

# Python Interview Questions.

By: @curious\_.programmer

1] What is python?

- Python was created by Guido van Rossum , and in 1991.
- Web applications are made by python with the help of servers.
- Python handles huge amount of data & perform mathematics.
- Python works on different platform like Mac, Linux, Windows, Raspberry Pi etc).
- Python is a object oriented programming language.
- Python is high level & most popular programming language.

2] Is the python case sensitive language.

→ Yes, Python is a case sensitive language.  
Because it differentiates the lower case & upper case identifiers.

3] What is Lambda function in python?

- · Lambda Function in python having no name.  
· Lambda forms are utilized to construct anonymous functions.  
· A normal functions are defined by def keyword but unnamed functions defined by lambda keyword.

example:-

```
adder = lambda x, y: x + y
```

```
print (adder (4, 8))
```

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4] What are the advantages of Python?

- · Python is very flexible & extensible language.  
· Python is object oriented programming language.  
· In python there are Tuple, list and dictionary  
• are useful data structure is present in the language.  
· Python runs on various platform like Mac, windows, Linux, raspberry pi etc.  
· Python is free and open source language.

5] What is PEP 8?

- 
- In python PEP 8 has appears as the style guide that most projects hold to it.
  - It provides a very readable and eye-pleasing coding style.
  - A full form of PEP is Python Enhancement Proposal.
  - PEP 8 recommends use 4 spaces to ~~to~~ show indentation and tabs should only be used to maintain consistency in the program.

6] What is self in python? @curious\_programmer

- 
- By using self keyword we can access the attribute & methods of class in python.
  - The self keyword is used to represent the instance of the class.
  - The self variable in the init method refer to the newly created object while in other methods.
  - Self is also used to refer to a variable field within the class.
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7] What is Init function in python?

- 
- `_init_` is one of the reserved method in Python.
  - The `_init_` method can be called when an object is created from the class.

- All **classes** have a function called `_init_()`, which is always executed when the class is being initiated.
- Use the `_init_()` function to assign values to object properties.
- The `_init` method doesn't create the object **attri** but only initialize the object's attributes.

8] What is pass in Python?

- The `pass` keyword represents a null operation in python.
- It is generally used for the purpose of filling up empty block of code which may execute during runtime.
- The `pass` statement is generally used as a placeholder.
- The `pass` statement is useful when you don't write implementation of Function.

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9] What is slice function in python.

- Python `slice()` Function is used to get a slice of elements from collection of elements.
- `slice()` function used with string, list, tuple, set, bytes or range objects .
- Syntax :- `slice(stop)`  
`slice(start, stop, step)`

10] How is memory managed in Python?

- Memory management in python involves a private heap containing all python objects & data structure.
- The python memory manager is deals with storage management aspects, like sharing, segmentation and caching.
- The core API gives access to some tools for programmer to code.
- In python there is also garbage collection is present. It recycles all the unused memory and so it makes free space in memory.

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11] What is tuple in Python?

- A tuple is a built in data type.
- We can stores a value in tuple.
- A tuple in Python is similar to a list.
- Tuples are immutable so we cannot change its values.
- Tuples respond to the + and \* operators much like strings.

12] What is an operator in Python?

- Operator is a symbol which is used on values to produce output on it.

- Arithmetic Operators are used to performing mathematical operations like addition, subtraction, multiplication & division.
- Comparison operator compares the values and returns true or false values on condition.
- Logical operator perform Logical AND, Logical OR and Logical NOT operations. It is used to combine conditional statements.
- Bitwise operator act on bit & perform bit-by-bit operations.
- Assignment operators used to assigning values to the variables.

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13. Is the python interpreted language?

- 
- A Python is an interpreted Language.
  - Python language program runs directly from the code.
  - Python converts the source code into language code. And it is again translated into machine language.
  - An interpreted language is any programming language that isn't already in machine code prior to runtime.
  - Python is fall under byte code interpreted.
  - The .py code source code is first compiled to byte code as .pyc .

14] What are Python iterators.

- · The iterators are objects which can be traversed through or iterated upon.
- Iterator contains countable number of values.
- Python iterators used to iterate object like list, tuple, and sets.
- The iterator object initialized using `iter()` method.

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15] Is indentation required in Python?

- · Indentation is most important for python.
- It specifies block of code. All code within loops classes functions etc.
- It is usually done by using four space character.
- If your code is not intended necessarily.
- It will not execute accurately and will throw error as well.

16] What is namespace in Python?

- A namespace is naming system used to make sure that names are unique to avoid naming conflicts.

17] What are local and global variable in Python?

- There are two types of variables local and global variables.

Local variables:-

- Local variables can only be reached within their scope.
- Any variable declared inside a function is known as a local variable. This variable is present in the local and not in the global space.

Global variables:- @curious-programmer

- A global variable can be used anywhere in the program as its scope is entire program.
- Variable declared outside a function or in global space are called global variables.
- These variables can be accessed by any function in the program.

# C++

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1] What is C++ ?

- C++ is an object oriented programming language. It was found in 1985 by Bjarne Stroustrup.
- C++ gives programmer a high level of control over system and memory.
- C++ is lot of well-structured and safer language than C.
- C++ is next version of C.

2] What are advantage of C++ ?

- C++ is an object oriented programming language.
- C++ program is useful for low-level programming language.

- C++ is highly portable language.
  - C++ language used in multi device, multi-platform app development.
  - C++ is multi-paradigm means it follows three paradigm Generic, Imperative, Object Oriented.
  - C++ gives user complete control over memory management.
  - C++ is used in various industries like finance, app development, game development, virtual reality etc.
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### 3] What is difference between C and C++ ?

→

C	C++
1] C language was developed by Dennis Ritchie.	1] C++ language was developed by Bjarne Stroustrup.
2] C is subset of C++	2] C++ is superset of C.
3] C is a structured programming language.	3] C++ supports both structural and object oriented programming language.
4] C does not support the data hiding.	4] C++ supports the data hiding.
5] C does not support reference variable.	5] C++ supports reference variable.

4] Define namespace in C++.

- - The namespace is logical division of the code which is designed to stop naming conflict.
- The main use of namespace in C++ is to remove ambiguity.
- Using namespaces, we can create two variable with having same name.
- Namespace is feature added in C++ and not present in C.
- Namespace declarations can be nested within another namespace.

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5] Define token in C++.

- - Token is a keyword in a C++. And it also identifier, literal, constant and symbol.

6] Define 'std'.

- - std is the default namespace standard used in C++.

7] What is full form of STL in C++?

- - Full form of STL is Standard Template Library.

8] Who invented C++ language?

→ - Bjarne Stroustrup.

9] How delete[] is different from delete?

→ - Delete is used to release a unit of memory  
delete[] is used to release an array.

10] What is destructor?

→ - Destructor in C++ are members functions in a class that delete an object.  
- A destructor has same name as class name.  
- Destructor is useful for releasing resources before exiting a program. @curious-programmer

11] What is constructor?

→ - Constructor is used to initialize an object.  
- Constructor is member function of class. Whose name is same as class name.  
- Constructor does not have a return type.  
- Therefore it do not have return type.

12] Explain this pointer?

→ - Pointer holds the address of current object.

13] What is virtual inheritance?

- Virtual inheritance is used to remove the ambiguity of base class.
- When derived class inherits same base class via other classes during multiple inheritance  
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14] What does scope Resolution operator do?

- A scope resolution operator (::) is used to define the member function outside the class.

15] What is Pure Virtual Function?

- Pure virtual function are one of the way we conceptualise Abstract classes.
- It is essentially a virtual function declared in the parent class. doesn't have any implementation & only has declaration.

16] What is operator overloading?

- Operator overloading in C++ is an overloaded declaration is a declaration in same scope of function or operator declared with the same name more than once.

17] What is type casting in C++?

- - Type casting in C is used to change the data type.
- - It has two types:
  - 1) Implicit type conversion - It is automatic.
  - 2) Explicit type conversion - It is user defined.

18] What is stream in C++?

- - Stream refers to a stream of characters to be transferred between program thread and i/o.

19] How to clear screen in C++?

- - To clear the screen using - clrscr() or system("clear").

20] How to use space in C++?

- - We can give space in C++ programming by cout < " ";  
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21] How many keywords in C++?

- There are 96 keywords in C++.

22] What is conio.h in C++?

- - Conio.h is a header file used for console input and output operations.
- And it is used to creating text based user interfaces.

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23] What is endl in C++?

- - Endl is a predefined object of ostream class to insert a new line characters.

24] How to copy paste in turbo C++?

- ∴ Ctrl + Insert to copy
- ∴ Shift + Insert to paste.

25] What is iostream in C++?

- - Iostream is the header file which contain all the functions of program like cout, cin etc

26] How to find length of string?

- - There is built in function in c++.

string str\_L = "abcd";

cout << "The length of string is:" <<  
str\_L.length();

27] What is flush in C++?

- - Flush is used to synchronize the associated stream buffer with its controlled output sequence.

28] What is encapsulation?

- - When all the data members and member function are combined in the single unit called class & this process is called encapsulation. @curious\_programmer

29] What is abstract class in C++?

- - An abstract class is cannot be used directly and is used to form a base class for others to inherit from.  
- Ex - If you create an object for an abstract class the compiler will throw an error to you.

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# SQL

## Interview

## Questions

By: @curious\_programmer.

1] What is SQL ?

- SQL stands for structured Query Language.
- SQL is a standard language for relational database management systems.
- SQL is specially useful in handling organized data comprised of entities and relations between different entities of data.

2] What is DBMS ?

- Database management system is a software that is used to manage the database.
- A DBMS serves as an interface between end-user and database , allowing users to

and a database, allowing user to create, read, delete data in the database.

- Most widely used types of DBMS software are relation, distributed, hierarchical, object-oriented and network.

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### 3] What is Database?

- A database is an organized collection of data, and it can be easily accessed & managed.
- We can organize data into tables, rows, columns and index to find relevant info.
- The main purpose of the database is to operate large amount of information by storing, retrieving and managing data.
- There are many databases available like MySQL, Oracle, MongoDB, SQL server.

### 4] What is RDBMS ?

- RDBMS stands for Relational Database Management system
- Relational Database Management System is collection of programs & compatibilities that enables IT teams.
- RDBMS store data in the form of tables.

- RDBMS provides a dependable method of storing and retrieving large amount of data.
- RDBMS uses SQL queries to access the data in database.

### 5] What is a Database Table ?

- A table is a collection of related data entries and consist of column & rows.
- A row is each individual entry that exist in a table.
- A column holds specific information about every record in a table.
- Columns can be arranged in verticle and rows as horizontal.
- The column in table also called fields and rows called records.

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### 6] What is Primary key?

- A primary key is a minimal set of attributes in a table that uniquely identify rows in that table i.e. tuples.
- When multiple columns are used as a primary key, it is known as composite primary key.
- While using composite primary key you should use few column as possible.

- When more columns you use for primary key the more storage space you required.
- Primary key has unique data.
- Primary key cannot have null value
- We cannot use duplicate value for primary key.
- Maximum length of primary key is 900 bytes.

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### 7] What is Foreign key?

- A foreign key is a key used to link two tables together. It is also called referencing key.
- A foreign key is a combination of column whose value matches primary key in different table.
- Use of foreign key is to link attributes of two tables with the help of primary key attribute.
- Hence, it is used for creating & maintaining the relationship bet' two relations.

### 8] What is a Join?

- The SQL join clause is used to combine rows from two or more tables in a SQL database based on related column between the two.

• There are four different types of JOIN's:

- 1) JOIN
- 2) LEFT JOIN
- 3) RIGHT JOIN
- 4) FULL JOIN.

9] What is the SELECT statement?

- . SELECT statement in SQL is used to recover data from a database.
- . The data returned is stored in result table called result-set.
- . The SELECT to determine what to include in final result set.

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10] What is cursor in SQL?

- . Cursor is a temporary work station.
- . It created in system memory When SQL statement is executed.
- . A SQL cursor is a set of rows together with points that identify rows.
- . Types of cursor:
  - 1) Implicit cursor.
  - 2) Explicit cursor.
- . Cursor are used to store Database tables.

### 11] What are Entities?

- An entity can be real world object.
- An entity can be a single thing, person, place or object.
- Data can be stored about such entities.

### 12] What is relationships in SQL?

- Relationship is a link between entities that have something to do with each other.
- It includes one to one, many to many, many to one relations.
- Relation in database allow for clear table & help cut redundant database is important.

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### 13] What is an index in SQL?

- SQL index is a table used to speed up the searching of the data.
- It also recover large amount of data from tables.
- INDEX requires its own space in storage device.
- INDEX is a pointer to data in a table.
- An INDEX is same to an index in the back of book.
- INDEX is also unique constraint.

## 14] What is a Self -Join ?

- It is a join in which table is joined with itself.
- The self join can be viewed as a join of two copies of same table.
- Self -join statement is important when two sets of data in same table are compared.

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## 15] What is a cross -Join ?

- Cross -Join is a Cartesian product of rows from tables in join.
- Cross Join is combination of each row of first column table with each row of second table.
- It is also called cartesian join.

## 16] What is Alias in SQL?

- Aliases are temporary name given to table or column for SQL query.
- It used when name of table is used other than original name.
- Aliases used to make column names more readable.
- Aliases useful when there are more than one table complicated in a query.

17] What is Normalization?

- 
- Normalization is a process restructure the data in database.
  - There is no redundancy of data, all data stored in one place.
  - It eliminates characteristics like Insertion, Update and Deletion Anomalies.
  - Normalization converts large tables in small tables. and links them by relationships.

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18] What is Denormalization?

- 
- It is inverse process of Normalization.
  - When converted all small tables want to make single table then we have to use denormalization.
  - Denormalization is a technique used by database to optimize the efficiency of database.
  - This method allows to add mixed data into normal database.

# Data Structure

## Interview

### Questions.

By: @curious\_programmer.

Q) What is a Data Structure?

- Data structure is a method that organizing the data in memory.
- Data structure is a 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.

2] What is Linear data structure?

- In linear data structure elements are stored sequentially.
- And each element are connected to previous and next element.
- Array, Linked list, stack and Queue are different types 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 sequentially.
- Non-linear data structure is not easy to implement.
- It uses device memory efficiently.
- Trees and graph are examples of non-linear data structure.

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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 multidimensional array?

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

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6] What is linked list in data structure?

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

7] What is stack?

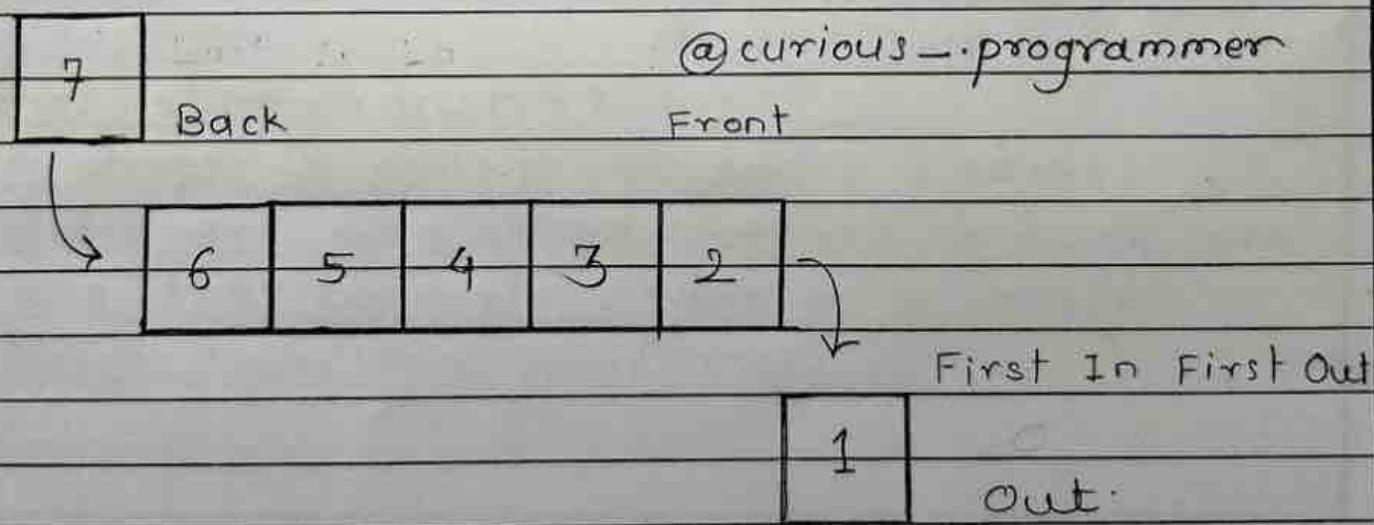
- Stack is a linear data structure.
- Stack follows LIFO(Last In First Out) or FILO(First In Last Out).
- In stack elements are added from top.
- And element can deleted only from stack.top.

Enter →	Enter 2		Enter 3	→	3
	→	2			2
1		1			1

Enter →			← Enter 5	
→		5		
4		4		
3		3		
2		2		
1		1		

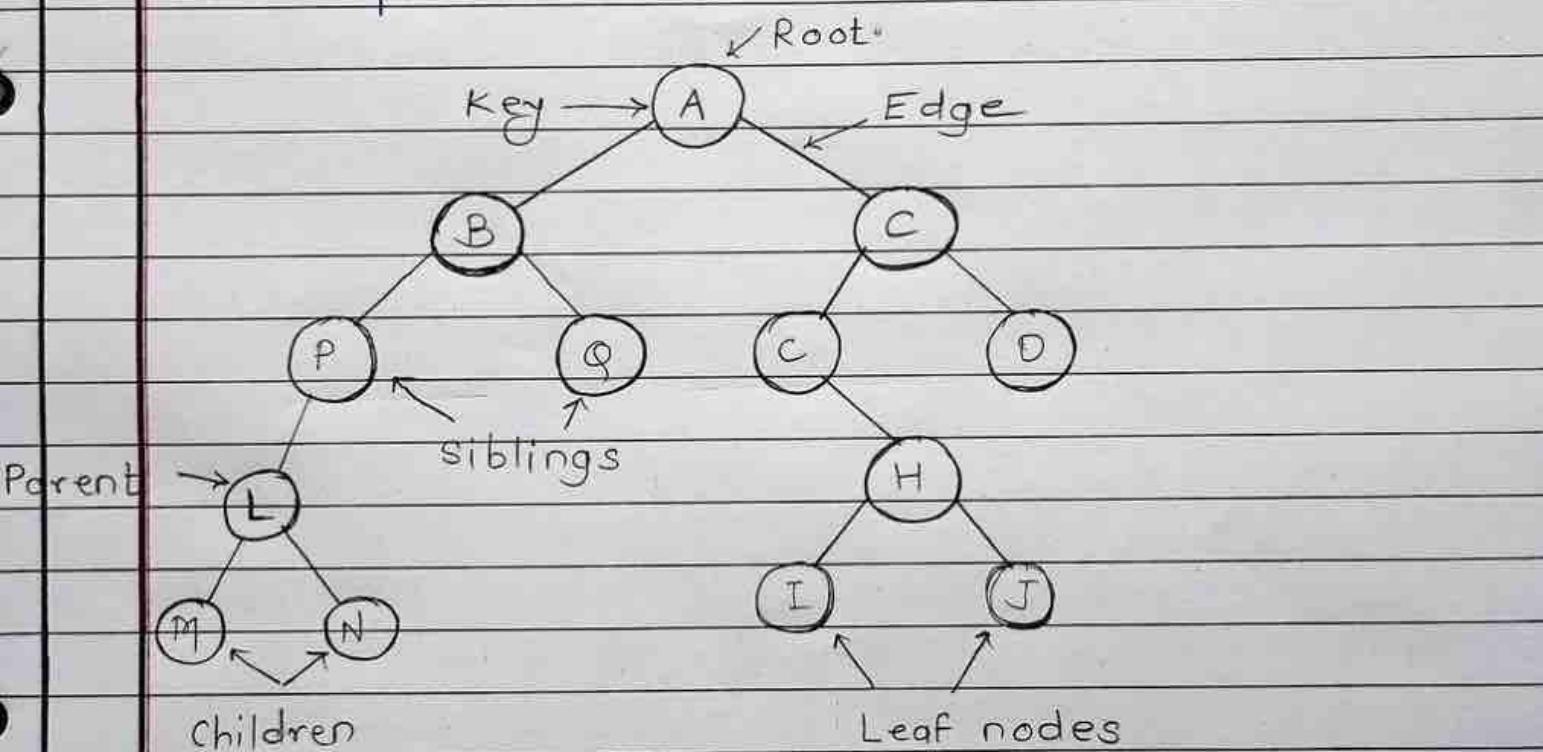
8] What is queue data structure.

- 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.



## 9] What is Tree in Data structure?

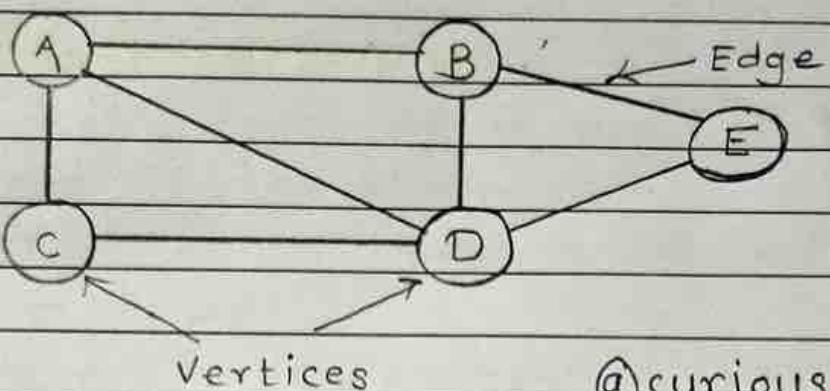
- Tree data structure is a kind of hierarchical data arrange in a tree-like structure.
- This tree consist of root central node, structural node, and sub nodes.
- It consist of node that node stores a value.
- The topmost node called root node.



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## 10] What is graph in D.S?

- A Graph is consist of nodes & edges.
- Nodes are also called vertices & edge are arcs. that connects nodes in a graph.
- Graph looks like cyclic tree.



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15] 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.

16] What is merge sort?

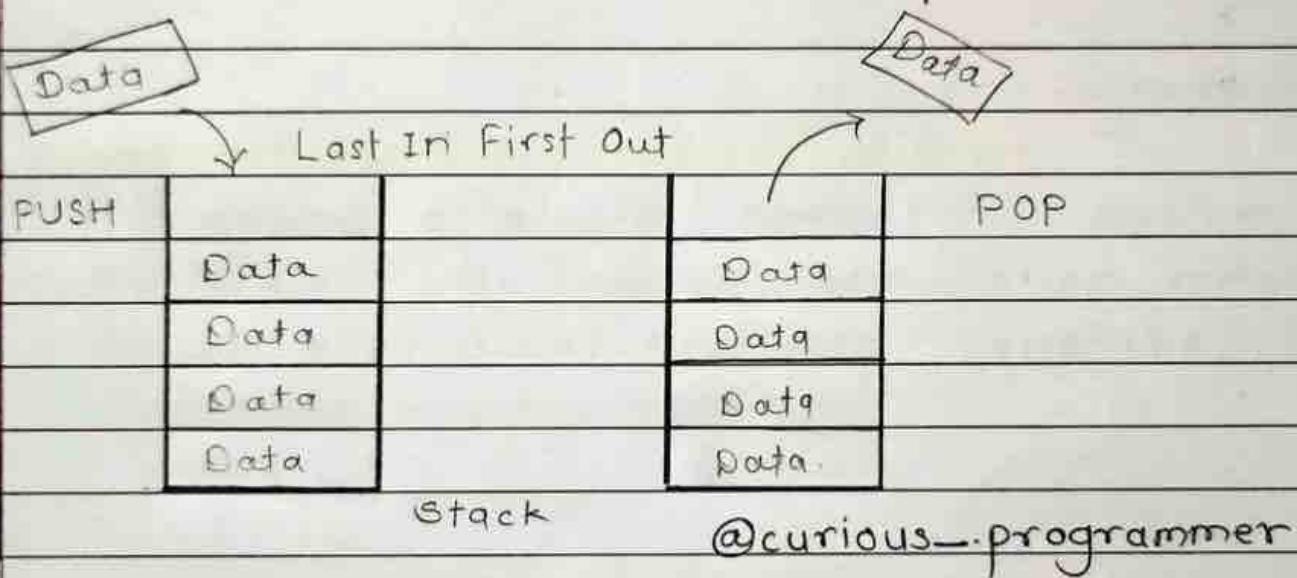
- Merge sort divides the array into two parts then sort it and combine it.
- It takes time of  $(n \log n)$  in worst case.

17] 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.

18] 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.



19] 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 occur when stack is empty and we try to delete element from stack.

20] 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.

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21] What are some applications of D.S.?

- • Numerical analysis, operating system, Artificial intelligence, simulation, compiler design, statistical analysis, graphics, database management.

22] What is a postfix expression?

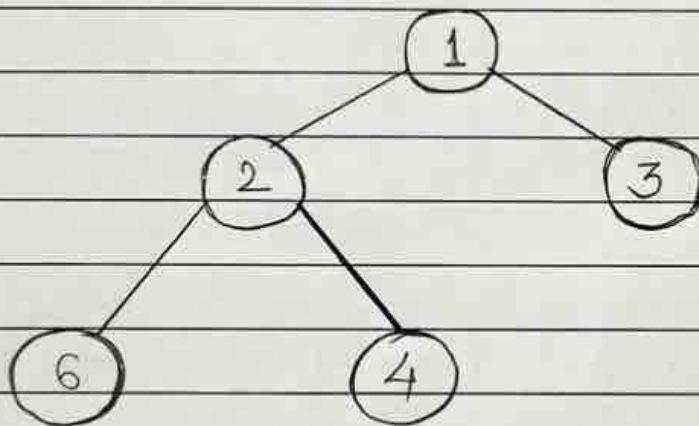
- • A postfix expression is a collection of operator and operands in which the operator is placed after the operands.
- In a postfix expression the operator follows the operands.

23] What is a deque?

- • Deque 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.

24) 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.



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