Abstract Data Type (ADT)

consists of

(1) a set S of mathematical objects, called states

(2) a set of operations on states.

- Manipulation Procedures: alter state.
- Access functions: return inform. about a state.

Ex. Queue of Integers

states: finite sequences of integers

like: (5, 1, -7, 2, 4, 0, 3, 1)

or: ( ) empty seq.

Operations

Manip. Procs.

Enqueue( )

Dequeue( )

Access fcns.

getFront( )

getLength( )

isEmpty( )

History of state

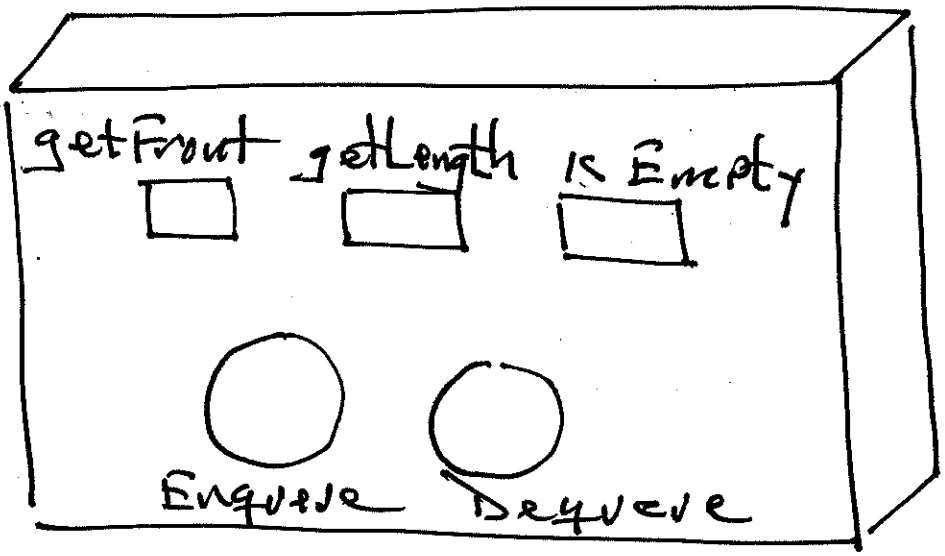
OP.	state	ret. Val
	( )	-
Enqueue(5)	(5)	-
Enqueue(1)	(5, 1)	-
Enqueue(-7)	(5, 1, -7)	-
Dequeue( )	(1, -7)	-
Enqueue(3)	(1, -7, 3)	-
getLength( )	(1, -7, 3)	3
getFront( )	(1, -7, 3)	1
isEmpty( )	(1, -7, 3)	False

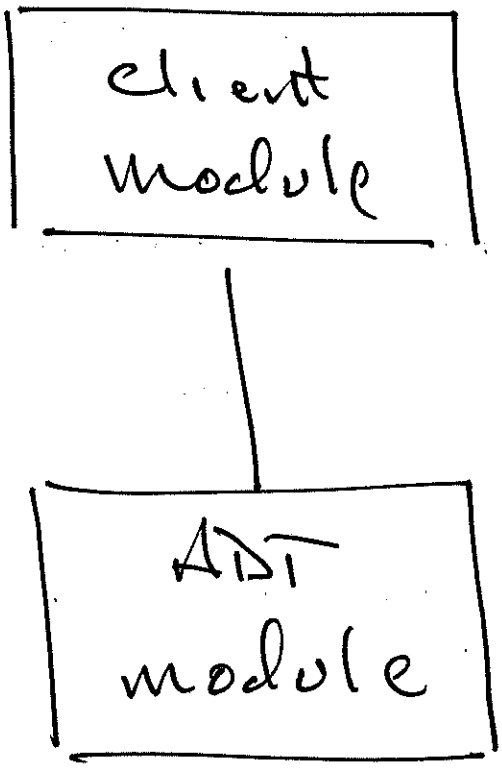
Preconditions: restrictions on state before an operation

Both Dequeue(), getFront() have Pre. cond.

not isEmpty()

Black Box Picture




client
module
ADT
module