

Design Model

— —Image Community

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Introduction

The design model redefined the architecture and architecture mechanism based on the analysis model. Moreover, subsystems are added to increase the reusability of the model, and the use case realization is improved according to the redesigned architecture mechanism. Finally, the analysis class is transformed into a design class. After the design steps, the entire model becomes more complete.

The community encourages artists to join the community as publishers by establishing reward mechanisms and free trading mechanisms. While inviting senior photographers to join us, we also welcome people with unique materials around us who are interested in photography to join us. We increase the enthusiasm of publishers by allowing publishers to set prices freely. Publishers improve their seniority through resource downloads. For novice publishers, publishing high-quality free images is a quick way to improve your seniority. At the same time the official will also provide photography tutorials for novices to quickly improve. Senior photographers can apply for certification of the platform, and thus have the qualifications customized by those who need them.

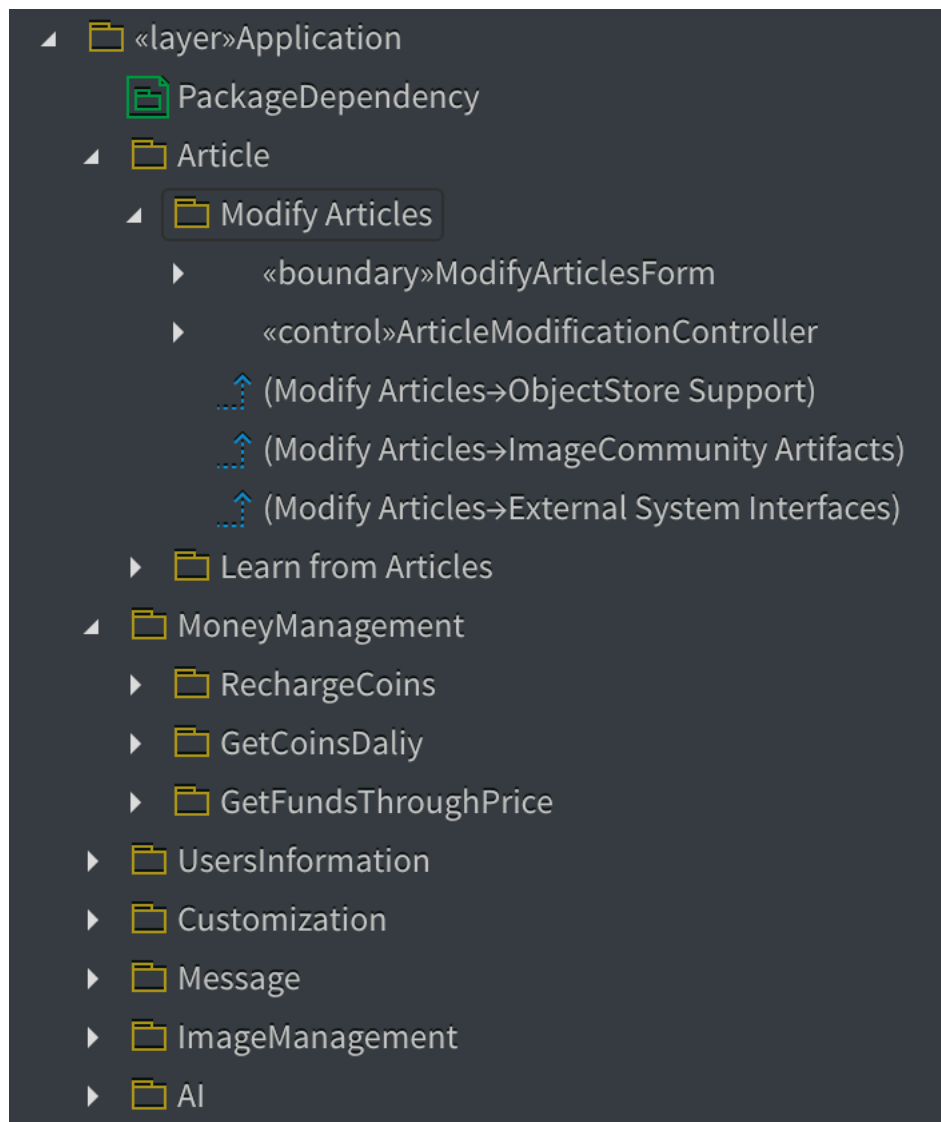
For individual designers, you always have the opportunity to find the right material for your work. First of all, the official and publisher will publish a part of high-quality materials for free search. Secondly, you can also post a customized form, looking for an official certified senior photographer to help you customize the picture. If you encounter an artist you are interested in, you can follow him and view more of his works, and then we will push his updates to you.

We can help you create value for the materials around you, and also help you get cheap and high-quality materials. Overall, we look forward to building a mutually beneficial and win-win picture exchange community

Architecture

Layer1 : Application

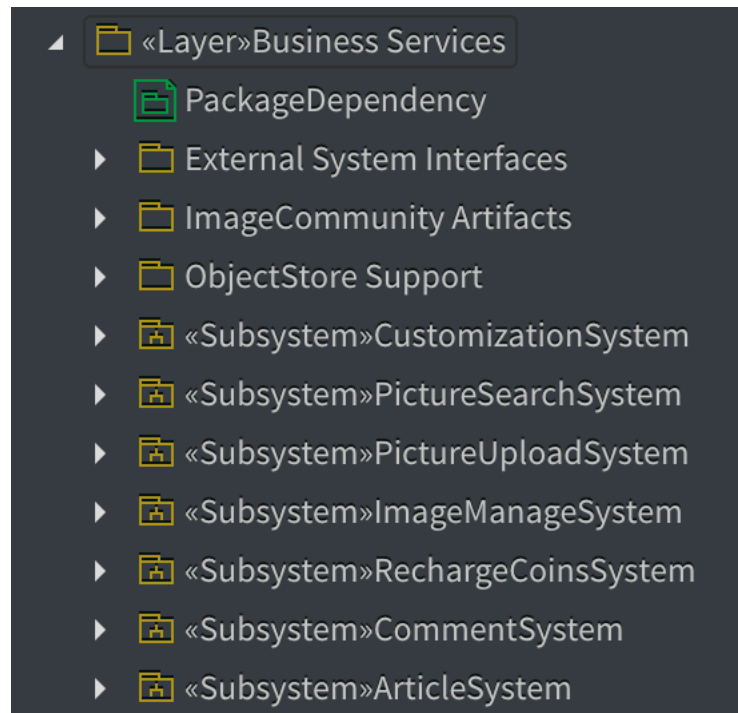
We package the classes according to functional differences, then place the application package in the application layer, and draw a package dependency graph for the package's dependency on the underlying layer.



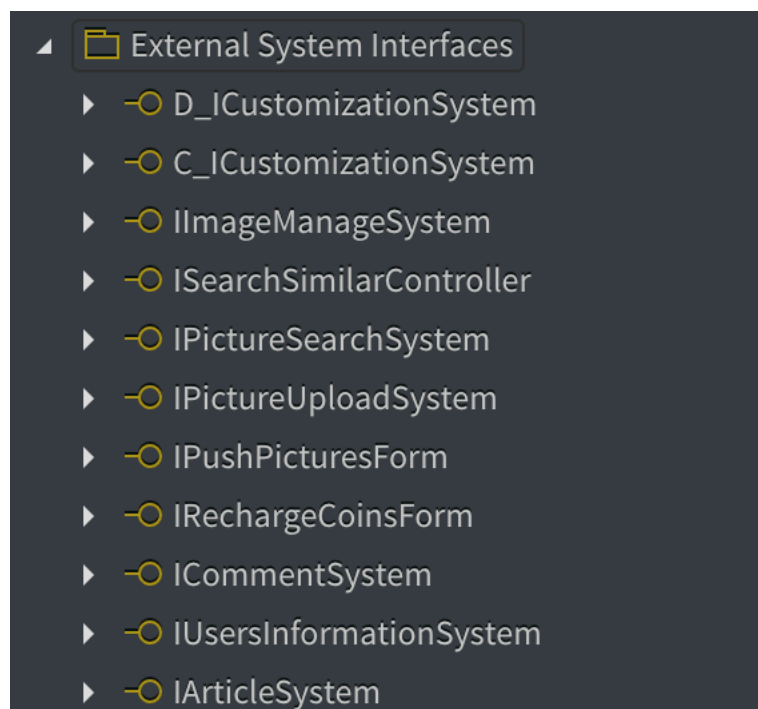
Layer2 : Business Services

We placed subsystems and subsystem interfaces and entity classes on this layer, this layer mainly provides general functions.

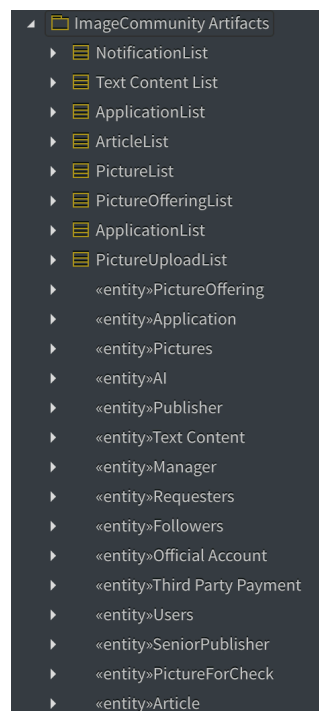
We have implemented a total of 7 subsystems.



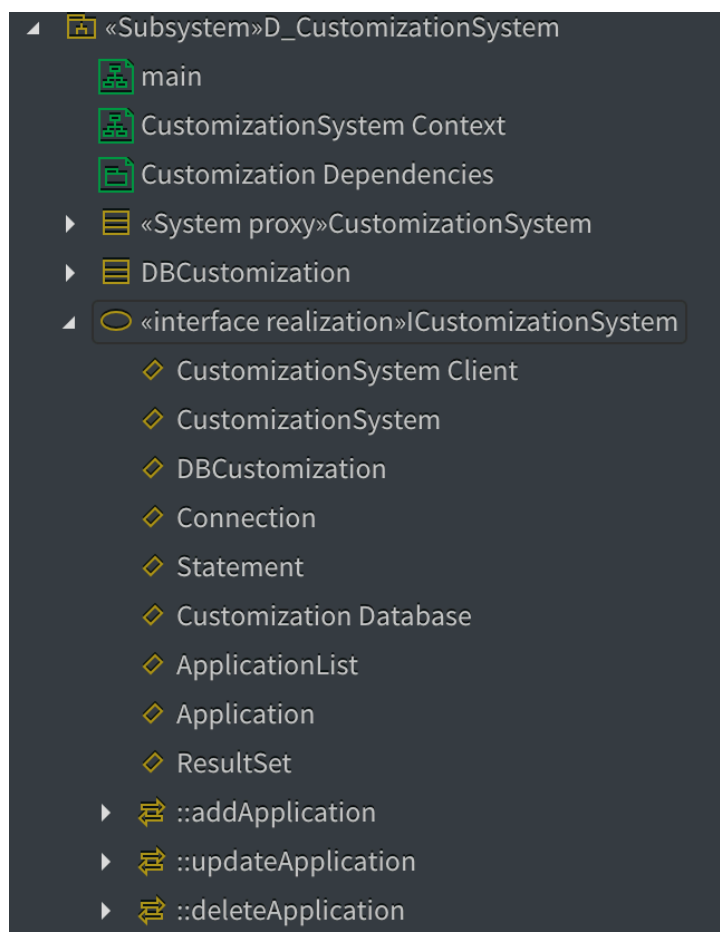
We placed all the subsystem interface here.



The entity classes are in ImageCommunity Artifacts Package.

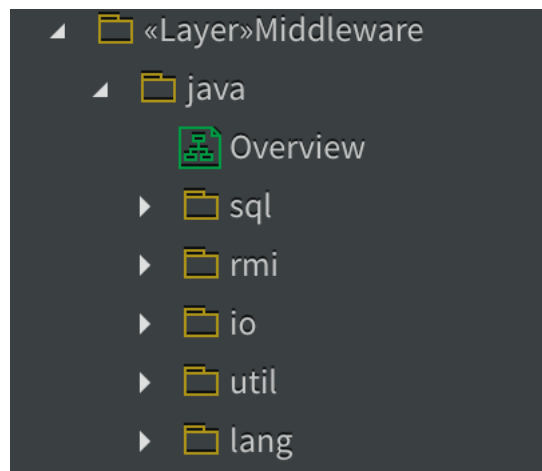


Each subsystem has its complete internal structure, including diagrams ,interface realization and system proxy.

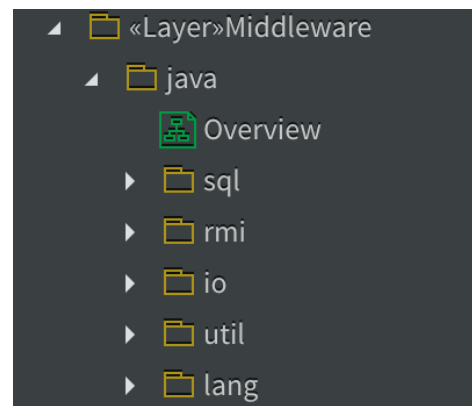
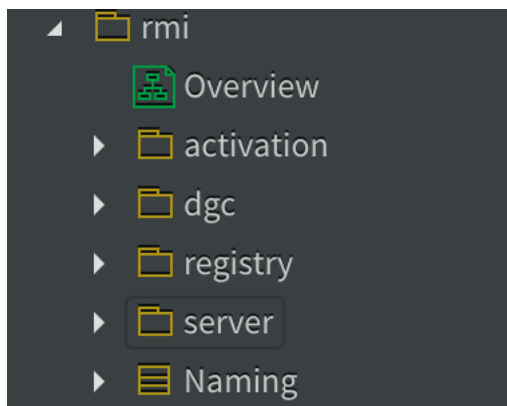


Layer3 : Middleware

We put Java packages on this layer, this layer provides common functions for other layers.

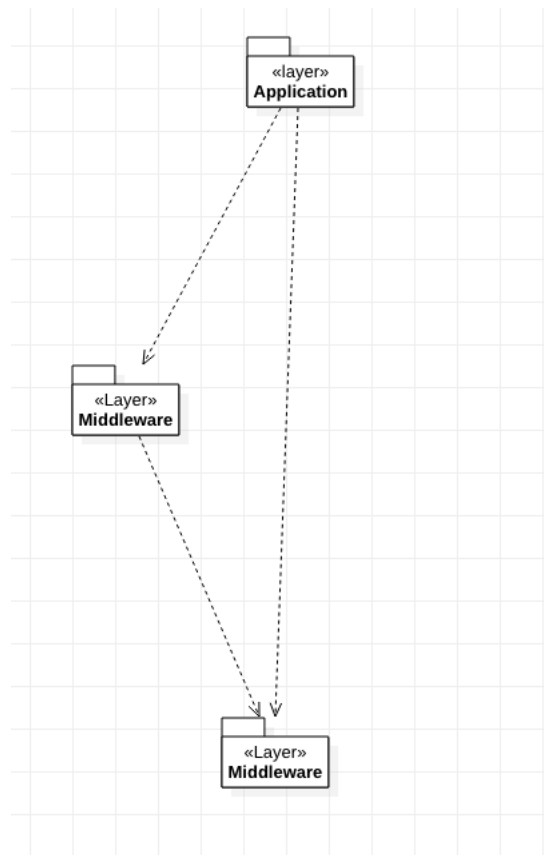


You can see sql package and rmi package with the classes we use in our mechanisms.



Layers: Relationship between layers

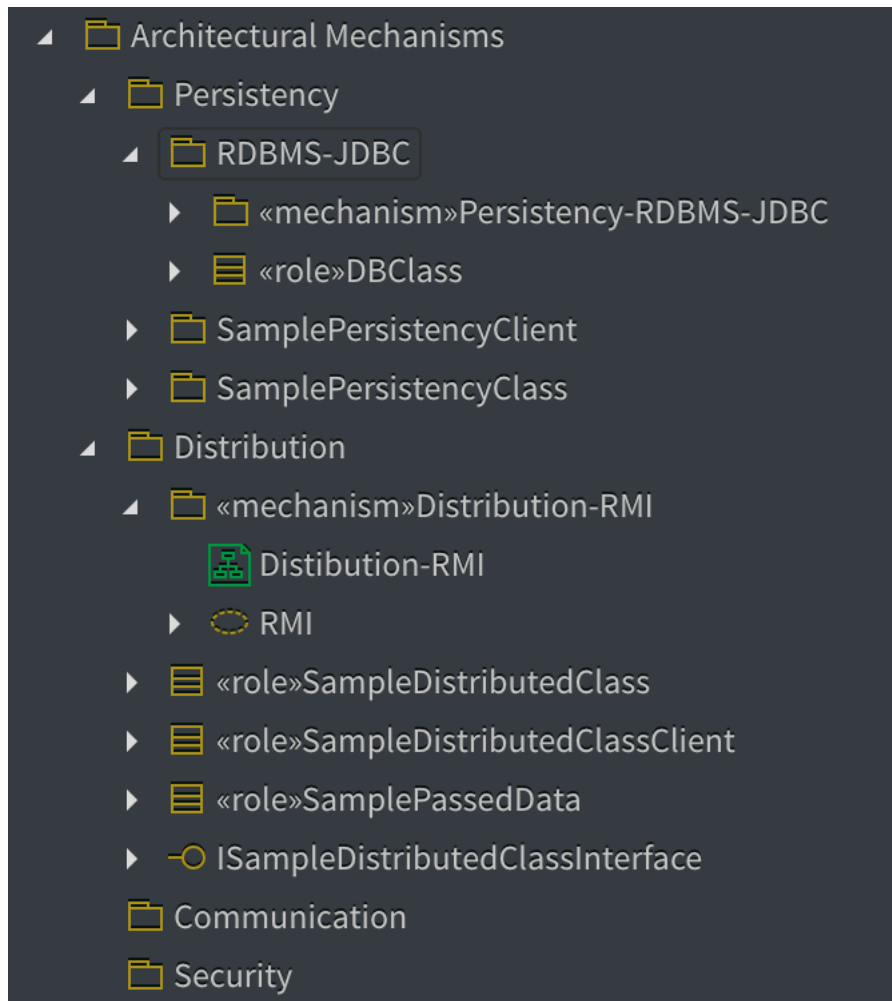
The deeper layer provides common services for the shallower layer, forming a relationship that the shallow layer depends on the deeper layer.



Architectural Mechanisms

Mechanisms

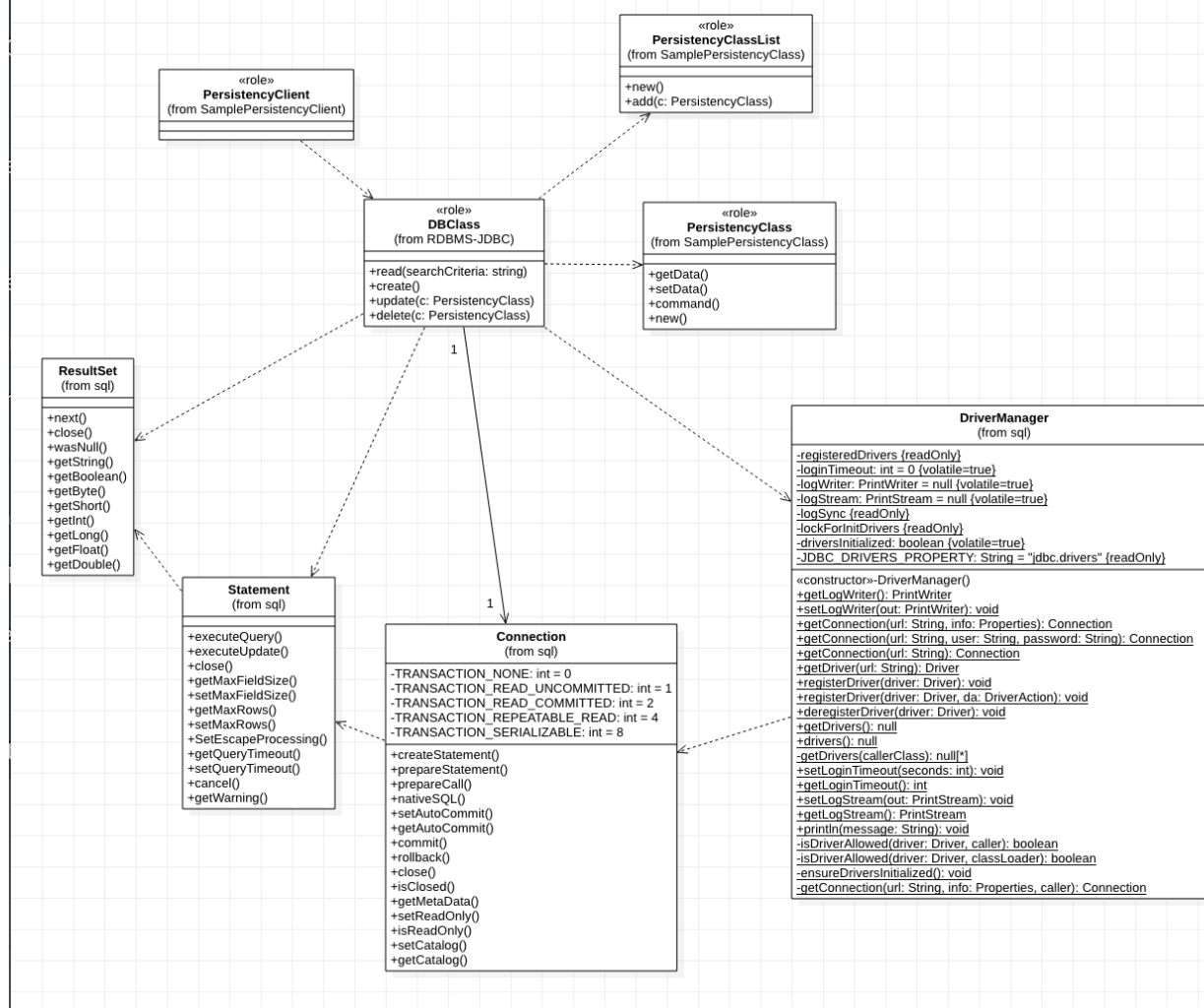
In our vision, there are 4 architectural mechanisms. But due to time, we have implemented two mechanisms for Persistency and Distribution.



Persistency

Persistency Diagram

For JDBC, a client will work with a DBClass to read and write persistent data. The DBClass is responsible for accessing the JDBC database using the DriverManager class. Once a database connection is opened, the DBClass can then create SQL statements that will be sent to the underlying RDBMS and executed using the Statement class. The results of the SQL query is returned in a ResultSet class object.

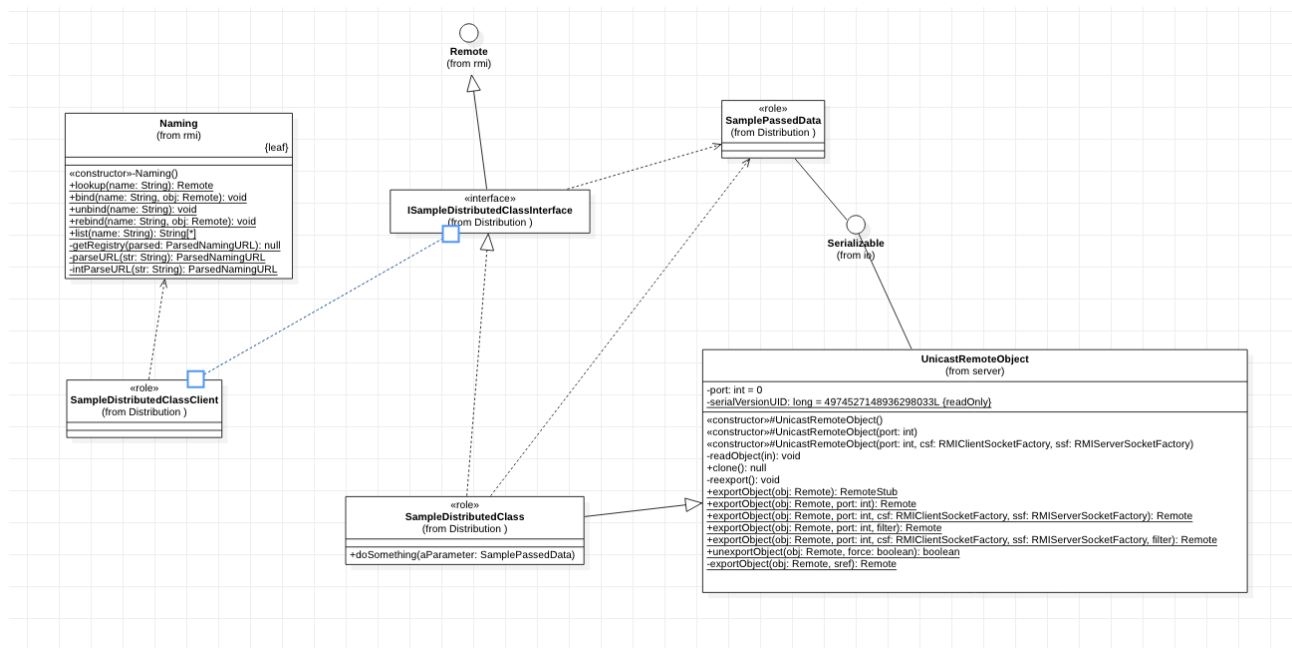


Persistency with four operations in JDBC.

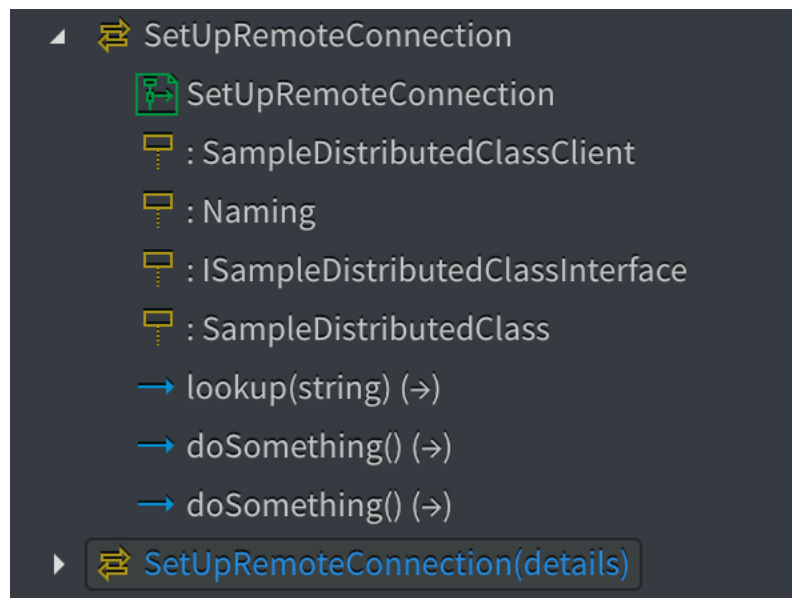
- ▶ ⇄ Update
- ▶ ⇄ Create
- ▶ ⇄ Delete
- ▶ ⇄ Initialize
- ▶ ⇄ Read

Distribution

Distribution Diagram



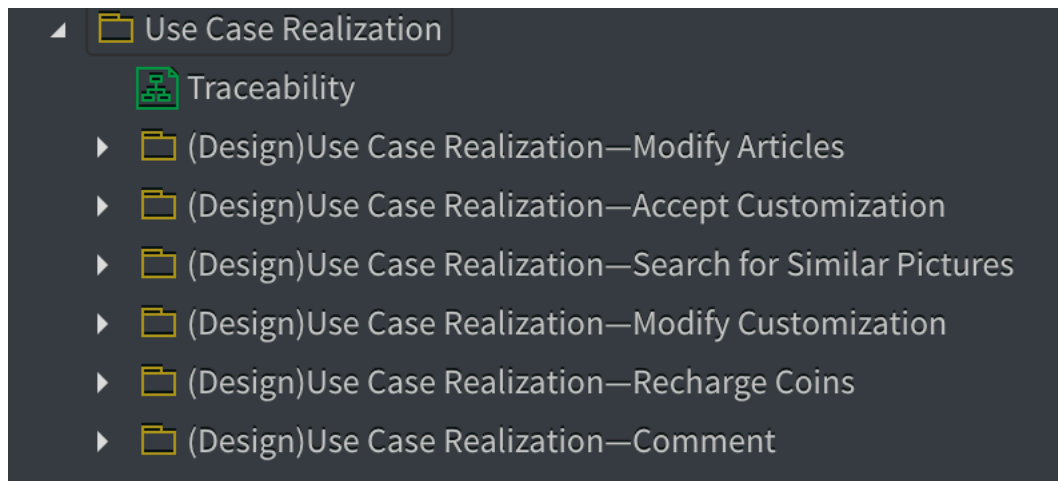
Distribution with two operations in RMI.



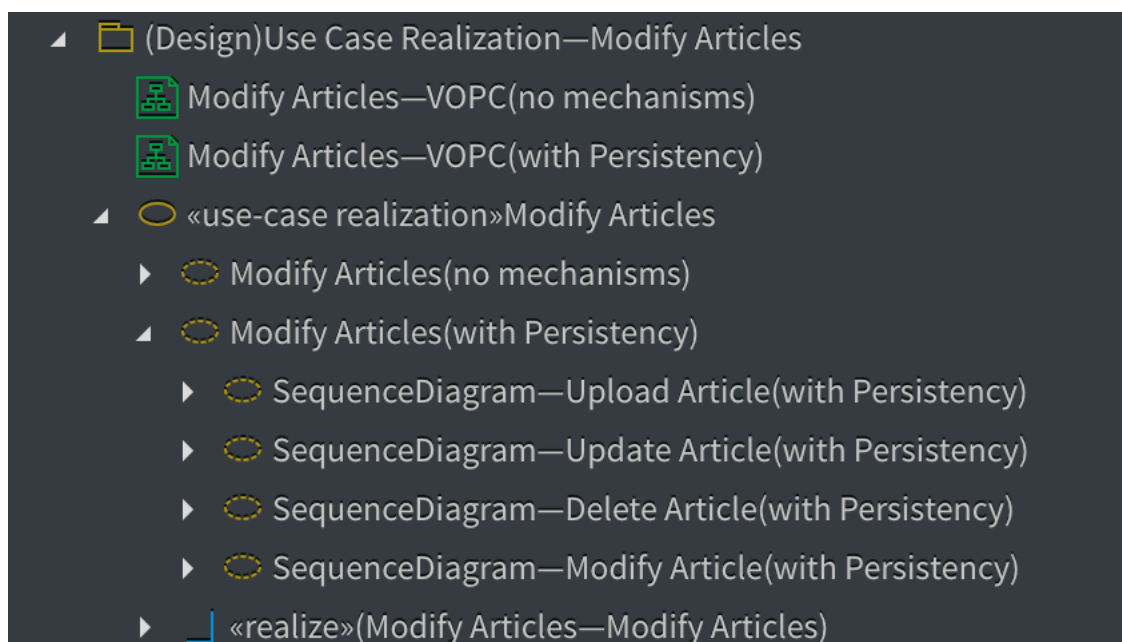
Use-Case Realization

(Design) Use-Case Realization

In design mode, we carried out a total of 6 use case realizations.

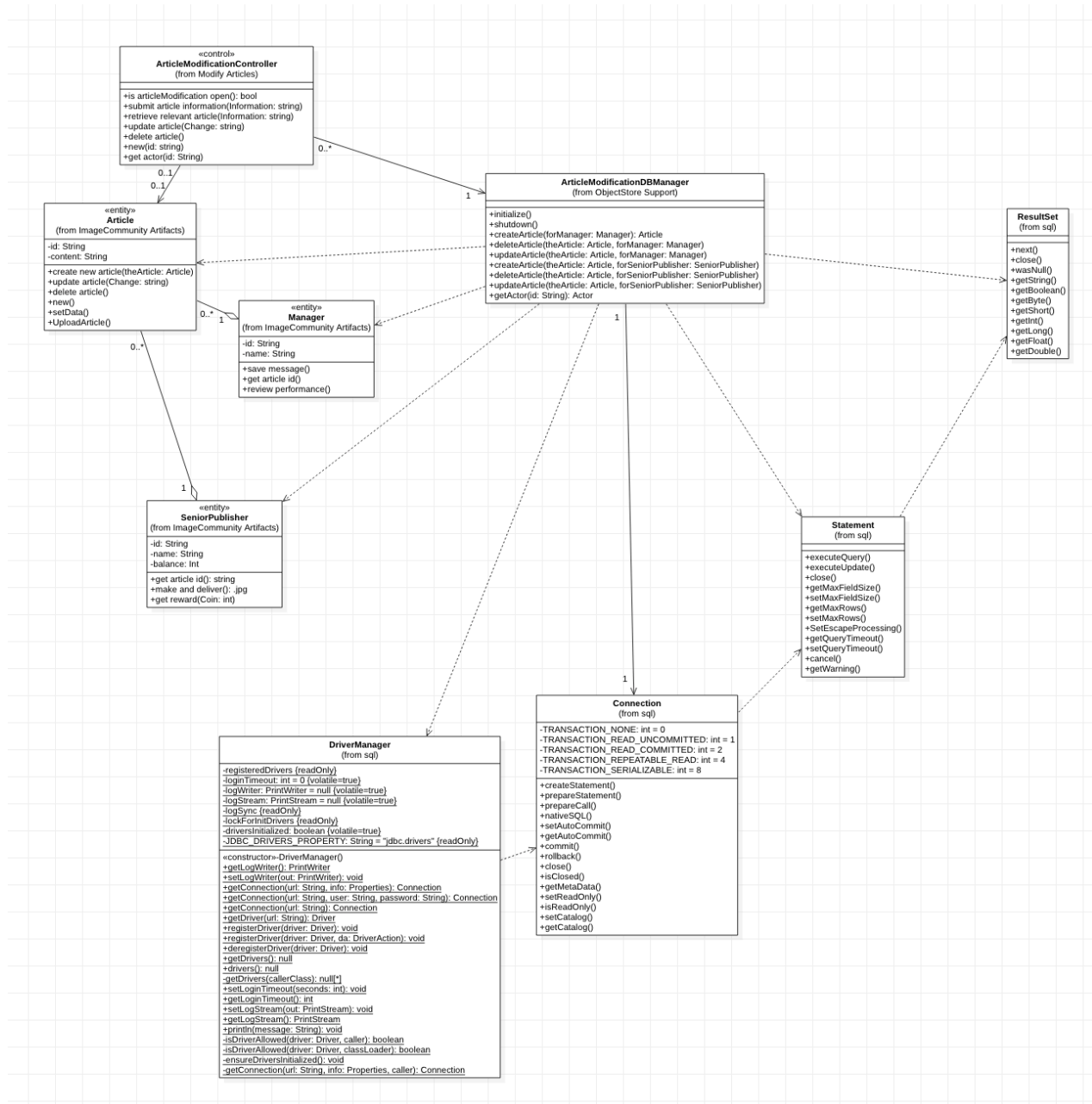


Each design use-case realization has a VOPC diagram and sequence diagram containing the architecture mechanism or subsystem .



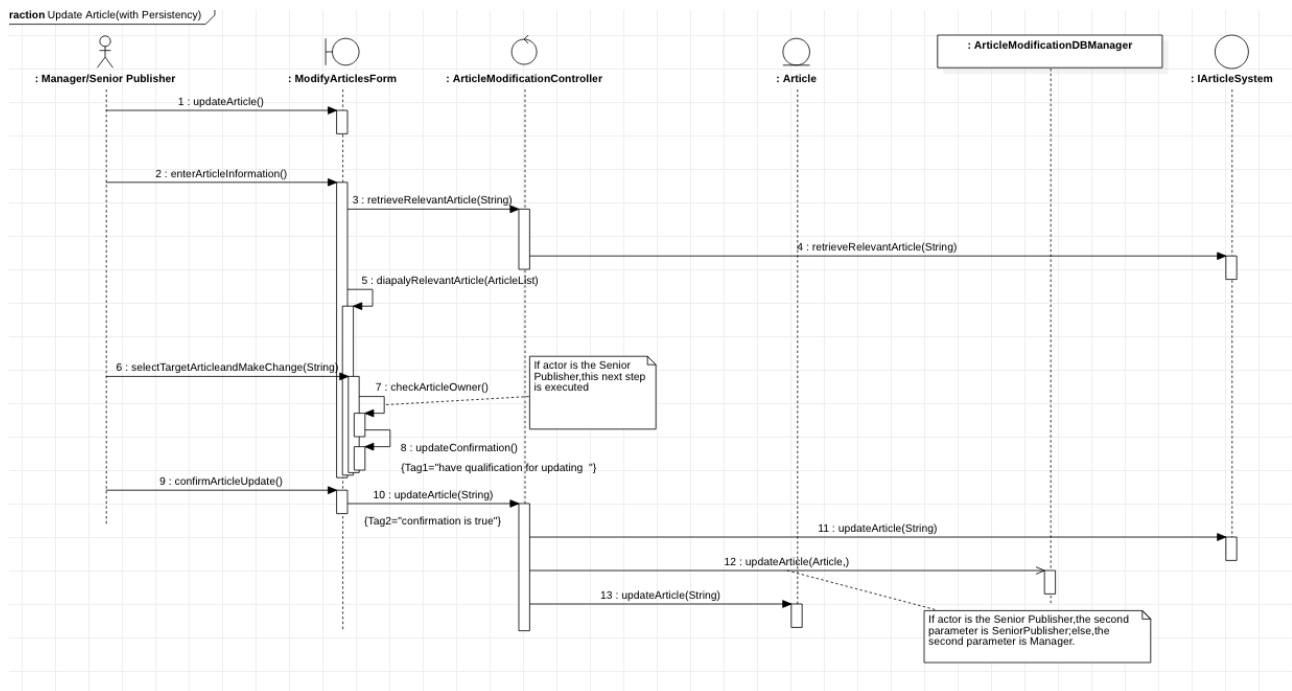
VOPC diagram in design model

Example: Modify Articles-VOPC (with Persistency)



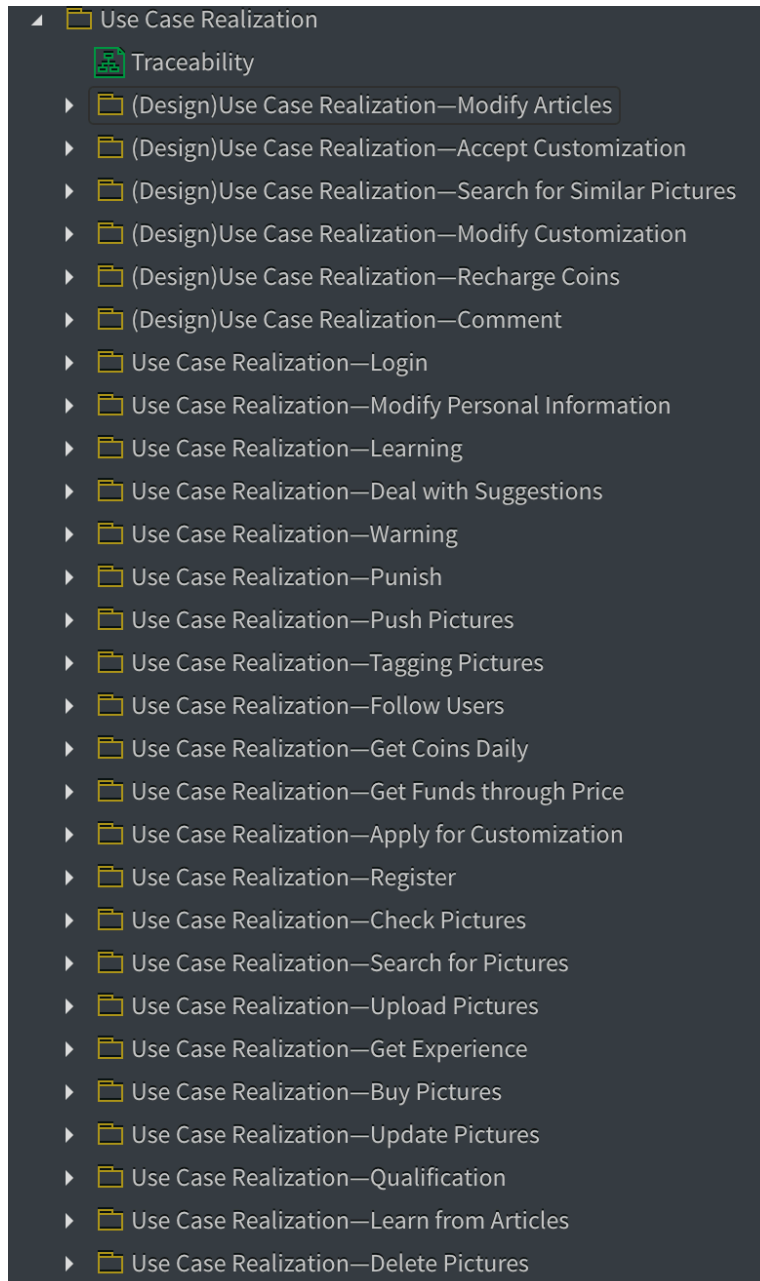
Sequence diagram in design model

Example: Modify Articles-update articles operation (with Persistency)

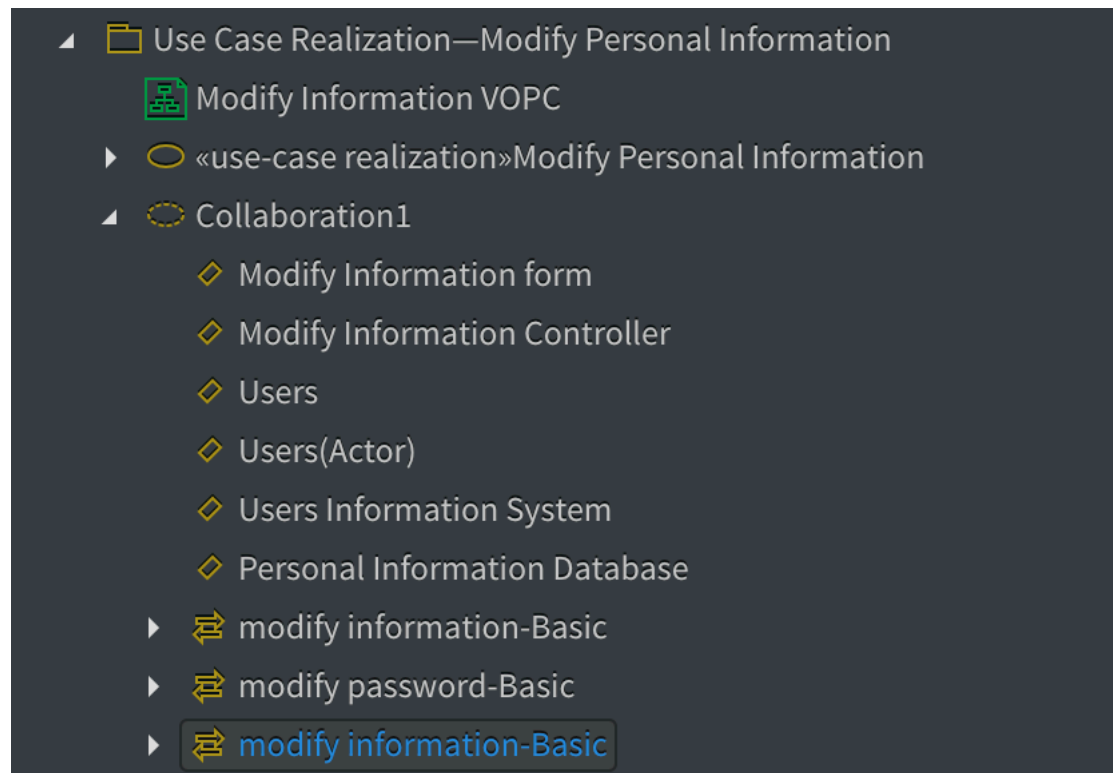


(Analyses) Use-Case Realization

We have implemented a total of 29 use cases.

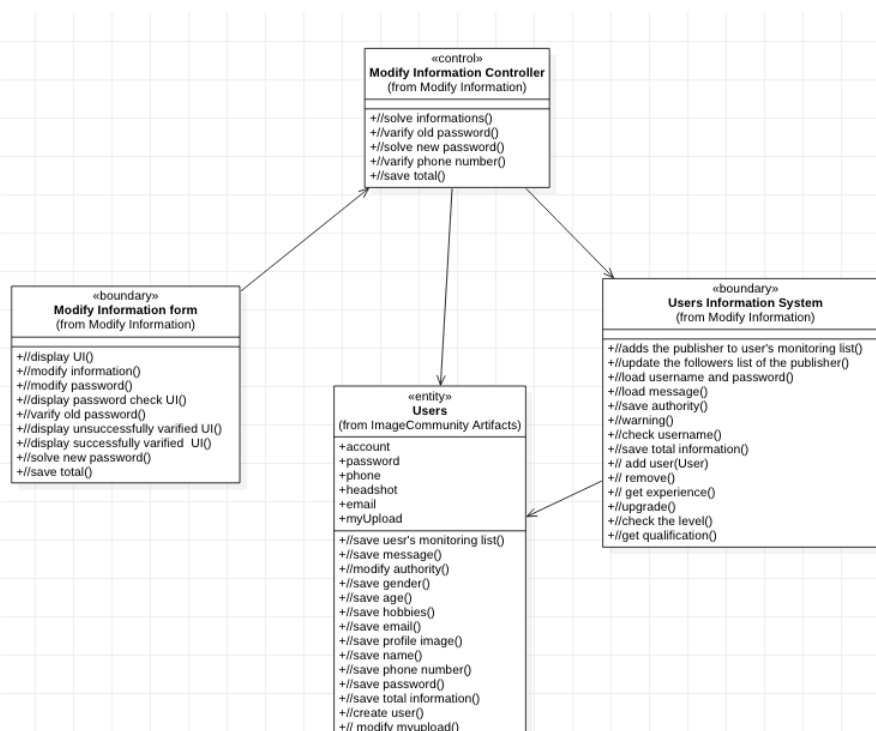


Each use case implementation has a complete structure, including VOPC diagram, sequence diagram, and interaction diagram.



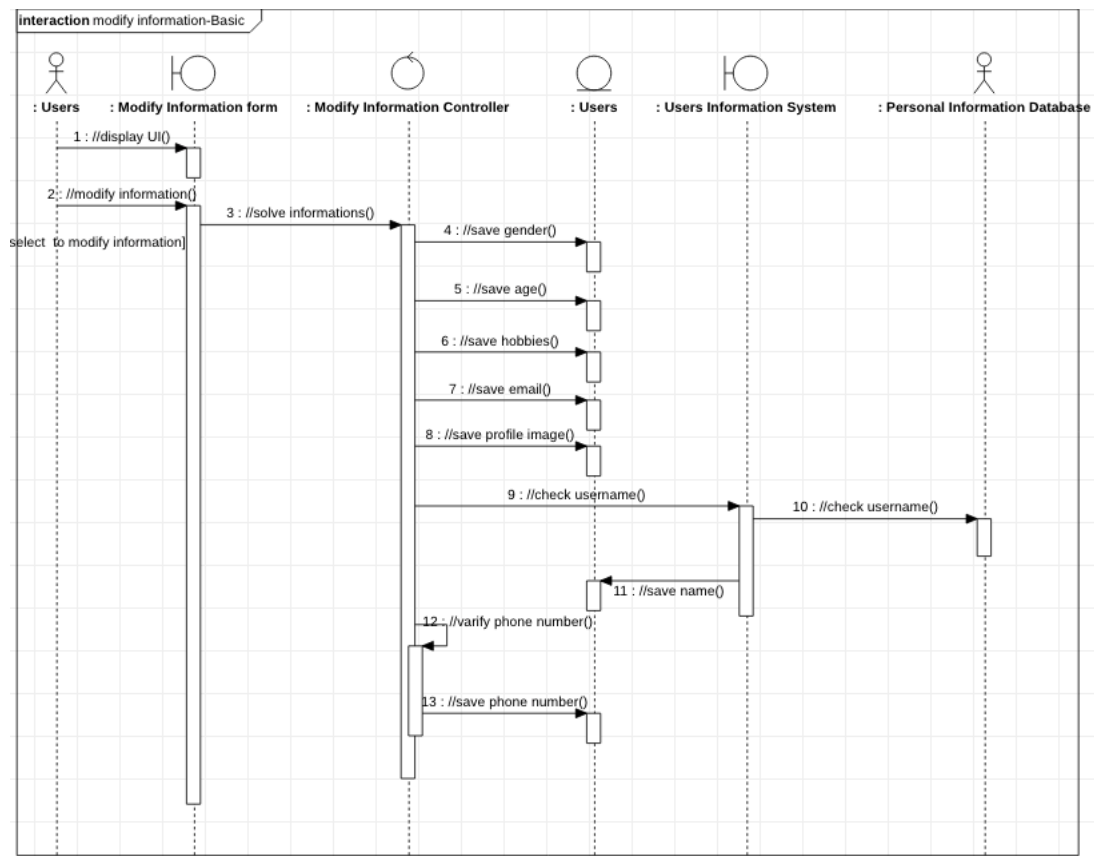
VOPC diagram in analyses model

Example: Modify Personal Information-VOPC



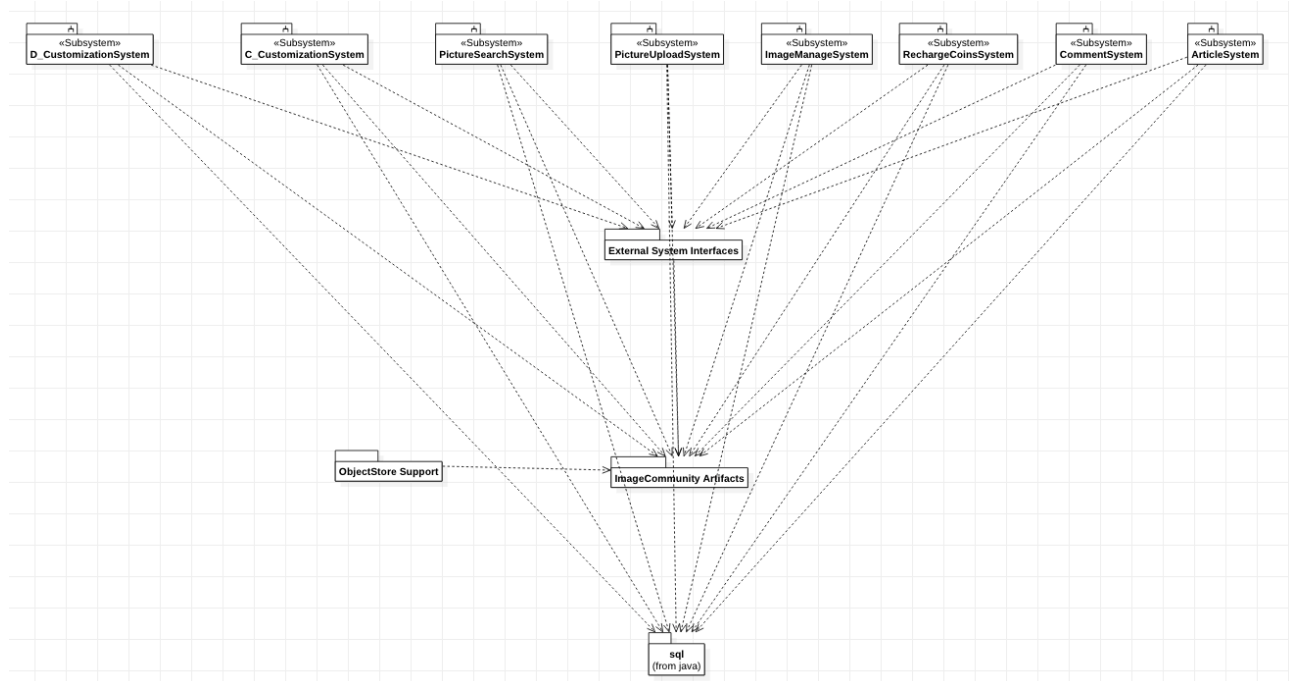
Sequence diagram in analyses model

Example: Modify Personal Information operation

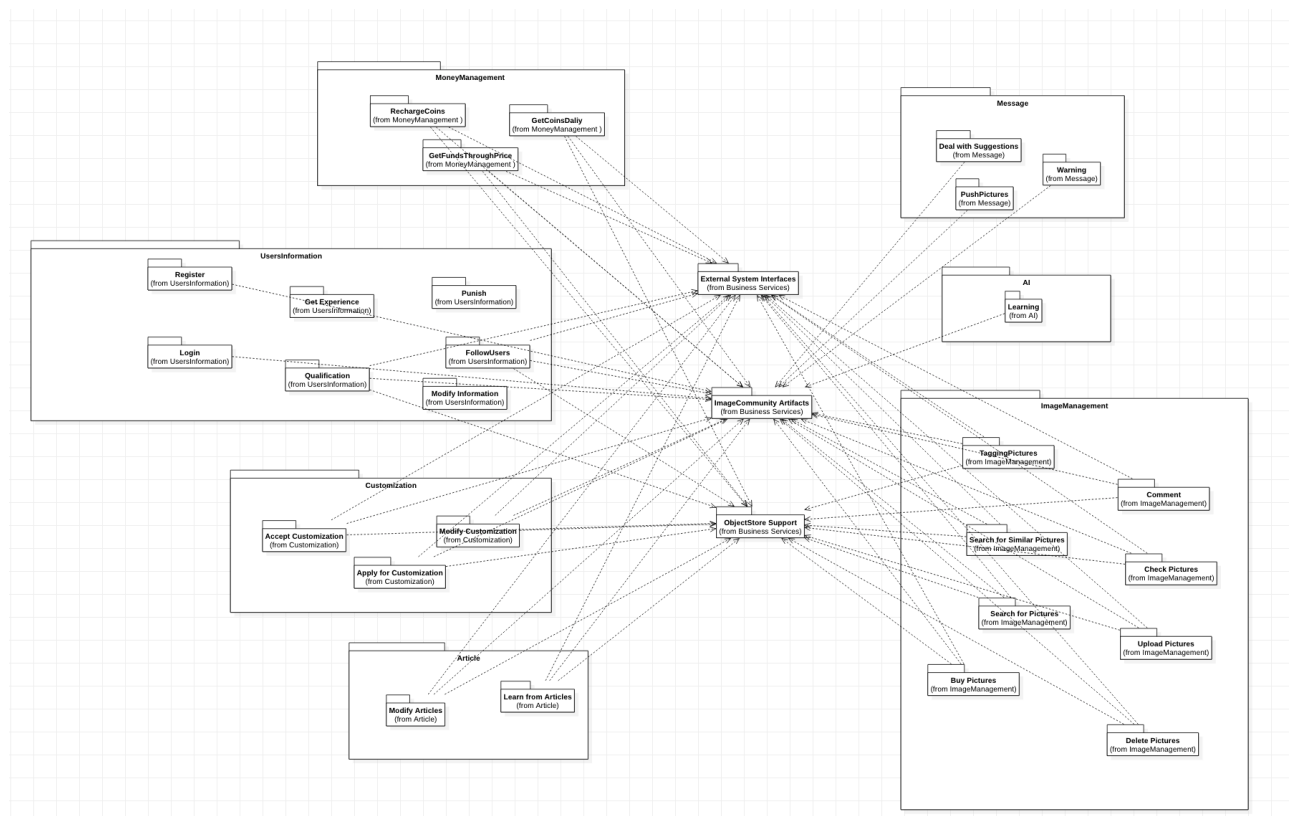


Package

Package Dependency In layer Business Services



In layer Application



List of References

- [1]<https://pixabay.com/> --An Picture Exchange Community
- [2]<https://www.shutterstock.com/> --An Traditional Picture Library
- [3]<https://www.vcg.com/>--A Chinese Traditional Picture Library
- [4]<https://keras.io/>--A Deep Learning API Document

Contributions of Team Members

1850052 丁逸敏:

Subsystems: CustomizationSystem

PictureSearchSystem

PictureUploadSystem

Design Use-Case Realizations :

Search for Similar Pictures

Modify Customization

Classes Refine:

More than 15 Classes Search for Similar Pictures and Modify Customization involved.

1851475陈丹怡:

**Subsystems: CustomizationSystem
ArticleSystem**

Design Use-Case Realizations :

Modify Articles

Accept Customization

Classes Refine:

More than 15 Classes Modify Articles and Accept Customization involved.

1852144李一凡:

**Subsystems: ImageManageSystem
RechargeCoinsSystem
CommentSystem**

Design Use-Case Realizations :

Recharge Coins

Comment

Classes Refine:

More than 15 Classes Recharge Coins and Comment involved.

1853898谭忠煜:

Design Model Document (this pdf)

Architecture Mechanism:

Persistency

Distribution

Layers Architecture

Layer Middleware

Packaging and Integration