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# Document Interface Specification

This document is generated by ComMA version 3.3.0.

# Versioning

|  |  |
| --- | --- |
| **Interface** | **Version** |

|  |  |
| --- | --- |
| IVendingMachine | 0.3 |

# Software Interface Design

## Syntax

### Data types and constants

#### Global User-Defined Types

**ENUMS**

|  |
| --- |
| **productName** |
| Enum with the available products |

|  |  |
| --- | --- |
| WATER |  |

|  |  |
| --- | --- |
| COLA |  |

|  |  |
| --- | --- |
| JUICE |  |

|  |
| --- |
|  |

|  |
| --- |
| **coinStatus** |
| When a coin is inserted in the vending machine
 it can be either rejected or accepted |

|  |  |
| --- | --- |
| ACCEPTED |  |

|  |  |
| --- | --- |
| NOT\_ACCEPTED |  |

|  |
| --- |
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| --- |
| **result** |
| Type for the result of the operation for requesting a product |

|  |  |
| --- | --- |
| DELIVERED |  |

|  |  |
| --- | --- |
| NOT\_ENOUGH\_MONEY |  |

|  |  |
| --- | --- |
| NOT\_ENOUGH\_SUPPLIES |  |

|  |
| --- |
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| --- |
| **switchOnResult** |
|  |

|  |  |
| --- | --- |
| SWITCH\_ON\_OK |  |

|  |  |
| --- | --- |
| LOAD\_PRODUCTS\_FIRST |  |

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**RECORD TYPES**

|  |
| --- |
| **Product** |
| Type for information about the products
 that can be ordered from the vending machine |

|  |  |  |
| --- | --- | --- |
| enum productName | name |  the name of the product |

|  |  |  |
| --- | --- | --- |
| int | cost |  the price of the product |

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### Signature

#### Interface IVendingMachine

COMMANDS

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| --- |
| void **loadProducts**(in int colaSupplies, in int juiceSupplies, in int waterSupplies)  |
| Description | Loads bottles of cola, juice and water into the machine.  |

|  |  |
| --- | --- |
| Parameter colaSupplies | the number of loaded bottles of cola |

|  |  |
| --- | --- |
| Parameter juiceSupplies | the number of loaded bottles of juice |

|  |  |
| --- | --- |
| Parameter waterSupplies | the number of loaded bottles of water |

|  |
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| --- |
| enum coinStatus **coinThrowedIn**()  |
| Description | A coin is thrown in the machine  |

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| --- | --- |
| Returns | indicates if the machine accepts or rejects the coin  |

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| --- |
| int **returnMoney**()  |
| Description | Command for returning the current credit.  |

|  |  |
| --- | --- |
| Returns | the amount of returned money  |

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| --- |
| enum result **orderProduct**(in enum productName prodName)  |
| Description | Command for ordering a product  |

|  |  |
| --- | --- |
| Parameter prodName | indicates the product name |

|  |  |
| --- | --- |
| Returns |   |

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| --- |
| enum switchOnResult **switchOn**()  |
| Description | Command for switching on the machine  |

|  |  |
| --- | --- |
| Returns | if the total number of bottles in the machine is more than 0the result is SWITCH\_ON\_OK, otherwise the result is LOAD\_PRODUCTS\_FIRST  |

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|  |

SIGNALS

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| --- |
| **switchOff**() |
| Description | Non-blocking call for switching off the machine |

|  |
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|  |

EVENTS

|  |
| --- |
| **zeroTotalSupplies**() |
| Description | Indicates that the machine is out of products |

|  |
| --- |
|  |

|  |
| --- |
| **outOfOrder**() |
| Description | Indicates that an internal error occurred |

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| --- |
|  |

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| --- |
| **inventoryInfo**(int items) |
| Description | Indicates the total number of bottles in the machine |

|  |  |
| --- | --- |
| Parameter items |  |

|  |
| --- |
|  |

## Semantics

### State behavior

#### Interface IVendingMachine

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| --- |
| **Global Variables** |
| **Type** | **Name** | **Comment** |

|  |  |  |
| --- | --- | --- |
| int | credit |  |

|  |  |  |
| --- | --- | --- |
| int | colaSupply |  |

|  |  |  |
| --- | --- | --- |
| int | juiceSupply |  |

|  |  |  |
| --- | --- | --- |
| int | waterSupply |  |

|  |
| --- |
| **Variable Initializations** |
| **Variable** | **Value** | **Comment** |

|  |  |  |
| --- | --- | --- |
| credit | 0 |  |

|  |  |  |
| --- | --- | --- |
| colaSupply | 1 |  |

|  |  |  |
| --- | --- | --- |
| juiceSupply | 1 |  |

|  |  |  |
| --- | --- | --- |
| waterSupply | 2 |  |

STATE MACHINE vendingMachine

Transitions defined in every state :

|  |  |  |
| --- | --- | --- |
| **Event** | **Guard** | **Actions** |

|  |  |  |
| --- | --- | --- |
| - |  | inventoryInfo |

Transitions defined in every state except states Initial:

|  |  |  |
| --- | --- | --- |
| **Event** | **Guard** | **Actions** |

|  |  |  |
| --- | --- | --- |
| switchOff() |  | - |

|  |  |  |
| --- | --- | --- |
| returnMoney() |  | reply |

|  |
| --- |
| **Initial State Initial** |
| **Event** | **Guard** | **Target State** | **Actions** |

|  |  |  |  |
| --- | --- | --- | --- |
| switchOn() | (colaSupply + juiceSupply + waterSupply) > 0 | Operational | reply(switchOnResult::SWITCH\_ON\_OK) |

|  |  |  |  |
| --- | --- | --- | --- |
| loadProducts(int colaSupplies, int juiceSupplies, int waterSupplies) |  | Initial | reply |

|  |
| --- |
| **State Operational** |
| **Event** | **Guard** | **Target State** | **Actions** |

|  |  |  |  |
| --- | --- | --- | --- |
| coinThrowedIn() |  | Operational | reply(coinStatus::ACCEPTED) |

|  |  |  |  |
| --- | --- | --- | --- |
| coinThrowedIn() |  | Operational | reply(coinStatus::NOT\_ACCEPTED) |

|  |  |  |  |
| --- | --- | --- | --- |
| orderProduct(enum productName prodName) |  | Operational | reply(result::DELIVERED)reply(result::NOT\_ENOUGH\_MONEY)reply(result::NOT\_ENOUGH\_SUPPLIES)reply(result::DELIVERED)reply(result::NOT\_ENOUGH\_MONEY)reply(result::NOT\_ENOUGH\_SUPPLIES)reply(result::DELIVERED)reply(result::NOT\_ENOUGH\_MONEY)reply(result::NOT\_ENOUGH\_SUPPLIES) |

|  |  |  |  |
| --- | --- | --- | --- |
| - | (colaSupply + juiceSupply + waterSupply) = 0 | Empty | zeroTotalSupplies |

|  |  |  |  |
| --- | --- | --- | --- |
| - |  | Error | outOfOrder |

|  |
| --- |
| **State Empty** |
| **Event** | **Guard** | **Target State** | **Actions** |

|  |
| --- |
| **State Error** |
| **Event** | **Guard** | **Target State** | **Actions** |

|  |  |  |  |
| --- | --- | --- | --- |
| - |  | Error | outOfOrder |



### Timing constraints

#### Interface IVendingMachine

Constraint TR1



Constraint TR2



Constraint OutOfOrder



### Data constraints

#### Interface IVendingMachine

Constraint DC1



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| GEN: Process Owner |
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# History of the Form

| Revision | Doc. Date | Author | CR-ID | Description |
| --- | --- | --- | --- | --- |
| 03 | 2017 Aug 22 | Rob Albers,Benno Tonissen | 2017/112 | * Comply with new format
* Added dedicated software interface design specification sections with guidance.
 |

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