Token passing
    d) Polling
    Answer: a) CSMA/CD

28. **IPv6 address length is:**
    a) 32 bits
    b) 64 bits
    c) 128 bits
    d) 256 bits
    Answer: c) 128 bits

29. **The PDU at the transport layer is called:**
    a) Packet
    b) Frame
    c) Segment
    d) Bit
    Answer: c) Segment

30. **Which device works at Data Link Layer?**
    a) Switch
    b) Router
    c) Gateway
    d) Hub
    Answer: a) Switch

31. **Which protocol provides reliable data transfer?**
    a) UDP
    b) IP
    c) TCP
    d) ICMP
    Answer: c) TCP

32. **ARP is used for:**
    a) Mapping IP to MAC
    b) Mapping MAC to IP
    c) Mapping DNS
    d) None
    Answer: a) Mapping IP to MAC

33. **Which layer of OSI model handles encryption and compression?**
    a) Presentation layer
    b) Session layer
    c) Application layer
    d) Transport layer
    Answer: a) Presentation layer
34. **Ping uses which protocol?**
    a) ICMP
    b) TCP
    c) UDP
    d) ARP
    Answer: a) ICMP

🧠 Software Engineering (35–50)

35. **Which model is also called the classic life cycle?**
    a) Waterfall
    b) Spiral
    c) Agile
    d) Prototype
    Answer: a) Waterfall
36. **Which of these is not a phase of SDLC?**
    a) Feasibility study
    b) Coding
    c) Debugging
    d) Maintenance
    Answer: c) Debugging
37. **In Agile, development is done in:**
    a) Modules
    b) Sprints
    c) Phases
    d) Levels
    Answer: b) Sprints
38. **RAD stands for:**
    a) Rapid Application Development
    b) Reliable Application Design
    c) Random Application Deployment
    d) Realistic Application Design
    Answer: a) Rapid Application Development
39. **Which model is best for high-risk projects?**
    a) Spiral
    b) Waterfall
    c) Incremental
    d) V-Model
    Answer: a) Spiral
40. **In software testing, alpha testing is done by:**
    a) End users

b) Developers
c) Test engineers
d) Customers
Answer: b) Developers

41. **Which of the following is a black-box testing technique?**
    a) Boundary value analysis
    b) Code review
    c) Statement coverage
    d) Control flow testing
    Answer: a) Boundary value analysis

42. **Coupling refers to:**
    a) Dependency between modules
    b) Complexity of code
    c) Size of module
    d) Number of functions
    Answer: a) Dependency between modules

43. **Which tool is used for version control?**
    a) Git
    b) Eclipse
    c) Jenkins
    d) Docker
    Answer: a) Git

44. **Verification ensures:**
    a) Product is built right
    b) Right product is built
    c) Both
    d) None
    Answer: a) Product is built right

45. **The main objective of requirement analysis is:**
    a) Define user needs
    b) Write code
    c) Design architecture
    d) Test software
    Answer: a) Define user needs

46. **Which diagram shows interaction between objects?**
    a) Sequence diagram
    b) Use case diagram
    c) Class diagram
    d) State diagram
    Answer: a) Sequence diagram

47. **In software metrics, LOC stands for:**
    a) Lines of Code
    b) Level of Code
    c) List of Classes
    d) Load on CPU
    Answer: a) Lines of Code

48. **Software reliability is defined as:**
    a) Probability of failure-free operation
    b) Time taken to execute
    c) Code efficiency

d) Hardware dependency
Answer: a) Probability of failure-free operation

49. **Which of the following is a maintenance activity?**
    a) Corrective
    b) Adaptive
    c) Perfective
    d) All of these
    Answer: d) All of these

50. **Software reusability means:**
    a) Using existing components in new systems
    b) Code duplication
    c) Copy-paste code reuse
    d) Rewriting modules
    Answer: a) Using existing components in new systems