First-Mid Term Examination

Birla Institute of Technology & Science, Pilani, Pilani Campus

Subject: Data Structures and Algorithmic Thinking (MPBA G537)

MBA in Business Analytics 1st Year- 2nd semester/2nd Year-1st semester
Maximum Marks: 30 Marks
Time duration: 90 Minutes
Date of Exam: 03 November 2022
NOTE: Each question carries equal marks i.e., ½

1. …….. level is where the model becomes compatible executable code

A) Abstract level

B) Application level

C) Implementation level

D) All of the above

2. Stack is also called as

A) Last in first out

B) First in last out

C) Last in last out

D) First in first out

3. Which of the following is true about the characteristics of abstract data types?

i) It exports a type.

ii) It exports a set of operations

A) True, False

B) False, True

C) True, True

D) False, False

4. …… is not the component of data structure.

A) Operations

B) Storage Structures

C) Algorithms

D) None of above

5. Which of the following is not the part of ADT description?

A) Data

B) Operations

C) Both of the above

D) None of the above

6. Inserting an item into the stack when stack is not full is called ……. Operation and deletion of item form the stack, when stack is not empty is called ……..operation.

A) push, pop

B) pop, push

C) insert, delete

D) delete, insert

7. ……. Is a pile in which items are added at one end and removed from the other.

A) Stack

B) Queue

C) List

D) None of the above

8. …… is very useful in situation when data have to stored and then retrieved in reverse order.

A) Stack

B) Queue

C) List

D) Link list

9. Which data structure allows deleting data elements from and inserting at rear?

A) Stacks

B) Queues

C) Dequeues

D) Binary search tree

10. Which of the following data structure can't store the non-homogeneous data elements?

A) Arrays

B) Records

C) Pointers

D) Stacks

11. A ……. is a data structure that organizes data similar to a line in the supermarket, where the first one in line is the first one out.

A) Queue linked list

B) Stacks linked list

C) Both of them

D) Neither of them

12. Which of the following is non-liner data structure?

A) Stacks

B) List

C) Strings

D) Trees

13. Which of the following data structure is non linear type?

A) Strings

B) Lists

C) Stacks

D) Graph

14. Which of the following data structure is linear type?

A) Graph

B) Trees

C) Binary tree

D) Stack

15. Match the following.

a) Completeness i) How long does it take to find a solution
b) Time Complexity ii) How much memory need to perform the search.
c) Space Complexity iii) Is the strategy guaranteed to find the solution when there in one.

A) a-iii, b-ii, c-i

B) a-i, b-ii, c-iii

C) a-iii, b-i, c-ii

D) a-i, b-iii, c-ii

16. The number of comparisons done by sequential search is ……

A) (N/2)+1

B) (N+1)/2

C) (N-1)/2

D) (N+2)/2

17. In ……, search start at the beginning of the list and check every element in the list.

A) Linear search

B) Binary search

C) Hash Search

D) Binary Tree search

18. State True or False.

i) Binary search is used for searching in a sorted array.

ii) The time complexity of binary search is O(logn).

A) True, False

B) False, True

C) False, False

D) True, True

19. Which of the following is not the internal sort?

A) Insertion Sort

B) Bubble Sort

C) Merge Sort

D) Heap Sort

20. In a queue, the initial values of front pointer f rare pointer r should be …….. and …….. respectively.

A) 0 and 1

B) 0 and -1

C) -1 and 0

D) 1 and 0

21. In a circular queue the value of r will be ..

A) r=r+1

B) r=(r+1)% [QUEUE_SIZE – 1]

C) r=(r+1)% QUEUE_SIZE

D) r=(r-1)% QUEUE_SIZE

22. Which of the following statement is true?

i) Using singly linked lists and circular list, it is not possible to traverse the list backwards.

ii) To find the predecessor, it is required to traverse the list from the first node in case of singly linked list.

A) i-only

B) ii-only

C) Both i and ii

D) None of both

23. The advantage of …….. is that they solve the problem if sequential storage representation. But disadvantage in that is they are sequential lists.

A) Lists

B) Linked Lists

C) Trees

D) Queues

24. What will be the value of top, if there is a size of stack STACK_SIZE is 5

A) 5

B) 6

C) 4

D) None

25. …… is not the operation that can be performed on queue.

A) Insertion

B) Deletion

C) Retrieval

D) Traversal

26. In general, the binary search method needs no more than ……. comparisons.

A) [log2n]-1

B) [logn]+1

C) [log2n]

D) [log2n]+1

27. Which of the following is not the type of queue?

A) Ordinary queue

B) Single ended queue

C) Circular queue

D) Priority queue

28. The property of binary tree is

A) The first subset is called left subtree

B) The second subtree is called right subtree

C) The root cannot contain NULL

D) The right subtree can be empty

29. State true or false.

i) The degree of root node is always zero.

ii) Nodes that are not root and not leaf are called as internal nodes.

A) True, True

B) True, False

C) False, True

D) False, False

30. State true of false.

i) A node is a parent if it has successor nodes.

ii) A node is child node if out degree is one.

A) True, True

B) True, False

C) False, True

D) False, False

31. ……. is not an operation performed on linear list

a) Insertion b) Deletion c) Retrieval d) Traversal

A) only a,b and c

B) only a and b

C) All of the above

D) None of the above

32. Which is/are the application(s) of stack

A) Function calls

B) Large number Arithmetic

C) Evaluation of arithmetic expressions

D) All of the above

33. Which of the following data structures are indexed structures?

A. Linear arrays

B. Linked lists

C. Queue

D. Stack

34. When new data are to be inserted into a data structure, but there is not available space; this situation is usually called ….

A. Underflow

B. overflow

C. houseful

D. saturated

35. A data structure where elements can be added or removed at either end but not in the middle is called …

A. linked lists

B. stacks

C. queues

D. dequeue

36. Operations on a data structure may be …..

A. creation

B. destruction

C. selection

D. all of the above

37. The way in which the data item or items are logically related defines …..

A. storage structure

B. data structure

C. data relationship

D. data operation

38. Which of the following are the operations applicable an primitive data structures?

A. create

B. destroy

C. update

D. all of the above

39. The use of pointers to refer elements of a data structure in which elements are logically adjacent is ….

A. pointers

B. linked allocation

C. stack

D. queue

40. Arrays are best data structures

A. for relatively permanent collections of data

B. for the size of the structure and the data in the structure are constantly changing

C. for both of above situation

D. for none of above situation

41. Which of the following statement is false?

A. Arrays are dense lists and static data structure.

B. Data elements in linked list need not be stored in adjacent space in memory

C. Pointers store the next data element of a list.

D. Linked lists are collection of the nodes that contain information part and next pointer.

42. Which of the following data structure is non-linear type?

A) Strings

B) Lists

C) Stacks

D) Tree

43. Which of the following data structure is linear type?

A) Array

B) Tree

C) Graphs

D) Hierarchy

44. The simplest type of data structure is ……

A) Multidimensional array

B) Linear array

C) Two dimensional array

D) Three dimensional array

45. Linear arrays are also called …….

A) Straight line array

B) One-dimensional array

C) Vertical array

D) Horizontal array

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D) For none of the above

47. Which of the following data structures are indexed structures?

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B) Linked lists

C) Graphs

D) Trees

48. Each node in a linked list has two pairs of …….. and …….

A) Link field and information field

B) Link field and avail field

C) Avail field and information field

D) Address field and link field

49. A …… does not keep track of address of every element in the list.

A) Stack

B) String

C) Linear array

D) Queue

50. When does top value of the stack changes?

A) Before deletion

B) While checking underflow

C) At the time of deletion

D) After deletion

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53. The logical or mathematical model of a particular organization of data is called a ……

A) Data structure

B) Data arrangement

C) Data configuration

D) Data formation

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