

DATABASE[G]*

feature {NONE} -- Implementation
data: ARRAY[G]

feature -- Commands

add_item* (g: G)
-- Add new item `g` into database.

require

non_existing_item: $\neg \text{exists}(g)$

ensure

size_incremented: $\text{count} = \text{old count} + 1$

item_added: $\text{exists}(g)$

feature -- Queries

count+: **INTEGER**

-- Number of items stored in database

ensure

correct_result: **Result** = data.count

exists* (g: G): **BOOLEAN**

-- Does item `g` exist in database?

ensure

correct_result: **Result** = $(\exists i : 1 \leq i \leq \text{count} : \text{data}[i] \sim g)$

DATABASE_V1[G]+

feature {NONE} -- Implementation
data: ARRAY[G]

feature -- Commands

add_item+ (g: G)
-- Append new item `g` into end of `data`.

feature -- Queries

count+: **INTEGER**

-- Number of items stored in database

exists+ (g: G): **BOOLEAN**

-- Perform a linear search on `data` array.

DATABASE_V2[G]+

feature {NONE} -- Implementation
data: ARRAY[G]

feature -- Commands

add_item++ (g: G)
-- Insert new item `g` into the right slot of `data`.

feature -- Queries

count+: **INTEGER**

-- Number of items stored in database

exists++ (g: G): **BOOLEAN**

-- Perform a binary search on `data` array.

invariant

sorted_data: $\forall i : 1 \leq i < \text{count} : \text{data}[i] < \text{data}[i + 1]$