Data Structures

data object

set or collection of instances

integer = {0, +1, -1, +2, -2, +3, -3, …}

daysOfWeek = {S,M,T,W,Th,F,Sa}

Data Object

instances may or may not be related

myDataObject = {apple, chair, 2, 5.2, red, green, Jack}

Data Structure

Data object +

relationships that exist among instances

and elements that comprise an instance

Among instances of integer

369 < 370

280 + 4 = 284

Data Structure

Among elements that comprise an instance

369

3 is more significant than 6

3 is immediately to the left of 6

9 is immediately to the right of 6

Data Structure

The relationships are usually specified by specifying operations on one or more instances.

add, subtract, predecessor, multiply

Linear (or Ordered) Lists

instances are of the form

$(e_0, e_1, e_2, \ldots, e_{n-1})$

where e_i denotes a list element

$n >= 0$ is finite

list size is n