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Abstract data types & Arrays

ADTs are the way of classifying data structures by providing a minimal expected interface and set of methods.

ADT → Minimal required functionality
ADT → operations

ARRAY – ADT

An array ADT holds the collection of given elements accessible by an index.

elements → can be int, float, custom

Minimal functionality :- get(i) → get element i
set(i, num) → set element i to num.
representation

Operations :- Max()
Min()
Search(num)
Insert(i, num)
Append(x)

Static and Dynamic arrays

Static arrays → Size cannot be changed

Dynamic arrays → Size can be changed

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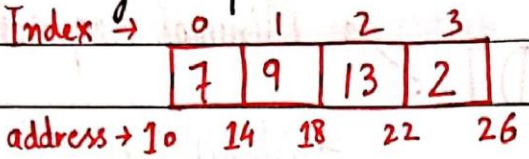
Quick Quiz : Code the operations mentioned above in C language by creating Array ADT using Structures.

Memory representation of Arrays



⇒ Array of Size 4

Elements in an array are stored in contiguous memory locations

Elements in an array can be accessed using the base address in constant time → O(1)

Array we use for faster retrieval and faster updating it has slow interstation and deletion