Subject: Object Oriented Programming

NRC: 2858

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Subject: Mechanic Shop

Contenido

General objective

To develop a management system for a mechanic workshop, so that the program can expand productivity, reduce waiting time for customers, obtain an inventory in order and optimize the results of the enterprise.

Specific Objectives

- To optimize the administrative services in the enterprise.
- Implement a payment service.
- Register customers in a database for future revisions in their vehicles.
- To organize an inventory by product category.

Theory

Glossary

- **Object Oriented Programming:** Manipulates input and output data through specific objects.
- **Library:** Implementation and coding of a programming language.
- **Class:** Set of variables.
- **Variable:** Values or operations to take or process.
- **Programmable Function:** Main algorithm that allows to solve a specific task.
- **Algorithm:** Set of instructions.
- **Object:** Information elements characterized by real data.
- **Method:** Actions that the object can do by itself.
- **Attribute:** Variables related to the state of an object.
- **Event or Behavior:** Realizable actions.
- **Messages:** Data transmission.
- **Instance:** Call of an object.
- **String:** Data type that interprets a text string.

Definition

The mechanic service workshop "Martinez" is located in the province of pichincha canton quito, Chillogallo neighborhood el Girón. This workshop began in 2011, a small shop that had a master mechanic, over time it grew to have workers and offer a variety of services, becoming a profitable business, acquire several tools due to technological advancement.

Problem

Based on the growth of mechanics, the need arose to implement a system that allows effectively manage the different processes, such as customer and product registration processes, while disorganization generated a significant loss of time, both for the customer and the worker.

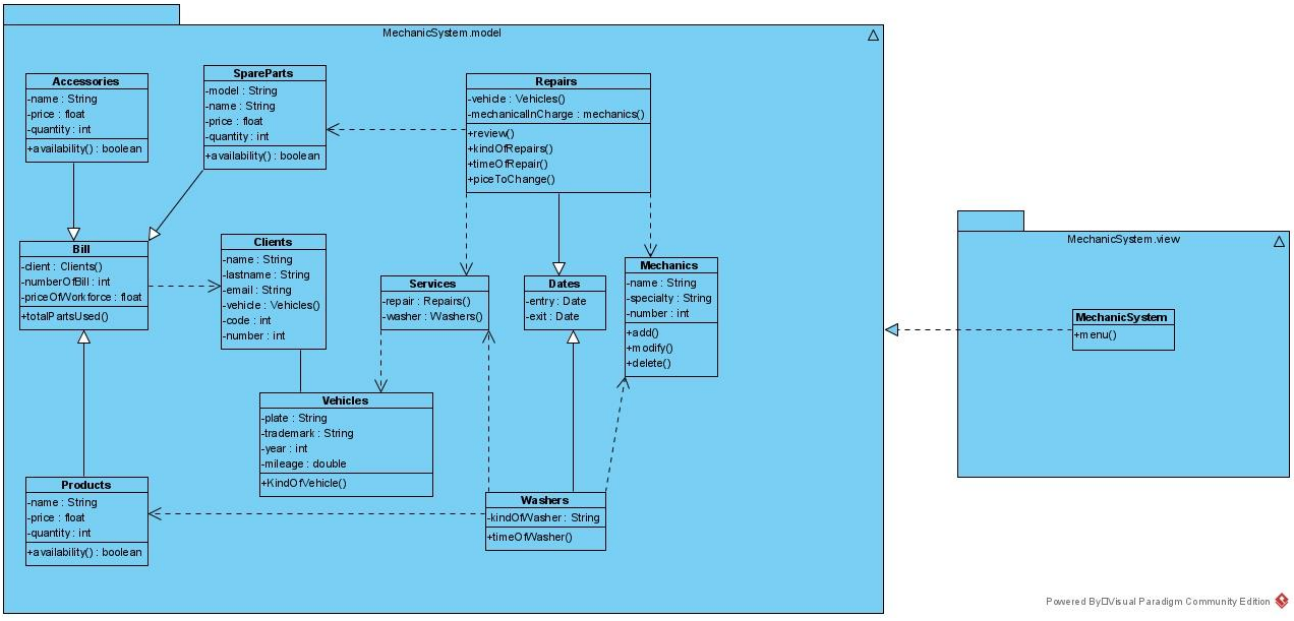
Solution

Establish a system based on object-oriented programming, which guarantees the optimization of time when providing a service, structure an inventory capable of describing each product and the exact location in the warehouse, develop a payment system, which stores the data of recurring customers securely. Define services and budgets based on what the repair shop offers.

Scope

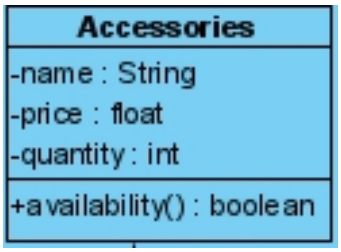
The system will allow the entry of customer and employee data, which will be stored in a database. It will define the services provided by the workshop with their costs and the products used, they will have a description and location of each one, stored in categories by products.

UML Diagram



UML Diagram Description

Accesories



Attributes

name: variable used to store the name of an accessory of type string.

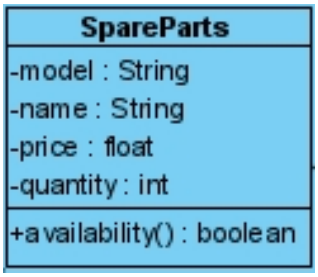
price: variable used to store the price of an accessory of type float.

quantity: variable to store the number of existing accessories of type int.

Methods

availability(): boolean method determines if an accessory is in stock.

SpareParts



Attributes

model: variable describing the model of a spare part of type string.

name: variable used to store the name of a string type spare part.

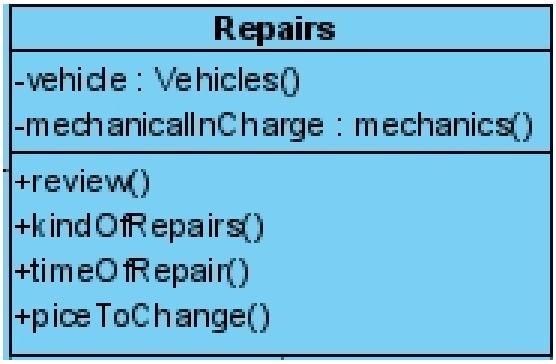
price: variable to store the price of a spare part of type float.

quantity: variable to store the number of existing spare parts of type int.

Methods

availability(): boolean method determines whether a spare part is in stock.

Repairs



Attributes

vehicle: variable allowing to use the attributes of the vehicle class.

mechanicalInCharge: variable allowing to use the attributes of the mechanic class.

Methods

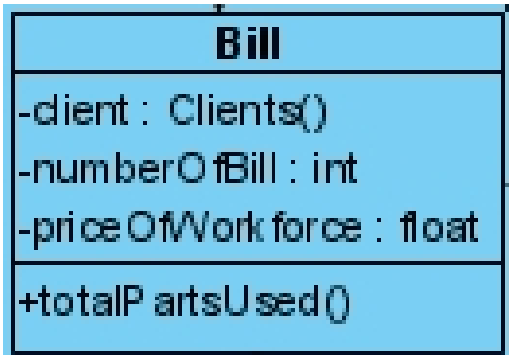
review(): void method describing an overhaul of a vehicle.

kindOfRepairs(): void method describing what is performed in a vehicle checkup.

timeOfRepairs(): void method describing the time taken for a vehicle revision.

piceToChange(): void method describing the change price.

Bill



Attributes

client: variable allowing to use the attributes of the customer class.

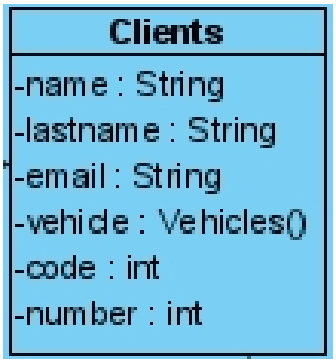
numberOfBill: variable that stores the number of delivered invoice of type int.

priceOfWorkforce: variable that stores the price of workforce of type float.

Methods

totalPartsUsed(): void method describing the total parts used.

Clients



Attributes

name: variable used to store the name of a string client.

lastName: variable that allows saving the last name of a customer of type string.

email: variable that saves the customer's email of type string.

vehicle: variable that uses the data of the vehicles class.

code: variable that allows to store a code for each customer of type integer.

number: variable that allows to store the phone number of each customer that enters, of type integer.

Services

Attributes

repair: variable that uses the attributes of the repairs class.

washer: variable that uses the attributes of the washers class.

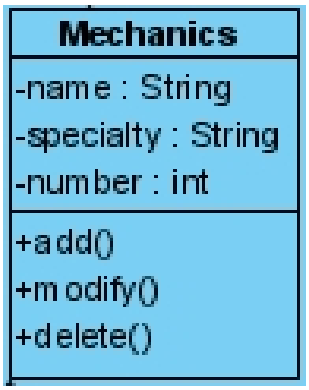
Dates

Attributes

entry: variable that stores the date of entry to the mechanics.

exit: variable that saves the date of exit from the mechanics.

Mechanics



Attributes

name: variable used to store the name of a mechanic of type string.

specialty: variable that stores the specialty of each mechanic of type string.

number: variable that stores the number of each mechanic of type int.

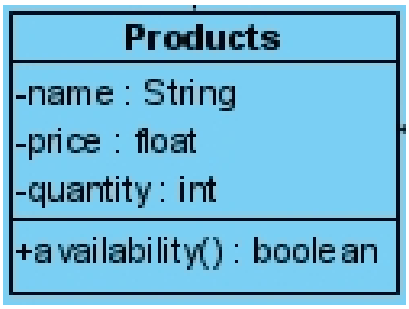
Methods

add(): Void method in which it allows the entry of a plate or data of the person.

modify(): Void method in which it allows to modify a plate or person's data.

deleted(): Void method in which it allows the removal of a plate or data of the person.

Products



Attributes

name: variable used to store the name of a product of type string.

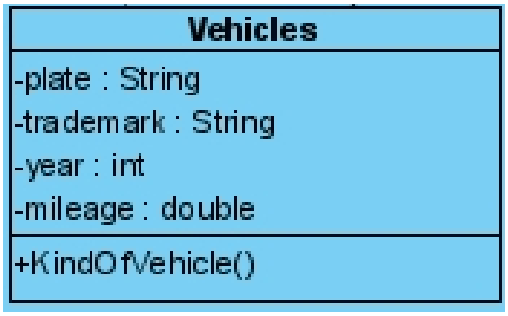
price: variable used to store the price of a product of type float.

quantity: variable to store the number of existing products of type int.

Methods

availability(): boolean method determines whether a product is in stock.

Vehicles



Attributes

plate: variable that allows to enter the series of a type string.

trademark: variable that stores the trademark of a vehicle of type string.

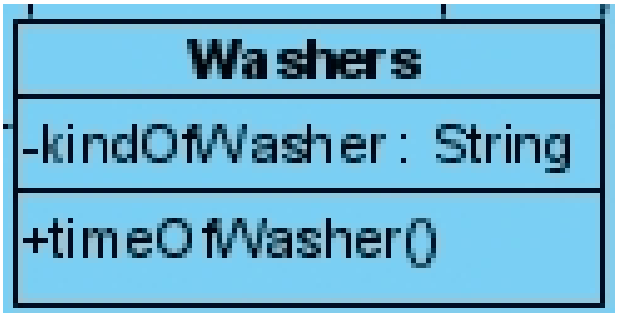
year: variable that stores the year of creation of a vehicle of type int.

mileage: variable that stores the mileage of a vehicle of type double.

Methods

kindOfVehicle(): void method describing the type of the vehicle.

Washers



Attributes

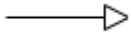
kindOfWasher: variable that describes the type of vehicle wash.

Methods

timeOfWasher(): void method describing the time it takes to wash a vehicle.

DEPENDENCE

Dependency which momentarily uses the attributes of the other class.



Generalization to determine that it requires elements of the other class.