CCT COLLEGE DUBLIN

OBJECT ORIENTED CONSTRUCTS / SYSTEMS ANALYSIS & DESIGN

Planning and Implementing an Object-Oriented Software System

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Project Problem and Goal Statement

X-vision Software

During pandemic days, people are being forced to spend more time at home, and as software developers, we need to adapt ourselves to our customers needs, implementing new technologies that can suit and make even their most basic activity safer and handy.

X-vision Software brings a nice idea on board but it became obsolete and lost market for streaming companies due to the facility of renting online content replacing the old school method which customers had to find a nearby kiosk, pick-up a movie and bring back after a certain period with the risk of paying extra money for over-time fee or for damaging the disk.

Problems with Current System:

- During pandemic days, many points where there are kiosks are closed.
- Customers have to leave home to rent a content.
- Customers have to bring it back on time to avoid extra fee.
- Extra fee can also be charged if the disk is damaged
- For more income, more kiosks should be built, therefore more money is spent.

EasyWatch Software

On the other hand, EasyWatch is an online platform of streaming which has a very user-friendly interface, downloading the content from the web with the simple idea of watching movies/series just by clicking and inserting a debit/credit card number and also eliminating the return process as the content is programmed to be available for 7 days. A payment receipt can also be sent from de system to any customers which wishes it by just adding their email to an optional field.

Objectives of the new system

- To eliminate the task of leaving home to rent a content and also to bring it back.
- To cut of the need of disks.
- To record payment information and link it with the rented content.
- To eliminate extra fees charged over customers for over-time renting.
- To eliminate unavailability of content
- To improve overall customer satisfaction.

Scope of new system

The project will cover the following areas of the business:

- Renting process
- Automated devolution system
- Streaming of content
- The system will not cover payroll or general accounting.

EasyWatch Guidance

1st

` Start of application:

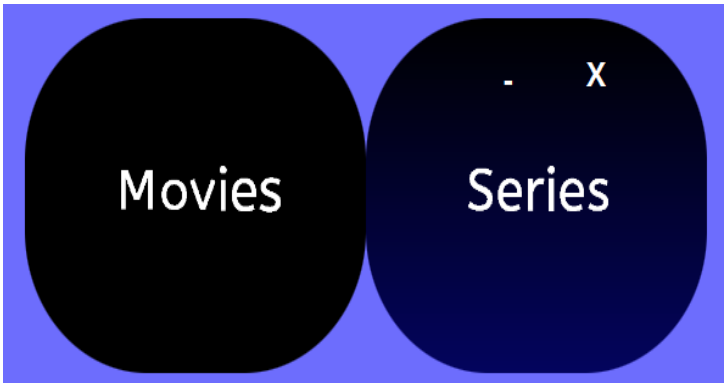
`

When the application starts, a logo animation is going to run while the system connects to an API and send HTTP requests

2nd

Navigate between Movies and Series, an easy way to have the main content classes separately adding a simple and sophisticated styling.

Ex: After clicking on Movies/Series, the system is going to load the content on a new screen.



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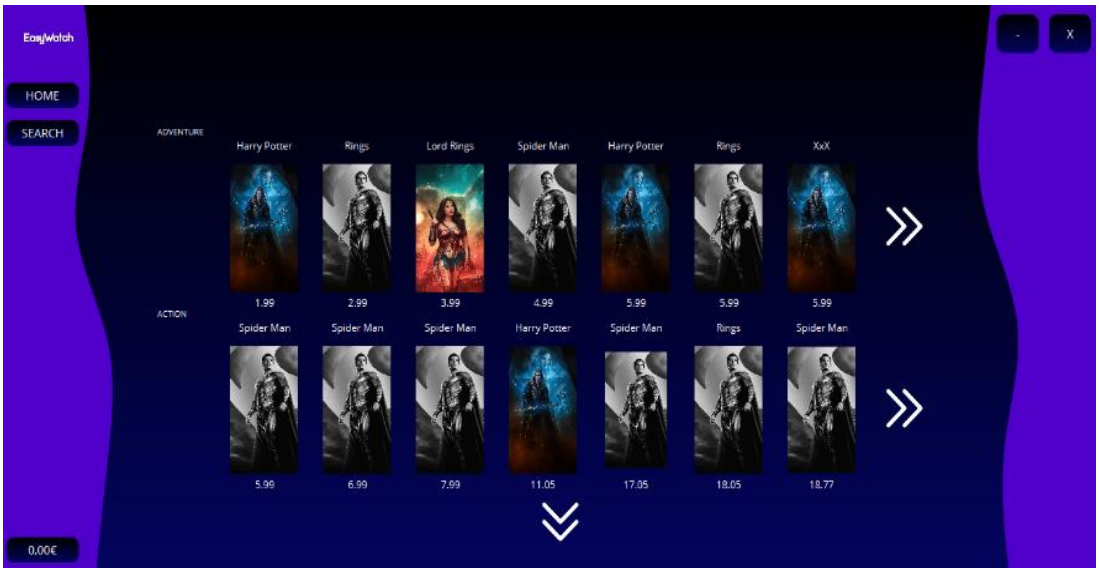
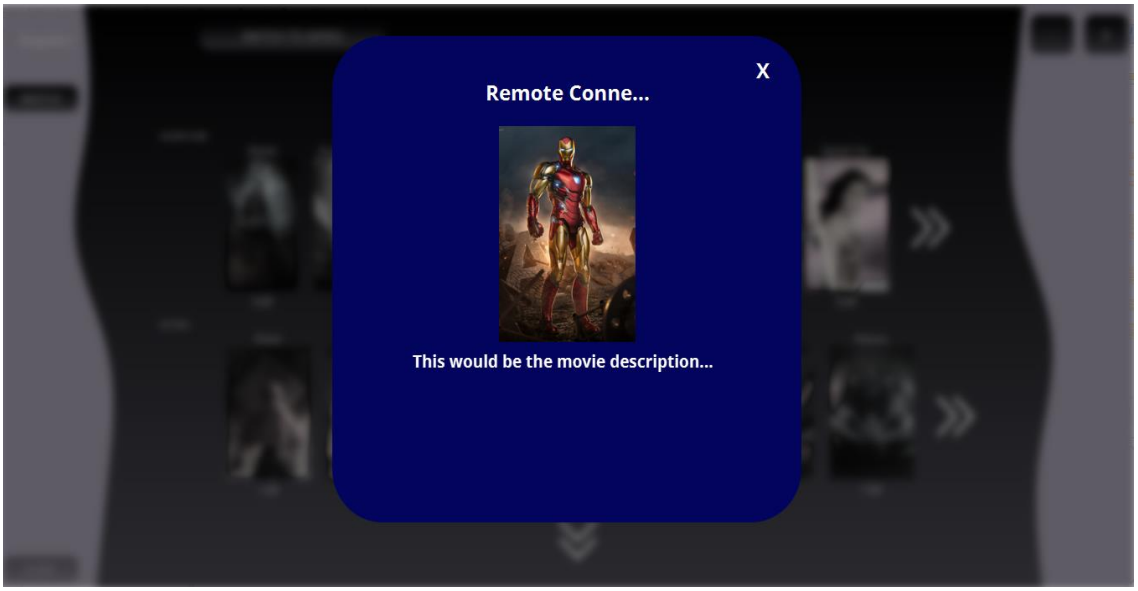


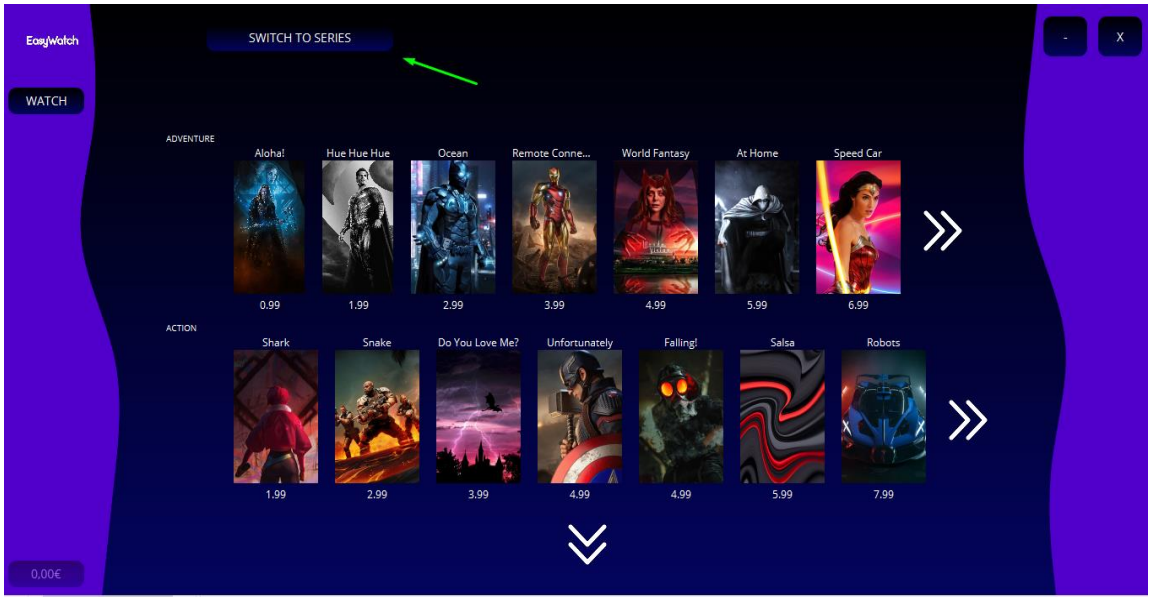
After loading, our main screen is going to be shown. It is built on a grid which starts with two main categories, “Adventure” and “Action”. To change a category, the user must click on the “Down Arrow” and a new genre is going to be shown and to see more options the “Side-Arrows” should also be clicked. There is also the option for search a movie by typing its name.

4th



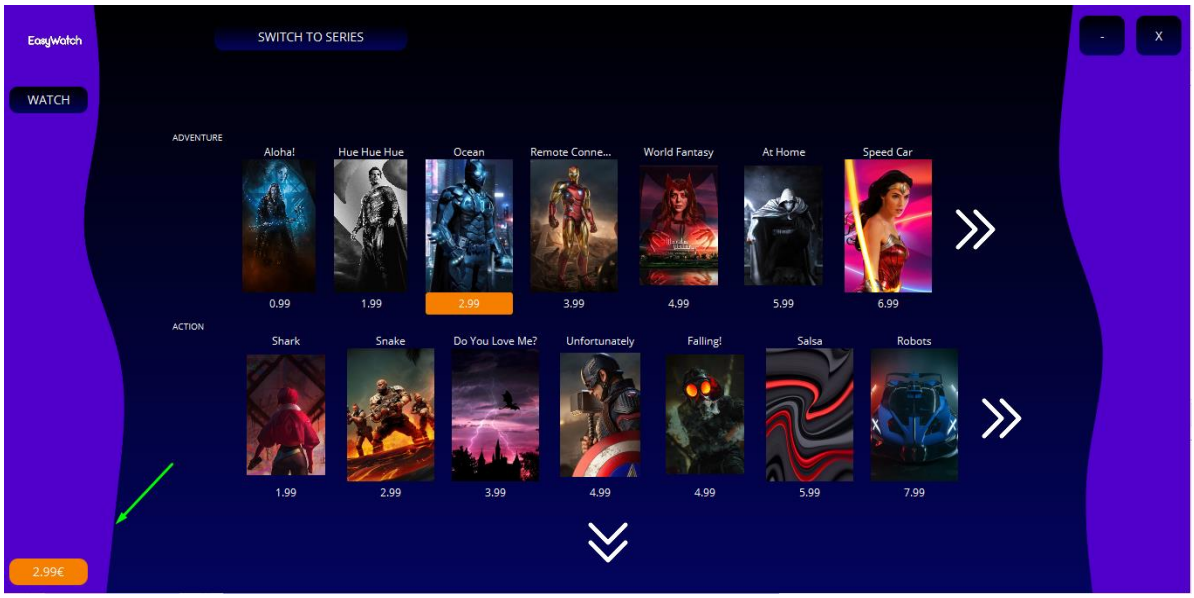
If you wish to see any description or information, you can do it by clicking over a picture and it will pop-up a smaller screen describing the content. A blur effect is going to be in the background while the description is opened. You can close it by clicking on the X and you will be back to the main content area.

5th



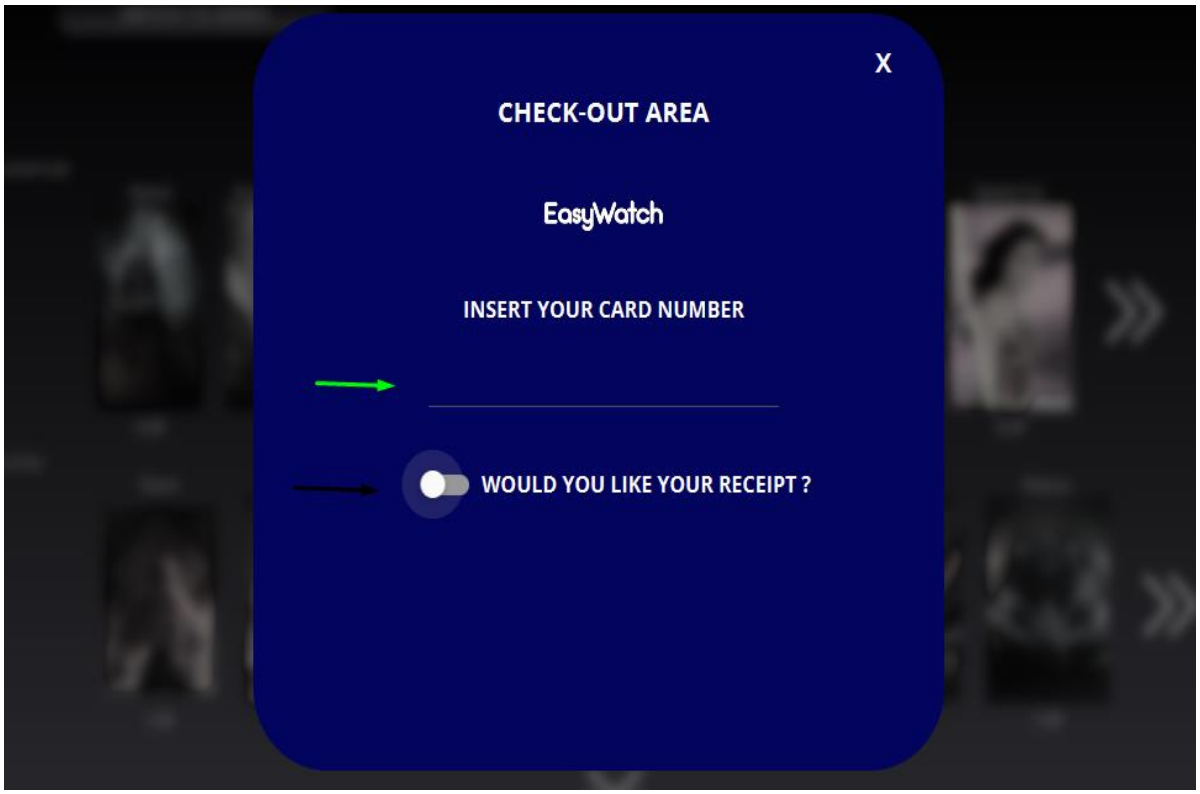
If you wish to switch from movies to series or vice-versa, you can do it by clicking on the top left of the screen

6th



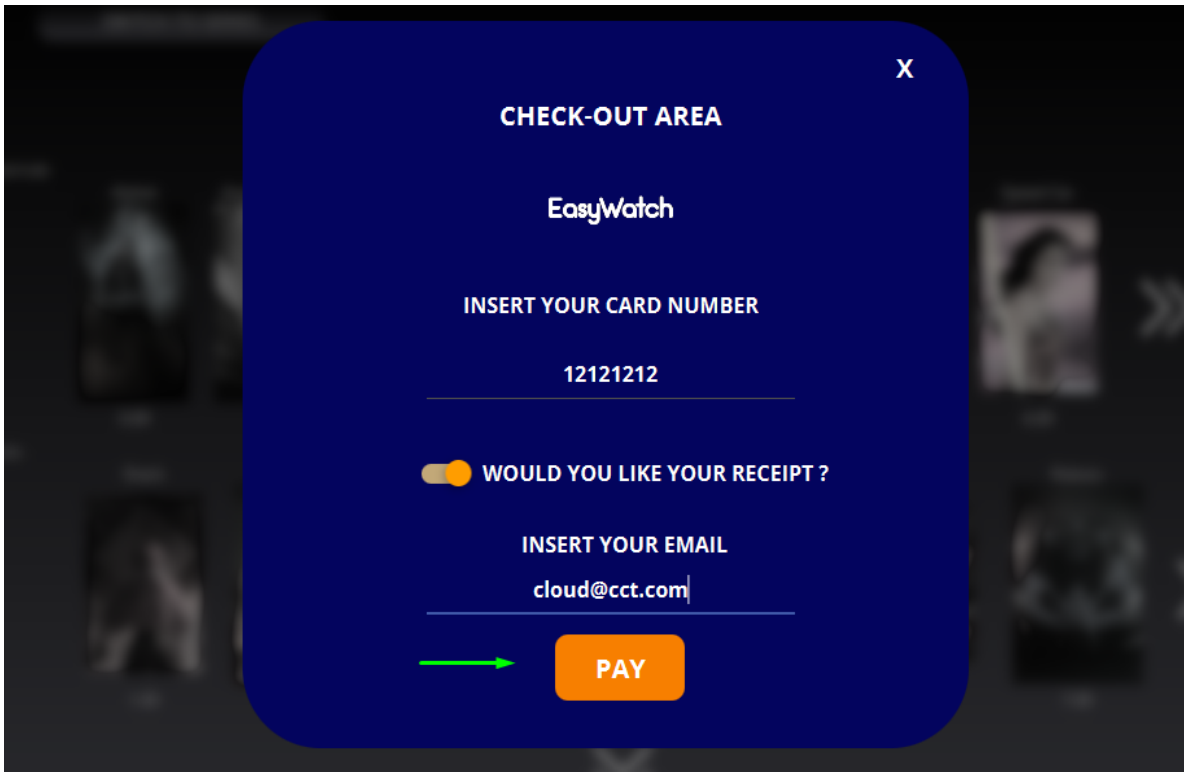
If you click over the price of any movie, the button is going to change to orange also adding its value to the left-down area (check-out area). The price can be cancelled by clicking again on the price or outside of any content and the standard colour is going to take place again. You can go to the check-out area by clicking over the final price.

7th



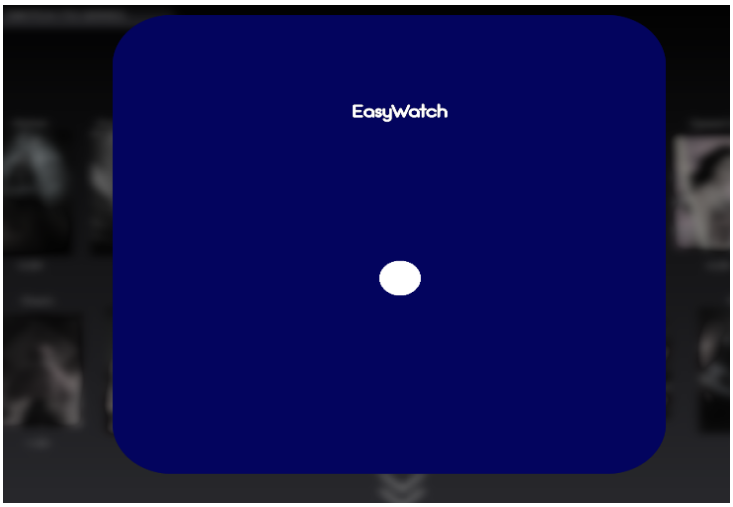
The only payment method is by adding a credit/debit card number. There is a validation method to accept only 8 numbers and no letters or special characters. You also have the option to receive a receipt through e-mail if you may wish click on the toggle button and a new field is going to be available.

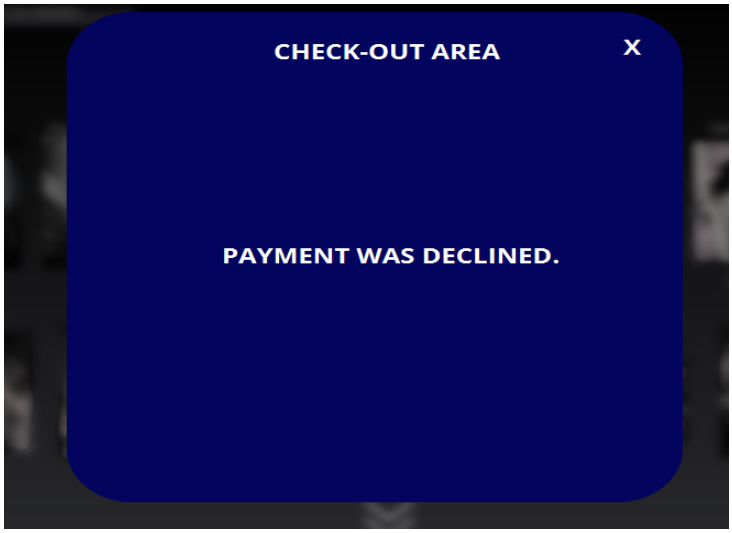
8th



After inserting a valid card number, and an email (if you wish). The button PAY will be shown on the screen and you can finish the renting by clicking on it. If you toggle the button you must insert an email and the button pay is going to show up again.

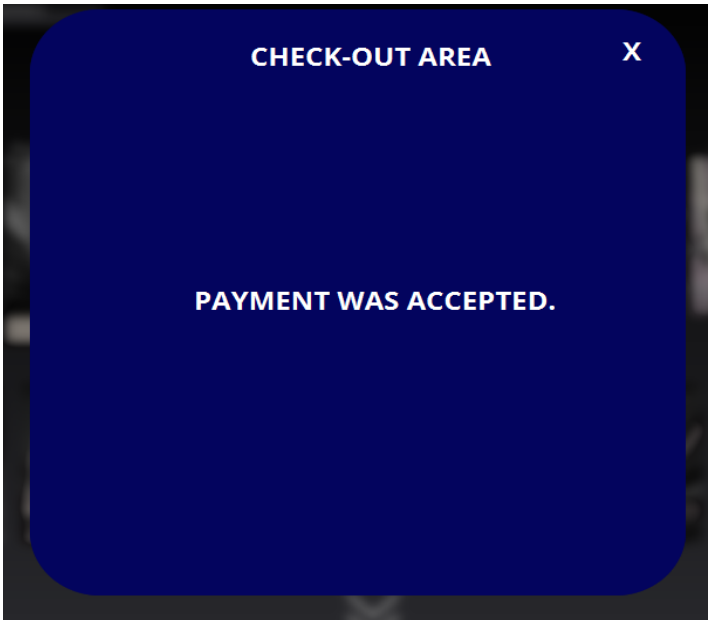
9th



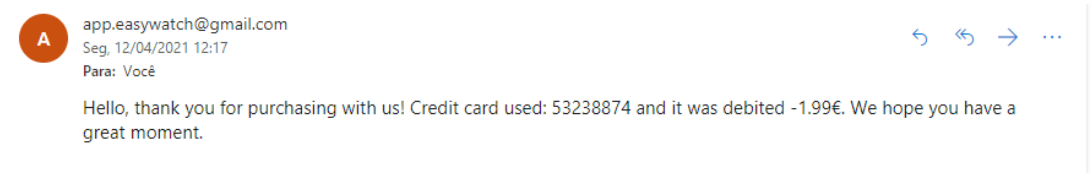


After clicking on pay, a load screen will pop-up. If the there is any wrong information or insufficient balance, the user will get a payment declined message and can return to the main area by clicking on the X.

10th

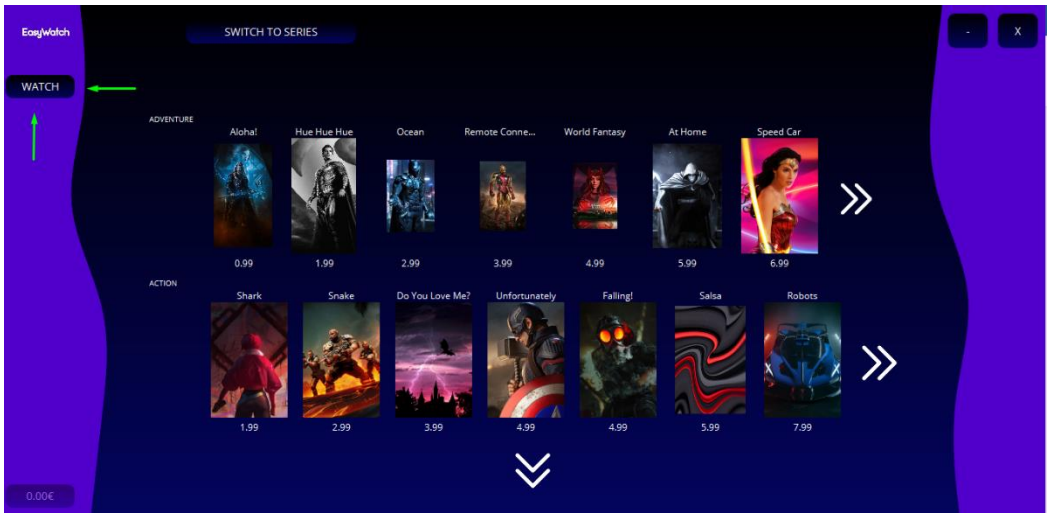


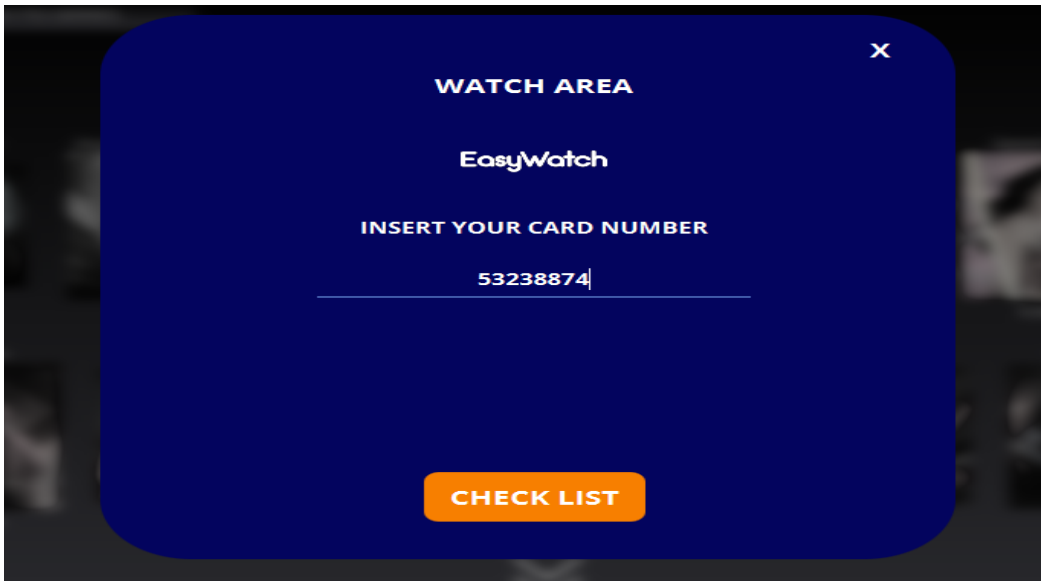
If you have credits, an accepting message will be displayed. For testing the payment system, we registered a card number in our data base with available balance. The number is 53238874.



If you choose to receive a receipt, you will get an email with the number of the card, and the amount credited.

11th

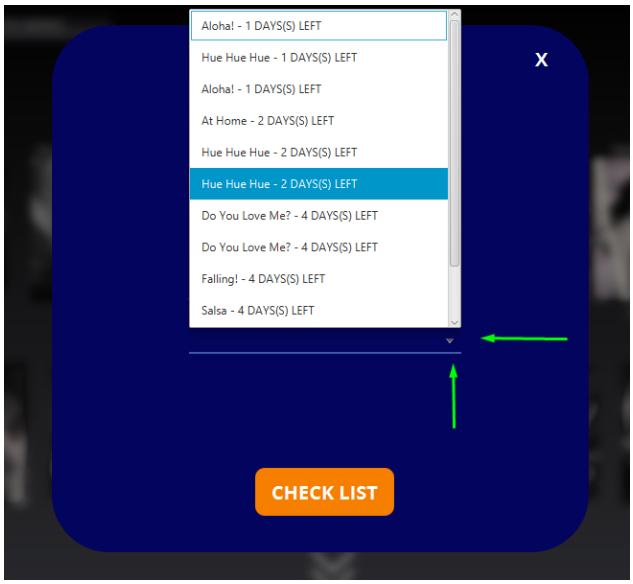




After a purchase, you can click on the button located on the top left side of the screen and a watch-area will pop-up. Just add the card number linked with the content you bought and click on Check List.

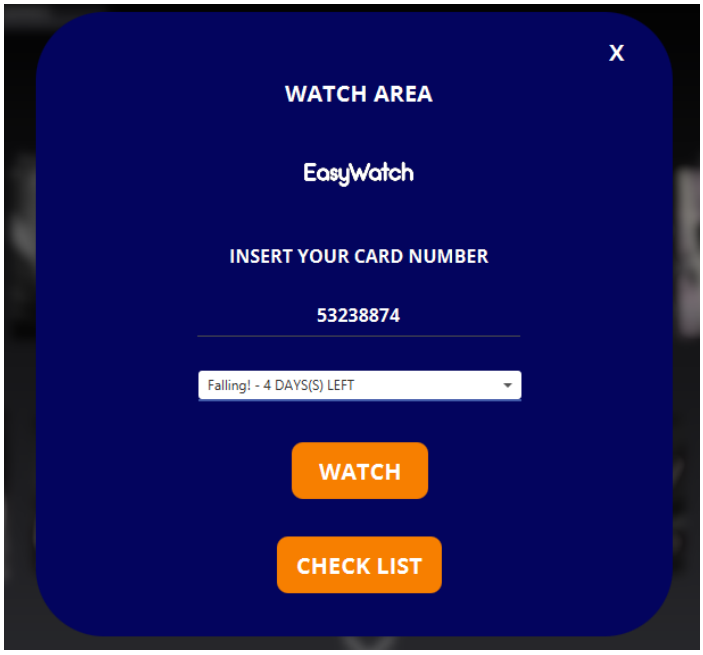
Note that there is also a validation method in this step, only numbers will be accepted and then the button will show up.

12th



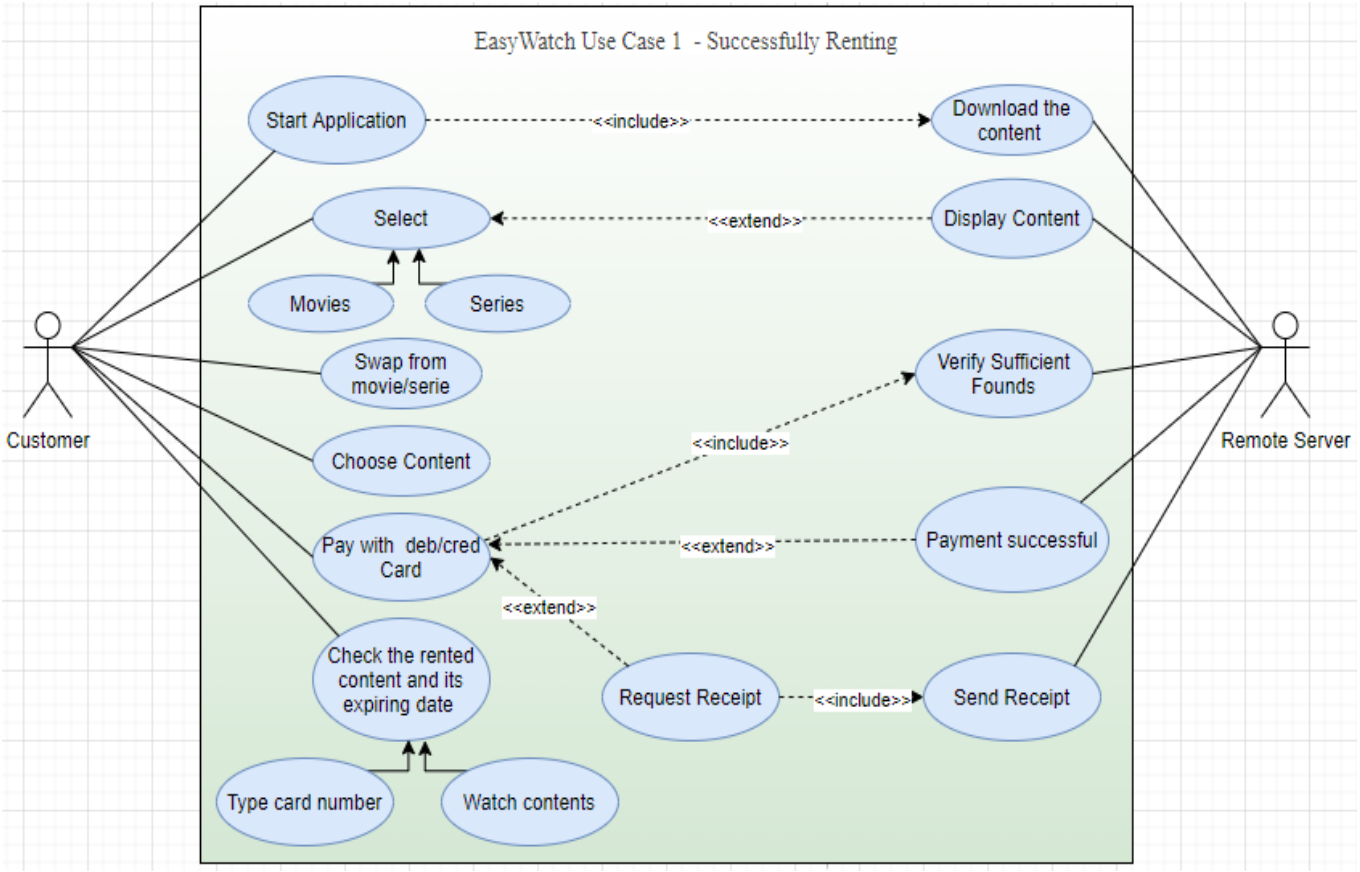
If you click on the down arrow, a list with all the content linked with the provided card number will be displayed, showing the contents name and also how long it is due to expire. After 7 days the content will be unavailable.

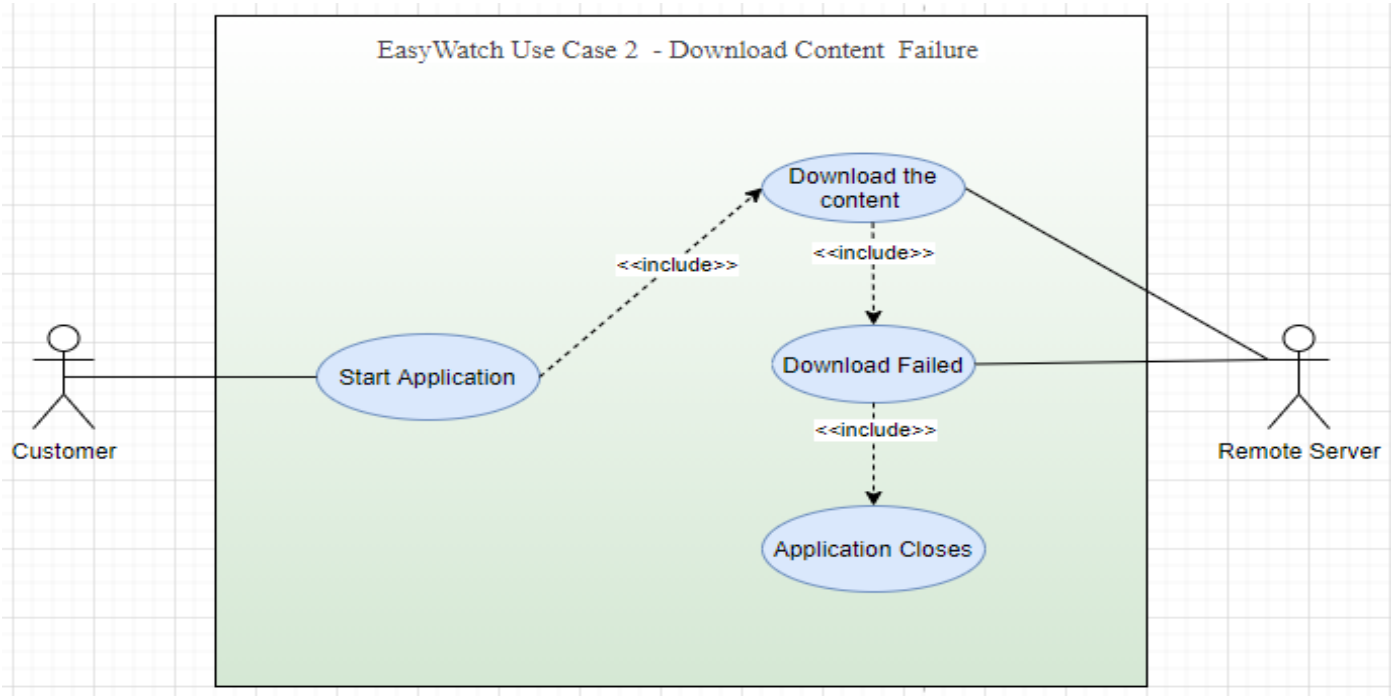
13th

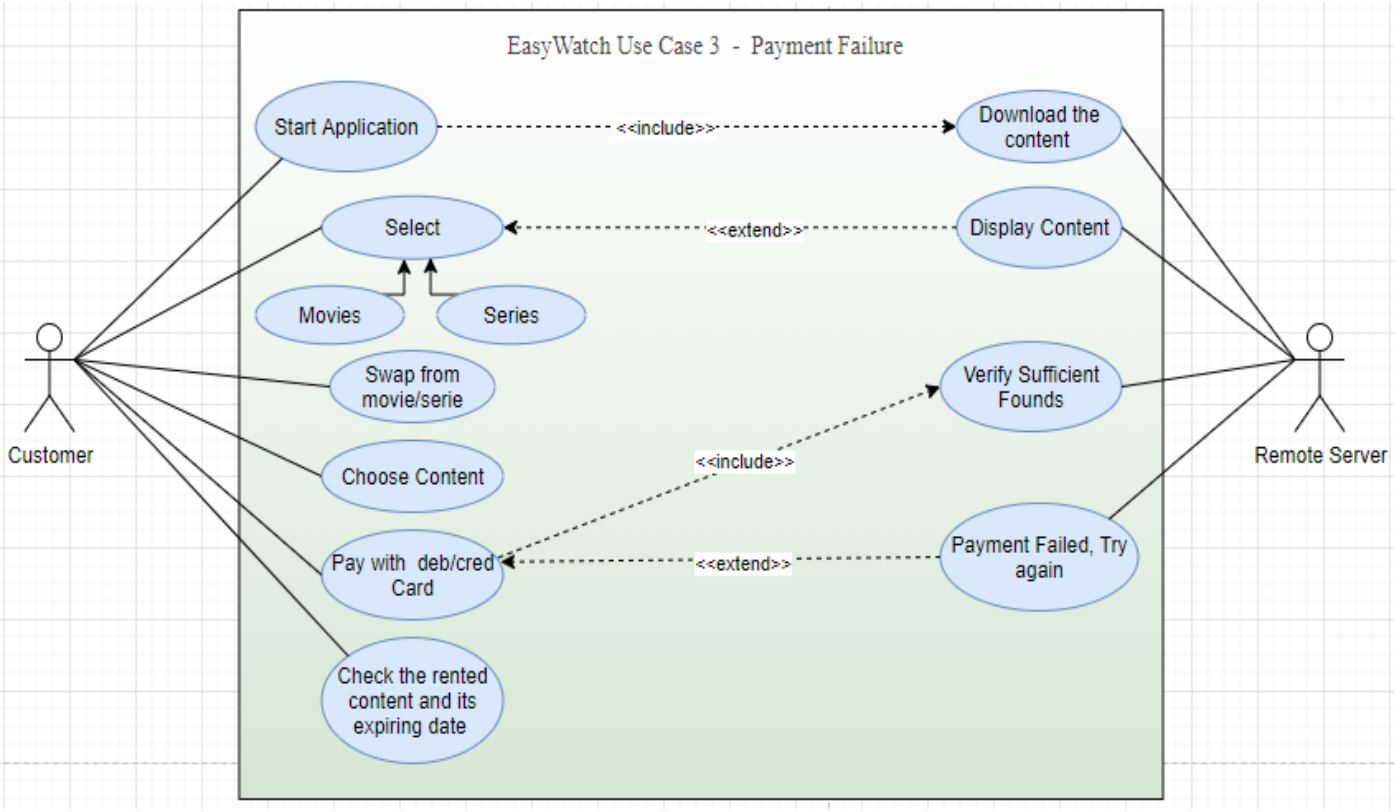


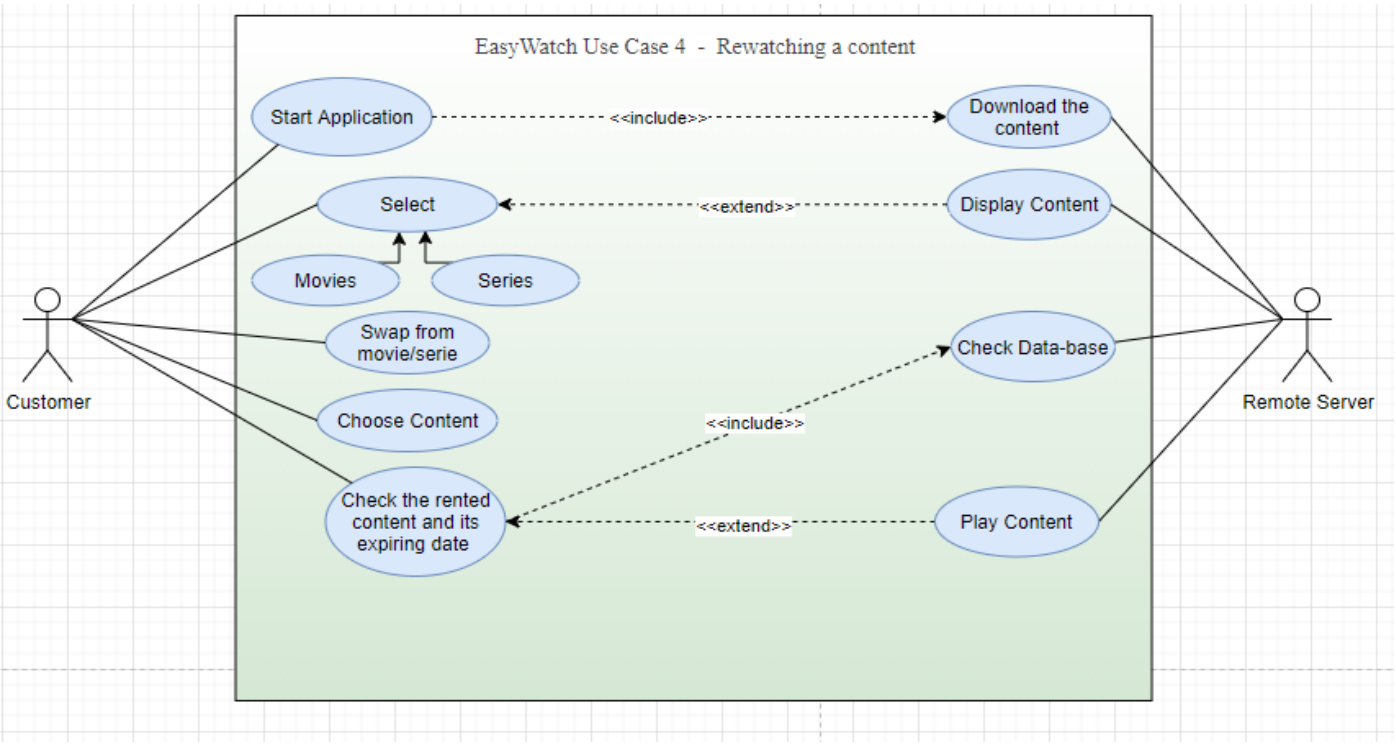
After selecting the content, you wish you can just click on watch and our watch screen will show up.

EasyWatch Use-Case Diagrams

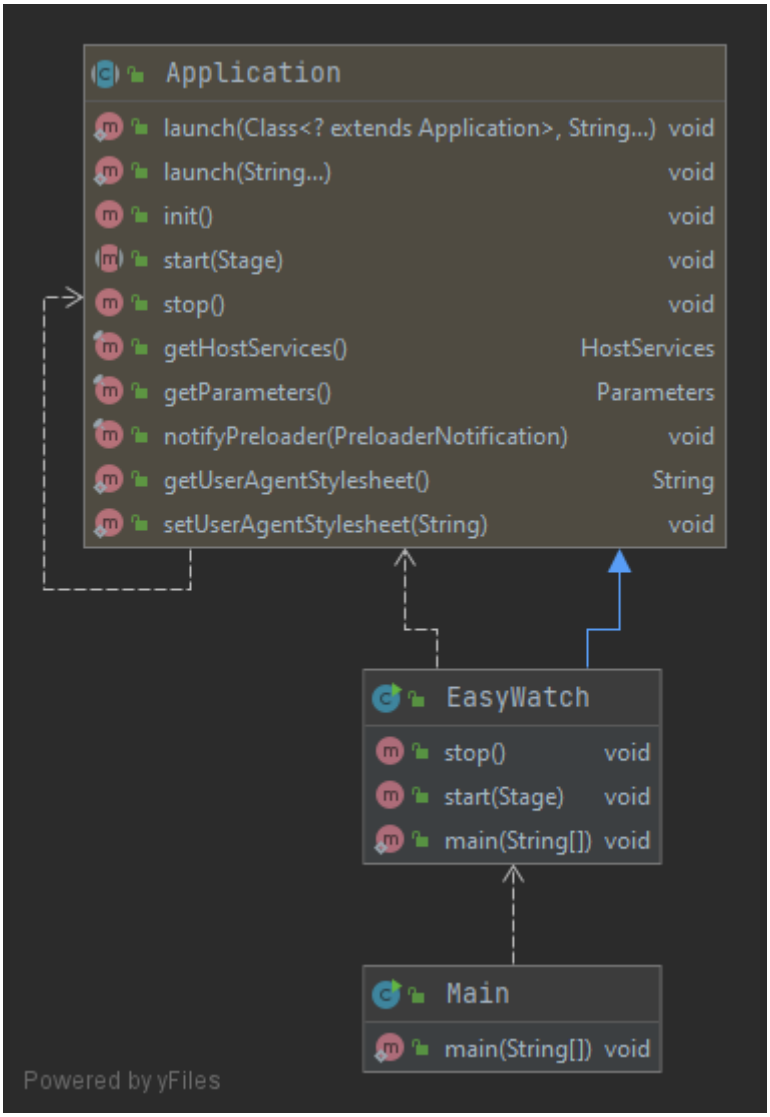




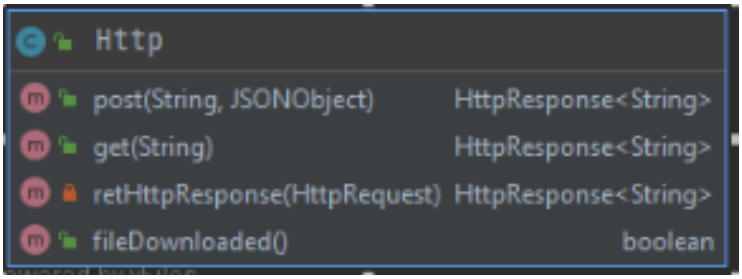

EasyWatch Use Case 3 - Payment Failure
Start Application
<<include>>
Download the content
Select
<<extend>>
Display Content
Movies
Series
Swap from movie/serie
Verify Sufficient Founds
Choose Content
<<include>>
Pay with deb/cred Card
<<extend>>
Payment Failed, Try again
Check the rented content and its expiring date
Customer
Remote Server


EasyWatch Use Case 4 - Rewatching a content
Start Application
<<include>>
Download the content
Select
<<extend>>
Display Content
Movies
Series
Swap from movie/serie
Check Data-base
Choose Content
<<include>>
Check the rented content and its expiring date
<<extend>>
Play Content
Customer
Remote Server

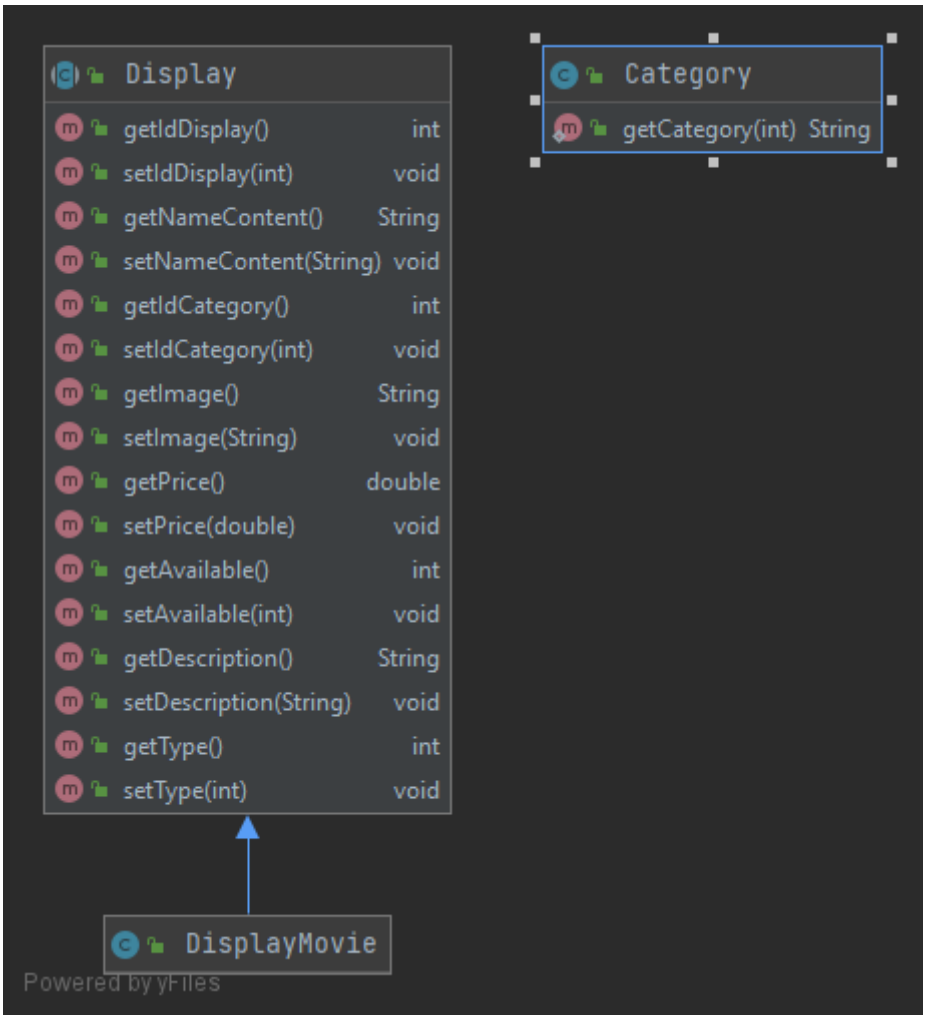
Easy Watch Class Diagrams – Main



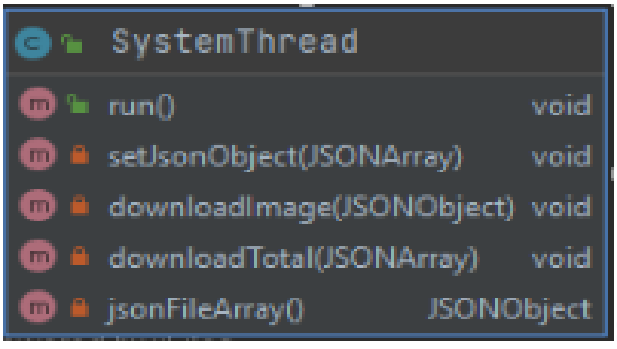
Http protocol Class Diagram



Model Class Diagram



Thread Class Diagram



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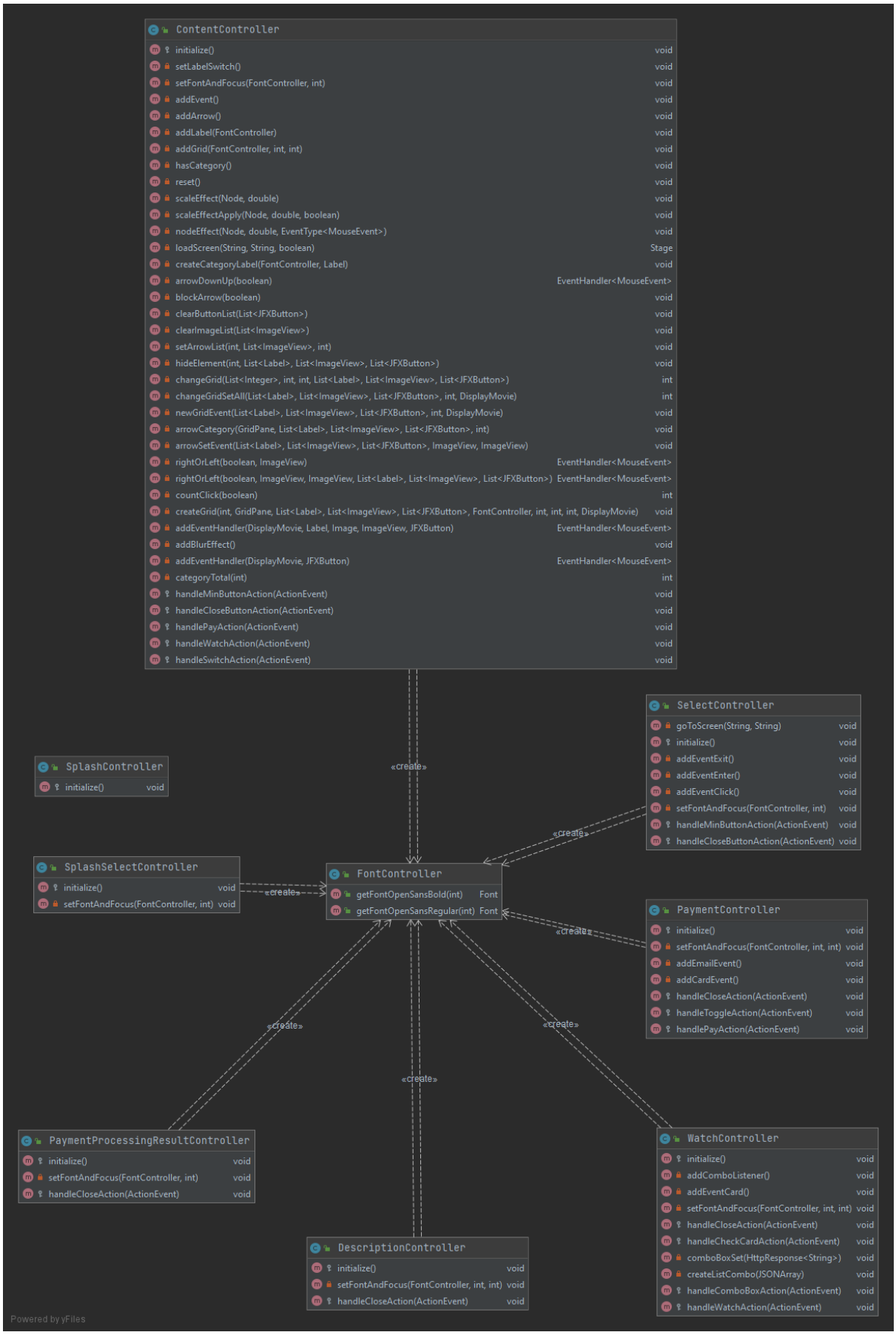
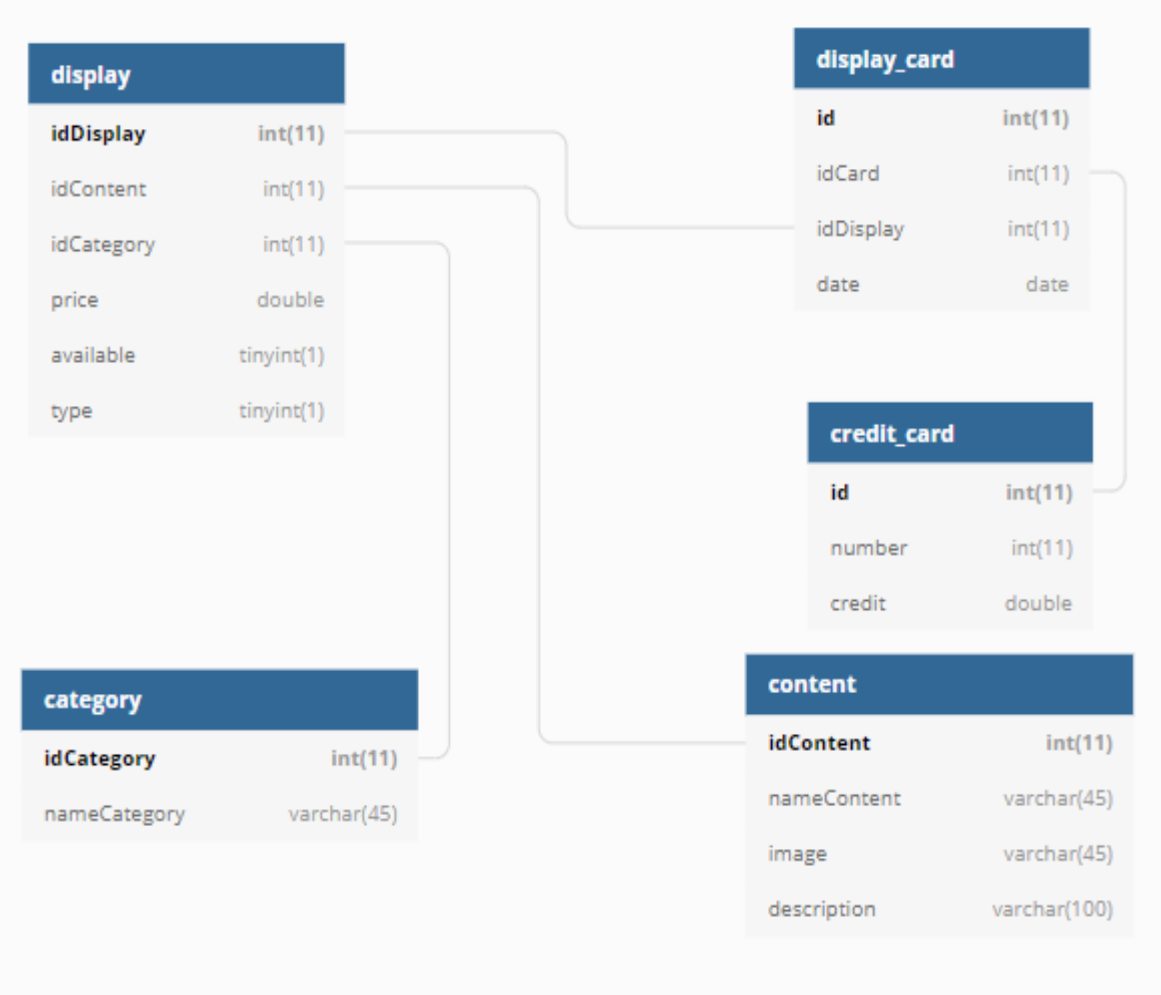
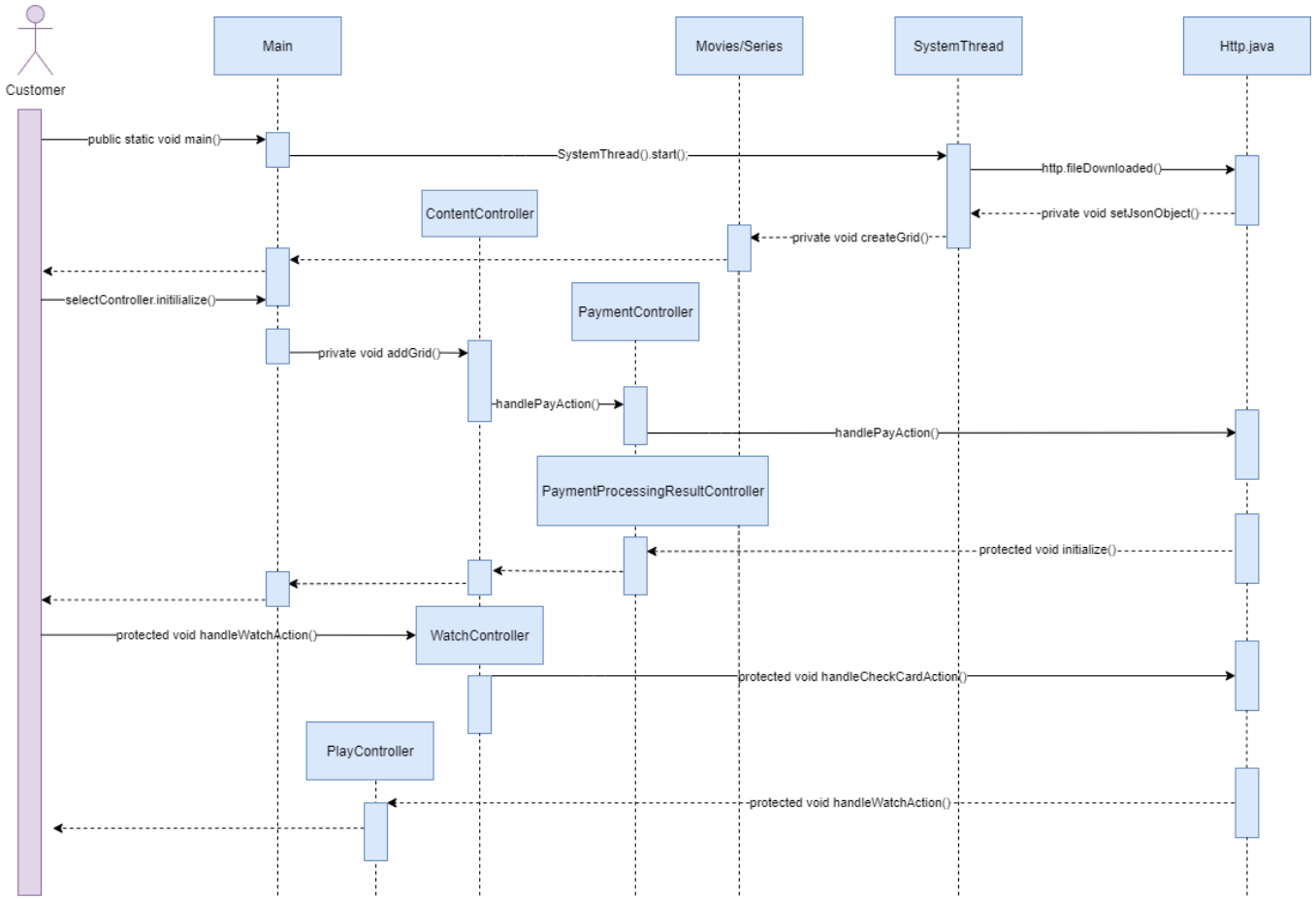
Easy Watch Controller Class Diagram



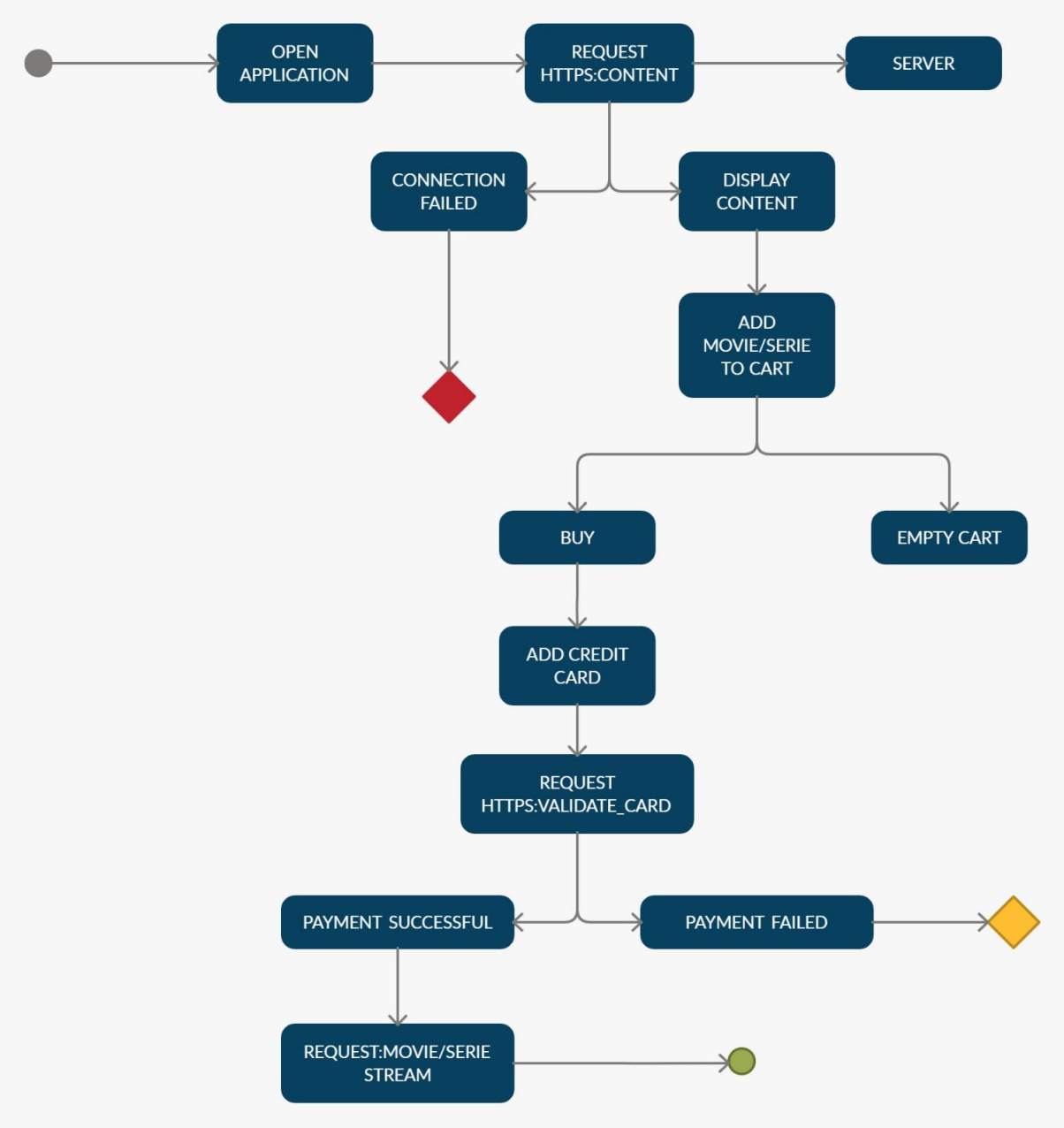
Data-Base Class Diagram



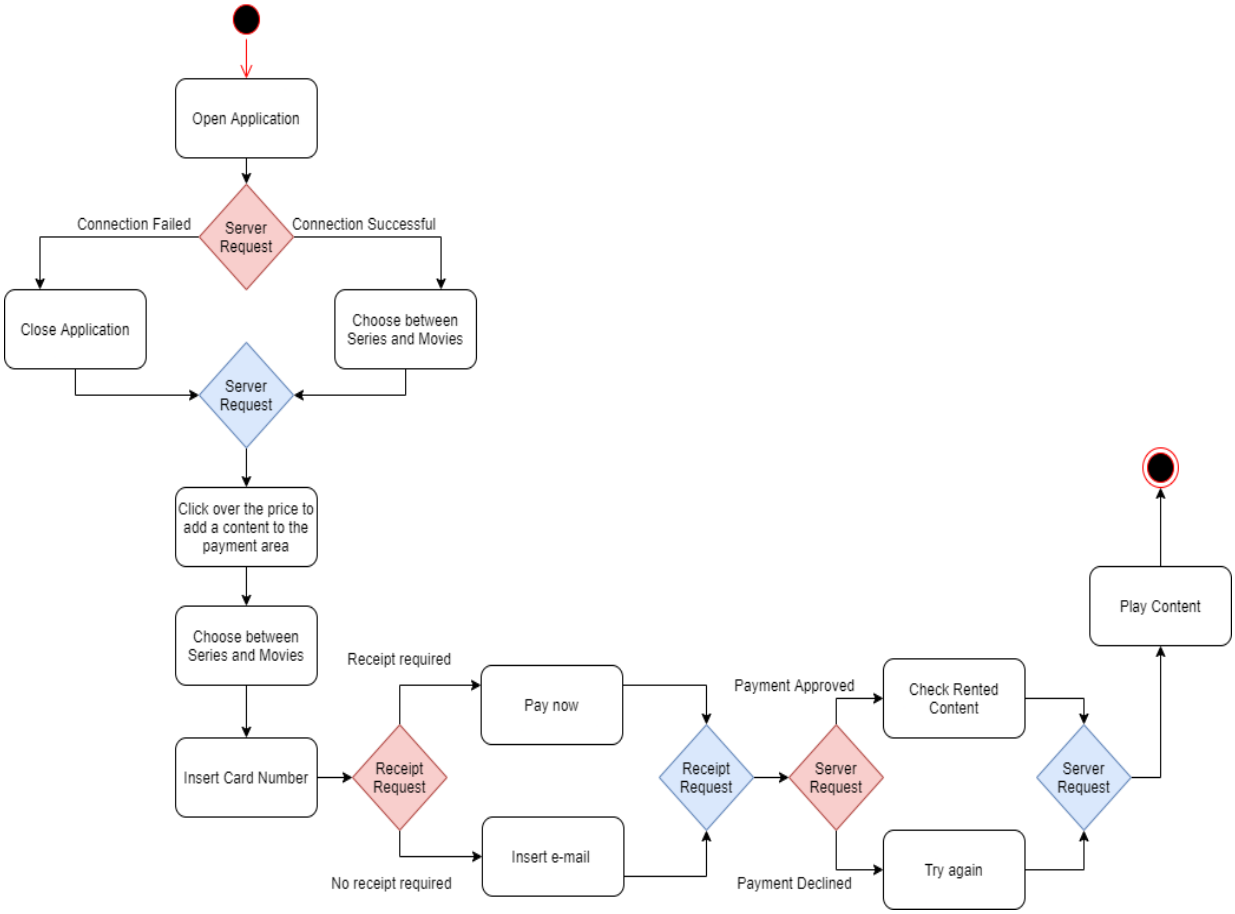
Sequence Diagram



State Diagram



Activity Diagram



Distinction work

What differentiates conventional software testing from object-oriented testing?

• Techniques and approaches are usually similar, however, new challenges are presented such as inheritance and polymorphism;

• Interactive and incremental OO processes give us the opportunity to improve our testing processes conventionally:

- How to start the testing process as soon as possible and contextualize it within a development process

- How to effectively choose what needs to be tested and implement it efficiently.

Explaining How modelling techniques manage

complexity in the development of computer-based systems.

Modelling is one of the main process that leads to the implementation of a good software. We build models to communicate the desired structure and behaviour of a system, visualizing and controlling its architecture understand better the system we are developing.

Software modelling uses several models to design a given system. A model is a simplification of reality, created to facilitate the understanding of complex systems. These models can cover detailed plans, as well as more general plans with a panoramic view of the system.

Any systems can be described under different aspects, using different models, where each model will therefore be a specific abstraction of the system. The models can be structural, emphasizing the organization of the system, or they can be behavioural, emphasizing the dynamics of the system. Some of the main advantages of planning before executing are:

- It helps to visualize the system as it is or as we want it to be;
- It allows us to specify the structure or behaviour of a system;
- It helps to provide a guide for building the system;

- Decisions made on the project are documented.

Through the models, we are able to obtain multiple views of the system, partitioning the complexity of the system to facilitate its understanding, and acting as a mean of communication between project participants. Therefore, a standardized modelling language, such as UML, is fundamental for building and understanding good models.

If we want to build great software, the problem will not be restricted to the question of writing large amounts of code, in fact, the secret is to elaborate the correct model and to think about how it will be possible to elaborate less code, with greater reliability and quality. This makes the development of quality software a matter of architecture, process and tools, reducing the responsibility of implementation.

References

Creately,(2017) *Why the Software Industry Has a Love-Hate Relationship with UML Diagrams,* Creately blog.

Link:

https://creately.com/blog/diagrams/advantages-and-disadvantages-of-uml/

W3 computing, The Importance of Using UML for Modelling

Link:

https://www.w3computing.com/systemsanalysis/importance-using-uml-modeling/