

- The domain of the ADT Stack:
 $\mathcal{S} = \{s \mid s \text{ is a stack with elements of type } TElem\}$
- **init(s)**
 - **descr:** creates a new empty stack
 - **pre:** True
 - **post:** $s \in \mathcal{S}$, s is an empty stack
- **destroy(s)**
 - **descr:** destroys a stack
 - **pre:** $s \in \mathcal{S}$
 - **post:** s was destroyed
- **push(s, e)**
 - **descr:** pushes (adds) a new element onto the stack
 - **pre:** $s \in \mathcal{S}$, e is a $TElem$
 - **post:** $s' \in \mathcal{S}$, $s' = s \oplus e$, e is the most recent element added to the stack
- **pop(s)**
 - **descr:** pops (removes) the most recent element from the stack
 - **pre:** $s \in \mathcal{S}$, s is not empty
 - **post:** $pop \leftarrow e$, e is a $TElem$, e is the most recent element from s , $s' \in \mathcal{S}$, $s' = s \ominus e$
 - **throws:** an *underflow* exception if the stack is empty
- **top(s)**
 - **descr:** returns the most recent element from the stack (but it does not change the stack)
 - **pre:** $s \in \mathcal{S}$, s is not empty
 - **post:** $top \leftarrow e$, e is a $TElem$, e is the most recent element from s
 - **throws:** an *underflow* exception if the stack is empty

- **isEmpty(s)**
 - **descr:** checks if the stack is empty (has no elements)
 - **pre:** $s \in \mathcal{S}$
 - **post:**

$$isEmpty \leftarrow \begin{cases} \text{true, if } s \text{ has no elements} \\ \text{false, otherwise} \end{cases}$$

- **Note:** stacks cannot be iterated, so they don't have an *iterator* operation!