DATA STRUCTURE INTERVIEW QUESTIONS.

1] **What is a data structure?**

⇒ • Data structure is a method that organizing the data in memory.
- Data structure is specialized format for organizing, processing, retrieving & storing data.
- Data structure includes Array, pointer, linked, list, stack, queue, structure, graph, searching, sorting, programs etc.
- Data structure is not a programming language.
- It is set of algorithm is use in any programming language to store the data in memory.
- Types of data structures
  i). Linear data structure.
  ii). Non - Linear data structure.

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2]. **What is Linear data structure?**

⇒ • In linear data structure elements are stored in sequentially.
- And each element are connected to previous and next element.
- Array, Linked list, stack and Queue are different type of linear data structures available.
- Linear data structure are easy to implement.

3]. **What is Non-Linear data structure?**

⇒ • In non-linear data structure elements are not arranged sequencially.
- Non-linear data structure is not easy to implement.
- It uses device memory efficiently.
- Trees and graph are examples of Non-linear data structure.

4]. **What is array?**

⇒
- An array is data structure for storing more than one data item that has similar data types.
- An array stored that position of each element can be computed from its index by its formula.
- In an array searching of element is easy by using index number.

5]. **What is Multidimentional array?**

⇒
- A Multidimentional array is with more than one dimention.
- It is an array of array.
- 2-D array are most commonly used.
- They are used to store data in tubular manner.

6]. **What is linked list in data structure?**

⇒
- It is a sequence of data structure, which are connected together via links.
- Each links contain a connection to another link.
- Linked list can grow & shrink its size, as per the requirement.
- It does not waste memory space.
  - i>. Singly linkedlist
  - ii>. Doubly linked list
  - iii>. Circular linked list.

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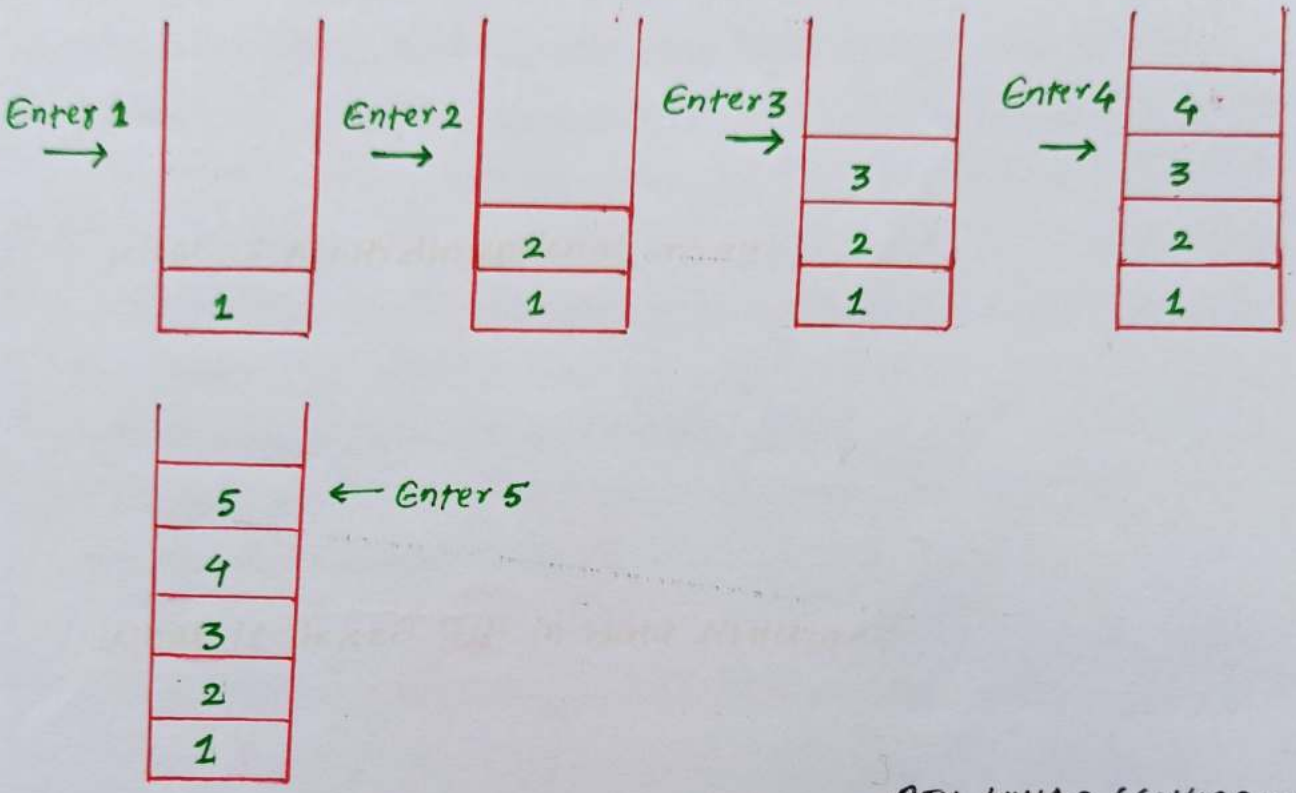
7]. **What is Merge sort?**

⇒
- Merge sort divides the array into two parts then sort it and combine it.
- It takes time of (n log n) in worst case.

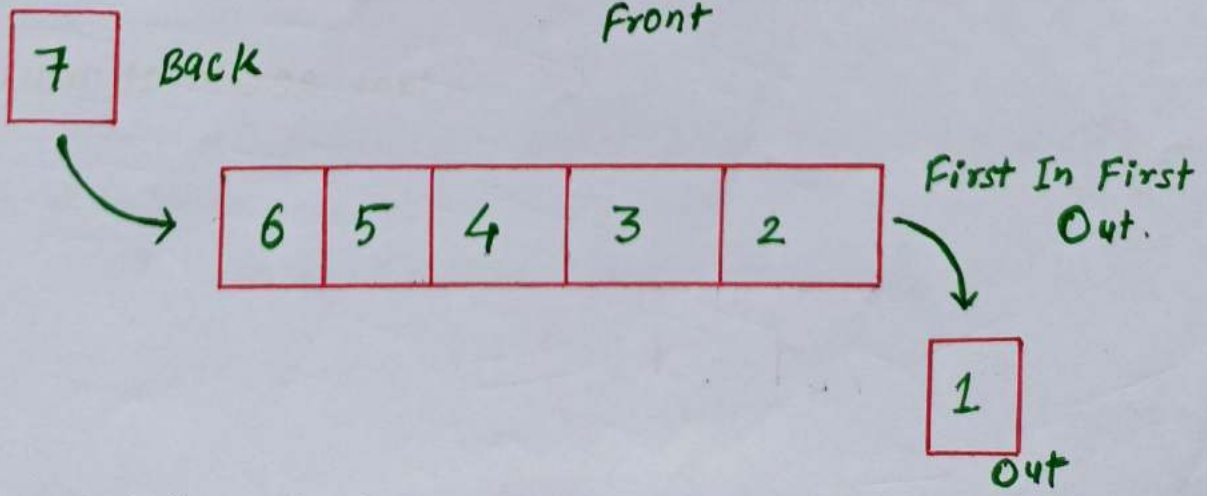
8]. **What is stack?**

⇒ • Stack is a linear data structure.
• Stack follows LIFO (Last In First Out) or FILO (First In Last Out).
• In stack elements are added from top.
• And element can deleted only from top.



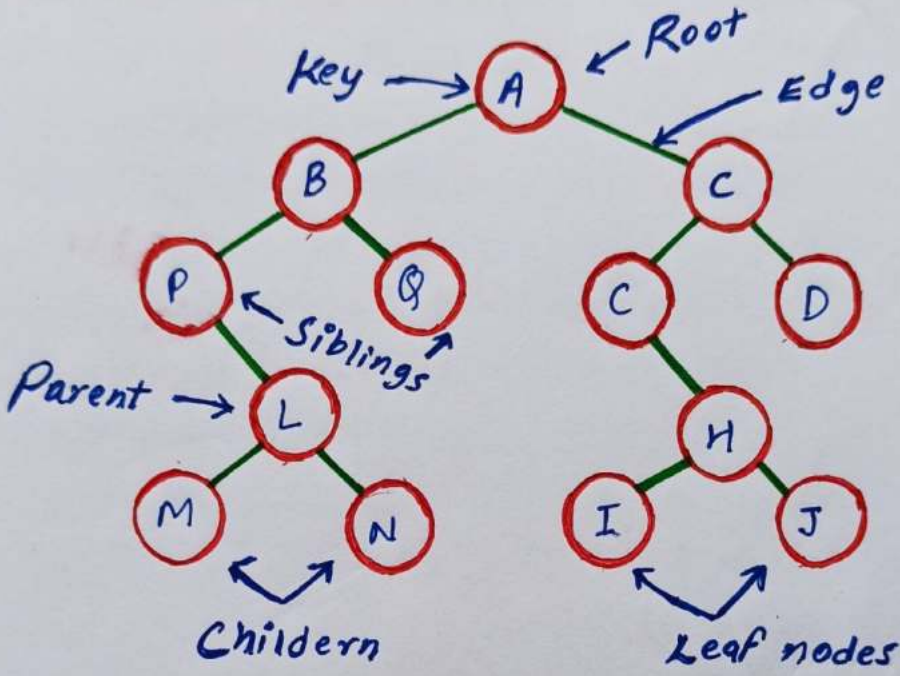
9]. **What is Queue data structure?**

⇒ • Queue is a linear data structure.
• It follows First In First Out (FIFO)
• Once a new element is inserted into queue all elements inserted before new element in queue must be removed to remove new element.



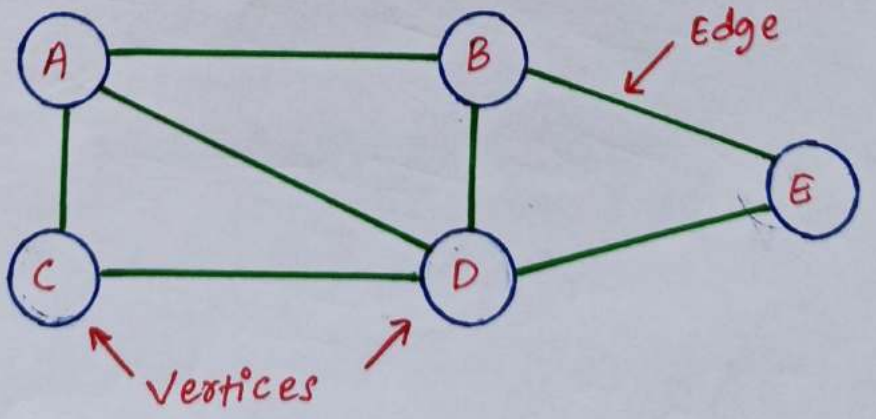
10]. **What is tree in Data Structure?**

⇒ • Tree data structure is a kind of hierarchical data arrange in a tree-like structure.
• This tree consist of central node structural node, and sub nodes.
• It consist of node that node stores a value.
• The topmost node called root node.



11]. **What is Graph in D.S.?**

⇒ • A Graph is consist of nodes & edges.
• Nodes are also called Vertices & edges are arcs that connects nodes in a graph.
• Graph looks like cyclic tree.



12]. **What is an algorithm?**

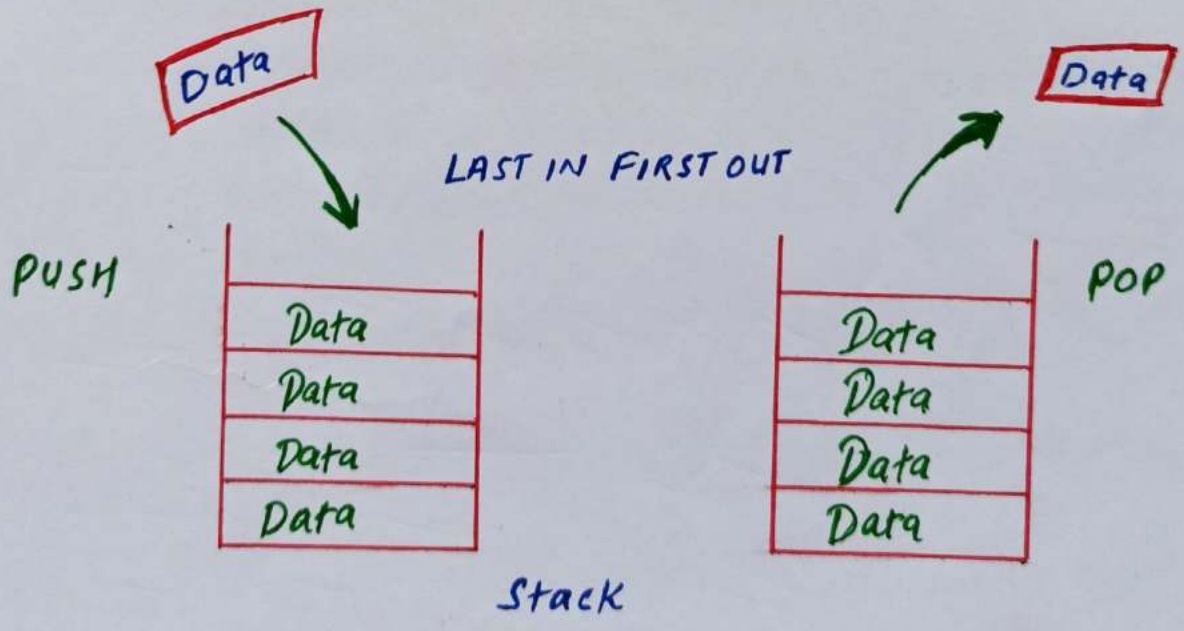
⇒ • An algorithm is a step by step method of solving a problem.
• It defines a set of instruction to be executed in certain order to get correct output.
• The algorithm designed are language independent.

13]. **What is selection sort?**

⇒ • In selection sort to find the minimum element in every iteration and place it in the array beginning from first index.
• Selection sort also divided into sorted and unsorted subarray.

14]. **What is Push in D.S.?**

⇒ • The PUSH Operator is used to insert a new element in the stack.
• PUSH Operation insert a new element at the top of stack.
• If insert a new element in full stack, a Overflow condition Occurs.
• PUSH add one element on top of the stack.



15]. **What is POP in D.S.?**

⇒ • The POP operator is used to remove a element from stack.
• POP operation removes a element from top of stack.
• Stack underflow condition occurs when stack is empty and we try to delete element from stack.

16] **What are dynamic D.S.?**

⇒ • It is collection of data in memory that expand and contract to grow or shrink in size as a program runs.
• This enables the programmer to control exactly how much memory is to be utilized.
• Examples: dynamic array, linked list, stack, queue, and heap.

17]. **What are the some application of D.S.?**

⇒ Numerical analysis, Operating system, Artifical Intelligence, Simulation, compiler design, statistical analysis, graphics, database management.

18]. **What is a Postfix expression?**

⇒ • A Postfix expression is a collection of operator and operands in which the operator is placed after the operands.
• In a postfix expression the operator follows the operands.

19]. **What is a dequeue?**

⇒ • Dequeue is a type of queue in which insertion & removal of element can either be performed from the front or the rear.

• It not follows FIFO Rule.

20]. **What are binary trees?**

⇒ • A binary tree is a tree data structure in which each parent node can have at most two children.

• We named it left child and right child.

• Binary tree contain :

i). Data

ii). Pointer to left child.

iii). Pointer to Right child.