

# BIRTHDAY\_BOOK

model: FUN[NAME, BIRTHDAY]

-- abstraction function

**do**

-- promote hashtable to function

**end**

put(n: NAME; d: BIRTHDAY)

**do**

-- implement using hashtable

**ensure** model = **old** model  $\uparrow$  [n,d]

-- infix symbol for override operator: @<+

**end**

remind(d: BIRTHDAY): ARRAY[NAME]

**do**

-- implement using hashtable

**ensure**

Result.count = (model  $\triangleright$  {d}).count

$\forall$  name  $\in$  (model  $\triangleright$  {d}).domain: name  $\in$  Result

-- infix symbol for range restriction: model @> (d)

**end**

count: INTEGER -- number of names

**feature** {NONE}

implementation: HASH\_TABLE[BIRTHDAY, NAME]

**invariant:**

count = model.count

count = implementation.count

$\forall$  [name, date]  $\in$  model: [name, date]  $\in$  implementation

remind: ARRAY[..]

model: FUN[NAME, ..]

\*  
HASHABLE

## NAME

item: STRING

**invariant**

item[1]  $\in$  A..Z

## BIRTHDAY

day: INTEGER

month: INTEGER

**invariant**

$1 \leq \text{month} \leq 12$

$1 \leq \text{day} \leq 31$