

Fundamental Project: IMS

Inventory Management System

Ervin Musincki

Specification approach

- Inventory system for a small shop creating and selling warship models
- They base their models on ships from the World of Warships game
- They use the in-game price of the ships as their sale price
- No online services at the time of development
- They require an IMS system for basic record keeping and cost calculation ONLY

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Page Discussion

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Search Example: Gun SEARCH

- Games

World of Tanks

World of Warplanes

World of Warships

WoT Blitz

WoT Console

WoWS: Legends

Navigation

Tools

In other languages

Homepage / World of Warships

The logo for World of Warships, featuring a large battleship in the center of a turbulent sea under a cloudy sky. The words "WORLD OF WARSHIPS" are written in bold letters, with "ACTION STATIONS" at the bottom.

World of Warships

World of Warships is a naval action MMO, dipping into the world of large-scale sea battles of the first half of the twentieth century. Epic battles rage across the oceans of the world in order to claim victory among teams comprised of the greatest representatives from the era of multi-ton marine giants. In order to achieve victory in battle, players must employ a wide range of strategies in a variety of tactical decisions. Sudden ambushes, cunning flanking attacks, open confrontation and "head-on" assaults — captains must strive to find an ideal way to deliver a decisive blow at the enemy.

Tactical diversity in **World of Warships** comes from the inclusion of many different classes of warships, including: **aircraft carriers**, capable of providing remote air support and striking targets at extreme range; **battleships** that project power across vast swaths of ocean; **light and heavy cruisers** with the capability to quickly respond to changing battlefield conditions; and stealthy, agile **destroyers** which can be highly effective in group attacks.

[World of Warships Official Homepage](#) [Download the World of Warships Game Guide](#)

In-Game Vehicles

A row of flags representing different in-game nations and alliances: U.S.A., Japan, U.S.S.R., Germany, U.K., Commonwealth, France, Italy, Pan-Asia, Europe, and Pan-America.

[List of Premium Ships](#)

Four ship models shown side-by-side: a Destroyer, a Cruiser, a Battleship, and an Aircraft Carrier.

Destroyers Cruisers Battleships Aircraft Carriers

[Naval Academy \(Video Tutorials\)](#)

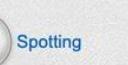
Basics

Port

Surface Combat

Ammunition Types

Game Mechanics

Spotting

Customization

Upgrades

Game Version

EU Server: 0.10.0
NA Server: 0.10.0
ASIA Server: 0.10.0
More: Changelogs

Technologies used

Project Management: Jira > Kanban Board

Version Control: Git

Git host: GitHub

Back-End Language: Java

IDE: Eclipse

Database Management: MySQL

Database host: GCP

Build Tool: Maven

Unit Testing: JUnit, Mockito

Quality Testing: SonarQube



Version Control

- main > dev > feature-branch model



- Note the cheeky "modified dummy to make node" commits which I used to stop the network representation collapsing on GitHub

```
ubuntu@QA:/Users/ergo96/eclipse-workspace/IMS$ cat src/main/resources/dummy.md
Silence is golden
Silence is still golden
Silence was golden yesterday
Silence is golden today
Silence will be golden tomorrow
Silence is golden, isn't it Google
Silence is golden this Friday
Isn't silence golden today
Things are beginning to be less silent
Nah, silence is golden once again
Not so silent anymore, is it
Why is everything so loud
```

```
* 110ab4d - (80 minutes ago) merging dev into main - Ervin Musincki (origin/main, origin/HEAD, main)
\ \
* 9fcd37b - (81 minutes ago) updated fat .jar - Ervin Musincki (HEAD -> feature-update_readme, origin/dev, dev)
* a521fbf - (84 minutes ago) merging feature-sonarcube_recoms into dev - Ervin Musincki
\ \
| * ee9e51d - (15 hours ago) modified files with sonarcube recommendations - Ervin Musincki
| * ce21dfd - (18 hours ago) modified files with sonarcube recommendations - Ervin Musincki
| * 84d1f1a - (20 hours ago) modified a number of files following sonarcube recommendations - Ervin Musincki
* | 7af3096 - (86 minutes ago) added final uml - Ervin Musincki
* | 976f5f2 - (18 hours ago) merging feature-erd into dev - Ervin Musincki
\ \
| * ce8851f - (18 hours ago) added erd - Ervin Musincki
* | 5569604 - (18 hours ago) modified dummy to make node - Ervin Musincki
\ /
* | 07c8616 - (18 hours ago) merging feature-risk_assessment into dev - Ervin Musincki
\ \
| * 8682f41 - (18 hours ago) added risk_assessment.pdf - Ervin Musincki
| * 857d567 - (2 weeks ago) Risk assessment added - Ervin Musincki
* | ecdd746 - (18 hours ago) modified dummy to make node - Ervin Musincki
\ /
* | 71867d2 - (2 days ago) merging dev into main with executable fat .jar - Ervin Musincki ... skipping...
* 110ab4d - (80 minutes ago) merging dev into main - Ervin Musincki (origin/main, origin/HEAD, main)
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* | 71867d2 - (2 days ago) merging dev into main with executable fat .jar - Ervin Musincki
```

Project Management Jira Kanban Board

- User stories first from spec then development specifics
- Subtasks in user stories
- Linked user stories with similar tasks
- Story points which I referred to as coffee points
 - More time -> more coffee
 - More effort -> more coffee
- MoSCoW methodology

Projects /  IMS /  IMS-5

As a user, I want to add items to the system

Backlog

Labels None

Story Points 7

Priority  Must Have

Reporter  Ervin Musincki

Show 6 more fields Assignee, Original estimate, Time tracking, Epic Link, Components and Fix versions

Created January 29, 2021, 11:30 AM Updated 48 seconds ago 

Subtasks 0% Done

 IMS-40 Create item domain	 BACKLOG
 IMS-41 Implement item controller	 BACKLOG
 IMS-42 Implement item DAO	 BACKLOG
 IMS-43 Create item table in db	 BACKLOG

Linked issues +

relates to

 IMS-8 As a user, I want to delete an item in the system	 BACKLOG
 IMS-7 As a user, I want to update an item in the system	 BACKLOG
 IMS-6 As a user, I want to view all items in the system	 BACKLOG

Activity

Show: **Comments** History Work log

Add a comment... 

Pro tip: press **M** to comment

[main](#)[1 branch](#)[0 tags](#)[Go to file](#)[Add file](#)[Code](#)

About

No description, website, or topics provided.

[Readme](#)

Releases

No releases published
[Create a new release](#)

Packages

No packages published
[Publish your first package](#)

README.md



Change Jira Priority lables to use with MoSCoW Prioritisation

In Jira click on the cog ikon (top right corner) > Issues > Priorities (Menu on the left) > Edit
You can enter the bellow or anything else you prefer.

Must Have

Icon URL:

<https://raw.githubusercontent.com/r9SC6Zv6/MoSCoW-Priorisation-Icons/a8c917f8a0241de3d2a36b2fc3b71>

Priority Color: ■ #cc0000

Should Have

Icon URL:

<https://raw.githubusercontent.com/r9SC6Zv6/MoSCoW-Priorisation-Icons/a8c917f8a0241de3d2a36b2fc3b71>

Priority Color: ■ #ff9900

Could Have

Priority	Must Have
Reporter	Should Have
	Could Have
	Wouldn't Have

[Show 5 more](#)

Kanban board



Only My Issues

Recently Updated

SELECTED FOR DEVELOPMENT 7

As the developer, I want an ERD, so I can be more efficient when implementing DB queries



....

IMS-16

Create ERD for MVP



....

IMS-38

Create final ERD



....

IMS-39

As the developer, I want a connection to my GCP DB instance



....

IMS-18

Create GCP Service account and download authentication key



....

IMS-27

Input GCP socket factory details to JDBC



....

IMS-28

Add environment variable to Eclipse



....

IMS-29

IN PROGRESS 5

As the developer, I need to perform a risk assessment, so I am ready when issues arise



....

IMS-15

Push risk assessment pdf to documentation directory



....

IMS-26

As the developer, I want a UML, so I can understand the relationship between my classes



....

IMS-17

Create UML for MVP



....

IMS-36

Create final UML



....

IMS-37

DONE 7

IMS-15 As the developer, I need to perform a risk assessment, so I am ready when issu...

Perform risk assessment



....

IMS-25

IMS-17 As the developer, I want a UML, so I can understand the relationship between m...

Create UML for IMS-Starter to understand the starting point



....

IMS-35

As the developer, I want a GitHub repository, so I can keep version control



....

IMS-19

Fork IMS-Starter to my repo



....

IMS-21

Clone repo to workstation



....

IMS-22

Change default branch from master to main



....

IMS-23

Clean up old unneeded branches and create new dev branch



....

IMS-24

We're only showing recently modified issues.

Looking for an older issue?

Kanban board

Release ...



Only My Issues

Recently Updated

SELECTED FOR DEVELOPMENT 5

IMS-5 As a user, I want to add items to the system

Implement item controller



IMS-41

Implement item DAO



IMS-42

As a user, I want to delete an item in the system



IMS-8

As a user, I want to update an item in the system



IMS-7

As a user, I want to view all items in the system



IMS-6

IN PROGRESS 2

IMS-5 As a user, I want to add items to the system

Create item domain



IMS-40

Create item table in db



IMS-43

DONE 9

As a user, I want to delete a customer in the system



IMS-4

As a user, I want to view all customers in the system



IMS-2

As a user, I want to add items to the system



IMS-5

As a user, I want to update a customer in the system



IMS-3

As a user, I want to add a customer to the system



IMS-1

As the developer, I want a connection to my GCP DB instance



IMS-18

Create GCP Service account and download authentication key



IMS-27

Input GCP socket factory details to JDBC



IMS-28

Add environment variable to Eclipse

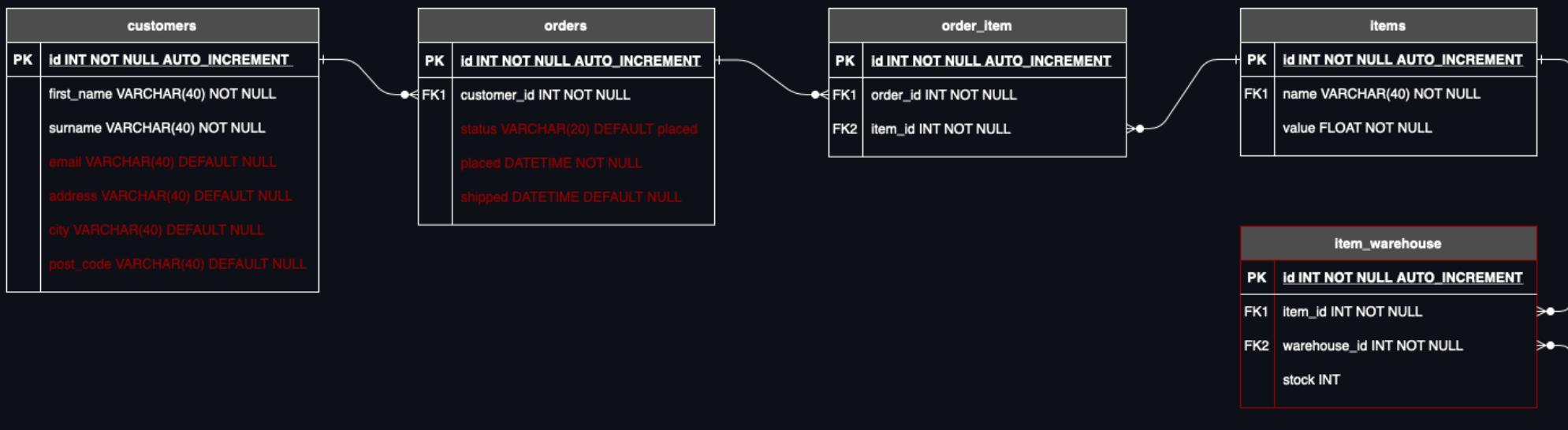
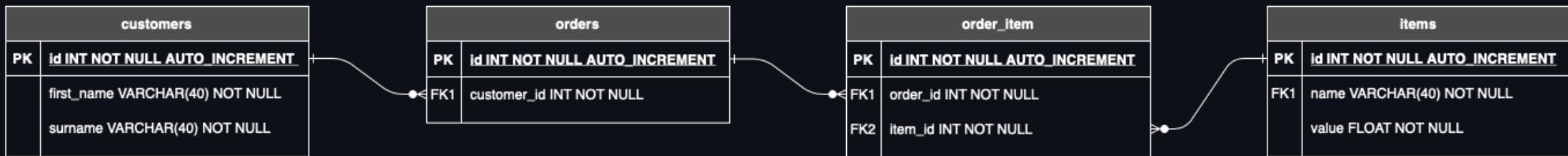


IMS-29

We're only showing recently modified issues.

Looking for an older issue?

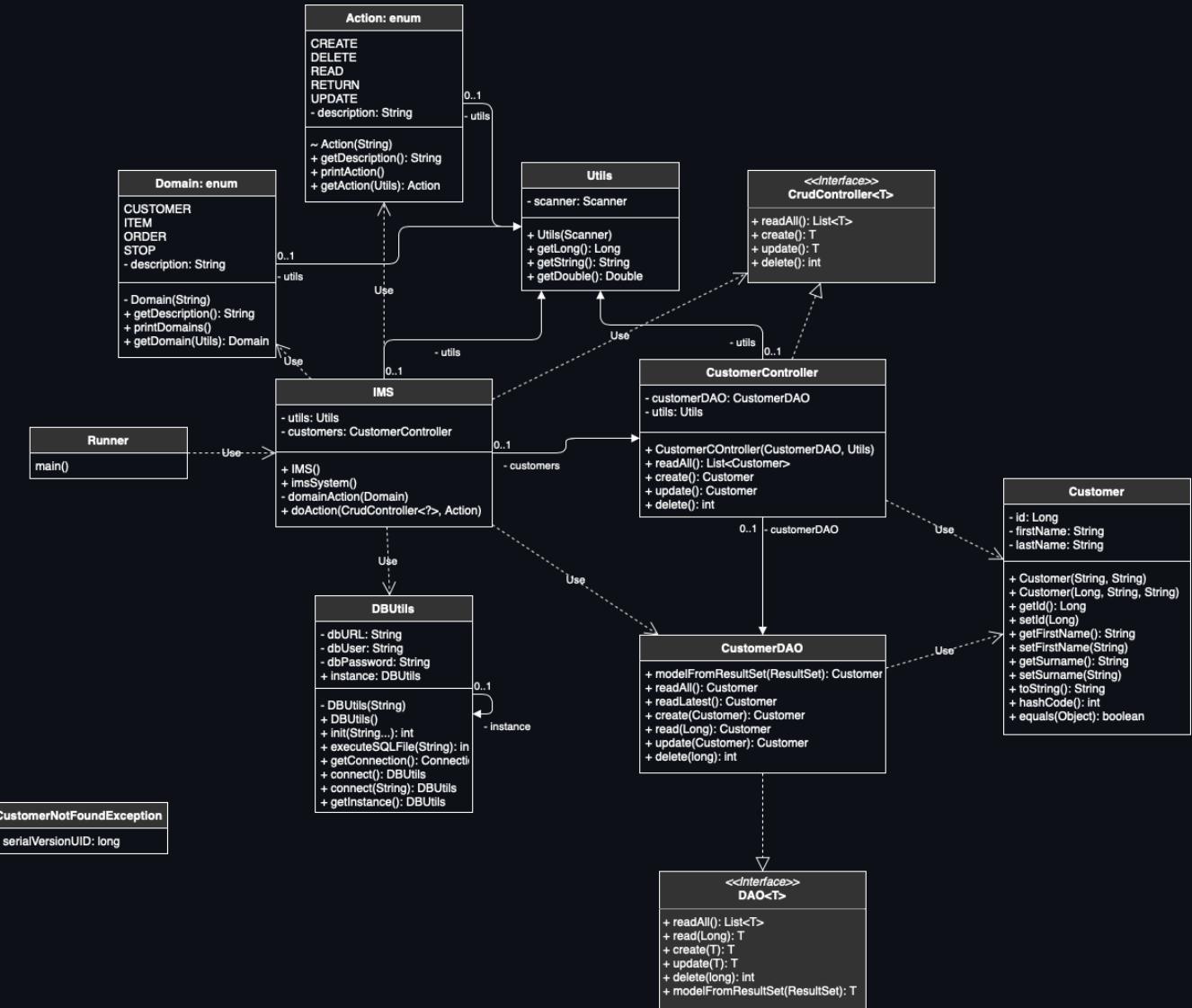
Entity Relationship Diagram

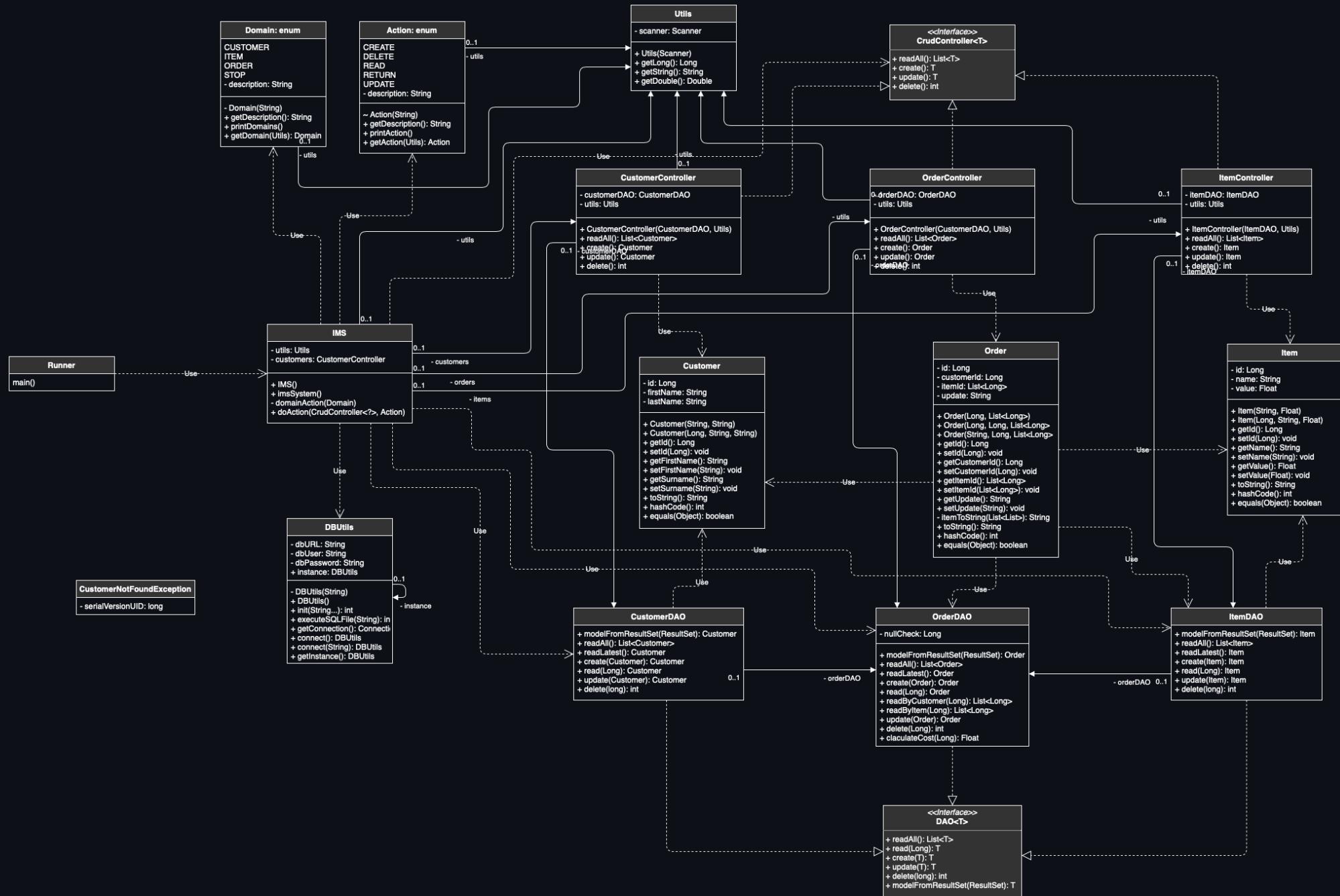


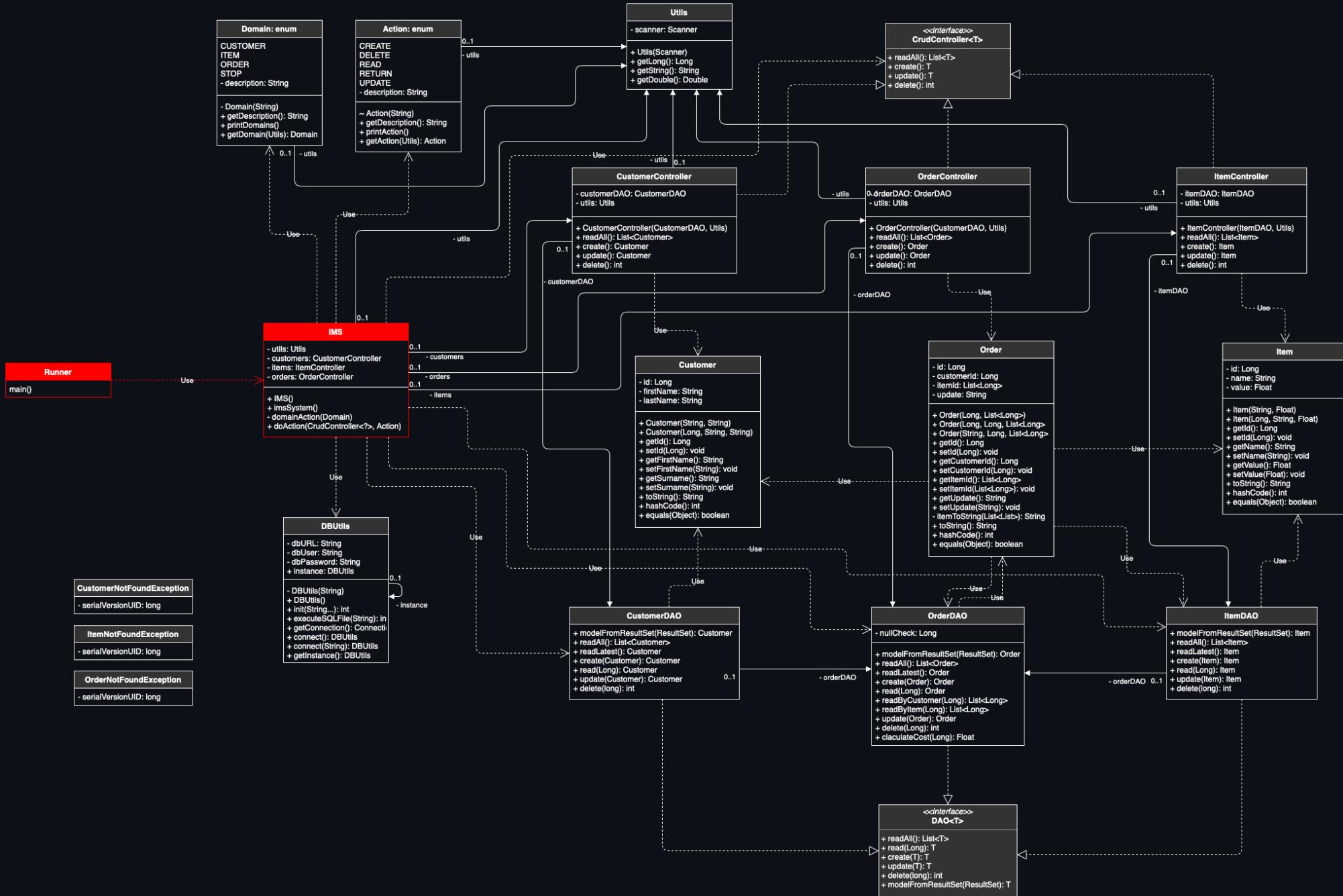
- Many customisations and improvements are possible

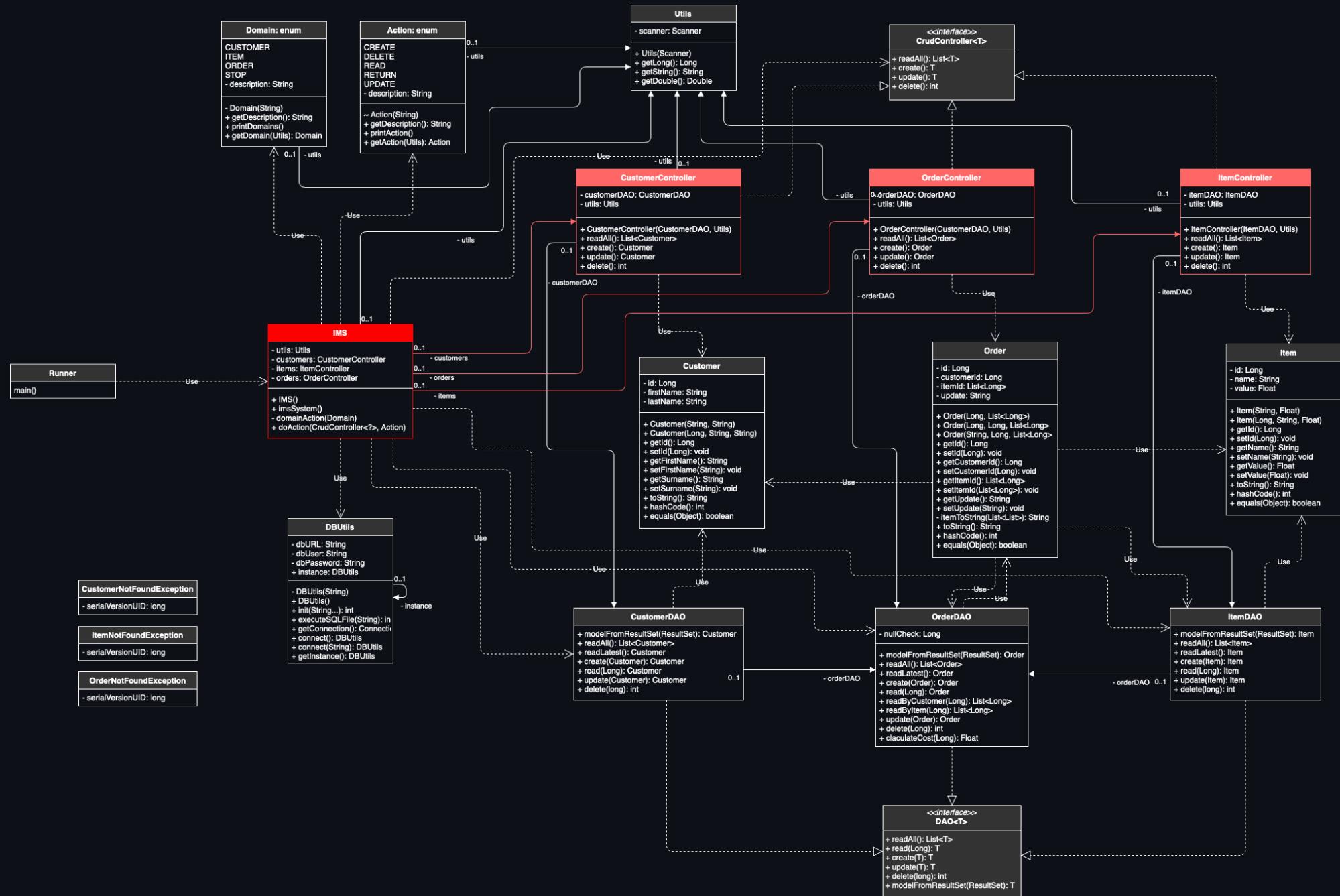
UML Class Diagram

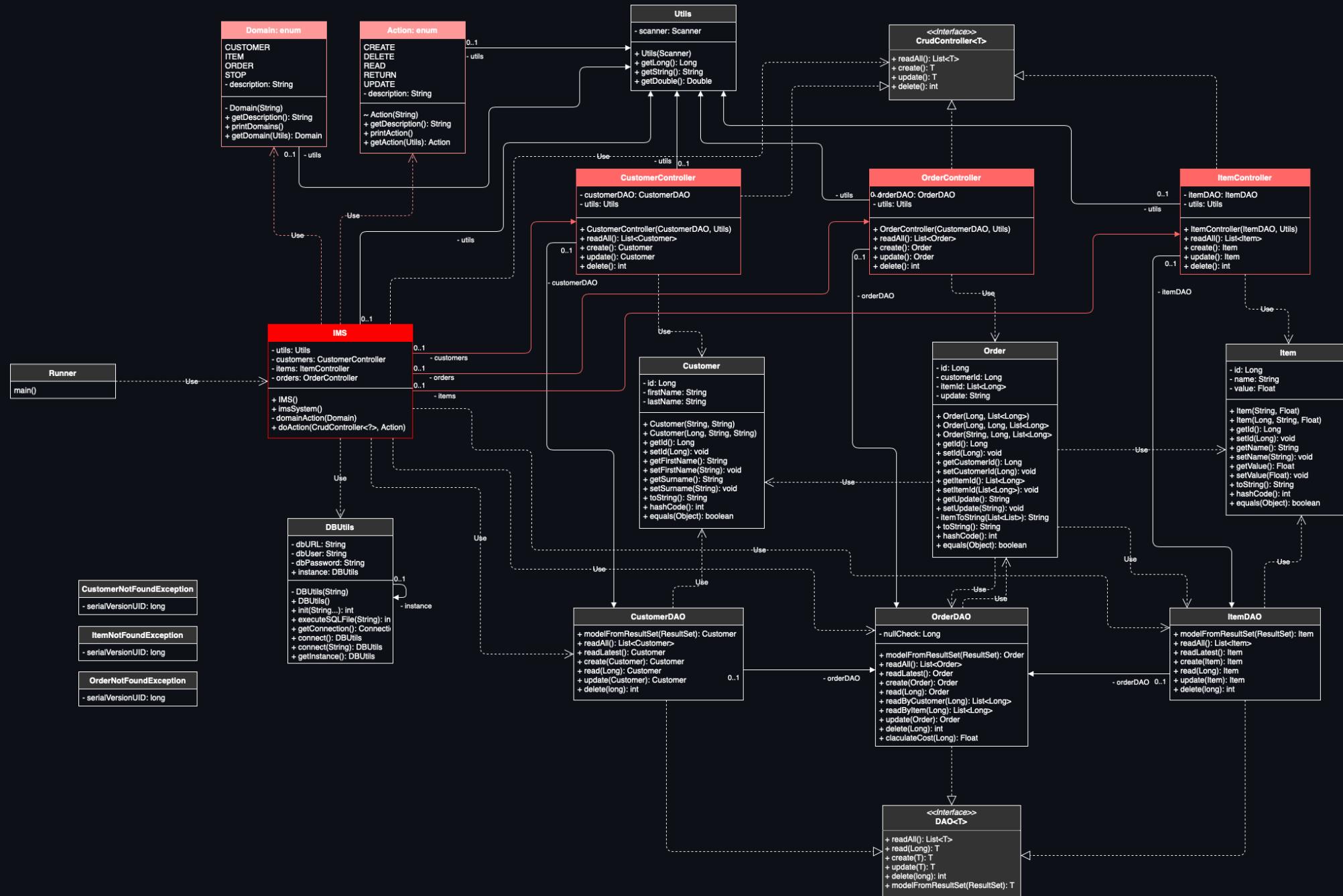
- UML of IMS-Starter
- Unified Modeling Language

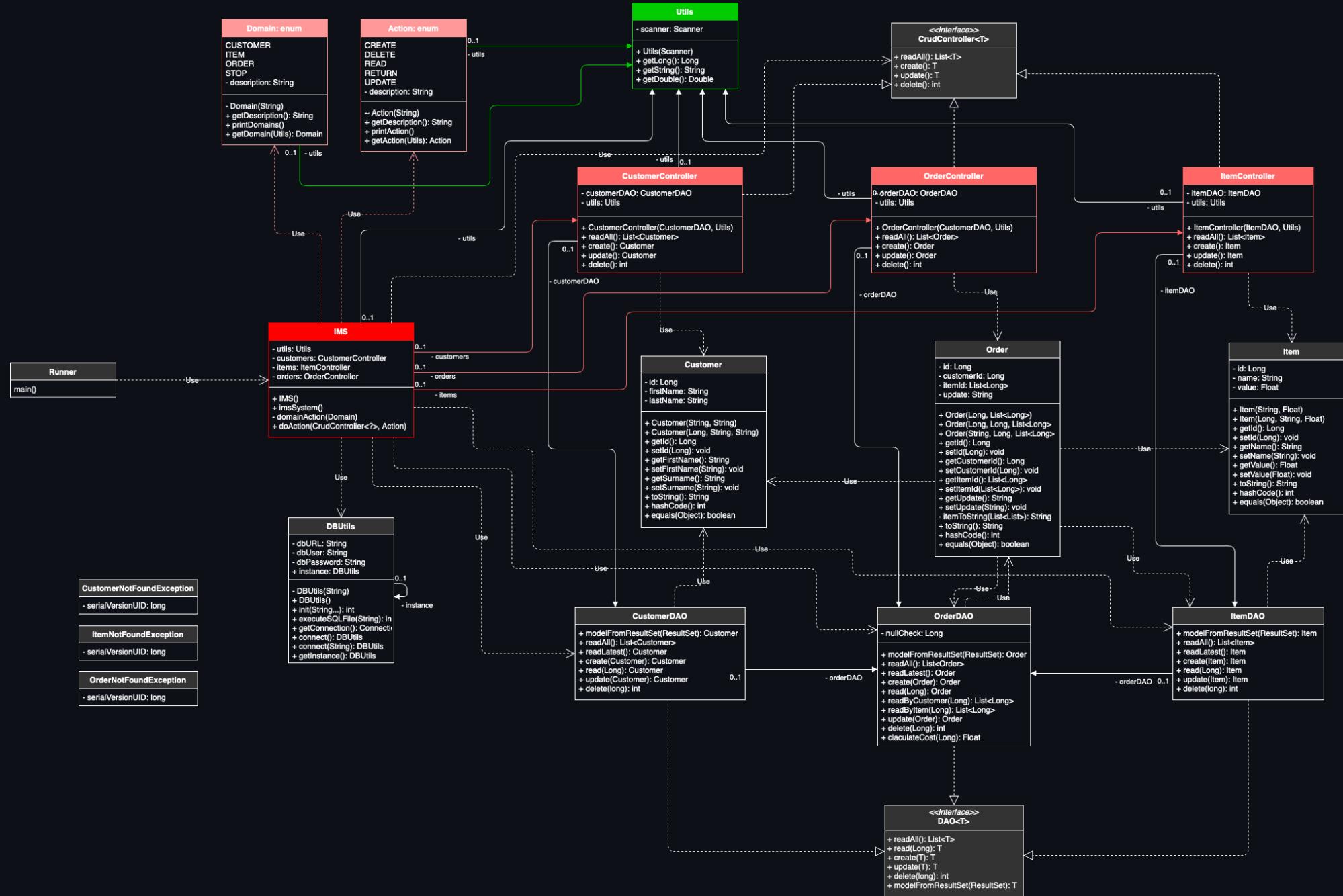


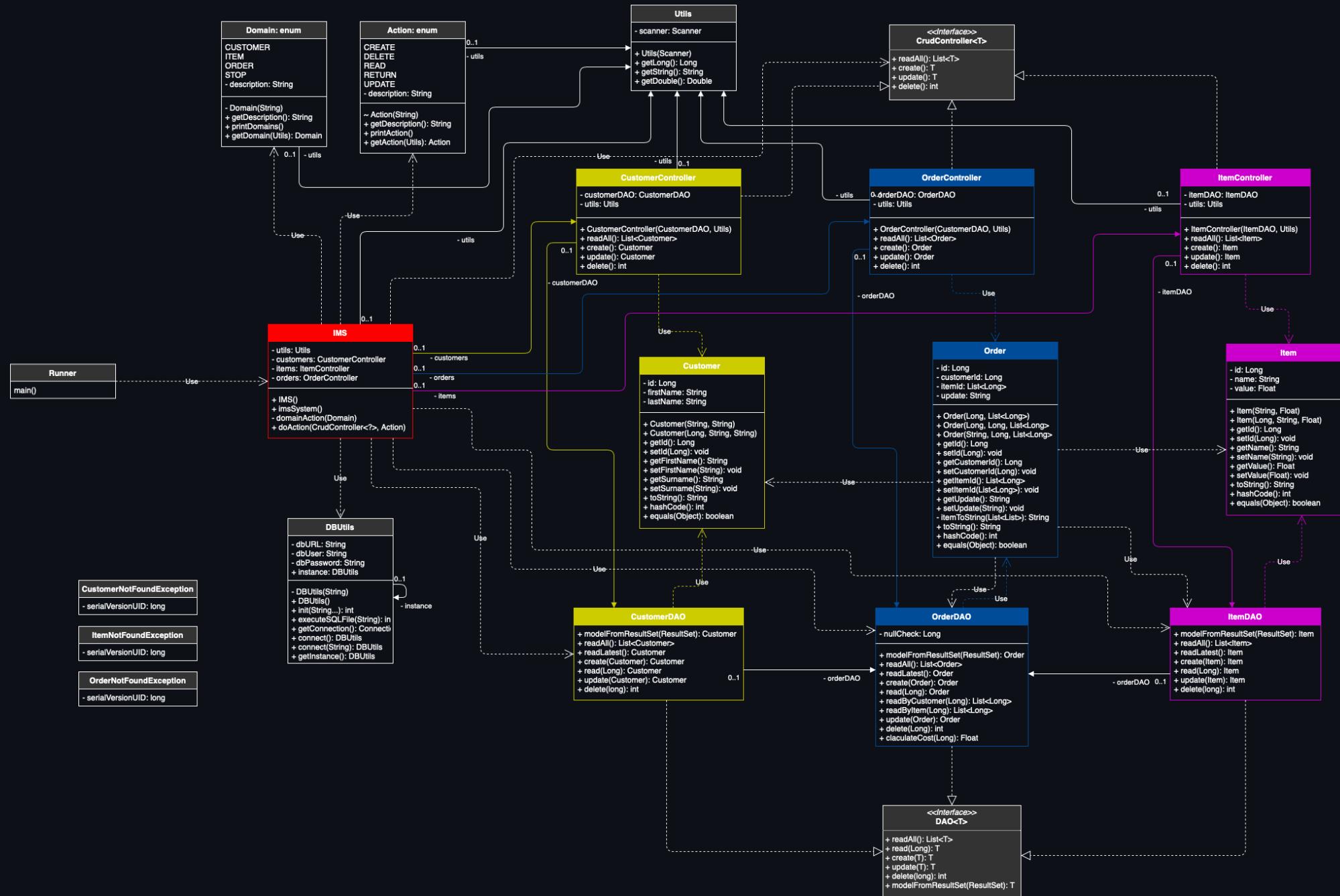


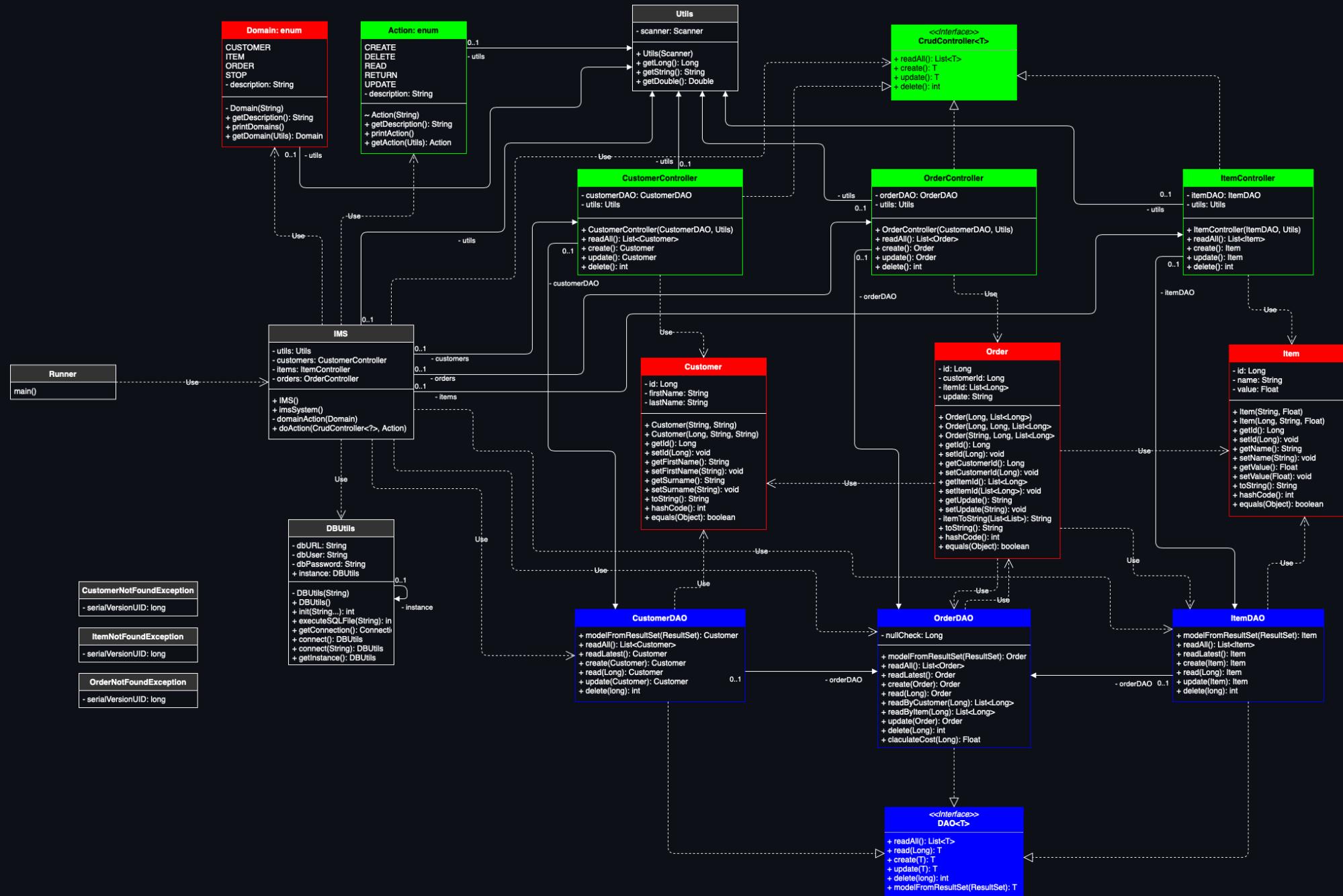












DEMO

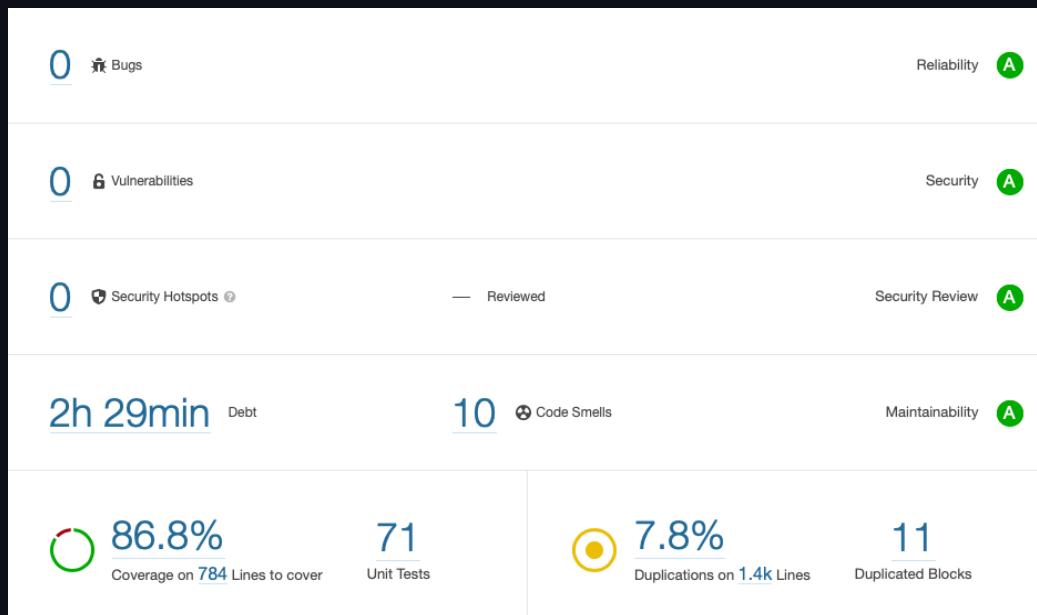
Testing

- Unit testing with JUnit
- Quality testing with SonarQube
- 86.8% coverage (currently)
- No major issues or vulnerabilities
- 10 Code Smells (currently)
 - Code duplications in database queries
 - Exception testing needs improvement

Element	Coverage	Covered Instructions	Missed Instructions	Total Instructions
IMS	90.2 %	4,604	498	5,102
src/main/java	86.2 %	2,699	431	3,130
com.qa.ims	0.0 %	0	175	175
IMS.java	0.0 %	0	157	157
Runner.java	0.0 %	0	18	18
com.qa.ims.utils	75.6 %	266	86	352
Utils.java	61.5 %	107	67	174
DBUtils.java	89.3 %	159	19	178
com.qa.ims.persistence.dao	94.6 %	1,288	73	1,361
OrderDAO.java	93.6 %	775	53	828
CustomerDAO.java	96.2 %	255	10	265
ItemDAO.java	96.3 %	258	10	268
com.qa.ims.persistence.domain	91.0 %	708	70	778
Order.java	84.7 %	271	49	320
Domain.java	80.2 %	85	21	106
Customer.java	100.0 %	176	0	176
Item.java	100.0 %	176	0	176
com.qa.ims.controller	95.4 %	437	21	458
Action.java	82.5 %	99	21	120
CustomerController.java	100.0 %	109	0	109
ItemController.java	100.0 %	113	0	113
OrderController.java	100.0 %	116	0	116
com.qa.ims.exceptions	0.0 %	0	6	6
src/test/java	96.6 %	1,905	67	1,972

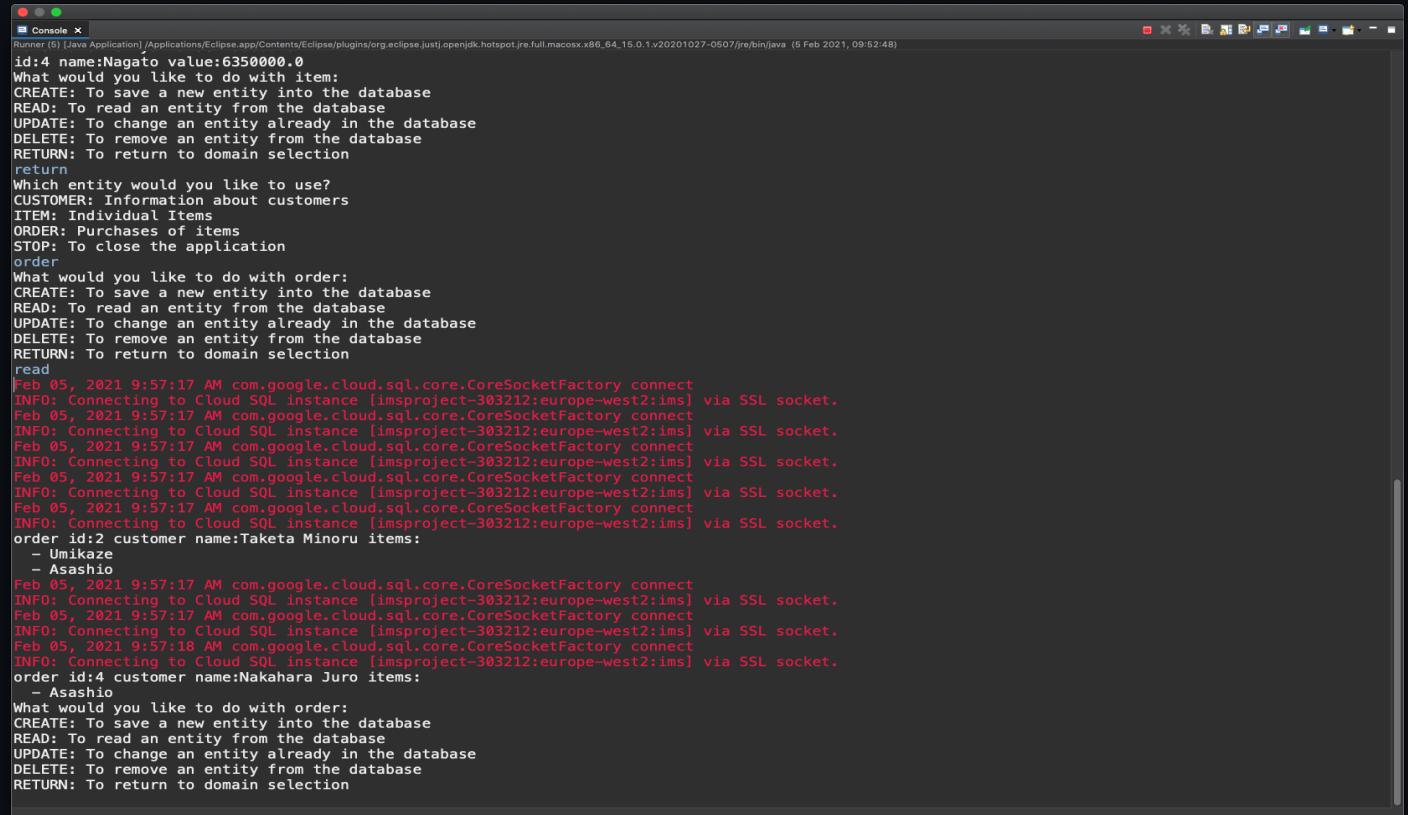
Issues found

- One major issue found while testing where the order of operations was wrong in the deletion of orders throwing an SQL Exception
- This is now fixed
- Highlights the importance of testing



Other issues and inconveniences

- Using GCP SocketFactory to connect to a database resulted in an extreme number of red log messages being displayed in console.
 - Workaround by resetting the LogManager in the main method
- Limited cross platform testing



```
id:4 name:Nagato value:6350000.0
What would you like to do with item:
CREATE: To save a new entity into the database
READ: To read an entity from the database
UPDATE: To change an entity already in the database
DELETE: To remove an entity from the database
RETURN: To return to domain selection
return
Which entity would you like to use?
CUSTOMER: Information about customers
ITEM: Individual Items
ORDER: Purchases of items
STOP: To close the application
order
What would you like to do with order:
CREATE: To save a new entity into the database
READ: To read an entity from the database
UPDATE: To change an entity already in the database
DELETE: To remove an entity from the database
RETURN: To return to domain selection
read
Feb 05, 2021 9:57:17 AM com.google.cloud.sql.core.CoreSocketFactory connect
INFO: Connecting to Cloud SQL instance [imsproject-303212:europa-west2:ims] via SSL socket.
Feb 05, 2021 9:57:17 AM com.google.cloud.sql.core.CoreSocketFactory connect
INFO: Connecting to Cloud SQL instance [imsproject-303212:europa-west2:ims] via SSL socket.
Feb 05, 2021 9:57:17 AM com.google.cloud.sql.core.CoreSocketFactory connect
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Feb 05, 2021 9:57:17 AM com.google.cloud.sql.core.CoreSocketFactory connect
INFO: Connecting to Cloud SQL instance [imsproject-303212:europa-west2:ims] via SSL socket.
order id:2 customer name:Taketa Minoru items:
- Umikaze
- Asashio
Feb 05, 2021 9:57:17 AM com.google.cloud.sql.core.CoreSocketFactory connect
INFO: Connecting to Cloud SQL instance [imsproject-303212:europa-west2:ims] via SSL socket.
Feb 05, 2021 9:57:17 AM com.google.cloud.sql.core.CoreSocketFactory connect
INFO: Connecting to Cloud SQL instance [imsproject-303212:europa-west2:ims] via SSL socket.
Feb 05, 2021 9:57:17 AM com.google.cloud.sql.core.CoreSocketFactory connect
INFO: Connecting to Cloud SQL instance [imsproject-303212:europa-west2:ims] via SSL socket.
order id:4 customer name:Nakahara Juro items:
- Asashio
What would you like to do with order:
CREATE: To save a new entity into the database
READ: To read an entity from the database
UPDATE: To change an entity already in the database
DELETE: To remove an entity from the database
RETURN: To return to domain selection
```

```
public static void main(String[] args) {
    //Stops GCP dependencies diluting the console
    java.util.logging.LogManager.getLogManager().reset();
```

Conclusion

- The imaginary warship model shop is very satisfied with the system
- Scalable product
- For easy deployment Database credentials or properties file passed in through arguments would be more ideal
- A GUI or web interface would be more user friendly
- The process of deleting in item needs urgent improvement
- More testing needed not for just coverage but to test specific critical behaviours

```
IMS — java -jar ims.jar — 82x30
Welcome to the Inventory Management System!

What would you like to do with order:
CREATE: To save a new entity into the database
READ: To read an entity from the database
UPDATE: To change an entity already in the database
DELETE: To remove an entity from the database
RETURN: To return to domain selection

read
Order id: 2 Customer name: Taketa Minoru Customer id: 2 Items:
- Umikaze Id: 1
- Asashio Id: 2
- Umikaze Id: 1
- Asashio Id: 2
Total cost: 138600.0

Order id: 4 Customer name: Nakahara Juro Customer id: 3 Items:
- Asashio Id: 2
Total cost: 9300.0

Order id: 10 Customer name: Ota Atsushi Customer id: 6 Items:
- Umikaze Id: 1
- Asashio Id: 2
- Tenryu Id: 3
- Nagato Id: 4
Total cost: 6675300.0

Press ENTER to continue
```

A detailed 3D rendering of a Japanese battleship, likely the Yamato, sailing on a calm blue sea under a clear sky. The ship's hull is a light grey, with its characteristic white belt armor and multiple gun turrets visible. The superstructure features a tall mast with a flag and various communication equipment. The bow is decorated with the traditional Japanese sunburst emblem.

Thank you for listening!

Any questions?