

VIRUS

DEMONSTRATION

Presented by

Trinh Manh Quynh – 20226064

Le Nhu Ngoc Son – 20226066

Vu Ngoc Dung – 20226032

Guided by

Dr. Tran The Hung



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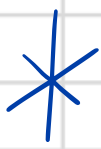
4.

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1. Project Assingment

Task	Responsible Member ID	Percentage Contribution
Class Diagram	Vu Ngoc Dung Trinh Manh Quynh	70% 30%
Use-case Diagram	Vu Ngoc Dung	100%
Components Package	Vu Ngoc Dung Trinh Manh Quynh	70% 30%
Main Frame Package	Trinh Manh Quynh	100%
Virus Data	Le Nhu Ngoc Son Trinh Manh Quynh	90% 10%
Report	Trinh Manh Quynh	100%
Slides	Le Nhu Ngoc Son	100%



2. Project Description

2.1

- Mini-Project Overview

2.2

- Mini-Project Requirement

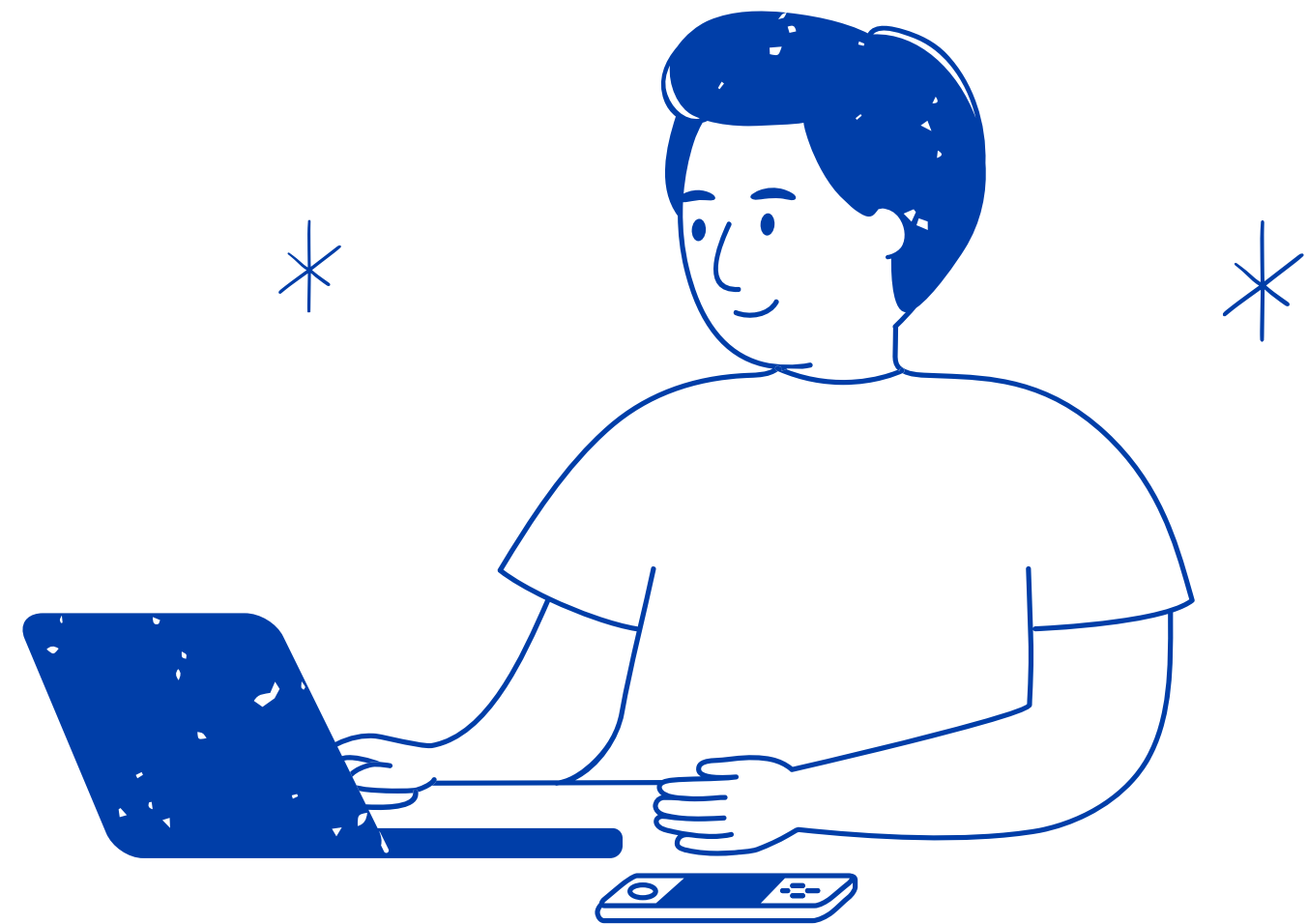
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- Use-case Diagram



2.1 Mini-Project Overview

In this project, we choose to build a virus encyclopedia. A place like wikipedia, contains information about viruses, divided in two groups, Envelope and Non-envelope viruses. Users can look up for information of viruses, either in a dictionary or by search function. More detail structure about the program will be shown later on in a Use-case diagram and class diagram.





2.2 Mini-Project Requirement

1. On the main screen: Title of the application, options to choose between virus with lipid envelop and virus without lipid envelop, help menu and quit
 - User can choose to investigate one of the two types of viruses in the main menu to start the application
 - After choosing the desired type, the application will show a variety of viruses in order for user to select
 - The help menu shows basic usage and aim of the application
 - The quit button exits the application.
2. In the demonstration:
 - Display the structure of the virus.
 - One button to start demonstrating the progress of virus infecting the host cell.
 - Return button to return to the main menu.

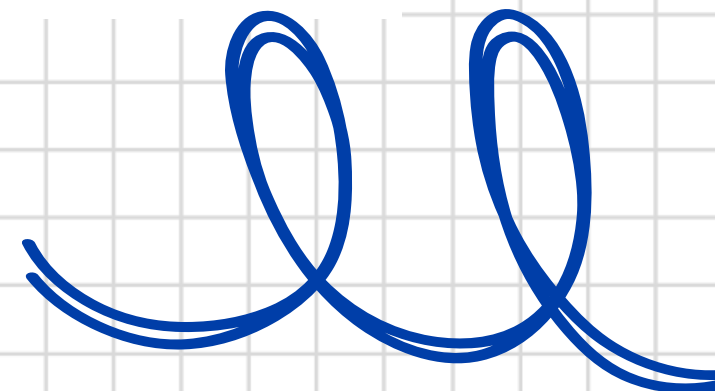
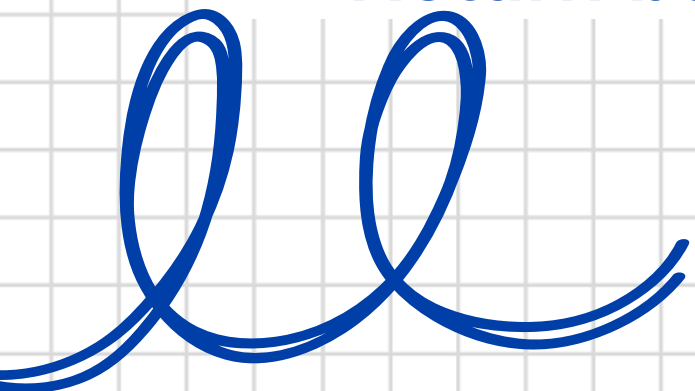
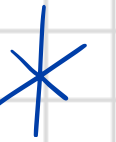


Figure 1 illustrates a demo interface showcasing the features of the simulator that we have to develop.



Figure 1: Sample GUI

2.3 Use-case Diagram

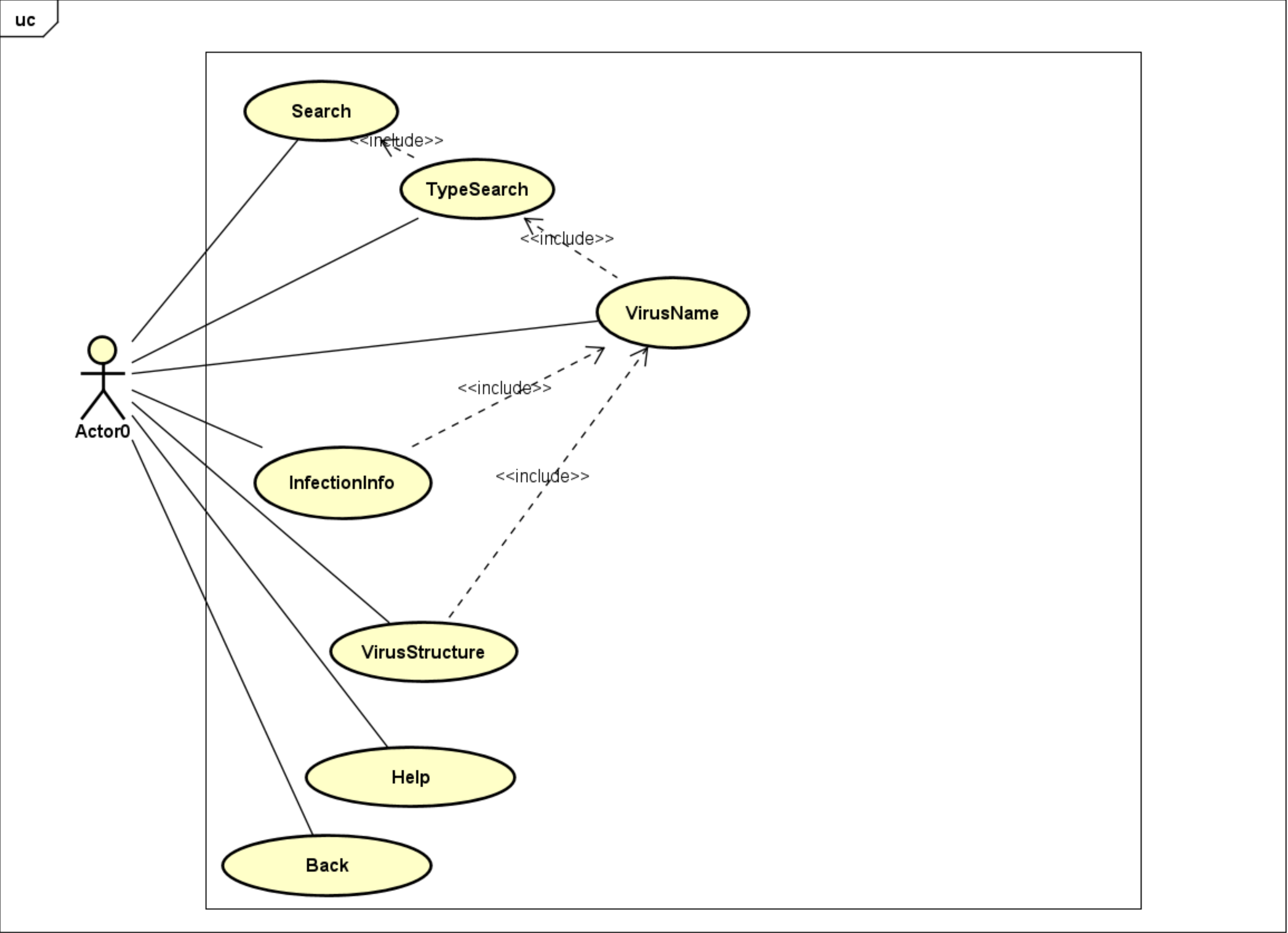


Figure 2: Use-case Diagram

2.3.1 Main screen

This is the main screen of our application. There is a side menu with different navigation, including Main menu, help menu and quit button.

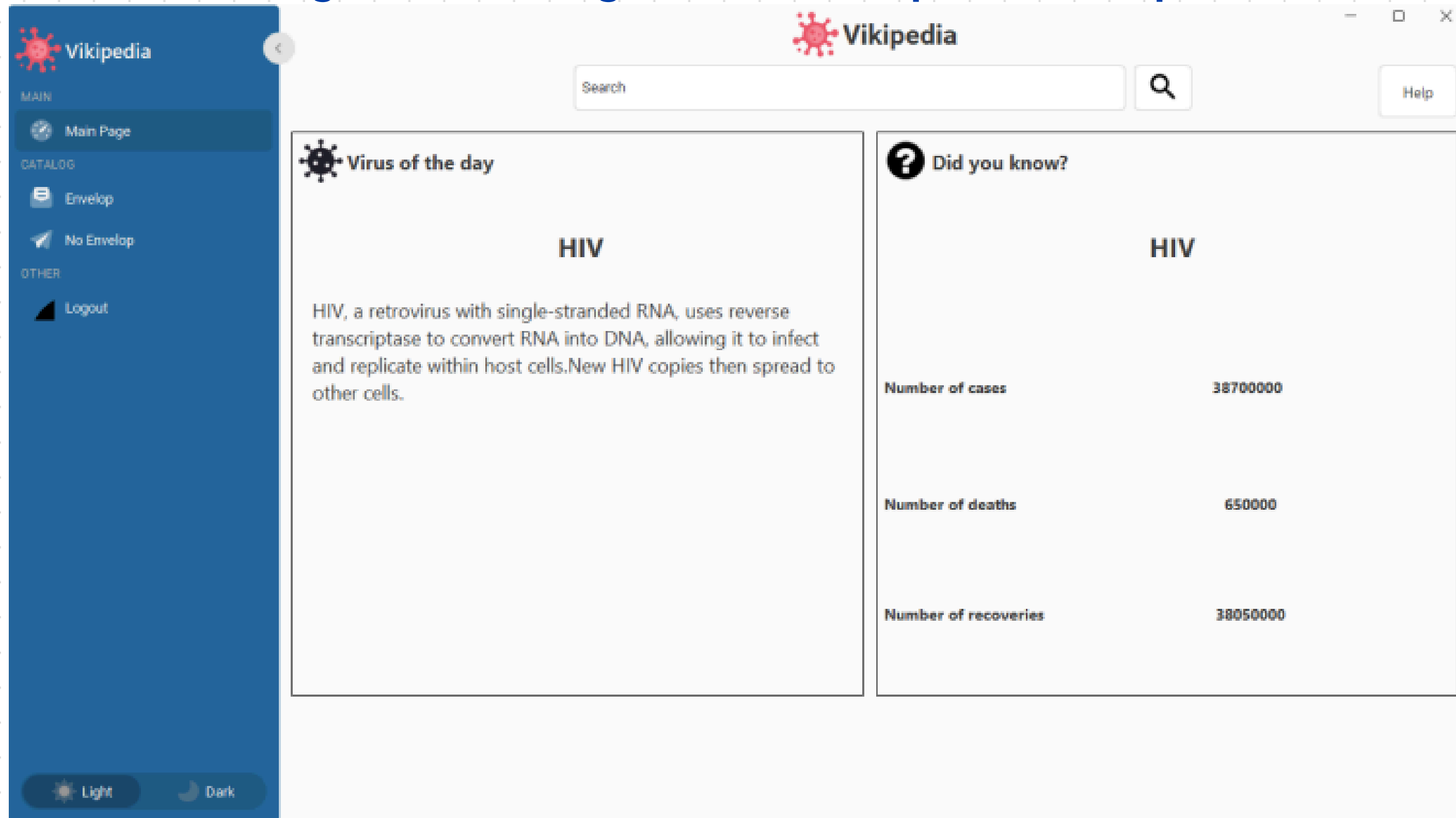


Figure 3: Main Menu



2.3.2 View help message

Firstly, users can choose Help button which gives them access to the help screen, where they can receive information on the aim of the application and how to use this program effectively.

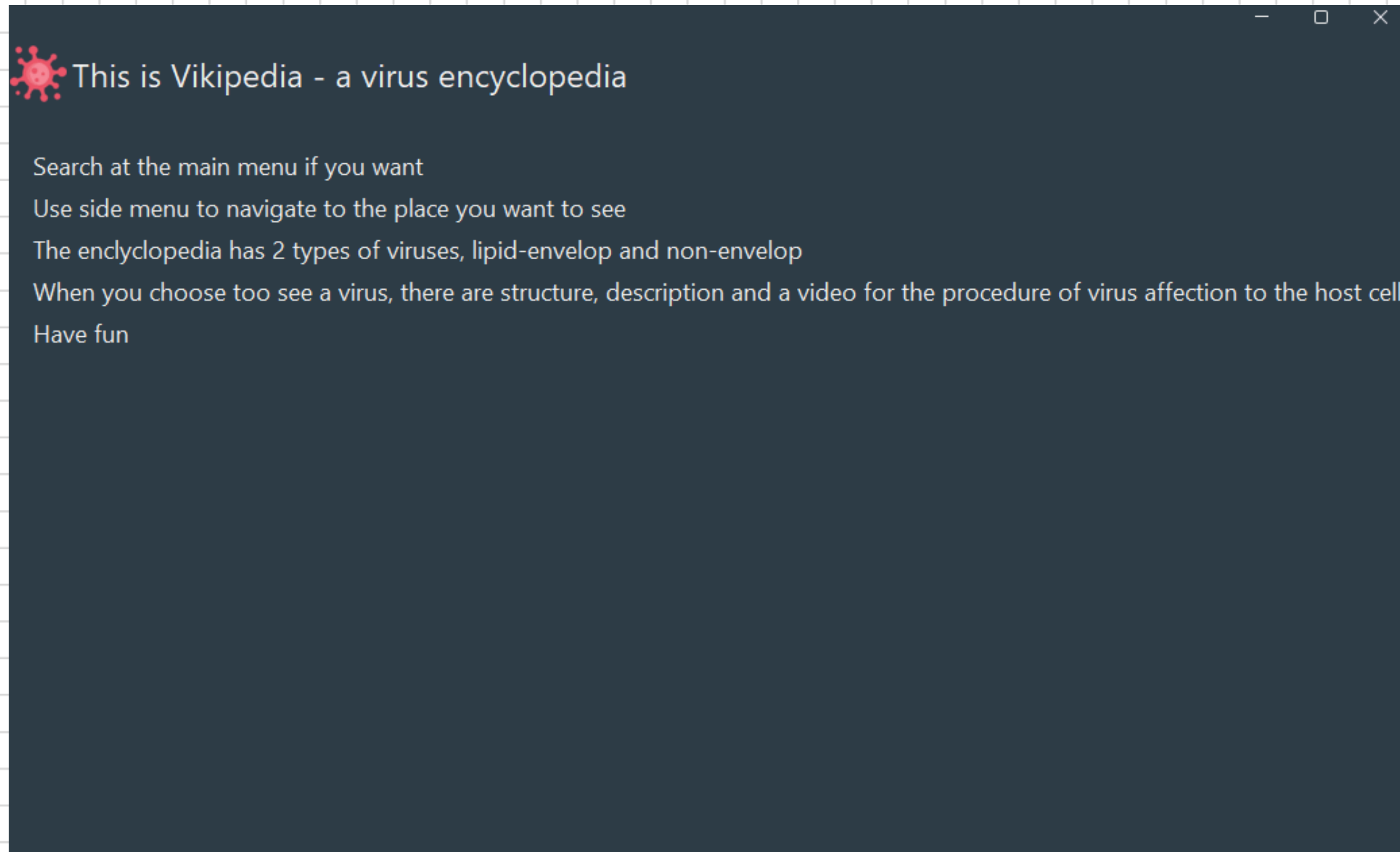
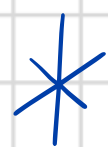



Figure 4: Help Screen


2.3.3 Operate on the dictionary




Either the user choose to search for the name of the virus, or use the side menu to navigate the desired virus. It will pop-up new frame of the virus information.


 Wikipedia

MAIN


 Main Page


CATALOG


 Envelop

 No Envelop

OTHER

 Logout

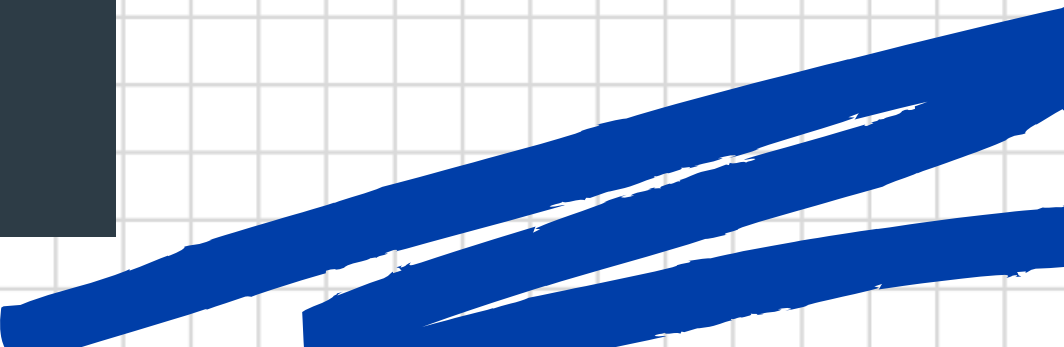
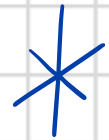
 Light

 Dark


Envelop Viruses

Name	Scientific Name	Discovered Date
COVID19	SARS-CoV-2	Dec 2019
HIV	HIV	1983
VACCINA VIRUS	VACV	1796


Figure 5: Choose Data Structures Screen




In the frame, there is video that represent the procedure of virus in affecting the host cell. User can choose to play, skip or rewind (10s).


 **Wikipedia**

MAIN


 Main Page

CATALOG

 Envelop

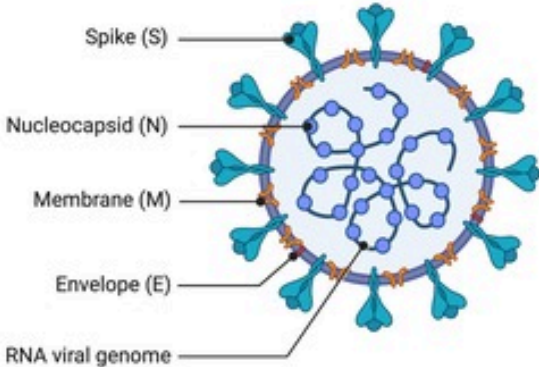
 No Envelop

OTHER

 Logout

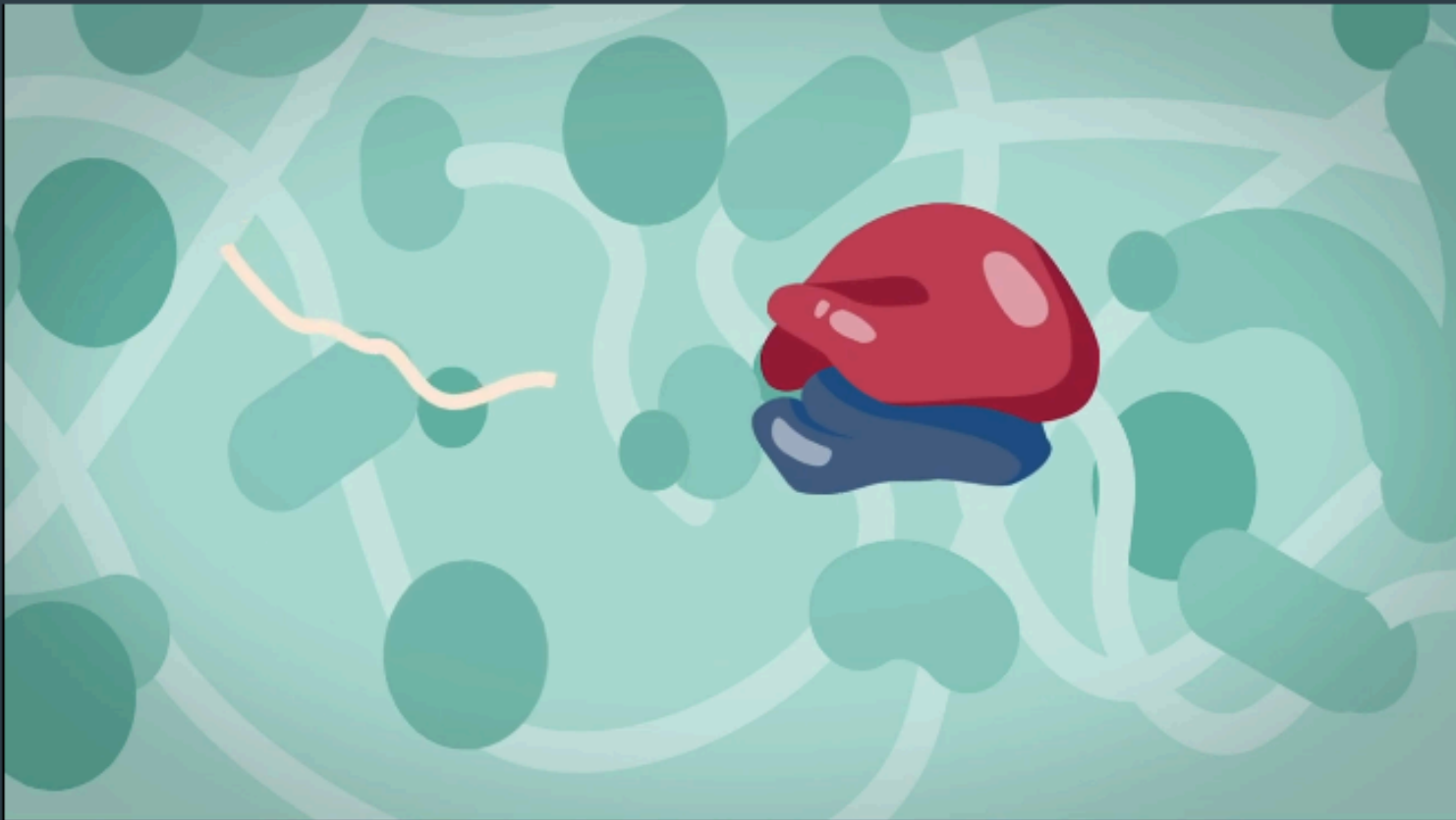
COVID19

Coronavirus Structure



Realm: Riboviria
Kingdom: Orthornavirae
Phylum: Pisuviricota
Class: Pisoniviricetes
Order: Nidovirales
Family: Coronaviridae

COVID-19 is a novel coronavirus, characterized by its single-stranded RNA genetic material. Unlike human cells, which typically carry double-stranded DNA, coronaviruses utilize RNA as their genetic blueprint. Coronaviruses, including COVID-19, possess a crucial enzyme called RNA-dependent RNA polymerase, enabling them to replicate their RNA genome within host cells. Upon infecting a cell, COVID-19 first binds to specific receptors on the host cell's surface, facilitating its entry into the cell.








Figure 6: Initialize Data Structure Screen

3. Design

3.1

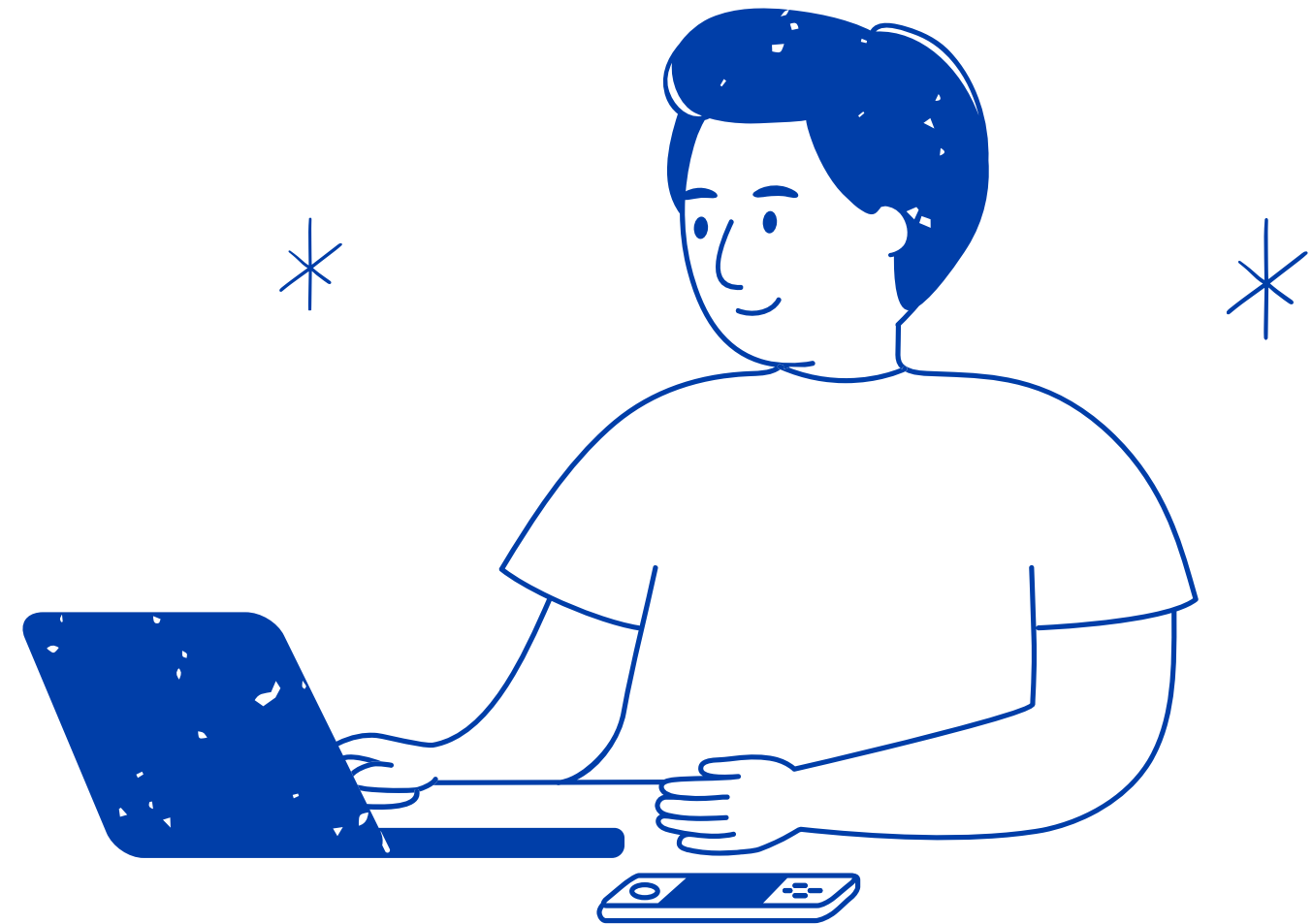
- Libraries

3.2

- General Class Diagram

3.3

- Package Details



3.1 Libraries

Since this application is an encyclopedia, regardless the GUI is not a requirement for the project, we notice that user experience in the program itself is a crucial part for an encyclopedia. Therefore, we need addition libraries. Below are the libraries we use:

- flatlaf: Java look and feel
- vlcj: video player for java swing



3.2 General Class Diagram

Our General Class Diagram consists of 5 main packages: **application**, **data**, **icon**, **menu** and **theme**.

The **application** package contains most of the main class of the program, but those are the GUI classes. The code under the hood responsible for the code logic is in **data** package, with some of the virus data (image, video). The **menu** and **icon** packages contain the images and icons for the GUI application.

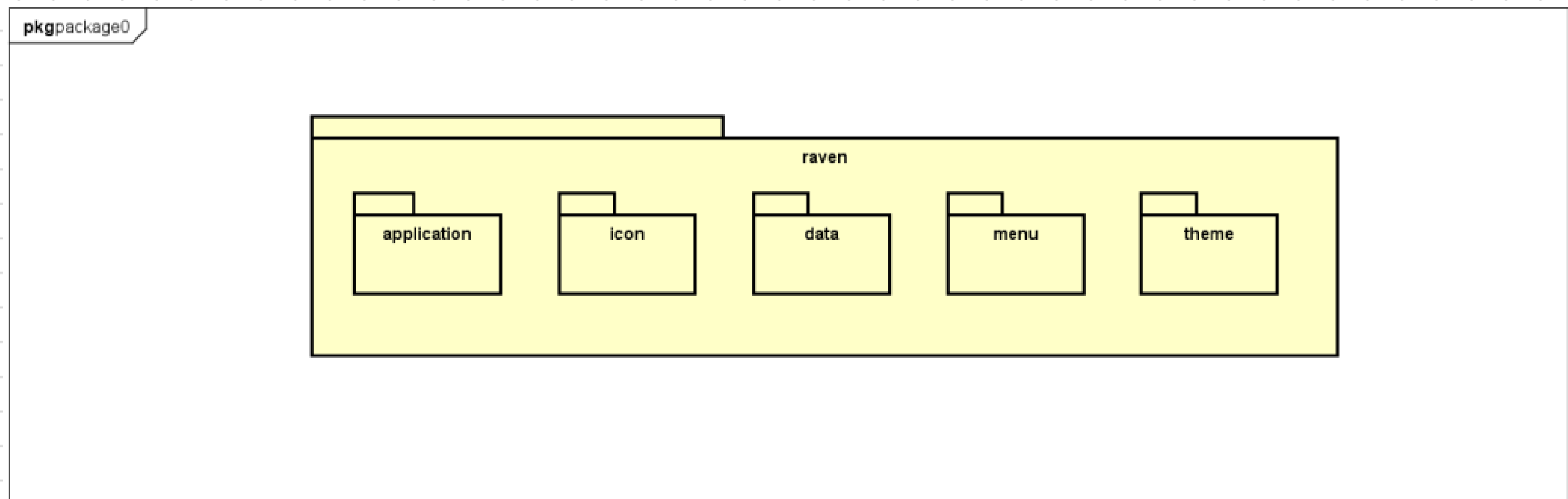


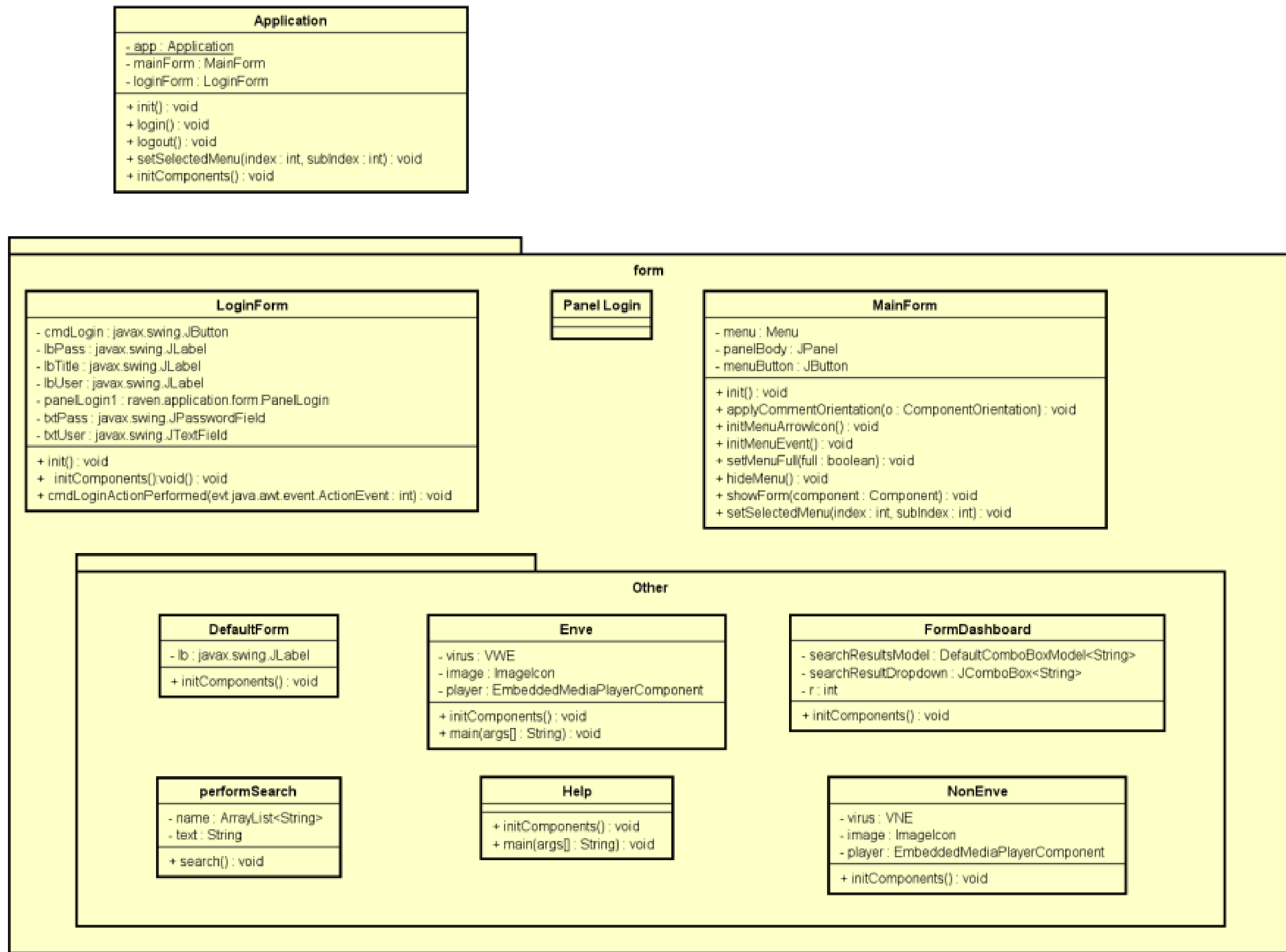
Figure 7: General Class Diagram

3.3 Package Details

3.3.1 raven.application package

In *raven.application* package, we have most of the program's GUI classes. Including **LoginForm**, **MainForm**, **PanelLogin**. Inside the package itself contains the form of the catalog, for different viruses. All of the classes use method ***initComponent()*** to initialize the required components.





**Figure 8: Package
raven.application
Class Diagram**

3.3.2 raven.data package

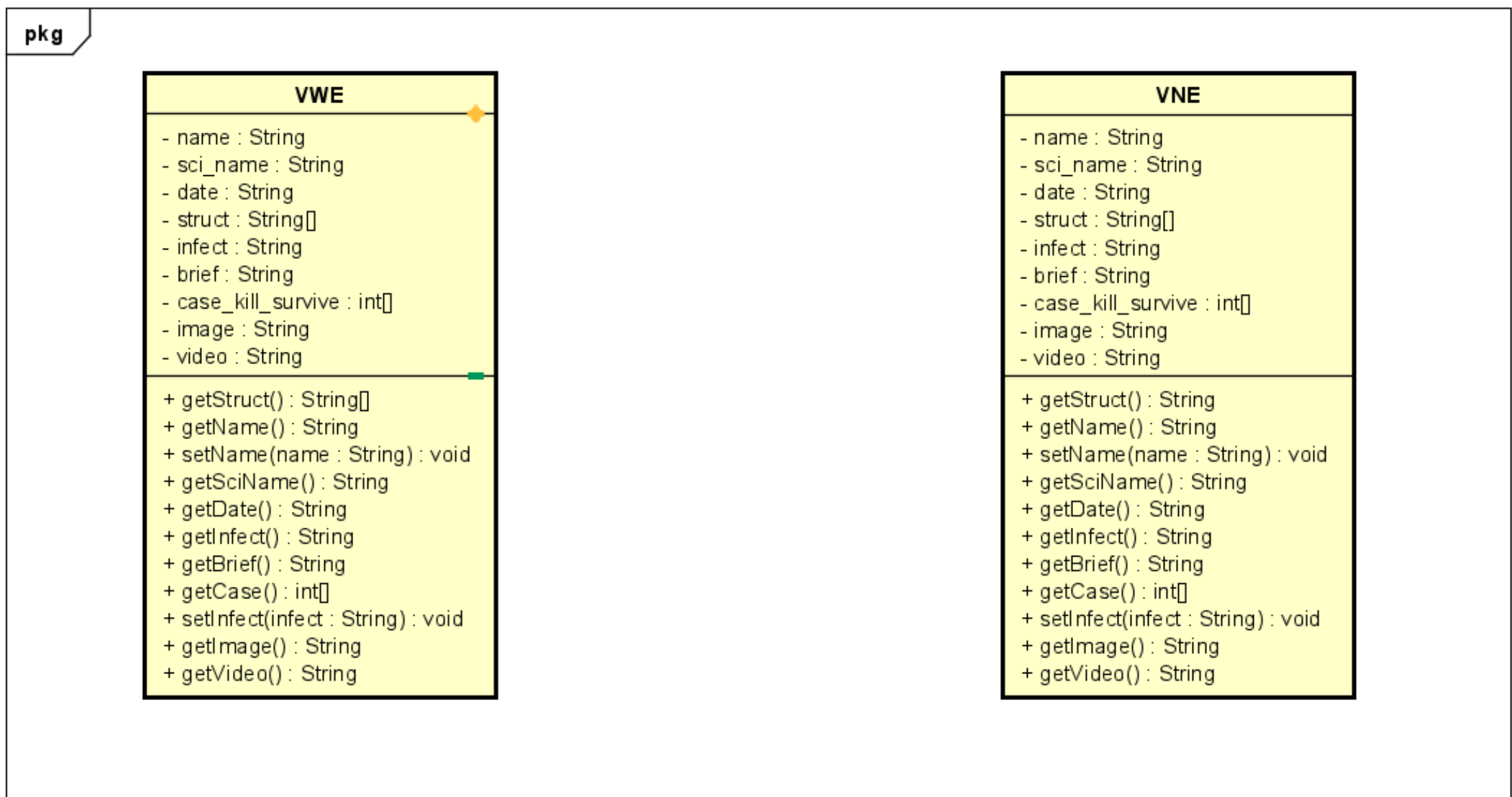


Figure 9: Package raven.data Class Diagram

This is the backbone of the program, in this package, beside of the images and videos of viruses, the main classes are VNE and VWE, stand for Non-envelop and With-Envelop, respectively. Both classes contain the attribute:

- **name:** Virus’s name
- **sci_name:** Scientific name of the virus
- **date:** Discovery date
- **struct:** The structure of the virus, provided by a brief description
- **infect:** A short paragraph of how a virus affect a cell.
- **case_kill_survive:** A list of int contains number of cases, death and survived.
- **image, video:** contain the path to the corresponding form of file.

Those viruses then initialized when the application is run.

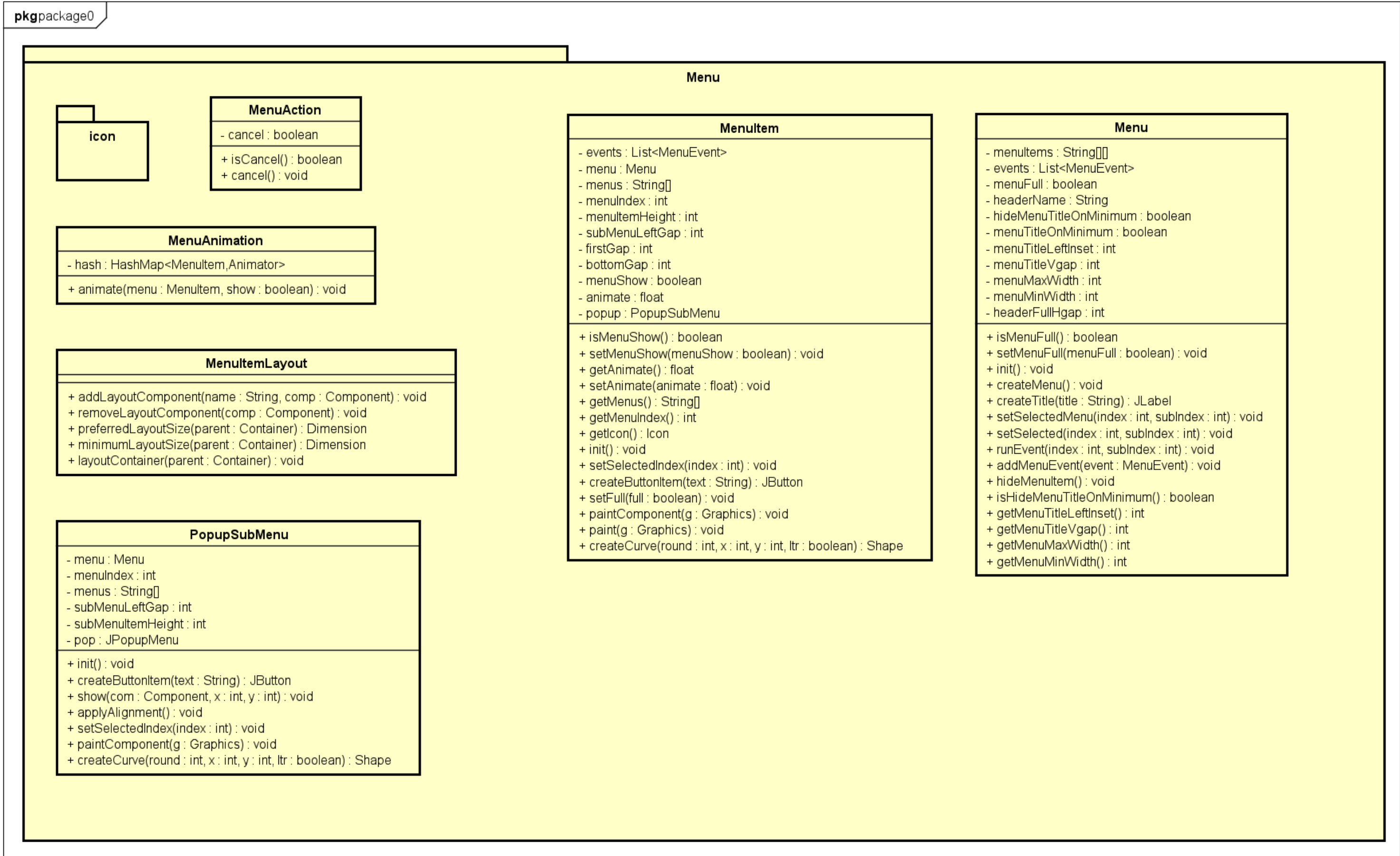


Figure 10: The Menu and Theme Class Diagram

4. References

This project greatly benefited from the knowledge and information provided by the following sources:

1. FlatLaf Library <https://www.formdev.com/flatlaf/>
2. Vclj Library <https://capricasoftware.co.uk/projects/vlcj> <https://github.com/caprica/vlcj>



Thank you for Listening!!!

Email

Quynh.TM226064@sis.hust.edu.vn

Son.LNN226066@sis.hust.edu.vn

Dung.VN226032@sis.hust.edu.vn

