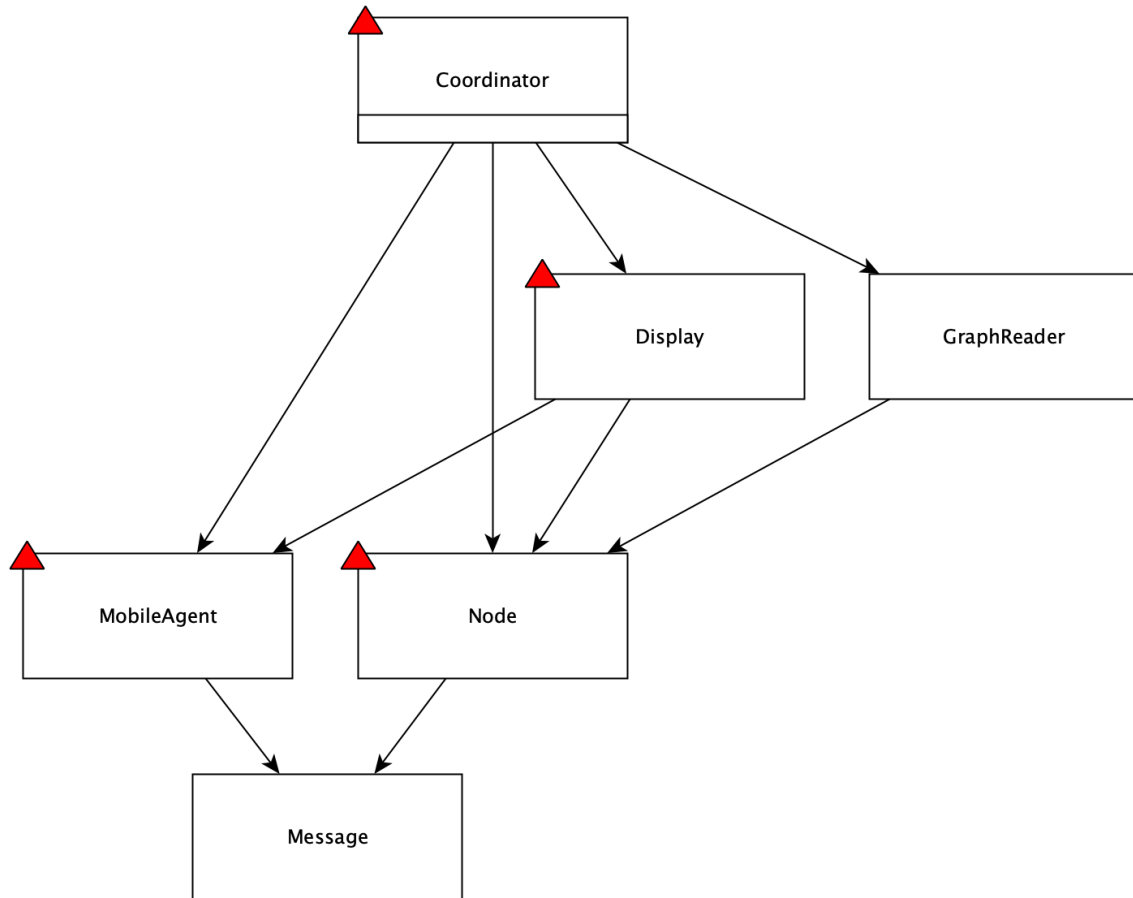


## Diagram



### Coordinator

The coordinator is the entry point into the program and it first starts by giving the user the option to choose which graph file to use for building the map of the nodes. Once the file is chosen the coordinator reads in the graph with the use of the GraphReader object. Once the coordinator builds the map of the nodes it creates the first mobile agent on the base station. Due to the nodes and the mobile agent being threads/runnable objects it also handles making their threads and starting them to begin the simulation.

### Display

This object is used to show the simulation running. The display gets the states of the nodes and shows them as either blue, yellow or red depending on their "heat" level. It also displays the mobile agents on the nodes, if they have been created. The display also gives a full inventory of the mobile agents that have been created in the simulation.

### GraphReader

This object reads in the text file that will be used to create the map of the node network for the simulation to be run on. The object assumes that the text file will only contain one fire node and one base station node. This object creates the node objects that will be used as the foundation for running the simulation.

### MobileAgent

This object is a concurrent thread and there can be 1 through k where k is the total number of mobile objects in the simulation. The first agent created starts at the base station and does a random walk through the graph in search of yellow state nodes. Once the mobile agent finds the first yellow state node it stops and sends a signal to be cloned on to surrounding nodes for fire mapping. Each node has a unique id to identify the nodes at the base station. They also keep track of where they were created and their current location. A mobile agent can only communicate with the node upon which it currently resides on. Mobile agents send, receive and analyze messages from nodes.

### Node

This object is a concurrent thread and there are 1 through k nodes where k is the number of nodes in the map. There is one base station and one fire node. The fire node can send one last message to its neighbors before it dies. A red node is dead, a yellow node is heated and a blue node has no effects. The node changes state based upon whether it has fire neighbor nodes. Once it has a fire neighbor node the yellow node is given a certain amount of time before it in turn changes its state to red. The base station node can only have one mobile agent on it. A node can only communicate with its neighbor nodes and the mobile agent that resides on top of it. Nodes send, receive and analyze messages from nodes and mobile agents.

### Message

This is the object that encapsulates the data that is sent between the agents and nodes in the simulation. It contains a sender, receiver and a message to be analyzed.