**Design Explanation**

The heart of the design is the class AlgorithmSingleRun, which represents a run of an algorithm (for example RandomRobotAlgorithm), on a single House. It contains a field \_currentHouse, which is of type House\*, and a field \_currentAlgorithm which is of type AbstractAlgorithm\*.

The Simulator loads the Houses and the Algorithms. The Simulator class has a field \_runs which is a vector of objects of type AlgorithmSingleRun. The Simulator creates an object of type AlgorithmSingleRun from each house and algorithm, and adds it to it's field \_runs.

The main function of AlgorithmSingleRun is DoStep, which performs one step of the algorithm in field \_currentAlgorithm on the house in field \_currentHouse.

The rest of the design is as required.

Note on Sequence Diagram: we tried to describe only the main idea of the program , in order to not confuse the reader. Therefore some utility details have been left out.