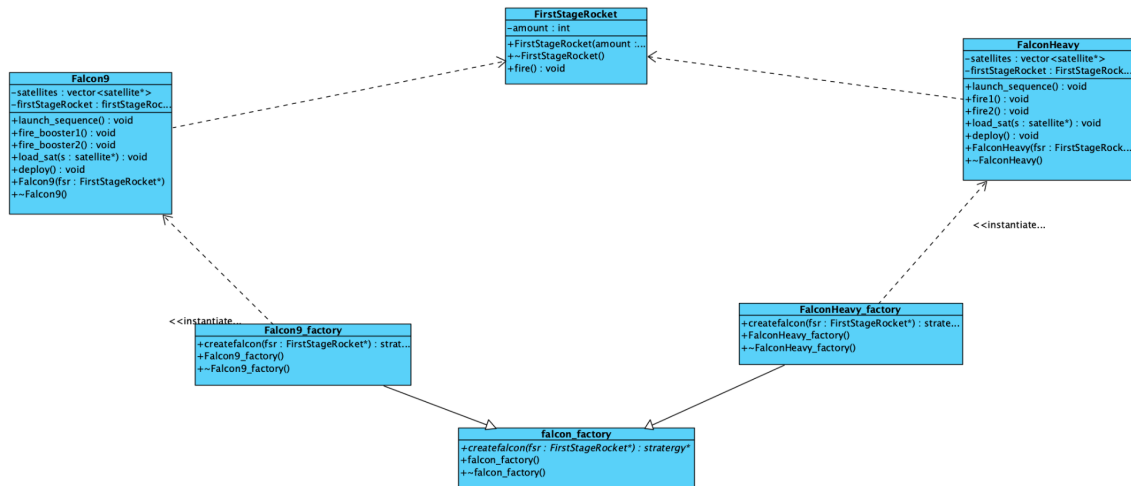


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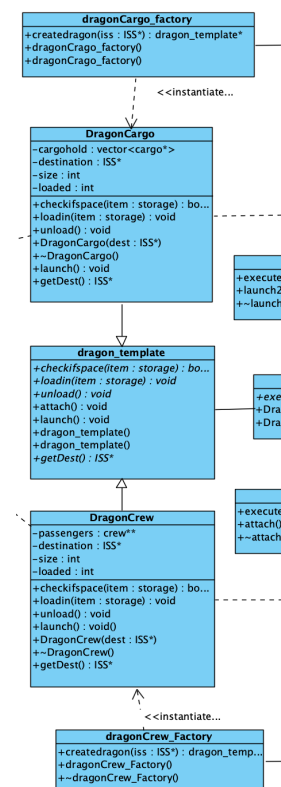
Group Project

Report

FR1: The user can create 2 types of rockets (Falcon and Dragon)

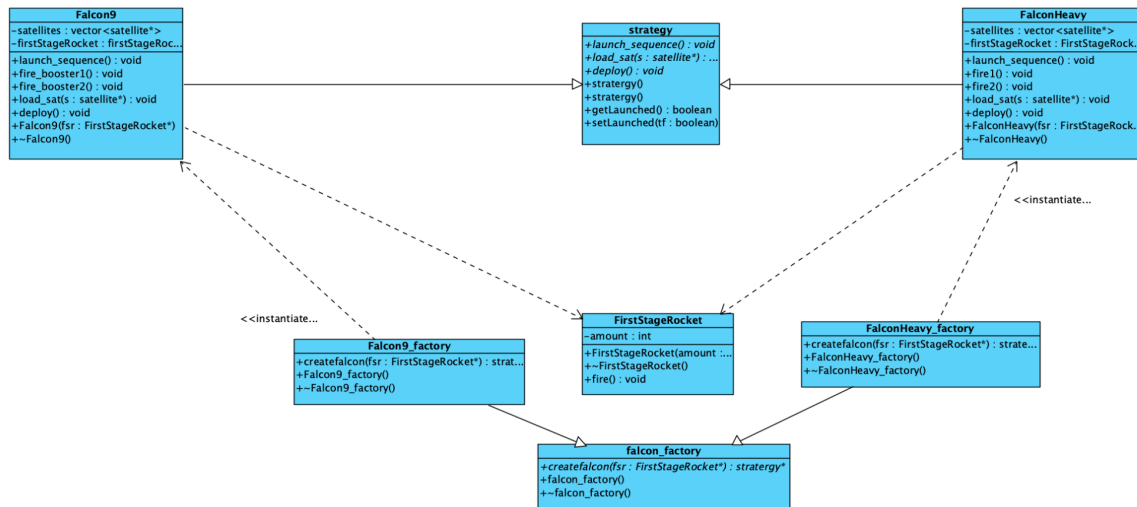


These are the falcon rockets that can be created.



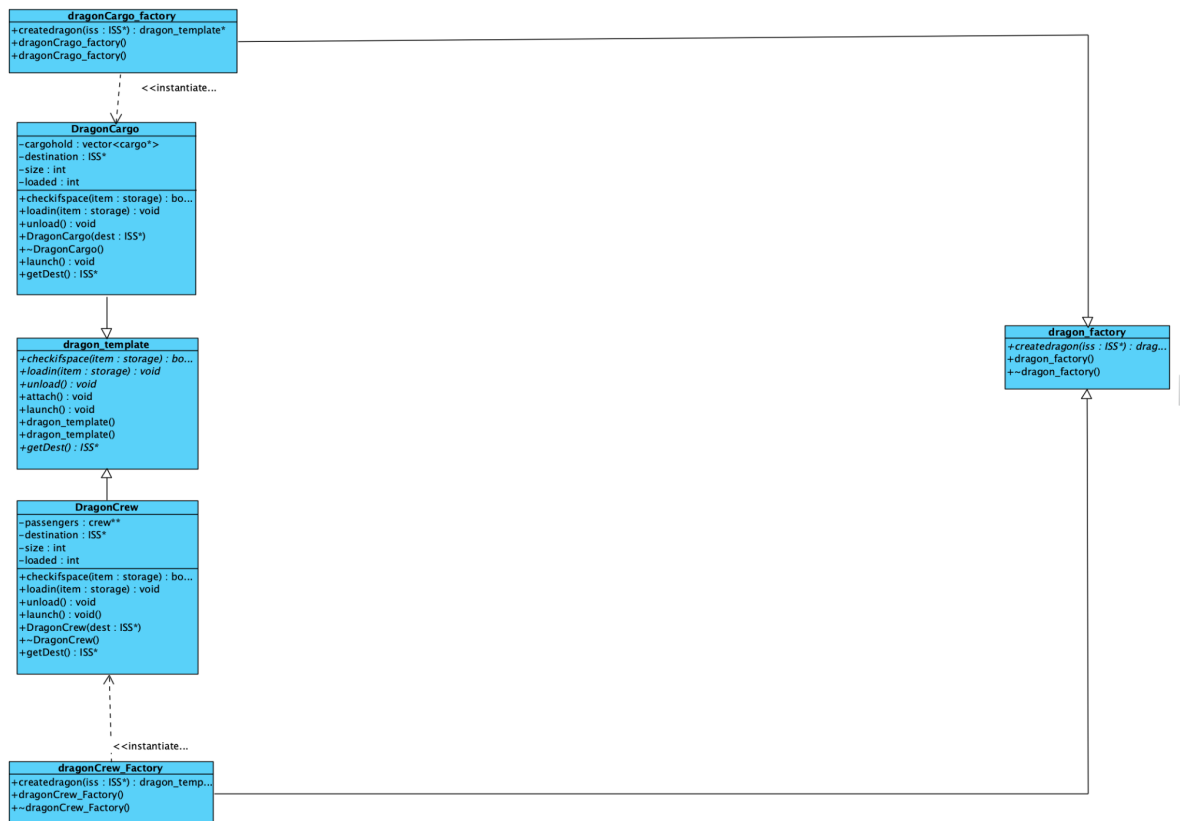
These are the dragon rockets that can be created.
This completes the FR1 requirements.

FR2: The user can create 2 sub-types of Falcon rockets with different launch sequences



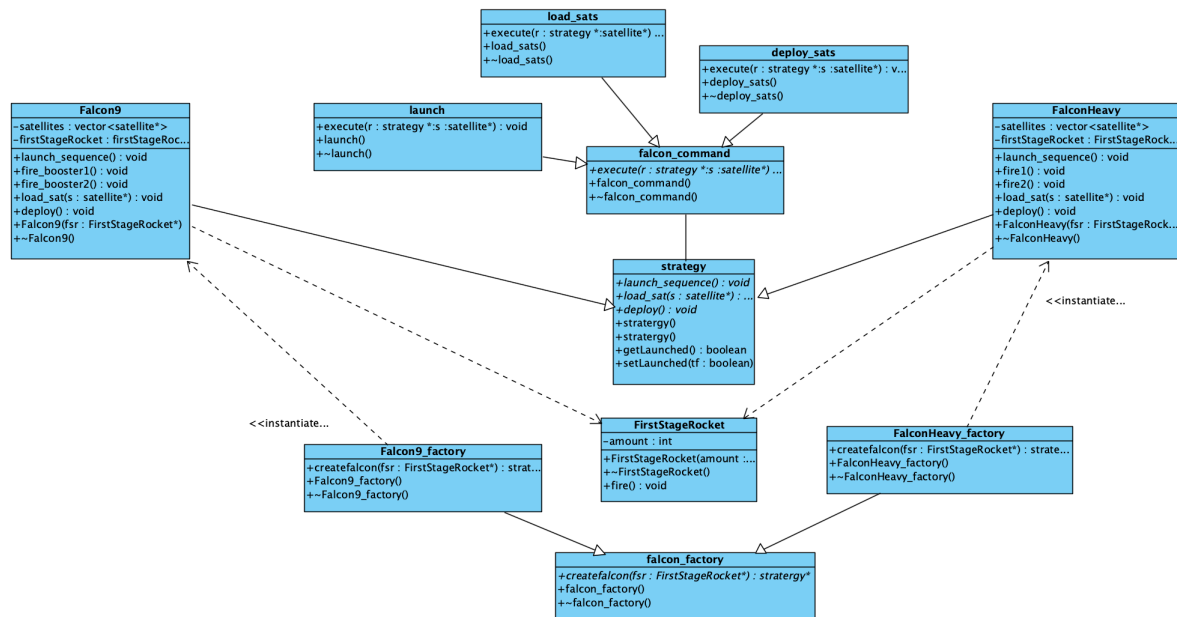
We made use of the abstract factory to create the two subtypes of Falcon rockets and we made use of the strategy design pattern to conduct different launch sequences for each rocket. This completes the FR2 requirement.

FR3: The user can create 2 sub-types of Dragon rockets with different load functions



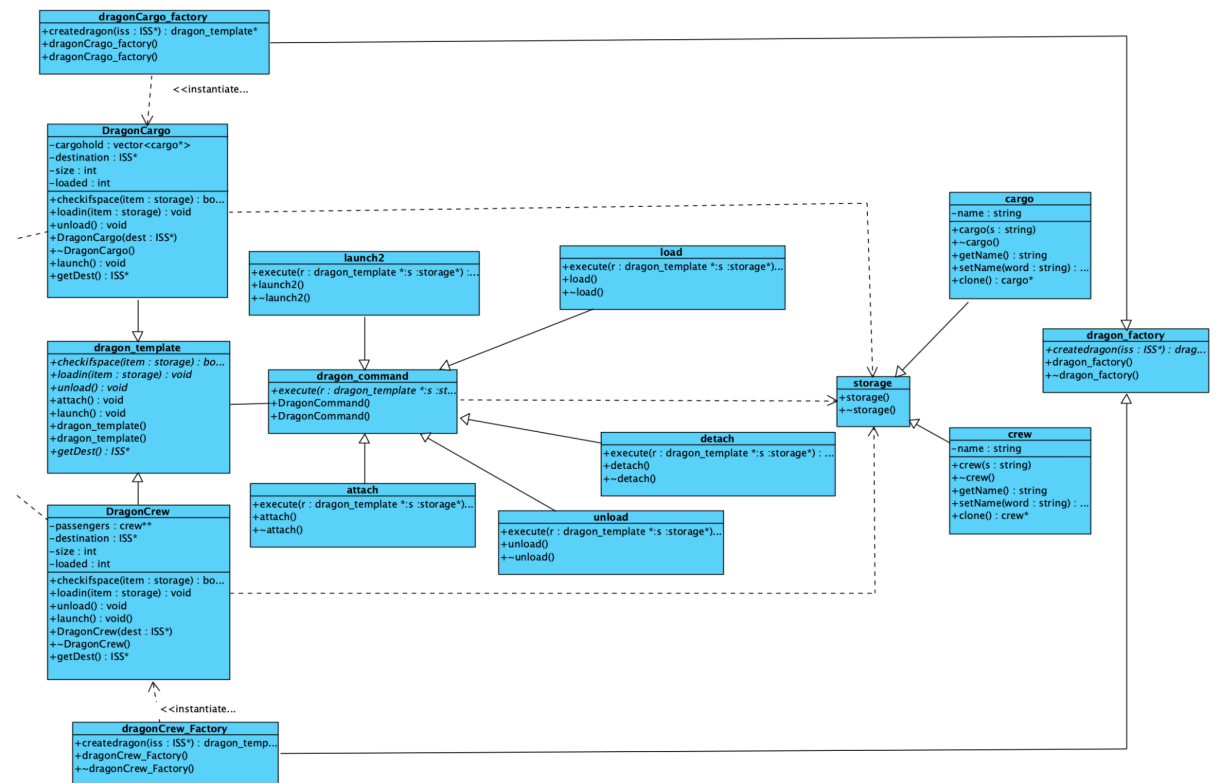
We made use of the abstract factory to create the two subtypes of dragon rockets and we made use of the template method design pattern to conduct different load functions for each rocket. This completes the FR2 requirement.

FR4: Give the Falcon rockets commands to load the Satellite, Launch the rocket and deploy the Satellite



We used the command design pattern to achieve the FR4 requirements to handle the commands of the falcon rocket.

FR5: Give the Dragon rockets commands to load cargo or crew, Launch the rocket, and attach and detach.

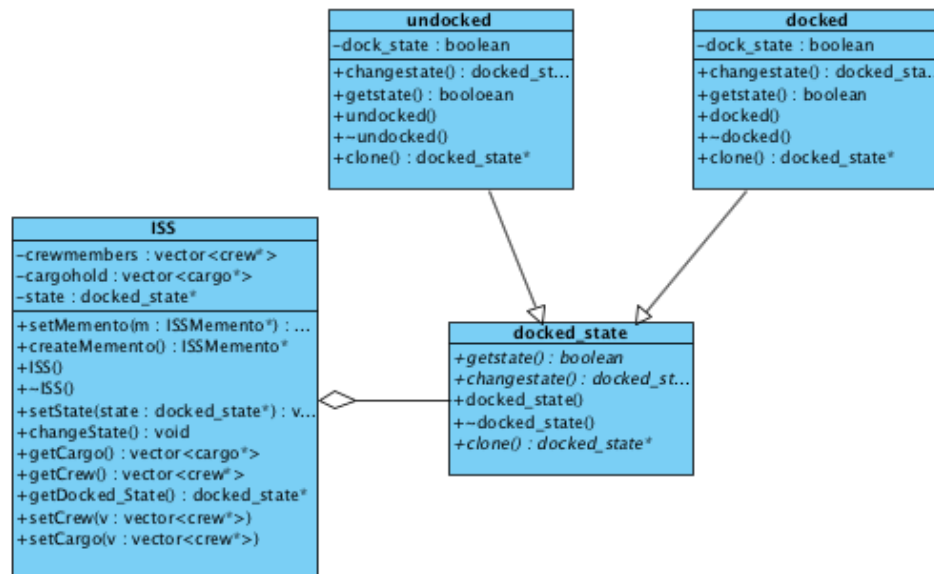


We used the command design pattern to achieve the FR5 requirements to handle the commands of the Dragon rocket.

FR6: Check to see if the ISS is docked to a rocket or not.

The State design pattern is used here to check to see if the ISS is docked to a rocket or not. The state in `docked_state`, will either be set to true or false depending on whether the ISS is docked to a rocket or not (true being docked, false being undocked). This state will be used in ISS.

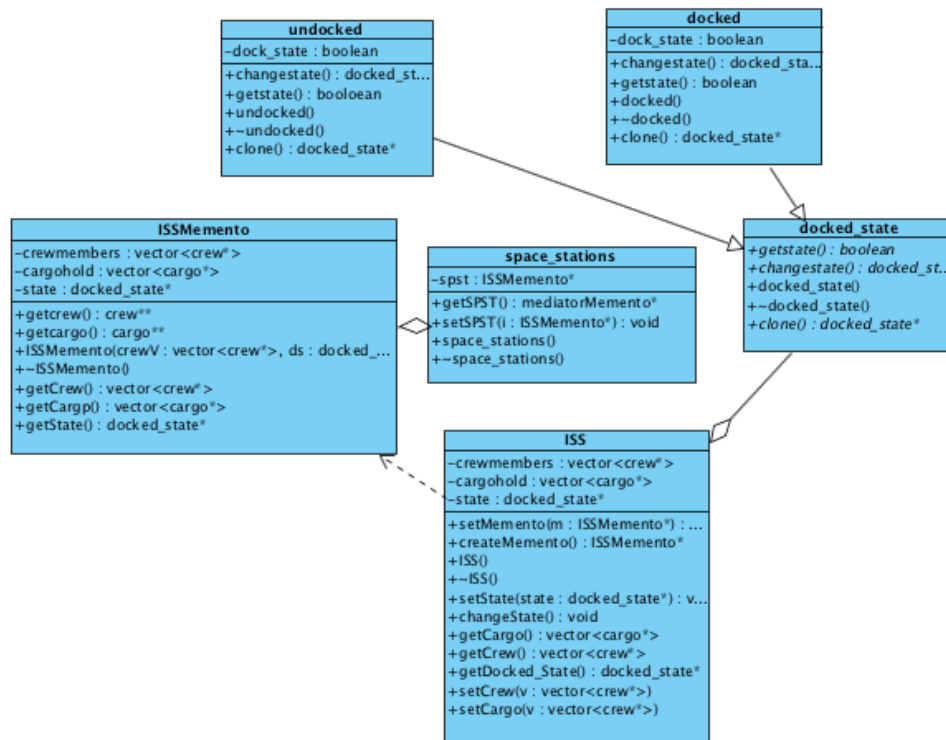
This satisfies FR6.



FR7: Memento to create a save state to use later and undo changes for the ISS.

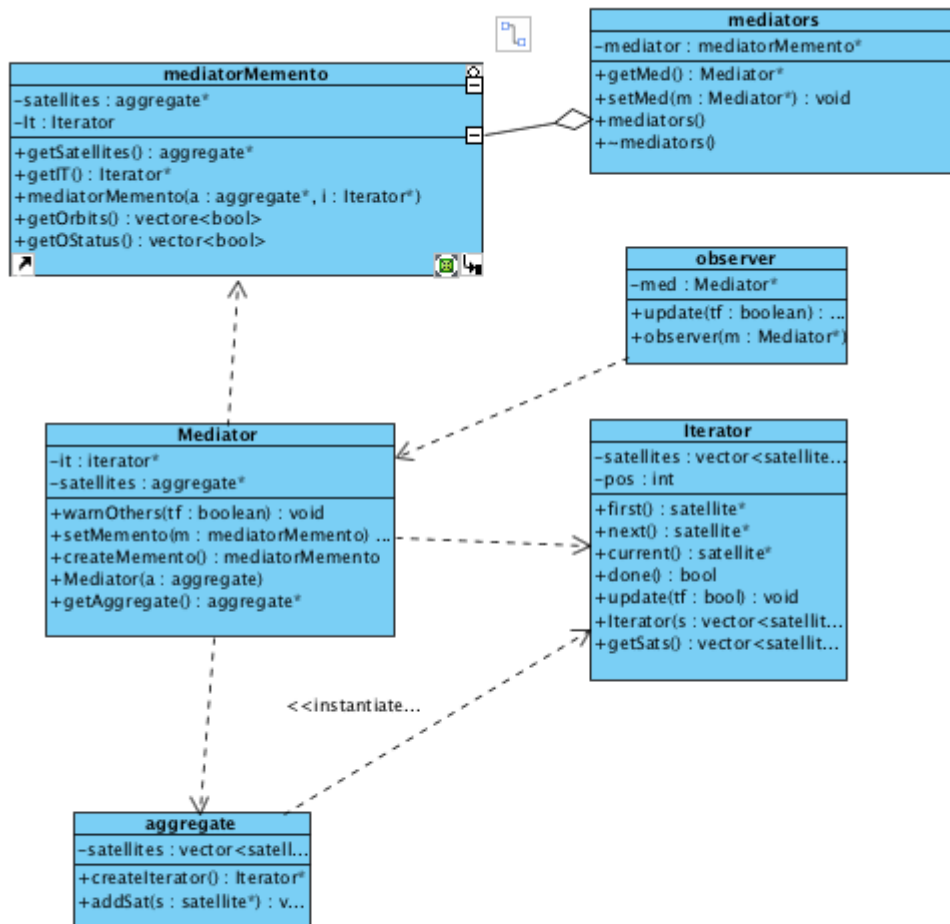
The Memento design pattern is used here.

The state is saved in space stations and can be used to reset it back to a former state. The saved state can be used in ISSMemento. This satisfies FR7



FR8: Store the state of the mediator for other simulations.

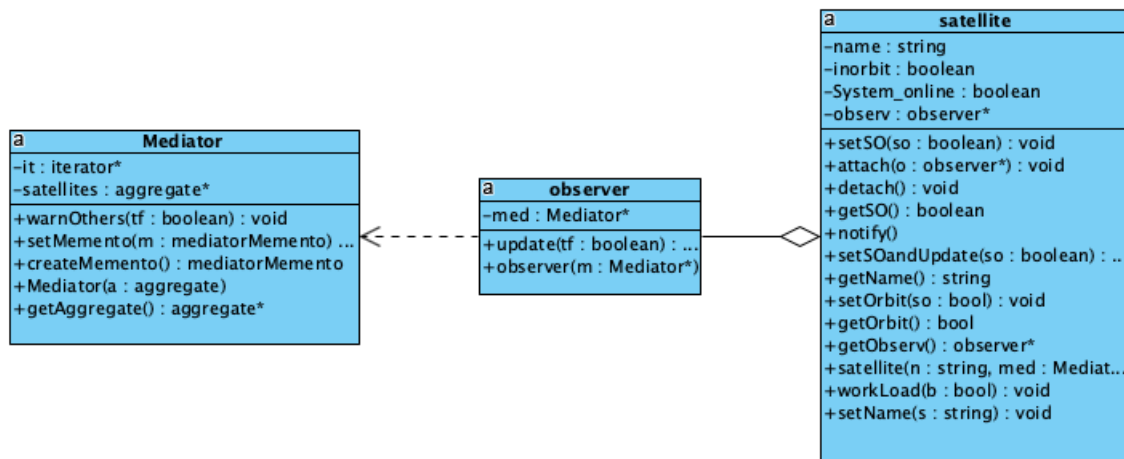
We used the Memento design pattern to store the state of the mediator for other simulations. The state is saved in mediators and can be used to reset it back to a former state. These saved states are then used in mediatorMemento.



Mediator uses Iterator as well as Observer and the Aggregate design pattern in this case, to satisfy what needs to be done in FR8.

FR9 Observer: Observe the Satellites to check if they are online.

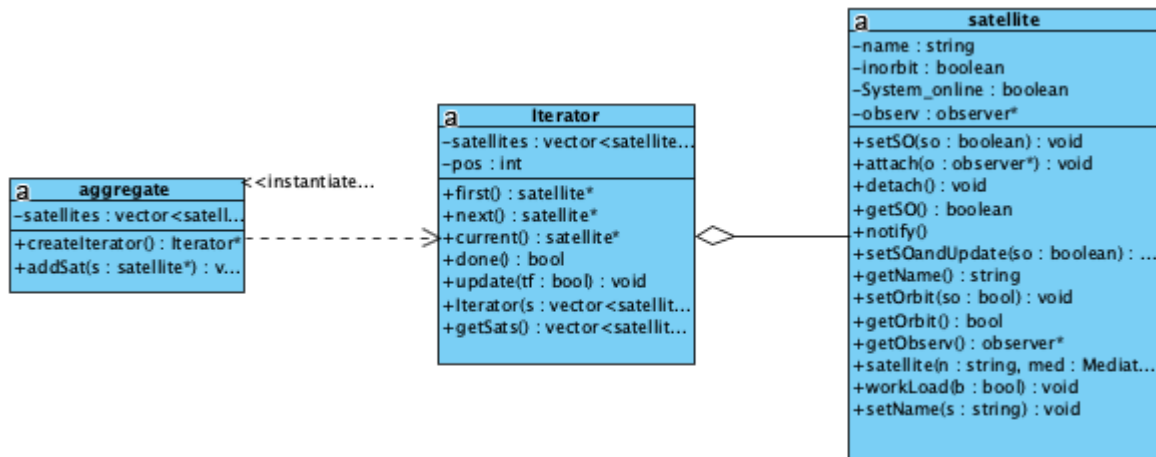
We used the Observer design pattern to observe all the Satellites that are created so that we can create an interface for communicating with Colleague objects to observe the state of the satellites to check if they are online and functional.



Observer uses Mediator design pattern in this case, to satisfy what needs to be done in FR9.

FR10 Iterator: Iterate through all the Satellites.

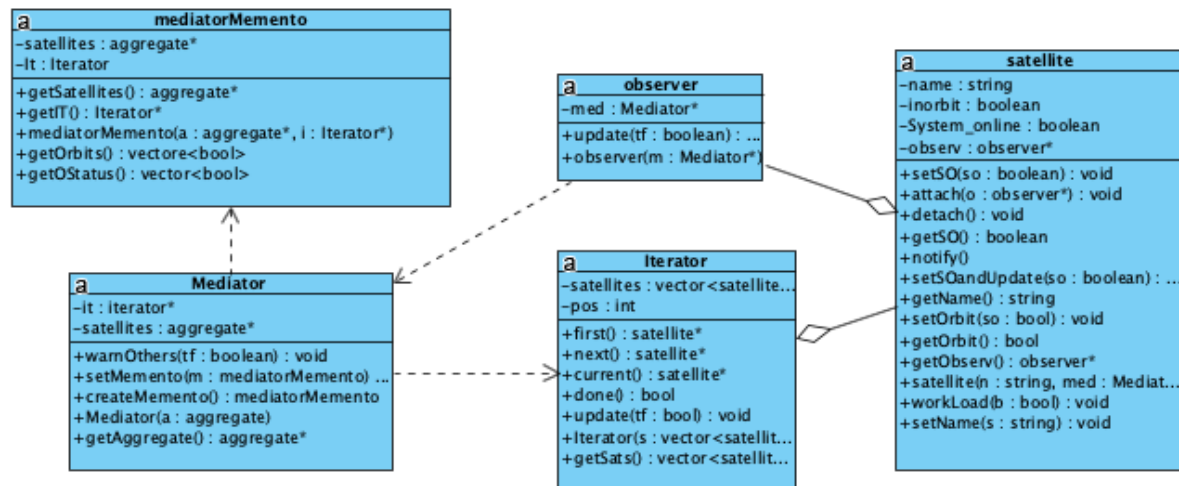
We used the Iterator design pattern to provide a way to access the elements of an aggregate object sequentially without exposing its underlying representation.



Iterator uses aggregate design pattern in this case, to satisfy what needs to be done in FR10.

FR11 Mediator: Be able to let all the other satellites know that one has gone offline and thus the system will be offline.

We used the mediator design pattern to define an object that encapsulates how a set of objects interact. Mediator promotes loose coupling by keeping objects from referring to each other explicitly, and it lets you vary the interaction independently.



Mediator uses Iterator as well as Observer and the mediatorMemento design pattern in this case, to satisfy what needs to be done in FR8.

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Languages

HTML 88.8% C++ 4.7%
JavaScript 4.7% CSS 1.8%

| CasparusBresler Add files via upload 8be2b24 3 minutes ago 147 commits | | |
|--|--|---------------|
| .vscode | Finished falcon heavy and added the set online for satellites in depl... | 13 days ago |
| Doxygen | Add files via upload | 3 minutes ago |
| .gitignore | Create .gitignore | 13 days ago |
| DragonCargo.cpp | Add files via upload | 2 days ago |
| DragonCargo.h | Update DragonCargo.h | 2 days ago |
| DragonCommand.cpp | Add files via upload | 6 days ago |
| DragonCommand.h | Update DragonCommand.h | 2 days ago |
| DragonCrew.cpp | Add files via upload | 2 days ago |
| DragonCrew.h | Update DragonCrew.h | 2 days ago |
| Falcon9.cpp | Add files via upload | 2 days ago |
| Falcon9.h | Update Falcon9.h | 2 days ago |
| FalconHeavy.cpp | Add files via upload | 2 days ago |
| FalconHeavy.h | Update FalconHeavy.h | 2 days ago |
| FirstStageRocket.cpp | Add files via upload | 2 days ago |
| FirstStageRocket.h | Update FirstStageRocket.h | 2 days ago |
| ISS.cpp | Update ISS.cpp | yesterday |
| ISS.h | Final doxygen | yesterday |

<https://github.com/CasparusBresler/COS214-Group-project>

Google doc link:

<https://docs.google.com/document/d/1ZyFFFvwAaleItSvR9pLnLDNzXXRbuXPa32FLfd0aAaY/edit?usp=sharing>