Viva Questions

Java :

1. What is Java?

Java is the high-level, object-oriented, robust, secure programming language, platform-independent, high performance, Multithreaded, and portable programming language.

2. features of Java Programming language.

- Simple
- Object-Oriented
- Portable
- Platform Independent
- Secured

3.Java virtual machine?

Java Virtual Machine is a virtual machine that enables the computer to run the Java program. JVM acts like a run-time engine which calls the main method present in the Java code. JVM is the specification which must be implemented in the computer system.

4. Types of memory areas are allocated by JVM?

Class(Method) Area: Class Area stores per-class structures such as the runtime constant pool, field, method data, and the code for methods.

1. Heap: It is the runtime data area in which the memory is allocated to the objects
2. Stack: Java Stack stores frames. It holds local variables and partial results, and plays a part in method invocation and return. Each thread has a private JVM stack, created at the same time as the thread. A new frame is created each time a method is invoked. A frame is destroyed when its method invocation completes.
3. Program Counter Register: PC (program counter) register contains the address of the Java virtual machine instruction currently being executed.
4. Native Method Stack: It contains all the native methods used in the application.

5.What is the platform?

A platform is the hardware or software environment in which a piece of software is executed. There are two types of platforms, software-based and hardware-based. Java provides the software-based platform.

6.What is classloader?

Classloader is a subsystem of JVM which is used to load class files. Whenever we run the java program, it is loaded first by the classloader. There are three built-in classloaders in Java.

7. Is delete, next, main, exit or null keyword in java?

No.

8.What if I write static public void instead of public static void?

The program compiles and runs correctly because the order of specifiers doesn't matter in Java.

9.What is an object?

The Object is the real-time entity having some state and behavior. In Java, Object is an instance of the class having the instance variables as the state of the object and the methods as the behavior of the object. The object of a class can be created by using the new keyword.

10. What will be the initial value of an object reference which is defined as an instance variable?

All object references are initialized to null in Java.

11.Does constructor return any value

yes, The constructor implicitly returns the current instance of the class

12.Is the constructor inherited?

No, The constructor is not inherited.

13.Can you make a constructor final?

No, the constructor can't be final.

14.Can we overload the constructors?

Yes, the constructors can be overloaded by changing the number of arguments accepted by the constructor or by changing the data type of the parameters.

15._____function of Array object adds and/or removes elements from an array?

splice()

16. Define a Java Class.

A class in Java is a blueprint which includes all your data. A class contains fields (variables) and methods to describe the behavior of an object. Let's have a look at the syntax of a class.

17. What are the main concepts of OOPs in Java?

1. Inheritance: Inheritance is a process where one class acquires the properties of another.
2. Encapsulation: Encapsulation in Java is a mechanism of wrapping up the data and code together as a single unit.
3. Abstraction: Abstraction is the methodology of hiding the implementation details from the user and only providing the functionality to the users.
4. Polymorphism: Polymorphism is the ability of a variable, function or object to take multiple forms.

18.How does Java enable high performance?

Java uses Just In Time compiler to enable high performance. It is used to convert the instructions into bytecodes.

19.What is meant by the Local variable and the Instance variable?

Local variables are defined in the method and scope of the variables that exist inside the method itself.

Instance variables are defined inside the class and outside the method and the scope of the variables exists throughout the class.

20.What is a Class?

All Java codes are defined in a Class. It has variables and methods.

21.What is meant by Method Overriding?

Answer: Method overriding happens if the sub-class method satisfies the below conditions with the Super-class method:

22.What is meant by Overloading?

Answer: Method overloading happens for different classes or within the same class.

23.What is meant by Interface?

Answer: Multiple inheritances cannot be achieved in java. To overcome this problem the Interface concept is introduced.

24.Explain about Public and Private access specifiers.

Public:

Public members are visible in the same package as well as the outside package that is for other packages.

Private:

Private members are visible in the same class only and not for the other classes in the same package as well as classes in the outside packages.

25.What is the meaning of Collections in Java?

Answer: Collection is a framework that is designed to store the objects and manipulate the design to store the objects.

26.What is meant by Ordered and Sorted in collections?

Ordered: It means the values that are stored in a collection is based on the values that are added to the collection. So we can iterate the values from the collection in a specific order.

Sorted: Sorting mechanisms can be applied internally or externally so that the group of objects sorted in a particular collection is based on the properties of the objects.

27.Explain about Map

Map cares about the unique identifier. We can map a unique key to a specific value. It is a key/value pair. We can search a value, based on the key. Like the set, the map also uses the "equals ( )" method to determine whether two keys are the same or different.

28.Explain the Priority Queue.

Priority Queue: Linked list class has been enhanced to implement the queue interface. Queues can be handled with a linked list. The purpose of a queue is "Priority-in, Priority-out".

29.What is a Thread?

In Java, the flow of execution is called Thread. Every java program has at least one thread called the main thread, the main thread is created by JVM. The user can define their own threads by extending the Thread class (or) by implementing the Runnable interface. Threads are executed concurrently.

30.Explain about join () method.

Join () method is used to join one thread with the end of the currently running thread.

31. Explain the thread life cycle in Java.

Answer: Thread has the following states:

- New
- Runnable
- Running
- Non-runnable (Blocked)
- Terminated

32.What is Synchronization?

Answer: Synchronization makes only one thread to access a block of code at a time. If multiple threads accesses the block of code, then there is a chance for inaccurate results at the end. To avoid this issue, we can provide synchronization for the sensitive block of codes.

33.Why is Java not a pure object oriented language?

Java supports primitive data types - byte, boolean, char, short, int, float, long, and double and hence it is not a pure object-oriented language.

34.What do you understand by an instance variable and a local variable?

Instance variables are those variables that are accessible by all the methods in the class. They are declared outside the methods and inside the class. These variables describe the properties of an object and remain bound to it at any cost.

Local variables are those variables present within a block, function, or constructor and can be accessed only inside them. The utilization of the variable is restricted to the block scope. Whenever a local variable is declared inside a method, the other class methods don't have any knowledge about the local variable.

35.Explain Typecasting

Answer: The concept of assigning a variable of one data type to a variable of another data type. It is not possible for the boolean data type.

It is of two types:

- Implicit
- Explicit

36.Explain access modifiers in Java.

Answer: Access modifiers are predefined keywords in Java that are used to restrict the access of a class, method, constructor, and data member in another class.

Java supports four access modifiers:

- Default
- Private
- Protected
- Public

37.explain the Oops concepts?

Abstraction– Representing essential features without the need to give out background details. The technique is used for creating a new suitable data type for some specific applicationEncapsulation– Refers to the wrapping up of data and code into a single entity. Allows the variables of a class to be only accessible by the parent class and no other classes

- Inheritance– When an object acquires the properties of some other object, it is called inheritance. It results in the formation of a parent-child relationship amongst classes involved. Offers a robust and natural mechanism of organizing and structuring software

- Object– Denotes an instance of a class. Any class can have multiple instances. An object contains the data as well as the method that will operate on the data
- Polymorphism– refers to the ability of a method, object, or variable to assume several forms

38.Define classes in Java

Answer: A class is a collection of objects of similar data types. Classes are user-defined data types and behave like built-in types of a programming language.

39._____leads to the portability and security of Java?

Bytecode is executed by JVM

40._____tool is used to generate API documentation in HTML format from doc comments in source code?

Javadoc tool

41.The output of the Java compiler is known as ----------.

Byte code

42.The .org part of a domain name stands for ----------.

Organization

43.---------- is the protocol used to transmit hyper text over the Internet.

HTTP

44.The ---------- statement is used to include another Java package in a Java source file.

Import.

45.A subclass can call a constructor method defined by its super class by use of the ---------- keyword.

Super

46.URL stands for ----------.

Uniform Resource Locator

47.In Java, the AWT classes are contained in the--------- package.

Java.awt

48.Java supports ----------_ programming.

Multi threaded

49.It is possible to throw an exception explicitly using the ----------_ statement.

Throw

50.The ---------- package provides classes for networking in Java.

Java.net

51.Java uses ---------- to represent characters.

Unicode

52.The mechanism of binding data with the code that manipulates it is known as ----------.

Dynamic binding

53.HTML stands for ----------.

Hyper Text markup Language

54.The user interface classes such as Button, Checkbox and Label are subclasses of ----------
-- class.

Utility

55.Java program processing always starts with _____ method.

Main()

56. Java is ____ sensitive language.

Case

57.On which platforms Java runs?

Java is platform independent becuase it produces Byte code

58._____ is used to find and fix bugs in the Java programs.

JDB

59._____is the return type of the hashCode() method in the Object class?

int

60.. Which package contains the Random class?

java.util package

61.. An interface with no fields or methods is known as a _____.

Marker Interface

62._____is not OOPS concept in Java?

Compilation

63.____is a type of polymorphism in Java

Compile time polymorphism

64.. When does method overloading is determined?

At compile time

65.. Which concept of Java is a way of converting real world objects in terms of class?

Abstraction

66.Which concept of Java is achieved by combining methods and attribute into a class?

Encapsulation

67._____overriding is combination of inheritance and polymorphism?

Method

68._____is not a Java features?

Use of pointers

69.The \u0021 article referred to as a

Unicode escape sequence

70.A ---------- is a collection of classes and interfaces.

Package

71.An ---------- is an object that is generated when a run time error occurs.

Exception

72.Java compiler produces an object file that contains ----------_.

Bytecode

72.---------- declares a class variable that is to be shared among all instances.

Static

73.-------- tool is used for viewing HTML files.

CLASSPATH

74.---------- is a news group from which you can read messages.

Usenet

75.---------- means data hiding.

Encapsulation

76.The ability to take more than one forms is called ----------.

Polymorphism

77.The smallest individual units in programs are known as ----------.

Tokens

78.A combination of character is a --------.

String

79.A class may have several constructors and it is called ----------.

Constructor overloading

80.The concept ---------- is similar to multiple inheritance.

Interface

81.----------_ also represents a group of characters.

String buffer

82.Java supports a special type of method called ----------.

constructor

83.The full form of JDK is ----------_.

Java development kit

84.The smallest individual units in programs are known as ----------.

Tokens

85.----------_ means handling multiple tasks simultaneously.

Multithreading

86.---------- is the process by which objects of one class acquire the properties of another class.

Inheritance

87.Many objects and their code form a user defined data type called ----------.

Class

88._____function of Array object extracts a section of an array and returns a new array?

Slice()

89. function of String object is used to match a regular expression against a string?

Match().

90._____function of Array object adds one or more elements to the end of an array and returns the new length of the array?

push()]

91._____function of Array object adds and/or removes elements from an array?

splice()

92.Which built-in method adds one or more elements to the end of an array and returns the new length of the array?

push()

93._____ code creates an object?

Var book=new object();

94._____function of String object combines the text of two strings and returns a new string?

concat();

95._____function of String object is used to match a regular expression against a string?

match()

96._____function of String object causes a string to be displayed as a superscript, as if it were in a <sup> tag?

sup()

97._____function of Array object adds one or more elements to the end of an array and returns the new length of the array?

push()

98

99._____creates a List of 3 visible items and multiple selections abled?

new List(3, true)

100. Which method of the Class.class is used to determine the name of a class represented by the class object as a String?

getName()

Python:

1. Who developed the Python language Answer:
   Guido van Rossum.
2. In which year was the Python language develop
   Answer:1989 .
3. In which language is Python written
   Answer:C programming language, and it is also called CPython.
4. What is the correct extension of the Python file Answer: .py
   extension .
5. What do we use to define a block of code in Python language Answer:
   Indentation .
6. Which character is used in Python to make a single line comment Answer: # .
7. What is the method inside the class in python language Answer:
   Function .
8. Why does the name of local variables start with an underscore discouraged
   Answer: It indicates a private variable of a class.
9. Which operator is the correct operator for power(ab)? Answer a**b .
10. What precedence order does Python follow?
    Answer: Parentheses, Exponential, Multiplication, Division, Addition, Subtraction
11. round(4.576) What will be the output of this function? Answer: 5
12. abs(math.sqrt(36)) What will be the output? Answer: 6.0

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13. What is called when a function is defined inside; a class Answer:
Method.

14. What is the output for −'python ' [-3]? Answer:
'h'.

15. Name the python module which supports regular expressions. Answer: -re.

16. Pylab is a package that combine_____,_____&_____into a single namespace.
Answer: Numpy, scipy & matplotlib .

17. Which code is used to open a file for binary writing? Answer:
"wb"

18. The format function, when applied on a string returns? Answer: str

19. How to find the last element of list in Python? Assume `python` is the name of list.
Answer: python[-1]

20. Which predefined Python function is used to find length of string Answer: len()

21. Which keyword is used to define methods in Python? Answer: def

22. What is the associativity of Operators with the same precedence? Answer: left to right

23. Which data type is used to store values in Key & Value format? Answer: Dictionary

24. How many types of funtional arguments in python
Answer: 4 (Required , keyword , default , variable-length arguments)

25. What is an exception?
Answer: Run time error

26. Is Tuple mutable?

Answer: No

27. Which command is used to Find and print Data types using the Type command.

name="Hello World”

Answer: print(type(name))

28. Is Python case sensitive?

Answer: Yes

29. What is the return type of function ID? Answer:

int

30. Which of the following keywords mark the beginning of the class definition?

Answer: Class

31. Python allows you to assign a single value to multiple variables simultaneously.

Answer: True

32. In python programming Pass is a null statement Answer: yes

33. Which symbol is used to test condition in a flow chart Answer :

decision

34. What error occurs when you execute the following Python code snippet? apple = mango

Answer: NameError

35. What is the type of inf?

Answer: float

36. What does ~4 evaluate to?

Answer: -5 (–(x+1))

37. What is the result of cmp(3,1)?

Answer: 1

38. What does this “^” operator refer to in python? Answer:
bitwise XOR

39. The output of executing string.ascii_letters can also be achieved by: Answer:
string.ascii_lowercase+string.ascii_uppercase

40. What will be the output of the following Python code? Str1=”hello” str[::-1]
Answer: olleh

41. What will be the ouput ? max(“what are you”)
Answer: y (max returns the character with the highest ascii value)

42. Given a string example=”hello” what is the output of example.count(‘l’)?
Answer: 2

43. What is “Hello”.replace(“l”, “e”)?
Answer: Heeeo

44. What function do you use to read a string?
Answer:input(“enter a string”)

45. What is the default value of encoding in encode()? Answer: utf-8

46. Suppose listExample is [‘h’,’e’,’l’,’l’,’o’], what is len(listExample)? Answer: 5

47. Suppose list1 is [2445,133,12454,123], what is max(list1)? Answer: 12454

48. To shuffle the list(say list1) what function do we use? Answer:
random.shuffle(list1)

49. To add a new element to a list we use which command? Answer:
list.append()

50. To remove string “hello” from list1, we use which command? Answer:
list1.remove(“hello”)

51. If a=(1,2,3,4), a[1:-1] is _____

Answer: (2,3)

52. What type of data is: a=[(1,1),(2,4),(3,9)]?

Answer: List of Tuples

53. Set members must not be hashable. Answer:

False

54. What will be the output of the following Python code s=set() type(s) Answer: <class 'set'>

55. Sets makes use of_____Dictionary makes use of _____

Answer: keys , key values

56. Which function will return the symmetric difference between two sets, x and y?

Answer: x^y

57. The_____function removes the first element of a set and the last element of a list.

Answer: Pop

58. The difference between the functions discard and remove is that: Answer: Remove throws an error if the specified element is not present in the set whereas discard does not throw an error in case of absence of the specified element.

59. If we have two sets, s1 and s2, and we want to check if all the elements of s1 are present in s2 or not, we can use the function: Answer: s2.issuperset(s1)

60. Suppose d = {"john":40, "peter":45}. To obtain the number of entries in dictionary which command do we use?

Answer: len(d)

61. If a is a dictionary with some key-value pairs, what does a.popitem() do?

Answer: Removes an arbitrary element

62. If b is a dictionary, what does any(b) do?

Answer: Returns True if any key of the dictionary is true

63. Which function does not necessarily accept only iterables as arguments?

Answer: chr()

64. Which function accepts only integers as arguments? Answer: chr()

65. What are the advantages of functions in python?

Answer: a) Reducing duplication of code b) Decomposing complex problems into simpler pieces c) Improving clarity of the code

66. What are the two main types of functions? Answer: Built-in function & User defined function

67. Where is function defined?

Answer: Module , class , another function

68. Python supports the creation of anonymous functions at runtime, using a construct called _____

Answer: lambda

69. Does Lambda contains return statements? Answer: false

70. What is a variable defined outside a function referred to as? Answer: A global variable

71. What is a variable defined inside a function referred to as? Answer: A local variable

72. What is the type of each element in sys.argv? Answer: string

73. What is the length of sys.argv?

Answer: number of arguments + 1

74. How are keyword arguments specified in the function heading? Answer: two stars followed by a valid identifier

75. How many keyword arguments can be passed to a function in a single function call?

Answer: zero or more

76. Which module in the python standard library parses options received from the command line?

Answer: getopt

77. What is the value stored in sys.argv[0]? Answer:

The program's name

78. How are default arguments specified in the function heading? Answer: identifier followed by an equal to sign and the default value

79. How are required arguments specified in the function heading? Answer: identifier

80. Where are the arguments received from the command line stored? Answer: sys.argv

81. Which of the following data structures is returned by the functions globals() and locals()?

Answer: dictionary

82. On assigning a value to a variable inside a function, it automatically becomes a global variable.

Answer: False

83. What happens if a local variable exists with the same name as the global variable you want to access?

Answer: The global variable is shadowed

84. ___ returns a dictionary of the module namespace._____ returns a dictionary of the current namespace.

Answer: globals() locals()

85. Only problems that are recursively defined can be solved using recursion.

Answer: false

86. What is tail recursion?

Answer: A function where the recursive call is the last thing executed by the function

87. What happens if the base condition isn't defined in recursive programs?

Answer: Program gets into an infinite loop

88. Recursion and iteration are the same programming approach. Answer:False

89. Is Python code compiled or interpreted?

Answer: Python code is both compiled and interpreted

90. definition for packages in Python? Answer:

A folder of python modules

91. Program code making use of a given module is called a_____of the module.

Answer: Client

92. _____is a string literal denoted by triple quotes for providing the specifications of certain program elements.

Answer: Docstring

93. In top-down design every module is broken into same number of submodules.

Answer: False

94. All modular designs are because of a top-down design process. Answer: False

95. What is the order of namespaces in which Python looks for an identifier?

Answer: Python first searches the local namespace, then the global namespace and finally the built-in namespace.

96. What is returned by math.ceil(3.4)?

Answer: 4

97. What is the value returned by math.floor(3.4)? Answer:

3

98. What is displayed on executing print(math.fabs(-3.4))? Answer:

3.4

99. What is math.factorial(4.0)?

Answer: The factorial of 4 is returned 24

100. What does the function math.frexp(x) return?

Answer: a tuple containing the mantissa and the exponent of x

Data Structure:

1.What is Data Structure?

- Data structure is a fundamental concept of any programming language, essential for algorithmic design.
- It is used for the efficient organization and modification of data.

2. Types of DS?
    - Linear(stack, array queues , linked list etc)
    - Non-linear (trees, graphs)

3. Applications of ds?

    - Artificial intelligence
    - Compiler design
    - Machine learning
    - Database design and management

4.Benefits of Learning Data Structures?
Fast retrieval, etc

5. Can you tell how linear data structures differ from non-linear data structures?
In linear data structure all the elements stored in sequential manner

6. What is an array?

Arrays are the collection of similar types of data stored at contiguous memory locations.

7.What is a multidimensional array?

Multi-dimensional arrays are those data structures that span across more than one dimension.(ex: 2D array)

8.What is a linked list?

A linked list is a data structure that has sequence of nodes where every node is connected to the next node by means of a reference pointer. The elements are not stored in adjacent memory locations. They are linked using pointers to form a chain. This forms a chain-like link for data storage.

9. Are linked lists of linear or non-linear type?

A: Linked lists can be considered both linear and non-linear data structures. This depends upon the application that they are used for.

- When linked list is used for access strategies, it is considered as a linear data-structure. When they are used for data storage, it can be considered as a non-linear data structure.

10.How are linked lists more efficient than arrays?

Insertion and Deletion

- Insertion and deletion process is expensive in an array as the room has to be created for the new elements and existing elements must be shifted.
- But in a linked list, the same operation is an easier process, as we only update the address present in the next pointer of a node.

Dynamic Data Structure

- Linked list is a dynamic data structure that means there is no need to give an initial size at the time of creation as it can grow and shrink at runtime by allocating and deallocating memory.
- Whereas, the size of an array is limited as the number of items is statically stored in the main memory.

11. Explain the scenarios where you can use linked lists and arrays.

Following are the scenarios where we use linked list over array:

- When we do not know the exact number of elements beforehand.
- When we know that there would be large number of add or remove operations.
- Less number of random access operations.

Below are the cases where we use arrays over the linked list:

- When we need to index or randomly access elements more frequently.
- When we know the number of elements in the array beforehand in order to allocate the right amount of memory.
- When we need speed while iterating over the elements in the sequence.

12. What is a doubly-linked list (DLL)?

This is a complex type of a linked list wherein a node has two references:

- One that connects to the next node in the sequence
- Another that connects to the previous node.

13.What are its applications(dLL)?
Audio track etc

14. What is a stack?

Stack is a linear data structure that follows LIFO (Last In First Out) approach for accessing elements.

15. What are the operation we perform in stack?
Push(), pop(), top

16. What is the condition for stack overflow?
Overflow condition: When stack is completely full (i.e. TOP= MaxSize -1) and we try to insert more element onto stack then this condition is called overflow condition

17. What is the condition for stack underflow?
Underflow Condition: When a stack is empty (i.e. TOP= -1) and we try to delete more element from it, then this condition is called underflow condition.

18. What are the applications of stack?

- Check for balanced parentheses in an expression
- Evaluation of a postfix expression
- Problem of Infix to postfix conversion
- Reverse a string

19. What is a queue?

- A queue is a linear data structure that follows the FIFO (First In First Out) approach for accessing elements.

20. What are the applications of queue?

- CPU Task scheduling
- BFS algorithm to find shortest distance between two nodes in a graph.
- Website request processin

21. How is a stack different from a queue?

In a stack, the item that is most recently added is removed first whereas in queue, the item least recently added is removed first.

22. What is time Complexity?
23. What is space complexity?

24. What is Infix notations?

Infix notation is commonly used in arithmetic formula or statements, the operators are written in-between their operands. An **expression** such as A * (B + C) / D is solved as: First add B and C. Multiply the result by A.

25. What is postfix notations?

In this **notation** style, the operator is **postfixed** to the operands i.e., the operator is written after the operands. For **example**, ab+. This is equivalent to its infix **notation** a + b.

26. what is prefix notations?

Prefix expression notation requires that all operators precede the two operands that they work on. Postfix, on the other hand, requires that its operators come after the corresponding operands. A few more examples should help to make this a bit clearer (see Table 2). A + B * C would be written as + A * B C in **prefix**.

27. Write the steps involved in the insertion and deletion of an element in the stack.

28. Which data structure suits the most in the tree construction?

(ans: queue datastructure)

28. In what scenario, Binary Search can be used?

It is used to reduce the seach operations

29. Different types of sorting?

Insertion sort, selection sort bubblesort etc.

30. Best sorting techqnuies?

Merge sort

31. Best searching techniques?

Binary search

32. What are the advantages of Binary search over linear search?

It reduces the serach operation

33. What is a recursive function?

A **recursive function** is a **function** that calls itself during its execution. The process may repeat several times, outputting the result and the end of each iteration.

34. What is tower of hanoi?

Tower of Hanoi is a mathematical puzzle where we have three rods and n disks. The objective of the puzzle is to move the entire stack to another rod, obeying the following simple rules:

1. Only one disk can be moved at a time.
2. Each move consists of taking the upper disk from one of the stacks and placing it on top of another stack i.e. a disk can only be moved if it is the uppermost disk on a stack.
3. No disk may be placed on top of a smaller disk.

35. What is fibonacci series?

The **Fibonacci sequence** is a **series** of **numbers** where a **number** is the addition of the last two **numbers**, starting with 0, and 1. The **Fibonacci Sequence**: 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55…

36. best time complexity for searching?

Constant time

37. worst time complexity for searching?

linear time.

38. best time complexity for sorting?

O(nlogn) merge sort

39. worst time complexity for sorting?

exponential

40. best startergy to sort array?

Merge sort

41. sudo code for prime number?

42. sudo code for even or odd number?

43. sudo code for vowel or consonents?

44. sudo code for binary search?

45. sudo code for fib series?

46. sudo code for sorting array?

47. sudo code for reverse of string?

48 sudo code for frequency of number?

48. sudo code for whether given number is palindrome or not?

48. sudo code for factorial?

49. sudo code for swapning without using third variable?

49. sudo code for length of number without using loop?

Log function

50.Sudo code for finding first digit of number without using loop?
51.sudo code for pyramid pattern?

52.What is tree ds?
53. does tree form cycle?
54. methods to traverse tree ds?
55. what is preorder traversal?

Visit the current node, then walk the left subtree, and finally walk the right subtree.

56. what is inorder traversal?

Walk the left subtree first, then visit the current node, and finally walk the right subtree.

57. what is post order traversal?

Walk the left subtree, then the right subtree, and finally visit the current node.

58.What is binary tree?

A **binary tree** is a tree where every node has at most two children.

59. what is full binary tree?

A **full binary tree** is a binary tree where every node has exactly 0 or 2 children.

60. what is complete binary tree?

A **complete binary tree** is like a perfect binary tree missing a few nodes in the last level. Nodes are filled in from left to right.

61. relation between no of node and heaight ?

$\log_2(n+1)=h$

62. what is binary search tree?

63 What is a self-balanced tree?

Self-balanced binary search trees automatically keep their height as small as possible when operations like insertion and deletion take place.

64. what is Left view of any binary trees.

65. what is graph?
66. what is the difference between graph and tree?
67. what are the technique to traverse the graph?
68. what is bfs?
69. what is dfs?
70. what is the difference between malloc and calloc?
71. what is the significance of *?

72. what are the disadv of linked list?
73. what are the different ways to implement stack?
74. what are the different ways to implement graph?
75. sudo code to check wheather stack is full or not?
76. explain the process of insertion of node in linked list?
77. what is the return type of malloc?
78. how do we check whether linked list is circular or not?
79. what is meant by ancestor node in tree?
80.explain the process of deletion of node tree?
81. applications of graphs?
82. will array store different data types at a time?

DBMS Viva Voice questions

1. **What is DBMS?**

   DBMS is a collection of programs that facilitates users to create and maintain a database. DBMS is a software in which data is stored in a more secure way as compared to the file-based system. Using DBMS, we can overcome many problems such as- data redundancy, data inconsistency, easy access,

more organized and understandable, and so on. There is the name of some popular Database Management System- MySQL, Oracle, SQL Server, Amazon simple DB (Cloud-based), etc.

2. What is a database?

a. Database mostly consists of the objects (tables), and tables include of the records and fields. Fields are the basic units of data storage, which contain the information.

3. What are advantages of DBMS?

a. Redundancy control
b. Restriction for unauthorized access
c. Provides multiple user interfaces
d. Provides backup and recovery
e. Enforces integrity constraints
f. Ensure data consistency
g. Easy accessibility
h. Easy data extraction and data processing due to the use of queries.

4. What is a checkpoint in DBMS?

The Checkpoint is a type of mechanism where all the previous logs are removed from the system and permanently stored in the storage disk. Checkpoints are those points to which the database engine can recover after a crash as a specified minimal point from where the transaction log record can be used to recover all the committed data up to the point of the crash.

5. **When does checkpoint occur in DBMS?**

A checkpoint is like a snapshot of the DBMS state. Using checkpoints, the DBMS can reduce the amount of work to be done during a restart in the event of subsequent crashes.

6. **What do you mean by transparent DBMS?**

The transparent DBMS is a type of DBMS which keeps its physical structure hidden from users. Physical structure or physical storage structure implies to the memory manager of the DBMS, and it describes how the data stored on disk.

7. **What are the unary operations in Relational Algebra**?

PROJECTION and SELECTION are the unary operations in relational algebra. Unary operations are those operations which use single operands. Unary operations are SELECTION, PROJECTION, and RENAME.

8. **What is RDBMS?**

RDBMS stands for Relational Database Management Systems. It is used to maintain the data records and indices in tables. RDBMS is the form of DBMS which uses the structure to identify and access data concerning the other piece of data in the database. RDBMS is the system that enables you to perform different operations such as- update, insert, delete, manipulate and administer a relational database with minimal difficulties.

9. What is DDL?

Data Definition Language (DDL) e.g., CREATE, ALTER, DROP, TRUNCATE, RENAME, etc. All these commands are used for updating the data that?s why they are known as Data Definition Language.

10. What is DML?

Data Manipulation Language (DML) e.g., SELECT, UPDATE, INSERT, DELETE, etc. These commands are used for the manipulation of already updated data that's why they are the part of Data Manipulation Language.

11. What is DCL?

DATA Control Language (DCL) e.g., GRANT and REVOKE. These commands are used for giving and removing the user access on the database. So, they are the part of Data Control Language.

12. What is TCL?

Transaction Control Language (TCL) e.g., COMMIT, ROLLBACK, and SAVEPOINT. These are the commands used for managing transactions in the database. TCL is used for managing the changes made by DML.

13. What do you understand by Data Model?

The Data model is specified as a collection of conceptual tools for describing data, data relationships, data semantics and constraints. These models are used to describe the relationship between the entities and their attributes.

There is the number of data models: Hierarchical data model, network model, relational model, Entity-Relationship model and so on.

14. What is data abstraction in DBMS?

Data abstraction in DBMS is a process of hiding irrelevant details from users.

15. What are three levels of data abstraction?

View level: It is the highest level of data abstraction. It describes only part of the entire database.

Physical level: It is the lowest level of abstraction. It describes how data are stored.

Logical level: It is the next higher level of abstraction. It describes what data are stored in the database and what the r relationship among those data is.

16. What is an entity?

The Entity is a set of attributes in a database. An entity can be a real-world object which physically exists in this world.

17. What is an Entity type?

An entity type is specified as a collection of entities, having the same attributes. Entity type typically corresponds to one or several related tables in the database.

18. What is an attribute?

An attribute refers to a database component. It is used to describe the property of an entity. An attribute can be defined as the characteristics of the entity.

19. What are the integrity rules in DBMS?

Data integrity is one significant aspect while maintaining the database. So, data integrity is enforced in the database system by imposing a series of rules. Those set of integrity is known as the integrity rules.

There are two integrity rules in DBMS:

Entity Integrity : It specifies that "Primary key cannot have a NULL value."

Referential Integrity: It specifies that "Foreign Key can be either a NULL value or should be the Primary Key value of other relation

20. What is integrity of a database?

Data integrity refers to the consistency and accuracy of data that is stored in your database.

21. What is the E-R model?

E-R model is a short name for the Entity-Relationship model. This model is based on the real world. It contains necessary objects (known as entities) and the relationship among these objects.

22. What is normalization?

Normalization is a process of analysing the given relation schemas according to their functional dependencies. It is used to minimize redundancy and used to minimize insertion, deletion and update distractions.

23. What are the commonly used normal forms?

- First Normal Form(1NF)
- Second Normal Form(2NF)
- Third Normal Form(3NF)
- Boyce & Codd Normal Form(BCNF)

24. What is Denormalization?

Denormalization is the process of boosting up database performance and adding of redundant data which helps to get rid of complex data. Denormalization is a part of database optimization technique. This process is used to avoid the use of complex and costly joins.

25. What is Join?

It is most commonly used way to combine information from two or more relations. A Join is always performed on the basis of the same or related column.

26. What are different types of join?

Left outer join

Right outer join

Full outer join

27. What is 1NF?

1NF is the **First Normal Form**. It is the simplest type of normalization that you can implement in a database. The primary objectives of 1NF are to:

- Every column must have atomic (single value)
- To Remove duplicate columns from the same table
- Create separate tables for each group of related data and identify each row with a unique column

28. What is 2NF?

2NF is the **Second Normal Form**. A table is said to be 2NF if it follows the following conditions:

The table is in 1NF, i.e., firstly it is necessary that the table should follow the rules of 1NF.

Every non-prime attribute is fully functionally dependent on the primary key, i.e., every non-key attribute should be dependent on the primary key in such a way that if any key element is deleted, then even the non_key element will still be saved in the database.

29. What is 3NF?

3NF stands for **Third Normal Form**. A database is called in 3NF if it satisfies the following conditions:

- It is in second normal form.
- There is no transitive functional dependency.
- For example: X->Z

Where:

X->Y
Y does not -> X
Y->Z so, X->Z

30. Explain ACID properties

ACID properties are some basic rules, which has to be satisfied by every transaction to preserve the integrity. These properties and rules are:

ATOMICITY: Atomicity is more generally known as all or nothing rule.' Which implies all are considered as one unit, and they either run to completion or not executed at all.

CONSISTENCY: This property refers to the uniformity of the data. Consistency implies that the database is consistent before and after the transaction.

ISOLATION: This property states that the number of the transaction can be executed concurrently without leading to the inconsistency of the database state.

DURABILITY: This property ensures that once the transaction is committed it will be stored in the non-volatile memory and system crash can also not affect it anymore.

31. What is Atomicity?
Atomicity is more generally known as all or nothing rule.' Which implies all are considered as one unit, and they either run to completion or not executed at all.

32. What is Consistency?
This property refers to the uniformity of the data. Consistency implies that the database is consistent before and after the transaction.

33. What is Durability?
This property ensures that once the transaction is committed it will be stored in the non-volatile memory and system crash can also not affect it anymore.

34. What is Isolation?
This property states that the number of the transaction can be executed concurrently without leading to the inconsistency of the database state.

35. What is stored procedure?
A stored procedure is a group of SQL statements that have been created and stored in the database. The stored procedure increases the reusability as here the code or the procedure is stored into the system and used again and again that makes the work easy, takes less time in processing and decreases the complexity of the system.

36. What is the difference between a DELETE command and TRUNCATE command?
DELETE command: DELETE command is used to delete rows from a table based on the condition that we provide in a WHERE clause.

- DELETE command delete only those rows which are specified with the WHERE clause.
- DELETE command can be rolled back.
- DELETE command maintain a log, that's why it is slow.
- DELETE use row lock while performing DELETE function.

TRUNCATE command: TRUNCATE command is used to remove all rows (complete data) from a table. It is similar to the DELETE command with no WHERE clause.

- The TRUNCATE command removes all the rows from the table.
- The TRUNCATE command cannot be rolled back.
- The TRUNCATE command doesn't maintain a log. That's why it is fast.
- TRUNCATE use table log while performing the TRUNCATE function.

37. How do you communicate with an RDBMS?
You have to use Structured Query Language (SQL) to communicate with the RDBMS.

38. What is Shared Lock?
Shared lock is required for reading a data item. In the shared lock, many transactions may hold a lock on the same data item. When more than one transaction is allowed to read the data items then that is known as the shared lock.

39. What is exclusive lock?
When any transaction is about to perform the write operation, then the lock on the data item is an exclusive lock. Because, if we allow more than one transaction then that will lead to the inconsistency in the database.

40. What is primary key?
The Primary key is an attribute in a table that can uniquely identify each record in a table. It is compulsory for every table.

41. What is a candidate key?

The Candidate key is an attribute or set of an attribute which can uniquely identify a tuple. The Primary key can be selected from these attributes.

42. What is a super key?

The Super key is a set of attributes which can uniquely identify a tuple. Super key is a superset of the candidate key.

43. What is a foreign key?

The Foreign key is a primary key from one table, which has a relationship with another table. It acts as a cross-reference between tables.

44. What is hierarchical database?

Hierarchical DBMS: As the name suggests, this type of DBMS has a structure similar to that of a tree, wherein the nodes represent records and the branches of the tree represent fields.

45. What is an object-oriented database?

Uses small individual software called object to store pieces of data and the instructions for the actions to be done with the data.

46. What is a network database?

This type of DBMS supports many-to-many relations wherein multiple member records can be linked.

47. What do you understand by query optimization?

Query optimization is the phase that identifies a plan for evaluation query that has the least estimated cost.

48. Do we consider NULL values the same as that of blank space or zero?

A NULL value is not at all same as that of zero or a blank space. The NULL value represents a value which is unavailable, unknown, assigned or not applicable whereas zero is a number and blank space is a character.

49. What is aggregation?

This is a feature of the E-R model which allows a relationship set to participate in another relationship set.

50. What is one-one relationship?

One-to-One Relationship – Used when a single row in Table A is related to a single row in Table B**.**

51. What is one to many relationship?

One-to-Many Relationship – Used when a single row in Table A is related to many rows in table B.

52. What is many to many relationship?

Many-to-Many Relationship – Used when many rows in table A can be related to many rows in table B.

53. What is self-referencing relationship?

Self -Referencing Relationship – Used when a record in table A is related to the same table itself.

54. What is concurrency control?

This is a process of managing simultaneous operations in a database so that database integrity is not compromised.

55. What do you understand by correlated subqueries in DBMS?

A correlated subquery is also a sort of subquery reliant on another query. So, when subqueries are executed for each of the rows of outer queries, then they are termed as correlated subqueries. Each subquery is executed a single time for every row of the outer query.

56. Explain Database partitioning and its importance.

Data partitioning is the process of dividing a logical database into independent units for the betterment of availability, performance, and manageability.

57. What is a trigger?

A special kind of stored procedure that is not called directly by a user. In fact, a trigger is created and is programmed to fire when a specific event occurs.

58. What are indexes?
Indexes are data structures responsible for improving the speed of data retrieval operations on a table. This data structure uses more storage space to maintain extra copies of data by using additional writes.

59. What is a clustered index?
Alters the way records are stored in a database as it sorts out rows by the column which is set to be clustered index.

60. What is a non-clustered index?
Does not alter the way it was stored but it creates a separate object within a table which points back to the original table rows after searching.

61. **What do you understand by cursor?**
A cursor is a database object which helps in manipulating data, row by row and represents a result set.

62. **What is an implicit cursor?**
Implicit cursor: This type of cursor is declared automatically as soon as the execution of SQL takes place. Here, the user is not indicated about the declaration of the cursor.

63. **What is an explicit cursor?**
Explicit cursor: This type of cursor is defined by the PL/ SQL, as it handles a query in more than a single row.

64. What is specialization?
Specialization: Specialization is a process of defining a set of subclasses of the entity type. Here, each subclass will contain all the attributes and relationships of the parent entity. Apart from this, the subclasses may contain additional attributes and relationships specific to itself.

65. What is generalization?
Generalization: Generalization is a process of finding relations, common attributes for a particular set of entities; and finally defining a common superclass for them.

66. Explain what is a deadlock and mention how it can be resolved?
Deadlock is a situation which occurs when two transactions wait on a resource which is locked or other transaction holds.

67. How can we prevent a deadlock?
Deadlocks can be prevented by making all the transactions acquire all the locks at the same instance of time. So, once deadlock occurs, the only way to cure is to abort one of the transactions and remove the partially completed work.

68. What do you understand by sub-queries in SQL?
A subquery is a query inside another query where a query is defined to retrieve data or information back from the database.

69. What is union all?
Combines the result set of two or more SELECT statements consisting of duplicate values.

70. What is union?
Combines the result of two or more SELECT statements consisting of distinct values.

71. What do you understand by CLAUSE in SQL?
CLAUSE in SQL is used to limit the result set by mentioning a condition to the query. So, you can use a CLAUSE to filter rows from the entire set of records.
Example: WHERE HAVING clause.

72. Talk about 'having' clause?

1. Used only with SELECT statement
2. Used with the GROUP BY function in a query
3. Whenever GROUP BY is not used, HAVING behaves like a WHERE clause.

73. What do you understand by a view?

A view in SQL is a single table, which is derived from other tables. So, a view contains rows and columns similar to a real table and has fields from one or more table.

74. What is BCNF?

BCNF is the **Boyce Codd Normal Form** which is stricter than the 3NF**.**

Any table is said to have in the BCNF if it satisfies the following 2 conditions:

- A table is in the 3NF.
- For each of the functional dependency X->Y that exists, X is the super key of a table.

75. **What is Identity?**

Identity (or AutoNumber) is a column that automatically generates numeric values. A start and increment value can be set.

76. **Why is group-clause used?**

Group-clause uses aggregate values to be derived by collecting similar data.

77. What is partition by?

A **PARTITION** BY clause is used to **partition** rows of table into groups. It is useful when we have to perform a calculation on individual rows of a group using other rows of that group. It is always used inside OVER() clause.

78. What is row_number()?

The ROW_NUMBER() is a window function that assigns a sequential integer to each row within the partition of a result set.

79. What is a window function?

A ***window function*** performs a calculation across a set of table rows that are somehow related to the current row.

80. What is a CTE in SQL?

A CTE is common table expression. It is a temporary named result set that you can reference within a SELECT, INSERT, UPDATE, or DELETE statement. The CTE can also be used in a View. A CTE must be reference immediately upon it's completion.

81. Write a query to create a table from another?

CREATE TABLE DuplicateCustomer AS SELECT * FROM Customers;

82. Write a query to insert into a temporary table?

SELECT * INTO #TEMP FROM Customers;

83. What is a temporary table in sql?

Temporary tables are stored in tempdb. They work like a regular table in that you can perform the operations select, insert and delete as for a regular table.
Temporary table exists only in the session.

84. **What is a subquery?**

A sub-query is the query inside a query. It is also called as nested query.

85. **Can we have joins and where clause together?**

Yes, we can have both together.

86. **Can we have where and having together?**

Yes, having and where can be used together. But the condition in 'where' will be executed first.

87. **RANK() IN SQL?**
The rank function assigns rank to all the rows within every partition. Rank is assigned such that rank 1 given to the first row and rows having same value are assigned same rank. For the next rank after two same rank values, one rank value will be skipped.

88. DENSE_RANK in sql?
It assigns rank to each row within partition. Just like rank function first row is assigned rank 1 and rows having same value have same rank. The difference between RANK() and DENSE_RANK() is that in DENSE_RANK(), for the next rank after two same rank, consecutive integer is used, no rank is skipped.

89. Give examples of Date functions?
NOW()- it will return current time and date.
DATE(): Extracts the date part of a date or date/time expression.

90. Datatypes in SQL?
INT, BIGINT, NUMERIC, FLOAT, DECIMAL, CHAR, VARCHAR, NCHAR, NVARCHAR.

91. **Aggregate functions in SQL?**
These functions are used to do operations from the values of the column and a single value is returned.
    a. AVG()
    b. COUNT()
    c. FIRST()
    d. LAST()
    e. MAX()
    f. MIN()
    g. SUM()

92. What are scalar functions?
These functions are based on user input, these too returns single value.
1. LEN()
2. ROUND()
3. NOW()

93. User Defined Function?
These functions are created by the user in the system database or in a user-defined database.

94. How to define a variable in SQL?
We declare variables using DECLARE clause.

95. Unicode datatypes in SQL?
Nvarchar(), nchar(), nvarchar(max) are the Unicode datatypes.

96. What is inner join?
It returns the matched values from both tables.

97. What is left join?
It returns all the values from left table along with matched values from the right table.

98. What is right join?
It returns all the values from right table along with matched values from left tables.

99. What is EXCEPT clause in SQL?
It will return all the columns from first query that are not present in the other query.

```
SELECT * FROM CUSTOMER
EXCEPT
SELECT * FROM CUSTOMER2
```

100. What are Constraints in SQL?

Constraints are used to specify the rules concerning data in the table. It can be applied for single or multiple fields in an SQL table during creation of table or after creating using the ALTER TABLE command. The constraints are:

- **NOT NULL** - Restricts NULL value from being inserted into a column.
- **INDEX** - Indexes a field providing faster retrieval of records.
- **PRIMARY KEY** - Uniquely identifies each record in a table.
- **FOREIGN KEY** - Ensures referential integrity for a record in another tab

OS:

1.What is the maximum length of the filename in DOS?
8

2. When was the first operating system developed?
1950

3. When does page fault occur?
The page does not present in memory.

4. Banker's algorithm is used?
To prevent deadlock

5. When you delete a file in your computer, where does it go?
Recycle bin

6. What is the mean of the Booting in the operating system?
Restarting computer

7. What is bootstrapping also called?
Cold boot

8. If the page size increases, the internal fragmentation is also??
Increases

9. The size of virtual memory is based on which of the following?

Address bus

10. What is a thread?

A thread is a basic unit of CPU utilization.

11. What is an operating system?

The operating system is a software program that facilitates computer hardware to communicate and operate with the computer software

12. What is the main purpose of an operating system?

- It is designed to make sure that a computer system performs well by managing its computational activities. It provides an environment for the development and execution of programs.

13.What is a socket?

A socket is used to make connection between two applications.

14. What is kernel?

Kernel is the core and most important part of a computer operating system which provides basic services for all parts of the OS.

15. What do you mean by a process?

An executing program is known as process

16. How many types of processes are there in OS?

two (operating system processes and user processes)

17. What is virtual memory?

memory management technique which enables processes to execute outside of memory. This technique is used when an executing program cannot fit in the physical memory.

18. What is a mutual exclusion condition

It specifies that the resources involved are non-sharable.

19. What is FCFS?

FCFS stands for First Come, First Served. It is a type of scheduling algorithm.

20. What is deadlock?

Deadlock is a specific situation or condition where two processes are waiting for each other to complete so that they can start

21. What are the conditions that cause deadlock?

Mutual exclusion, Hold and wait, Circular wait, No preemption

22. Who provides the interface to access the services of the operating system?

System call

23. Where are placed the list of processes that are prepared to be executed and waiting?

Ready Queue

24. Which conditions must be satisfied to solve a critical section problem?

Bounded Waiting, Progress, Mutual Exclusion

25. What is booting?

It is a procedure of turning on the computer by loading the kernel.

26. What are the time-sharing systems?

multiple users can use a specific program from different terminals at the same time.

27. Give the advantages of a multiprocessor system.

processing capability of the system increases too.

28. how many states of process exist.

5(five)

29. what are the states of a process

- New
- Running
- Waiting
- Ready
- Terminate

30.What is IPC?
IPC stands for Inter-Process Communication, and it is a mechanism, in which various processes can communicate with each other with the approval of the OS.

31. What is a Scheduling Algorithm?

A scheduling algorithm is a process that is used to improve efficiency by utilizing maximum CPU and providing minimum waiting time to task

32. What are the different types of scheduling algorithms.?

First-Come, First-Served (FCFS) Scheduling

Shortest-Job-Next (SJN) Scheduling

Priority Scheduling

Shortest Remaining Time

Round Robin (RR) Scheduling

Multiple-Level Queues Scheduling

33. Which program runs first after booting the computer and loading the GUI?

Authentication

34. What is a system software?

The system software is a type of computer program designed to run hardware and software programs on a computer.

35. Which operating system runs on the server

Network OS

36. What is multi tasking?

It performs more than one task at a time using a single processor.

37. What is multiprocessing?

It performs more than one task at a time using multiple processors.

38. Explain zombie process?

basically a process that is terminated or completed but the whole process control block is not cleaned up from the main memory

39. What is responsible for managing all computer resources such as CPU, memory, files, processes, etc.

Kernel

40. Give 2 examples of OS

Ubuntu, Ms-Windows

41. What is RTOS in OS?

Real Time Operating System (RTOS) is an operating system that is used for real-time application

42. What is GUI?

GUI (Graphical User Interface) is basically a type of user interface that allows users to use graphics to interact with OS.

43. what is a process?

It is a computer program that is under execution.

44. What is the use of a banker's algorithm?

To prevent deadlock

45. What is the use of directory structure in the operating system?

It is used to store folders and files hierarchically.

46. Name some of the functions of kernel

Process management, Resource management, Disk management

47. What are the 2 most popular kernels?

Monolithic kernel, Microkernel

48. What is Monolithic kernel

In this type of OS kernel, all the user services and kernel services reside in the same memory space

49. What is a microkernel

This type of kernel is small in size, and all the user and kernel services reside in different memory addresses

50. How is a thread different from a process?

The process is independent, whereas a thread is not.

A thread can assist other threads, whereas the process cannot.

51. What is starvation?

problem of not getting all needed resources is known as starvation.

52. Explain PCB?
PCB stands for Process Control Block, and it an operating system data structure, which can collect and store information about the processes.

53. What is Semaphore?

It is a variable that is used to create a synchronized process.

54. How many types of semaphores exist?

TWO

55. What are the different semaphores?

1. Counting semaphore.
2. Binary semaphore.

56. What is cache memory?

It is a volatile computer memory directly attached to the register, which provides high-speed data access to the processor.

57. What is IPC?
IPC stands for Inter-Process Communication, and it is a mechanism, in which various processes can communicate with each other with the approval of the OS.

58. Name the Various IPC mechanisms.

- Sockets
- Pipe
- Shared Memory
- Signals
- Message Queues

59. Give the difference between compiler and Interpreter.

A compiler first reads all the code at once and then tries to execute it, whereas an interpreter reads the code line by line and simultaneously executes it.

60. What are sockets?

Sockets are the Inter-process Communication mechanisms that are used to provide point-to-point communication between 2 processes.

61. What are the main memories used by an OS

RAM and ROM

62. Can there be a deadlock situation with a single process?

No, to occur a deadlock situation, we need at least 2 dependent processes.

63. What are interrupts?

These are the signals generated by the external input devices to stop the ongoing active process of the CPU

64. Explain pipe in OS?

Pipe is the method for exchanging information between processes.

65. What communication pipe performs?

Generally, pipe forms a one-way communication, which means by using a pipe, a process can only send information, such as output or other parameters of the process to another process.

66. Name the operations which are possible on a semaphore.
We can only perform 2 operations on a semaphore: Wait, and
Signal.

67. What is a critical section?

A critical section can only execute one process at a time, and this eliminates the problems that can be caused by concurrent accessing resources.

68. What is process scheduling?

routine followed by the process manager of the system. To use different methods and strategies to remove a particular running process or select another process for the CPU.

69. What are the types of scheduling?

Preemptive and Non preemptive

70. what is preemptive scheduling?

Processes are allocated to the CPU for a limited period.

71. what is non preemptive scheduling?

A process remains in the CPU till it gets entirely executed.

72. Name the various scheduling algorithms.

- First Come First Serve (FCFS).
- Shortest Job First (SJF).
- Priority Scheduling
- Round Robin Scheduling

73. What is priority scheduling

preemptive algorithm, and here CPU is allocated to those processes first that have a high priority.

74. What are the different types of memory used by the system?

Main memory, such as RAM and ROM.

Secondary memory, such as hard disk and e-drives.

Cache.

Internal process memory, such as registers.

75. What is a page in OS?

A page can be defined as the smallest unit of data, and it is a fixed-length contiguous block of virtual memory.

76. What do you know about the library?

A library is a collection of files that contains subroutines, data, and other objects that can be used by other programs.

77. What type of commands are required to perform various tasks in DOS?

External commands

78. Give examples of system software's

Operating system, Compiler, Utilities

79. What type of memory stores data in a swap file on a hard drive?

Virtual Memory

80. Which "semaphore" can take the non-negative integer values?

Counting Semaphore

81. Which operating system does not require a command to run?

Windows OS

82. what does the operating system work between?

User and Computer

83. What is the paging in the operating system?

In the operating system, paging is a memory management scheme (MMS) in which memory is divided into pages of fixed size.

84. Which backup methods is quickest and requires the least amount of backup space?

Incremental backups

85. How many types of buffer overflow in the operating system?

Two

Stack overflow and heap overflow

86. what is a buffer?

Temporary area of storage

87. what is a stack?

A stack is a special area of computer's memory which stores temporary variables created by a function

88. what is a heap?

The heap is a memory used by programming languages to store global variables

89. What is fragmentation?

A fragmentation is a state of a hard disk in which the most important parts of a single file are stored at different places in the disk. Loss of memory

90. what is PCB identified by?

PID(process ID)

91. What is used to prevent threads or processes from accessing a single resource?

Semaphore

92. Who is responsible for keeping the process from the program

Operating system

93. does windows OS require a command to run?

NO

94. State the main difference between logical from physical address space

Logical address refers to the address that is generated by the CPU. On the other hand, physical address refers to the address that is seen by the memory unit.

95. What are device drivers?

Device drivers provide a standard means of representing I/O devices that maybe manufactured by different companies

96. What is caching?

Caching is the processing of utilizing a region of fast memory for a limited data and process. A cache memory is usually much efficient because of its high access speed.

97. What is a folder in Ubuntu?

There is no concept of Folder in Ubuntu. Everything included in your hardware is a FILE.

98. What are approaches to Handling Deadlock.

Deadlock detection, avoidance, prevention

99. Which of the following usually provides the interface to get access to the services of OS?

System call, library, API

100. Which is the main function of the Command Interpreter?

To get and execute next user-specified command