

CNAPS 10 1 - 17 - 08



- QUIZ TODAY
- LAB 1 DUE TOMORROW 10:00 PM

LOGICAL OPERATORS : and, or, not, xor

A	B	A and B
F	F	F
F	T	F
T	F	F
T	T	T

CONJUNCTION



NEGATION

A	not A
F	T
T	F

EXCLUSIVE OR

DISJUNCTION OR INCLUSIVE OR

A	B	A exor B
F	F	F
F	T	T
T	F	T
T	T	F

A	B	A or B
F	F	F
F	T	T
T	F	T
T	T	T

INPUT:  $n \geq 1$  (# OF #s IN THE LIST TO BE SEARCHED) [3]

$a_1, \dots, a_n$  (THE LIST ITSELF)

target (THE # WE ARE SEARCHING FOR)

OUTPUT: THE FIRST INDEX  $i$  SUCH THAT

target =  $a_i$ , OR 0 IF NO SUCH

INDEX  $i$  EXISTS.

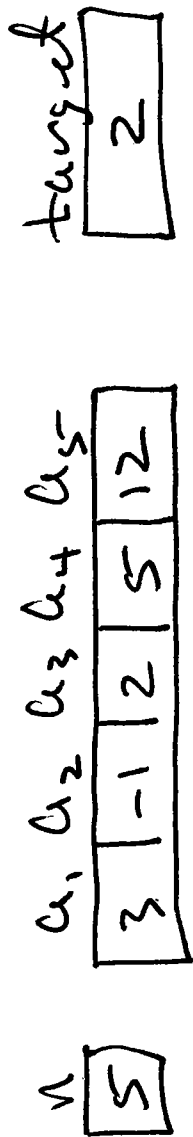
SEQUENTIAL SEARCH

- 1.) get  $n, a_1, \dots, a_n, \text{target}$
- 2.)  $i \leftarrow 1$
- 3.)  $\text{found} \leftarrow \text{false}$
- 4.) while  $[(i \leq n) \text{ and } (\text{not}(\text{found}))]$ 
  - 5.) if  $a_i = \text{target}$
  - 6.)  $\text{found} \leftarrow \text{true}$
  - 7.) else  $i \leftarrow i+1$
  - 8.) if not found
  - 9.)  $i \leftarrow 0$
  - 10.) Print  $i$
  - 11.) stop

5

EX Tracer This on list: 3, -1, 2, 5, 12

(so  $n=5$ ), AND  $target=2$



L  
~~TR~~  
M

Print 5

Ex. Assume ADDITION is a Primitive Operation,  
 while MULTIPLICATION is NOT (INTEGERS.) GIVEN  
 a, b, COMPUTE a.b

- 1.) get a, b
- 2.) Product  $\leftarrow 0$
- 3.)  $i \leftarrow 1$
- 4.) while  $i \leq b$
- 5.)     Product  $\leftarrow$  Product + a
- 6.)      $i \leftarrow i + 1$
- 7.) Print Product
- 8.) stop

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- 1.) get a, b
  - 2.) Prod  $\leftarrow 0$
  - 3.) for  $i \leftarrow 1$  TO  $b$
  - 4.)     Prod  $\leftarrow$  Prod + a
  - 5.) Print Prod
  - 6.) stop

Ex. Assume Multiplication is primitive, while  
 Exponentiation is NOT. Given  $a, b,$

Compute  $a^b$

- 1.) get  $a, b$
- 2.) power  $\leftarrow 1$
- 3.)  $i \leftarrow 1$
- 4.) while  $i \leq b$
- 5.) power  $\leftarrow \text{power} \cdot a$
- 6.)  $i \leftarrow i + 1$
- 7.) print power
- 8.) stop

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- 1.) get  $a, b$
  - 2.)  $p \leftarrow 1$
  - 3.) for  $i \leftarrow 1$  to  $b$
  - 4.)  $p \leftarrow p \cdot a$
  - 5.) print  $p$
  - 6.) stop