Advanced Programming

Workshop No 1 – Object-Oriented Programming

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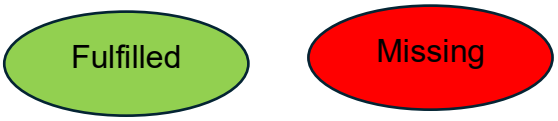
## 1. User Sections:

This is what 15 students told us they would like to see in a catalog of electronic devices:




- As a student, I would like to see product references, recommendations and ratings, to facilitate the decision to purchase the item.
- As a student, I would like to see information about the components, since it is important to know the quality of the product offered.
- As a student, I would like you to give the components, such as ram, processor, ssd, etc., to know if they are “good”.
- As a student, I would like you to have images, since images come faster to the mind.
- As a student, I would like to know about the camera, space, processor, because as I will use the devices very often, it will not be useful if it is not working or does not fulfill my expectations.
- As a student, I would like to be able to compare so that I can choose more easily and not regret at some point.
- As a student, I would like to be able to read and post reviews so I can know if it is worth it or not, as a kind of guide for me and others.
- As a student, I would like to see the features of the device, capacity, portability, that I can use it for work ... to know the qualities of the product.
- As a student, I would like to see mainly the batteries of products such as cell phones and computers because it is annoying to be aware of a device with little charge.
- As a student, I am interested in accessories, for the aesthetics or the ease of the activities I do every day.

- As a student, I am interested in seeing detailed reviews from other buyers to know the quality.
- As a student, I would be interested in a section of buying guides by category, to be able to open several products simultaneously and compare which one is more efficient for my activity.
- As a student, I want to be able to filter by specifications, to find products that meet my requirements.
- As a student, I would like to be able to save products in a wish list to review and purchase them later.
- As a student, I would like to be able to filter products by price range, to find devices that fit my budget.
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## 2. Object-oriented principles analysis:

*Encapsulation:* The application encapsulates data and methods within classes. For example, the Car class manages the list of products and their prices, and provides methods to add, remove and view items.

*Inheritance:* Could be applied in future enhancements. For example, a base class such as Product could be extended to specific product types such as Phone, Computer, etc. Implementing other types of functions requested by users.

*Polymorphism:* The methods of the ProductList class (phone(), computer(), television(), etc.) are polymorphic, since they handle different types of products and they share a common interface.

## 3. CRC cards:

The Categories class is responsible for organizing and displaying the categories of electronic devices, facilitating user navigation. The ProducList class complements this functionality, allowing to show the available items. The Car class handles user interactions with the shopping cart, providing methods to add, remove and display selected products. And the DataClient class is responsible for collecting and storing the customer information needed to complete the purchase process, ensuring that the order can be processed correctly.

| *Categories* |
| --- |
| Responsabilities:<br>- Show available categories.<br>- By category interact with the lists of devices in it.<br>- Display the shopping cart |
| Collaborators:<br>- ProducList.<br>- Car |

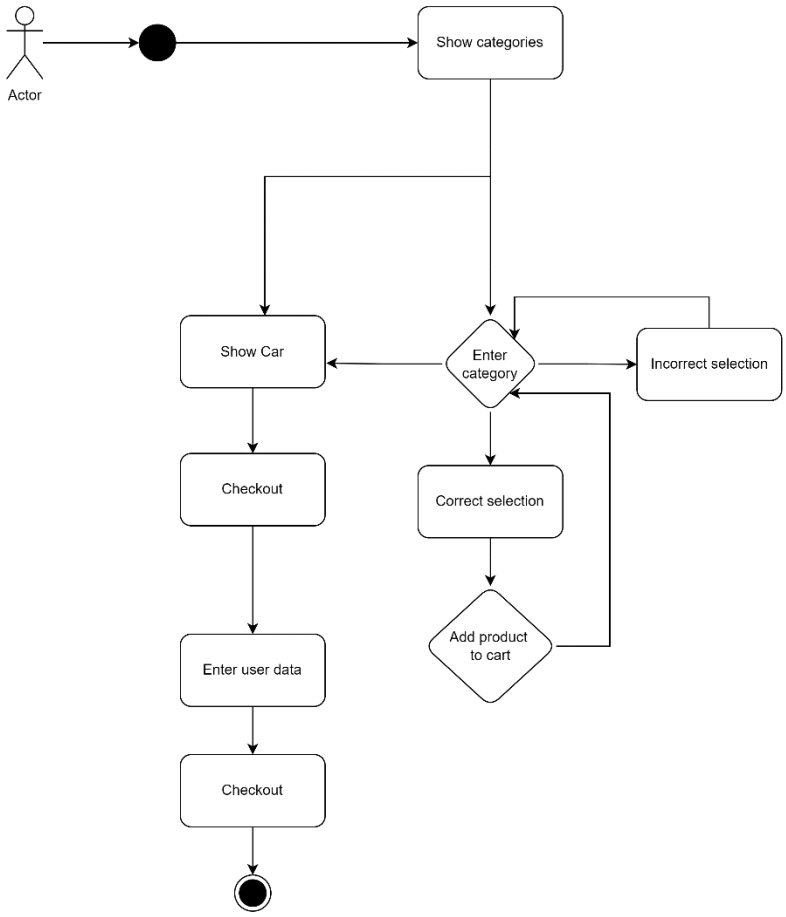
| *ProducLIst* |
| --- |
| Responsabilities:<br>- Display products by categories.<br>- Interact with Car to add products. |
| Collaborators:<br>- Categories.<br>- Car |

| *Car* |
| --- |
| Responsabilities:<br>- Store/remove selected products.<br>- Allow to view cart.<br>- Interact with DataClient. |
| Collaborators:<br>- Categories.<br>- ProducList.<br>- DataClient. |

| *DataClient* |
| --- |
| Responsabilities:<br>- Collect and modify client information.<br>- Handle payment process. |
| Collaborators:<br>- Car. |

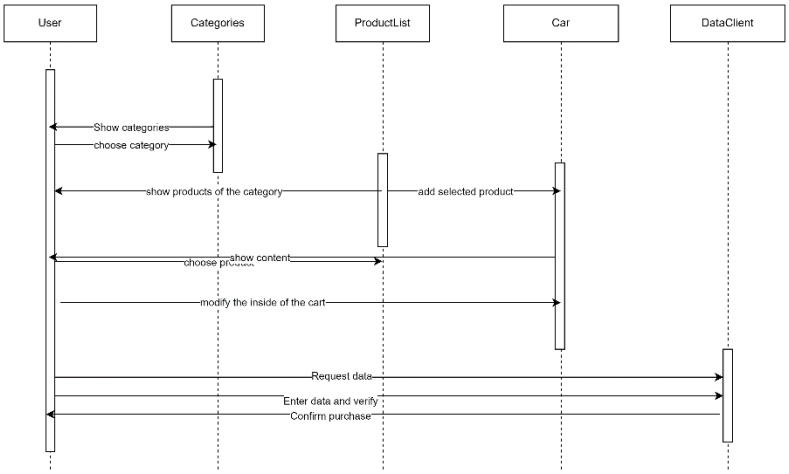
## 4. Activity diagrams:

This activity diagram shows the flow of the shopping cart application. The user begins by browsing the electronic device categories, selects products to add to the cart, and then reviews the cart to adjust or delete products. Upon checkout, he/she enters billing and delivery information. After validating this data and completes confirming the purchase and providing delivery details.




## 5. Sequence diagrams:

This sequence diagram illustrates the interactions between the main components of the program: It clearly shows the separation of responsibilities between different classes. Reflecting the flow of data and actions from user to purchase confirmation.



## 6. Class Diagrams:

The diagram shows the class structure with four main classes: Categories, ProductList, Car, and DataClient.

In the design there is a composition relationship between Categories and ProductList. Car is related to both Categories and ProductList. DataClient appears to be isolated, with no explicit relationships to other classes.