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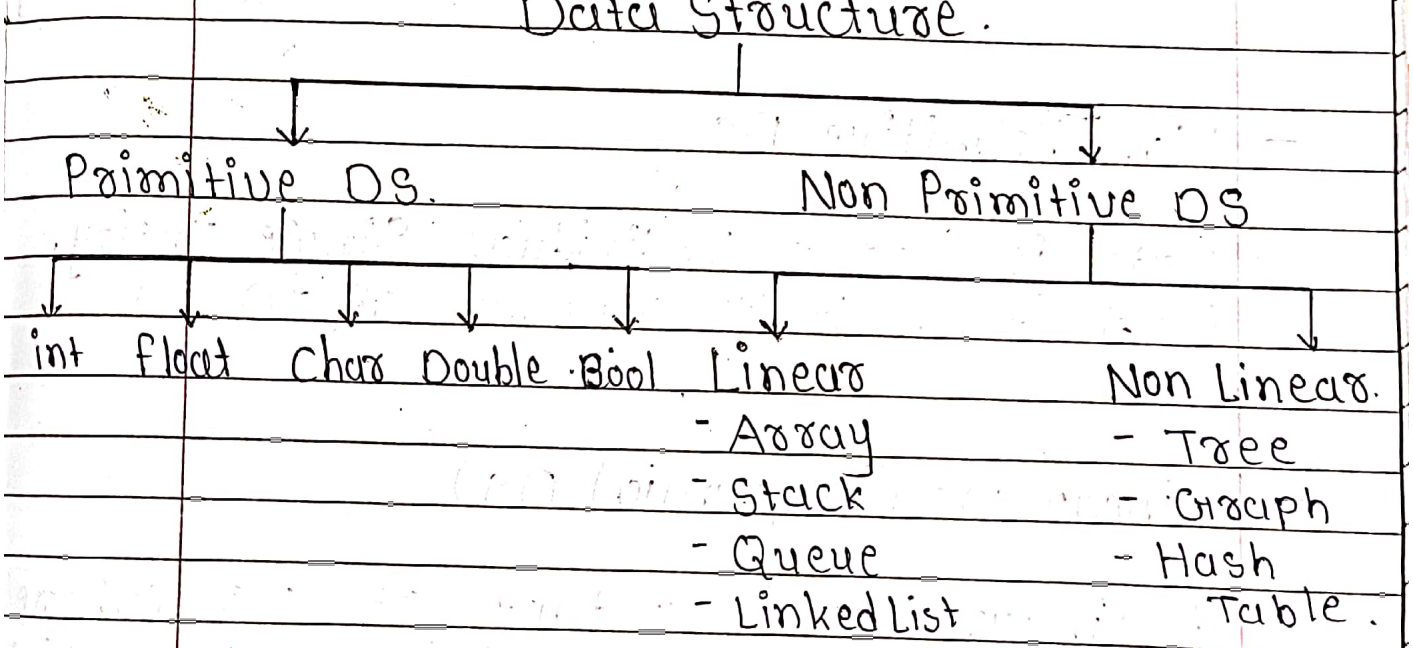
* What is Data Structure ?

→ Data Structure is a concept, It is Branch of Computer Science. But it is not a language.

→ Data Structure is a concept. We shows that. how the Data stored inside the memory and what is the Relation of the Data with another Data.
the.



- Primitive DS.
↳ Single Entity or Single Individual Storage is called Primitive DS.

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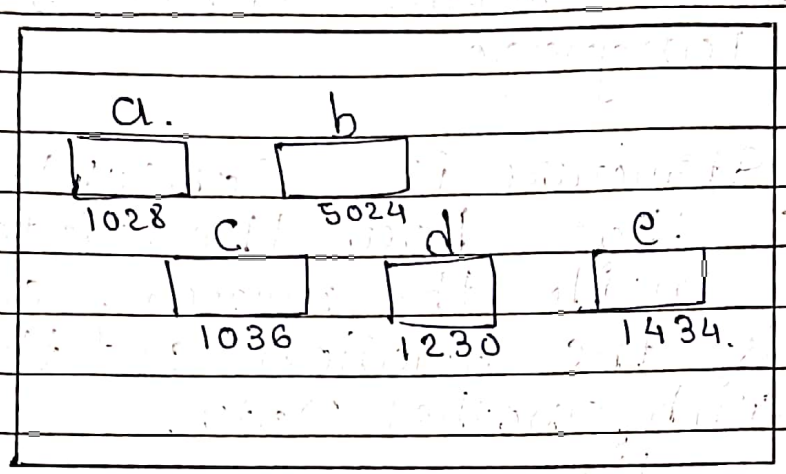
Ex -

int a, b, c, d, e ;



Store in Memory Like this.

Individual Variable Store.

Individual ~~and~~ or. Store Single Entity

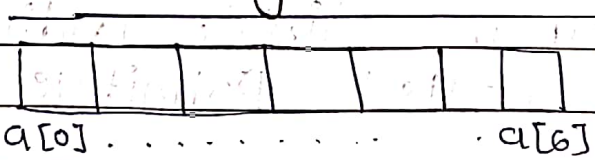
- Non Primitive DS.

↳ Data is not a Individual Single Entity, Data is in Bulk amount of Data.

- Linear DS (Sequential DS)

↳ A Linear DS is a type of DS where elements are arranged in a Sequential

Ex - Array. int a[7] ;



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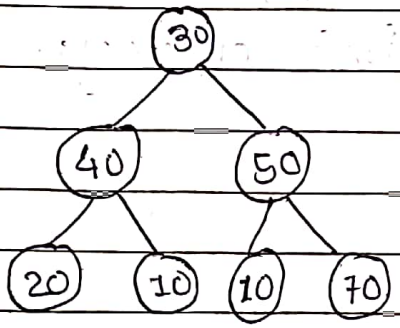
↳ We are know Starting and Ending Point.

- Non linear DS (Non Sequential DS)

↳ A non-linear DS is a type of DS where elements are not arranged in a Sequential.

Ex - Tree.



↳ We are know Starting Point But not Ending Point.

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DS.

Static
- Array

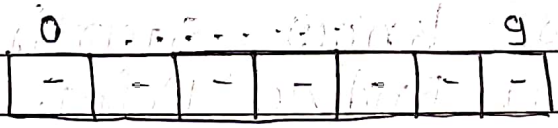
Dynamic.
- Linked List

- Static.
↳ It Store Fix amount of Data.
↳ It's Allocate the memory at Compile Time.
↳ The Data that gets memory Allocation at Compile time always has a fixed Size.

Ex -

Array.

```
int arr[10];
```



↳ We see in Above only Store fix Data 10, ~~are can't~~ Neither more Can be added nor less ; if we add less data, the memory will be wasted.

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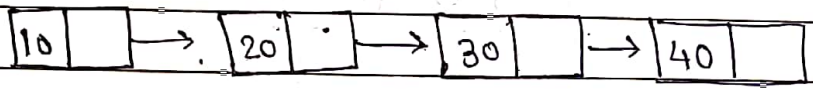
- Dynamic.

↳ It stores data in changeable size.
(It stores a variable amount of data)
↳ It allocates the memory at Runtime.
↳ The data that gets memory allocation at runtime does not have a fixed size.
↳ Memory can be increased or decreased as per requirement.

Ex -
Linked List.



↳ we see in above, data can be added or removed at runtime. No memory is wasted because only the required memory is allocated.

↳ we can add or remove data anytime.

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* Implementation

There are two ways to implement data Structures:

- Array Implementation.
  ↳ Fixed size, may lead to overflow or wasted memory.

- Linked List Implementation.
  ↳ Dynamic size, can grow or shrink as needed.