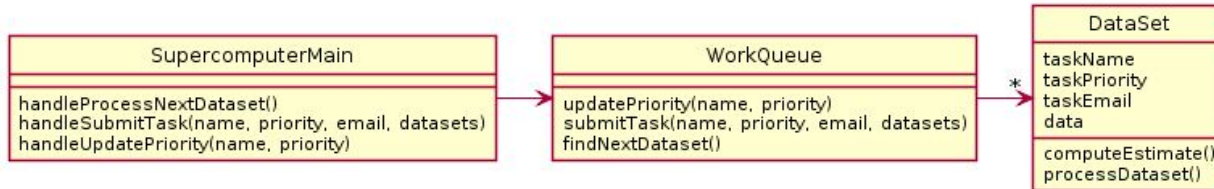
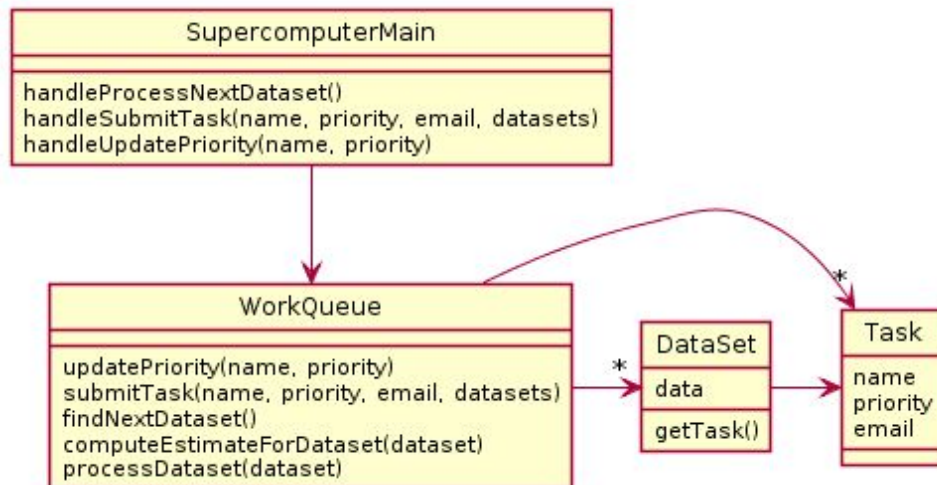


**Supercomputer:** The astronomy department maintains a supercomputer that everyone wants to use. Astronomers submit tasks to the supercomputer that consist of a series of datasets that must be processed independently. Each task includes a name, priority, and an email address where the results should be sent. Each dataset just has data. Given a dataset, it is possible to compute an estimate of how long it will take to run. The department agrees that the supercomputer should process datasets in priority order, and when priorities are equal, the supercomputer should select the dataset with the smallest estimated runtime. However, it must be possible to change a task's priority after it has been submitted.

**Solution A**



**Solution B**



Explain the problems with each one (and give the number of the OO Principles violated)

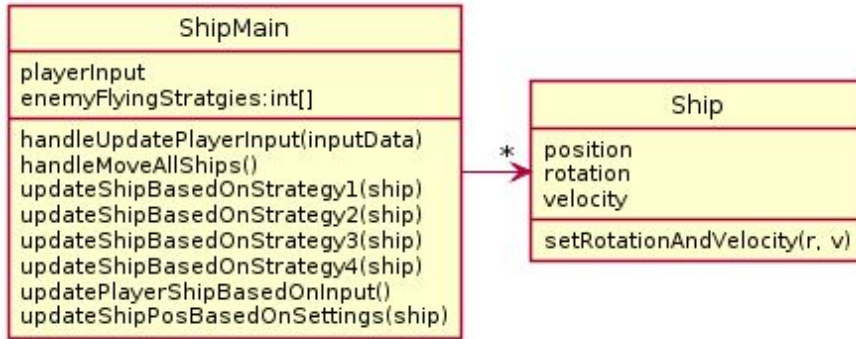
*Problems With A*

*Problems With B*

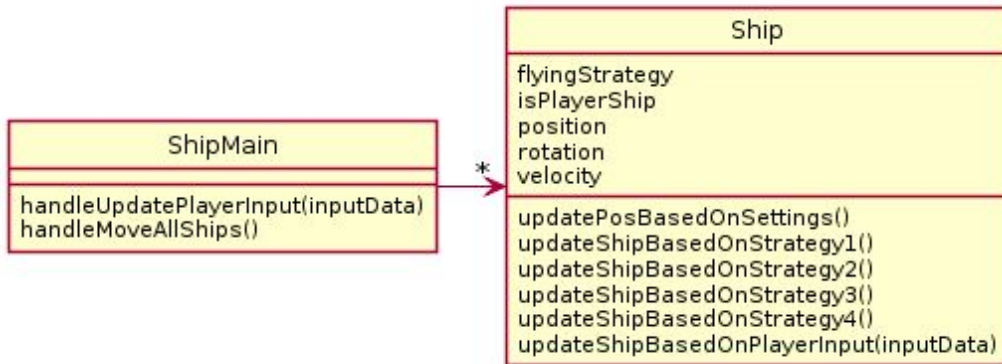
Write your UML solution that fixes all the problems on the **back of page 2**.

**Spaceship:** In a single player spaceship racing game, the mechanics surrounding ships are particularly important. Each ship has its own current position, rotation, and velocity. Rotation and velocity can be increased or decreased by the controller - this are how the ship is steered. When ships are computer controlled there are 4 different flying strategies that control how the ship moves in the game. When ships are player-controlled they get input from a gamepad which sets rotation and velocity. There are two commands to consider: updatePlayerInput which is called when a player presses the gamepad and moveAllShips which updates the position of all ships in the game based on their current settings.

**Solution A**



**Solution B**



Explain the problems with each one (and give the number of the OO Principles violated)

*Problems With A*

*Problems With B*

Write your UML solution that fixes all the problems on the **back of page 1**.



