

FACULTAD DE INGENIERÍA

GRUPO 5

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Exercise 1 ADT

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**ADT: Provider**

**Description**: an organization which has household appliances and takes care of their distribution. As an organization, it has certain information.

Constructors

**Provider**: name X description X address X city X phoneNumber X webPage → Provider

**Comment**: creates a provider with the specified information and no household appliances in the warehouse.

**Precondition**: a name, description, address, city, phone number and web page.

**Postcondition**: a provider with the specified information.

Modifiers

**addHouseholdAppliances**: Provider X householdAppliances → Provider

**Comment**: adds household appliances to the provider’s warehouse.

**Precondition**: a list of household appliances.

**Postcondition**: the provider with the household appliances added.

**removeHouseholdAppliances**: Provider X householdAppliance → Provider

**Comment**: checks if the household appliance is in the warehouse and if it is, it is removed.

**Precondition**: a household appliance.

**Postcondition**: if the household appliance is in the warehouse, the provider without it. Else, the provider as before the method was applied.

**provideHouseholdAppliance**: Provider X applianceName X applianceModel X quantity → householdAppliances

**Comment**: receives a household appliance name and model and the wanted number of them and, if available, returns them.

**Precondition**: a name, model and an integer higher than 0.

**Postcondition**: if enough products which satisfy the requirements are found, a list of those household appliances. Else, nothing.

Analyzer

**getProductQuantity**: Provider X name X model → numberOfProducts

**Comment**: given a product name and model, returns the quantity of that product in the warehouse.

**Precondition**: a name and model.

**Postcondition**: an integer >= 0.

**ADT: Catalogue**

**Description**: list of household appliances which have a discount.

Constructor

**Catalogue**: id X name X discount → Catalogue

**Comment**: constructs an empty catalogue with an id, name and a discount.

**Precondition**: an id, name and an integer x with 0<x<100.

**Postcondition**: an empty catalogue with the specified information.

Modifier

**addProduct**: Catalogue X householdAppliance → Catalogue

**Comment**: checks if the household appliance is already in the catalogue, if not, it adds it to the catalogue.

**Precondition**: a household appliance.

**Postcondition**: if the household appliance is not in the catalogue, the catalogue with it added. Else, the same catalogue as before the method.

**removeProduct**: Catalogue X householdAppliance → Catalogue

**Comment**: checks if the household appliance is in the catalogue, if it is, it removes it from the catalogue.

**Precondition**: a household appliance.

**Postcondition**: if the household appliance is in the catalogue, the catalogue without it. Else, the same catalogue as before the method.

Analyzer

**hasProduct**: Catalogue X householdAppliance → boolean

**Comment**: checks whether a household appliance is in the catalogue or not.

**Precondition**: a household appliance.

**Postcondition**: true if the household appliance is in the catalogue, false other way.

**ADT: HouseholdAppliance**

**Description**: a product with a name, model and price that can be bought or sold and is made by a manufacturer.

Constructor

**HouseholdAppliance**: name X model X price → HouseholdAppliance

**Comment**: creates a household appliance with the specified name, model and price and a label depending on these.

**Precondition**: a name, model and a real number > 0.

**Postcondition**: a household appliance with the specified information.

Modifier

**changePrice**: HouseholdAppliance X newPrice → HouseholdAppliance

**Comment**: changes the price of the specified household appliance to the new one.

**Precondition**: a household appliance and a real number > 0.

**Postcondition**: the household with the new price.

**ADT: Manufacturer**

**Description**: produces the household appliances.

Constructor

**Manufacturer**: name X description X address X city X phoneNumber X webPage → Manufacturer

**Comment**: creates a manufacturer with the specified information.

**Precondition**: a name, description, address, city, phone number and web page.

**Postcondition**: a manufacturer with the specified information.

Analyzer

**makeHouseholdAppliances**: Manufacturer X applianceName X applianceModel X quantity → HouseholdAppliances

**Comment**: given a household appliance name and model, makes the specified quantity of those.

**Precondition**: a household appliance name and model and an integer > 0.

**Postcondition**: the specified number of the specified household appliance.

**ADT: Label**

**Description**: contains the household appliance’s information.

Constructor

**Label**: id X name → Label

**Comment**: creates a label with the specified information.

**Precondition**: an id and name.

**Postcondition**: a label with the specified information.

**ADT: LineCart**

**Description**: buying order for a household appliance which contains the number of it to be bought.

Constructor

**LineCart**: id X householdAppliance X quantity → LineCart

**Comment**: creates a line cart with the specified information.

**Precondition**: an id, household appliance and an integer > 0.

**Postcondition**: a line cart with the specified information.

Modifier

**addProduct**: LineCart X quantityToAdd → LineCart

**Comment**: adds more of the same product to the cart.

**Precondition**: an integer > 0.

**Postcondition**: the line cart with the products added.

**removeProduct**: LineCart X quantityToRemove → LineCart

**Comment**: removes some of the products from the cart.

**Precondition**: an integer > 0.

**Postcondition**: the line cart without the products removed.

Analyzer

**getPrice**: LineCart → price

**Comment**: calculates the line cart’s price by multiplying the number of products by its price.

**Precondition**: a line cart.

**Postcondition**: a real number >= 0.

**ADT: Cart**

**Description**: a line cart holder, where a customer can check the products he is going to buy and how many of them.

Constructor

**Cart**: id → Cart

**Comment**: creates an empty cart with a total price of 0.

**Precondition**: an id.

**Postcondition**: a cart with the specified id.

Modifier

**addProducts**: Cart X LineCart → Cart

**Comment**: adds a line cart and recalculates the total value of the cart by adding the value of the line cart to it.

**Precondition**: a line cart.

**Postcondition**: the cart with the line cart added and its price added to the cart’s total price.

**removeProducts**: Cart X HouseholdAppliance X quantityToRemove → Cart

**Comment**: looks for the line cart of the specified household appliance and removes the quantity specified. Recalculates the total value of the cart with the modified line cart. If the line cart product quantity is 0, removes it from the cart.

**Precondition**: a household appliance and an integer > 0.

**Postcondition**: the cart with the products removed and its total price reduced.

Analyzer

**getTicket**: Cart → Ticket

**Comment**: creates the cart’s corresponding ticket with the cart’s id and total price.

**Precondition**: a cart.

**Postcondition**: a ticket.

**ADT: Ticket**

**Description**: a bill with the corresponding cart’s amount of money to be paid.

Constructor

**Ticket**: id X amountToPay → Ticket

**Comment**: creates a ticket with the specified information.

**Precondition**: an id and a real number > 0.

**Postcondition**: a ticket with the specified information.