

- Domain of the ADT Set:
 $\mathcal{S} = \{s | s \text{ is a set with elements of the type } TElem\}$
- **init** (s)
 - **descr:** creates a new empty set
 - **pre:** true
 - **post:** $s \in \mathcal{S}$, s is an empty set.
- **add**(s, e)
 - **descr:** adds a new element into the set if it is not already in the set
 - **pre:** $s \in \mathcal{S}$, $e \in TElem$
 - **post:** $s' \in \mathcal{S}$, $s' = s \cup \{e\}$ (e is added only if it is not in s yet. If s contains the element e already, no change is made).
 $add \leftarrow \text{true}$ if e was added to the set, *false* otherwise.
- **remove**(s, e)
 - **descr:** removes an element from the set.
 - **pre:** $s \in \mathcal{S}$, $e \in TElem$
 - **post:** $s' \in \mathcal{S}$, $s' = s \setminus \{e\}$ (if e is not in s , s is not changed).
 $remove \leftarrow \text{true}$, if e was removed, *false* otherwise
- **search**(s, e)
 - **descr:** verifies if an element is in the set.
 - **pre:** $s \in \mathcal{S}$, $e \in TElem$
 - **post:**

$$search \leftarrow \begin{cases} True, & \text{if } e \in s \\ False, & \text{otherwise} \end{cases}$$
- **size**(s)
 - **descr:** returns the number of elements from a set
 - **pre:** $s \in \mathcal{S}$
 - **post:** $size \leftarrow$ the number of elements from s

- isEmpty(s)

- **descr:** verifies if the set is empty
- **pre:** $s \in \mathcal{S}$
- **post:**

$$isEmpty \leftarrow \begin{cases} True, & \text{if } s \text{ has no elements} \\ False, & \text{otherwise} \end{cases}$$

- iterator(s, it)

- **descr:** returns an iterator for a set
- **pre:** $s \in \mathcal{S}$
- **post:** $it \in \mathcal{I}$, *it* is an iterator over the set *s*

- destroy (s)

- **descr:** destroys a set
- **pre:** $s \in \mathcal{S}$
- **post:** the set *s* was destroyed.