

→ ABSTRACT DATA TYPES & ARRAYS 6

→ ADTs are the way of ~~is~~ classifying

data structures by providing a minimal expected interface and set of methods.

ADT  $\begin{cases} \rightarrow \text{Minimal required functionality} \\ \rightarrow \text{Operations} \end{cases}$

$\rightarrow$  ARRAY - ADT

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

$\rightarrow$  Minimal Functionality :  $GET(i) \rightarrow$  get element  $i$   
 $SET(i, num) \rightarrow$  set element  $i$  to  $num$ .

$\rightarrow$  Operations :  $MAX()$   
 $MIN()$   
 $SEARCH(NUM)$   
 $INSERT(i, num)$   
 $APPEND(x)$

$\rightarrow$  Static & Dynamic arrays.

$\rightarrow$  Static arrays  $\rightarrow$  Size cannot be changed

$\rightarrow$  Dynamic arrays  $\rightarrow$  Size can be changed

$\rightarrow$  Memory representation of Arrays:

INDEX $\rightarrow$	0	1	2	3	
	7	9	13	2	
ADDRESS $\rightarrow$	10	14	18	22	26

$\rightarrow$  Elements in an array are stored in

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contiguous memory locations.

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