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Report workshop 1 – Software-modeling

User stories

- As a customer, I want to select prints so that they match my tastes.
- As a player, I want to select videogames so that I can play games that interest me.
- As a player, I want to have ergonomic joysticks so that I can play comfortably.
- As a customer, I want to select the size so that I can place the machine in my room.
- As a player, I want to use warm lighting so that I can play for longer periods.
- As a customer, I want to select the size so that the machine fits my height.
- As a player, I want to select the size so that the machine fits my height.
- As a customer, I want to track my order status so that I know when my machine will arrive.
- As a player, I want to connect additional controllers so that I can play with friends.
- As a customer, I want to choose the type of screen so that I can have the best display quality.
- As a player, I want to download new games so that I can expand my library.
- As a parent, I want to set parental controls so that I can restrict certain content for younger users.
- As a player, I want to select sound systems so that I can enjoy better audio.
- As a customer, I want to select the material so that I can have a durable and stylish machine.
- As a customer, I want to receive instructions so that I can use the machine easily.

object-oriented principles analysis

1. Abstraction

The system abstracts different entities representing key parts of the customer's interaction with the shop arcade machine.

Classes like Videogame, Prints, Material, Purchase, and Customer provide an abstraction of real-world objects.

These classes focus on essential attributes and behaviors relevant to the problem domain, making interactions simpler and modeling reality effectively.

2. Encapsulation

Each class encapsulates its own data and methods, for example, Client has private attributes (name, phone, address) and the corresponding get/set methods to manage access, in case of having a login we can restrict access to verify that the only one accessing is the user.

Similarly, Videogame, Prints, and Material manage their own attributes, keeping details hidden while exposing public methods for controlled access, ensuring that the data can only be accessed or modified in defined ways

3. Polymorphism

Polymorphism is implied by the fact that Custom_elements can represent multiple types of elements (Videogame, Prints, Material), but can be used in a uniform way within the Machine class.

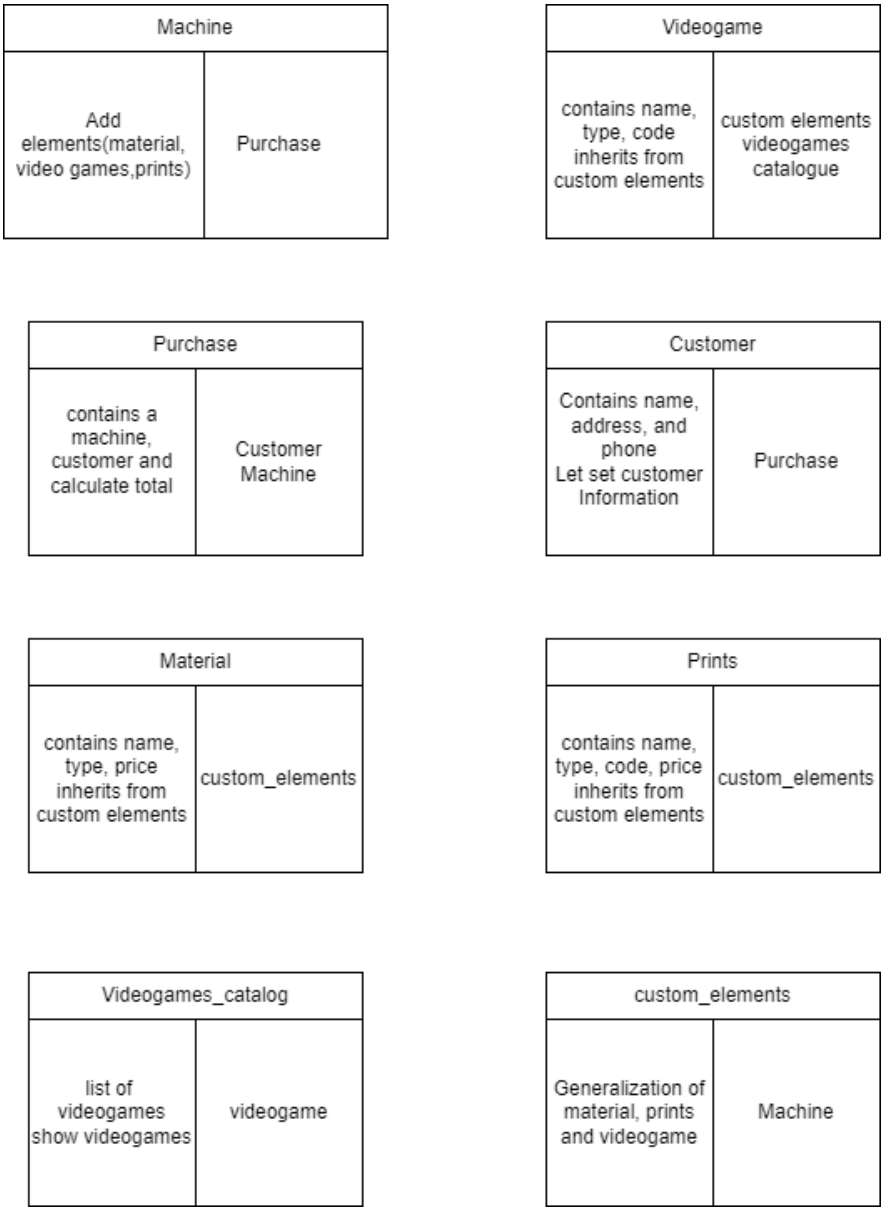
The use of Custom_elements in Machine allows flexibility when adding new items, regardless of their specific subclass (videogames, prints, or materials), as they all follow a similar interface defined by Custom_elements.

4. Inheritance

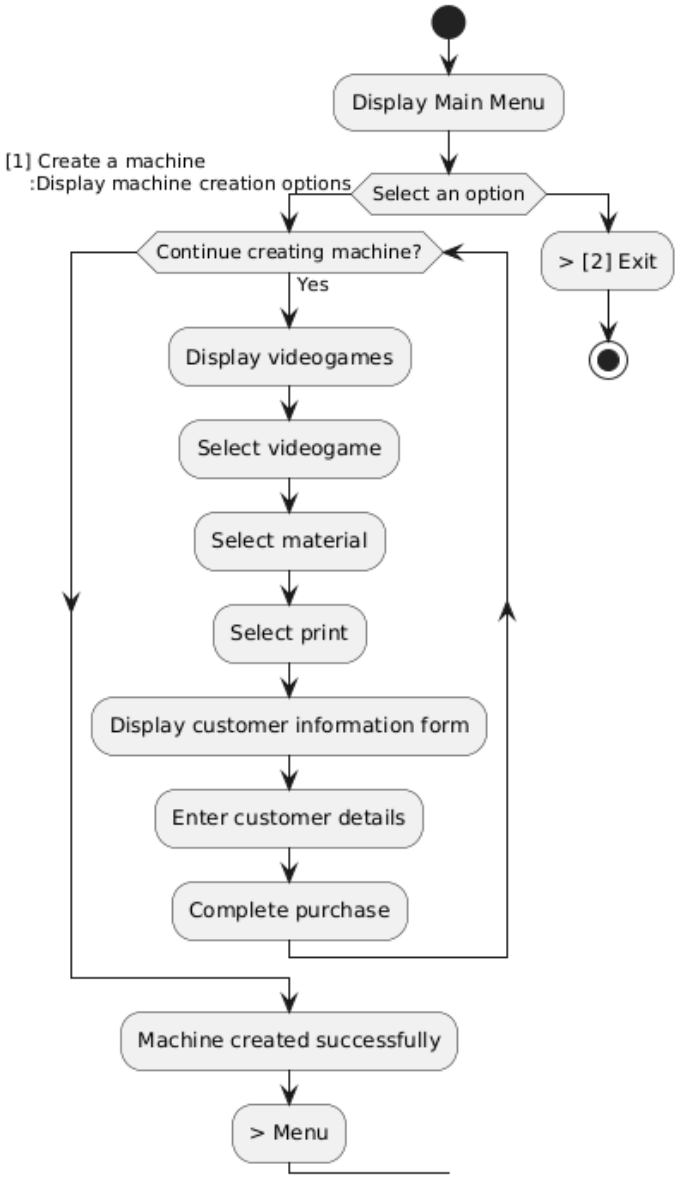
The diagram of classes shows inheritance in action, where the Custom_elements class is extended by Videogame, Prints, and Material. This allows shared attributes like name and type in Custom_elements to be reused in subclasses, avoiding duplication of code and fostering reusability.

The subclasses also extend the functionality of the base class by adding their own specific attributes and methods, such as the price attribute in Prints and Material.

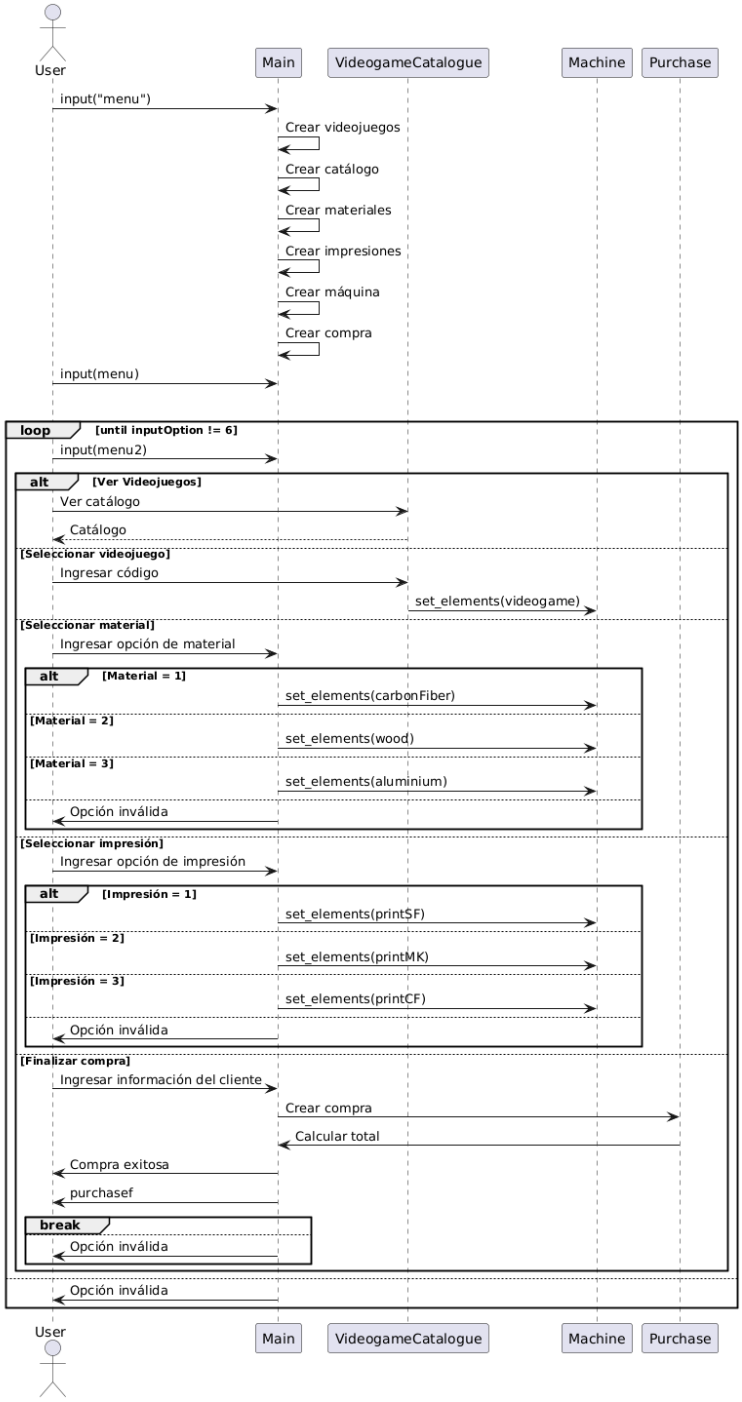
CRC cards


Machine
Add elements(material, video games,prints)
Purchase
Videogame
contains name, type, code inherits from custom elements
custom elements videogames catalogue
Purchase
contains a machine, customer and calculate total
Customer Machine
Customer
Contains name, address, and phone
Let set customer Information
Purchase
Material
contains name, type, price inherits from custom elements
custom_elements
Prints
contains name, type, code, price inherits from custom elements
custom_elements
Videogames_catalog
list of videogames show videogames
videogame
custom_elements
Generalization of material, prints and videogame
Machine

Activity diagrams


Display Main Menu
[1] Create a machine
:Display machine creation options
Select an option
> [2] Exit
Continue creating machine?
Yes
Display videogames
Select videogame
Select material
Select print
Display customer information form
Enter customer details
Complete purchase
Machine created successfully
> Menu

Sequence Diagram



Class diagram