

**CSCI-5448 SPRING 2016**  
**OBJECT ORIENTED ANALYSIS AND DESIGN**  
**PROJECT REPORT - PACKET SNIFFER**

**Team Members:**      Apoorva Bapat  
                                 Nehal Kamat  
                                 Sunil Baliganahalli Narayana Murthy

**Description:** A packet sniffer application using Java and having a GUI that can capture and analyze packets being transmitted and received over a network. The captured packets can be used to gain information about the type and content of messages being transmitted over the network.

### 1. What features were implemented?

The features of the packet analyzer are implemented from the user requirements are as follows:

User Requirements				
ID	Requirement	Topic Area	User	Priority
UR-001	User should be able to launch application.	Interaction	Any	High
UR-002	User should be able to close the application	Freedom	Any	Medium
UR-003	User should be able to start capturing packets by selecting network interface		Any	High
UR-004	User should be able to stop capturing packets		Any	High
UR-007	User should be able to import/export the saved Packets.		Any	High
UR-010	User should be able to filter packets according to detected protocols.		Any	Medium
UR-011	User should be able to inspect the packet information for a selected packet		Any	Medium
UR-012	User should be able to view only packet header.		Any	Medium
UR-013	User should have the option to view real time network statistics	Stats	Any	High

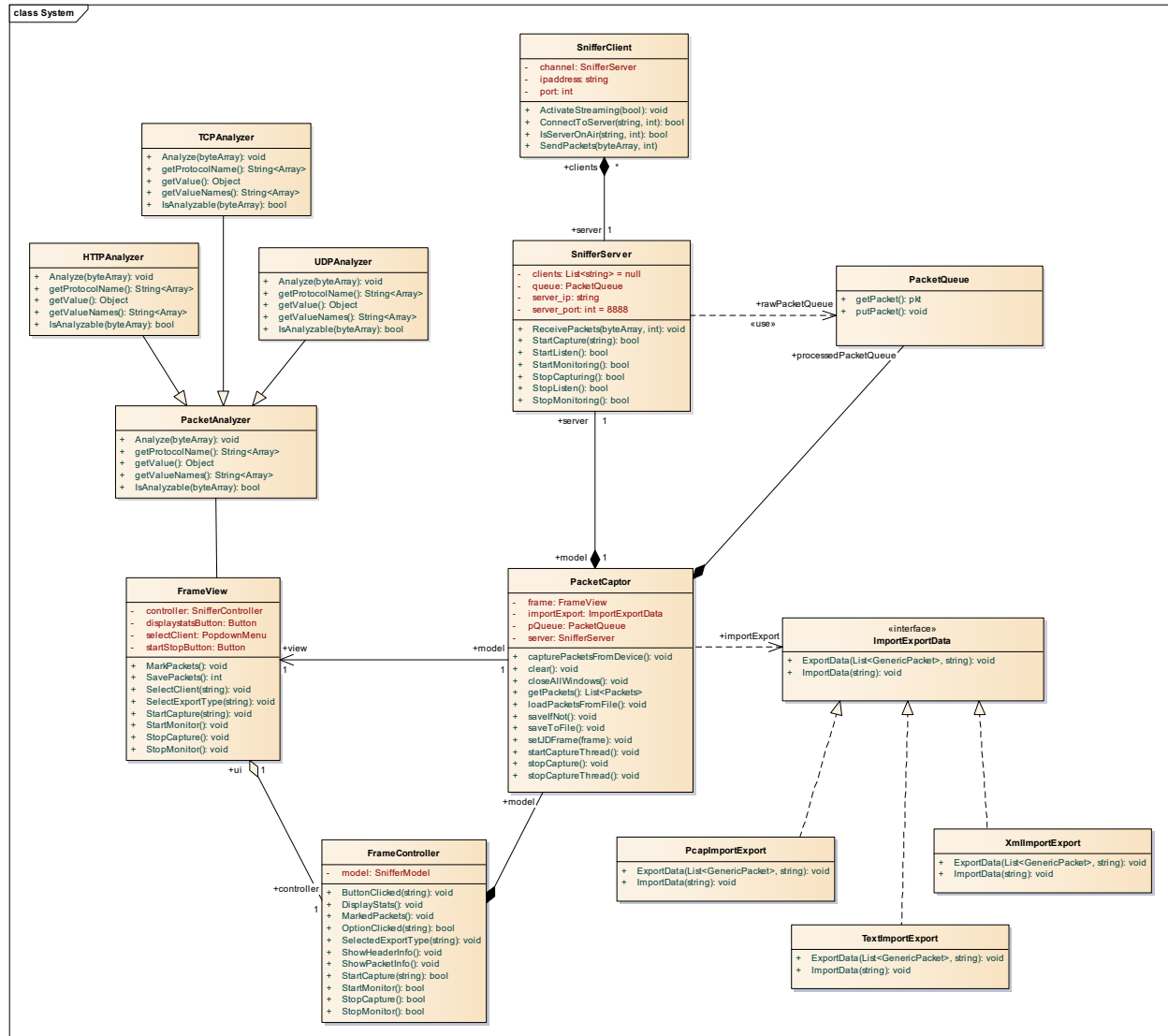
## 2. Which features were not implemented from Part 2?

The features that we were unable to implement (mainly due to the given timeframe) are:

User Requirements				
ID	Requirement	Topic Area	User	Priority
UR-005	User should be able to mark packets for saving packet information.		Any	Medium
UR-006	User should be able to save either all the captured packets or marked captured packets		Any	High
UR-008	User should be able to view types of protocols used in captured packets.		Any	High
UR-009	Users should have the option of choosing the client machine to monitor packets from.	Freedom	Any	High
UR-014	User should be able to validate a selected packet for its integrity and authenticity	Validity	Any	High

Also, the above features are not essential to the functioning of a vanilla packet sniffer and the core functionality has been implemented.

**3. Show your Part 2 class diagram and your final class diagram. What changed? Why? If it did not change much, then discuss how doing the design up front helped in the development.**



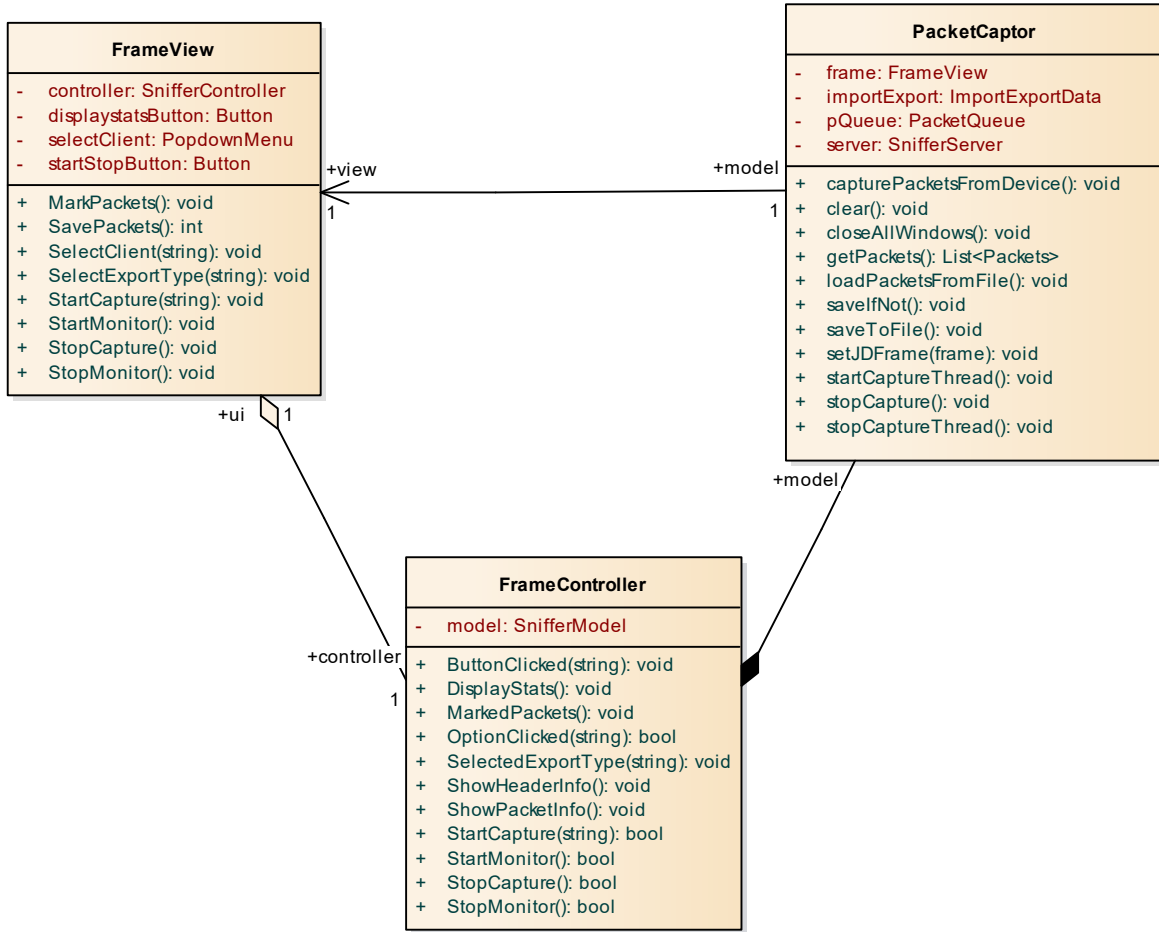
4. Did you make use of any design patterns in the implementation of your final prototype? If so, how? If not, where could you make use of design patterns in your system?

The following design patterns were used in implementation of the final prototype:

1. Model View Controller
2. Observer Pattern
3. Strategy Pattern

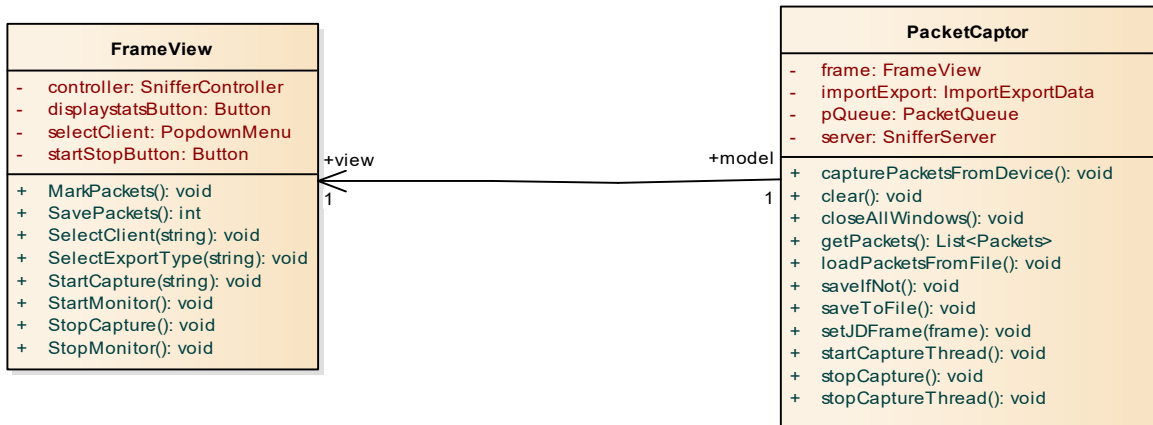
### A. Model - View – Controller

## class System

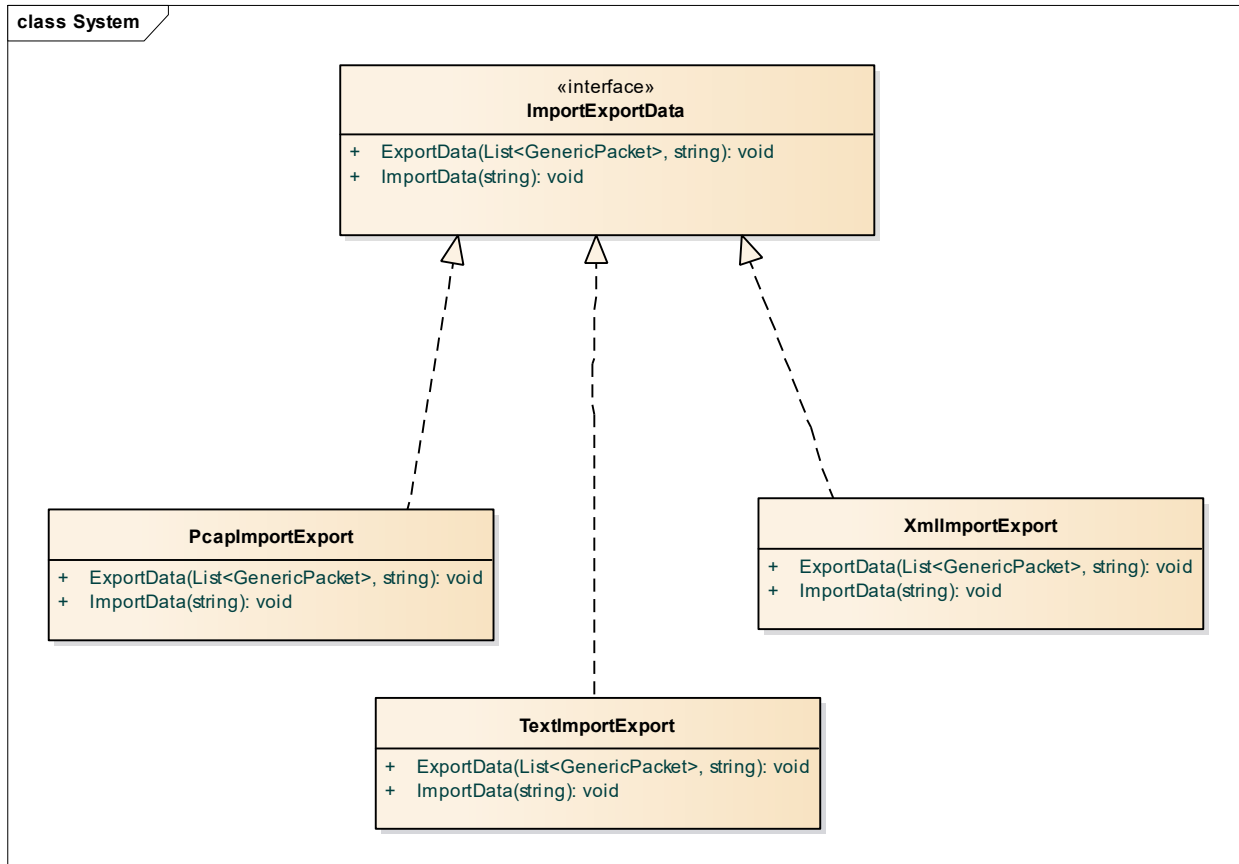


## B. Observer

## class System



## C. Strategy Pattern



### 5. What have you learned about the process of analysis and design now that you have stepped through the process to create, design and implement a system?

1. Analysis of a system in terms of its requirements and proposed design is extremely crucial at the beginning of any of any software design process as it helps us draft a rough sketch of what the system could look like and what features are important for the essential requirements of the system to function properly.
2. The nature and requirements of the system will change as the development progresses and so sufficient provision to accommodate this change dynamically should be programmed into the system's architecture.

3. It is important for all the team members to understand what each one is doing so as to work on his/her own part of the system keeping in mind the overall structure of how the system is being built, i.e., compatibility between modules
4. Implementation of a system is not a trivial task and implementing all of the use cases and requirements by a given deadline is an extremely difficult task keeping in mind the dynamic nature of the requirements and the process of development.
5. The architecture of the system reflects the designers' mindset and approach to the given system. Making use of Object-Oriented concepts in the design shows that the developers are interested in making a system keeping in mind the pitfalls of development but at the same time keeping it open for expansion or modification at later stages during the development.