



University Of Ibn-Khaldoun Tiaret
Report of Practical Work

Flying Agents

Option: Master 1 Year SE

Course: Multi-Agents System

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Introduction:

In the purpose of learning multi system agents and for the good grasp of the it concepts and theory, we were assigned to a practical work to demonstrate our skills in a problem which consist of making a mobile agent that can move in a platform distributed on 3 machines having each a container. The role of this agent is to recover the mac address of each machine during his displacement, we have extended more further, we made this agent can move in a platform distributed on n machine, and this one will recover all the information about the machine that he moved on (Operating System, RAM, Hard disk and so on).

Solution Proposed:

We used the Jade library to define and manipulate our agents, we also made a Graphical User Interface that will help user interact with this system of agents. After the user connect with other pc in the same network, the user can request the agent to scan all PC's and go back, or he can see a particular PC in the network and see its information's. The GUI will interact with an Agent Coordinator which will request the Mobile Agent to move to some location and comeback with some information's, the coordinator agent will interact with the mobile agent with Agent Communication Language (ACL) , and the GUI will interact with the Coordinator Agent with Object to agent communication system provided in the library.

Tools Used:

To successfully create this system, we have used:

- Jade Platform for Agents.
- JavaFX for GUI.
- Java core libraries.

Agent Developed:

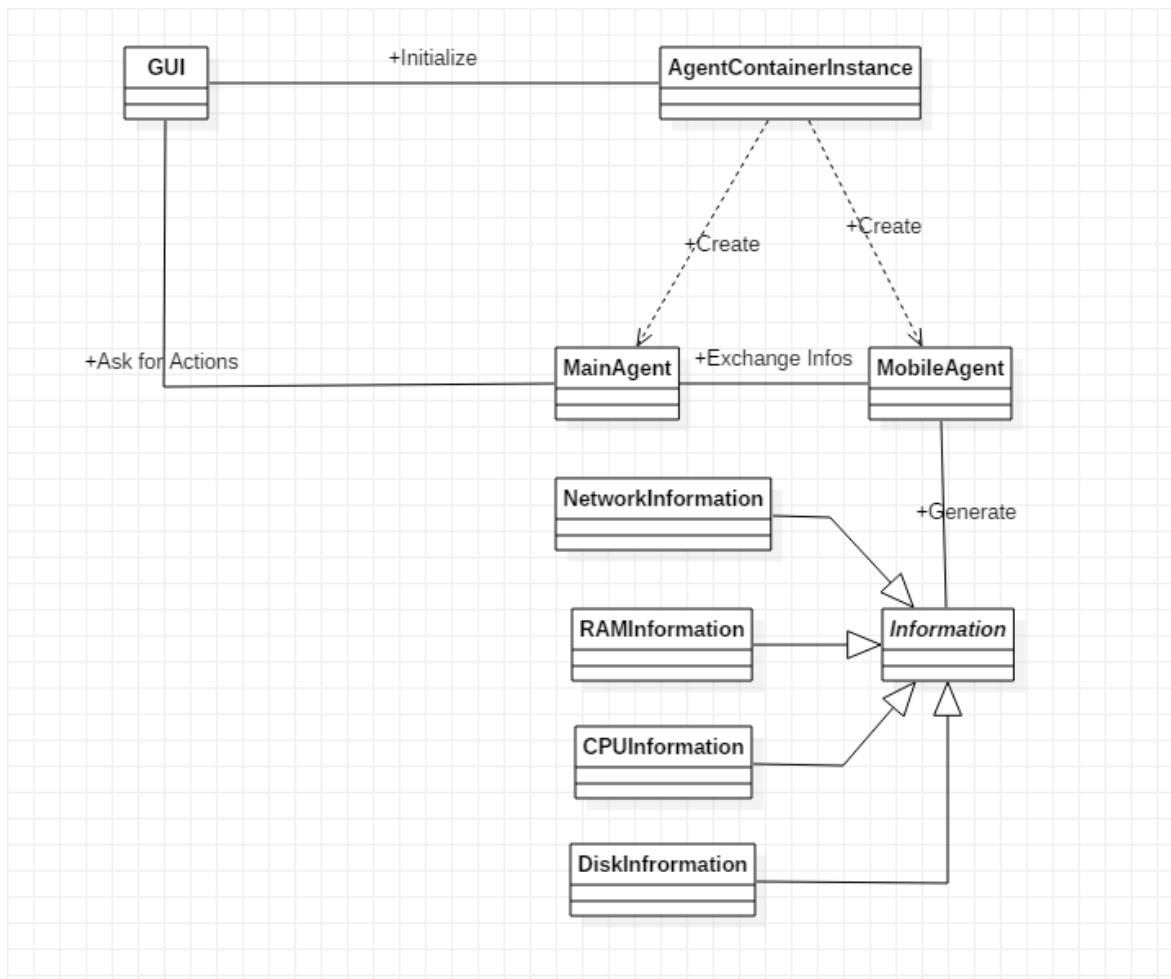
In this system we developed mainly two Agents:

- **Main Agent:** This Agent was the responsible for managing the interaction with the GUI and The mobile agent, when the User want information's from a specific PC, this Agent will transmit this order to the mobile agent which will move to the required PC and get the required information, after moving, the Main Agent will receive the information from the Mobile Agent and then give to the UI in order to display it in the front of the User
- **Mobile Agent:** This agent was the responsible for moving between PC's, generating the required information in these PC's, and sending this information's to the Other agent in order to consume it, for moving this agent will require which location to move to and the location of the Main Container in order to get back.

Diagrams:

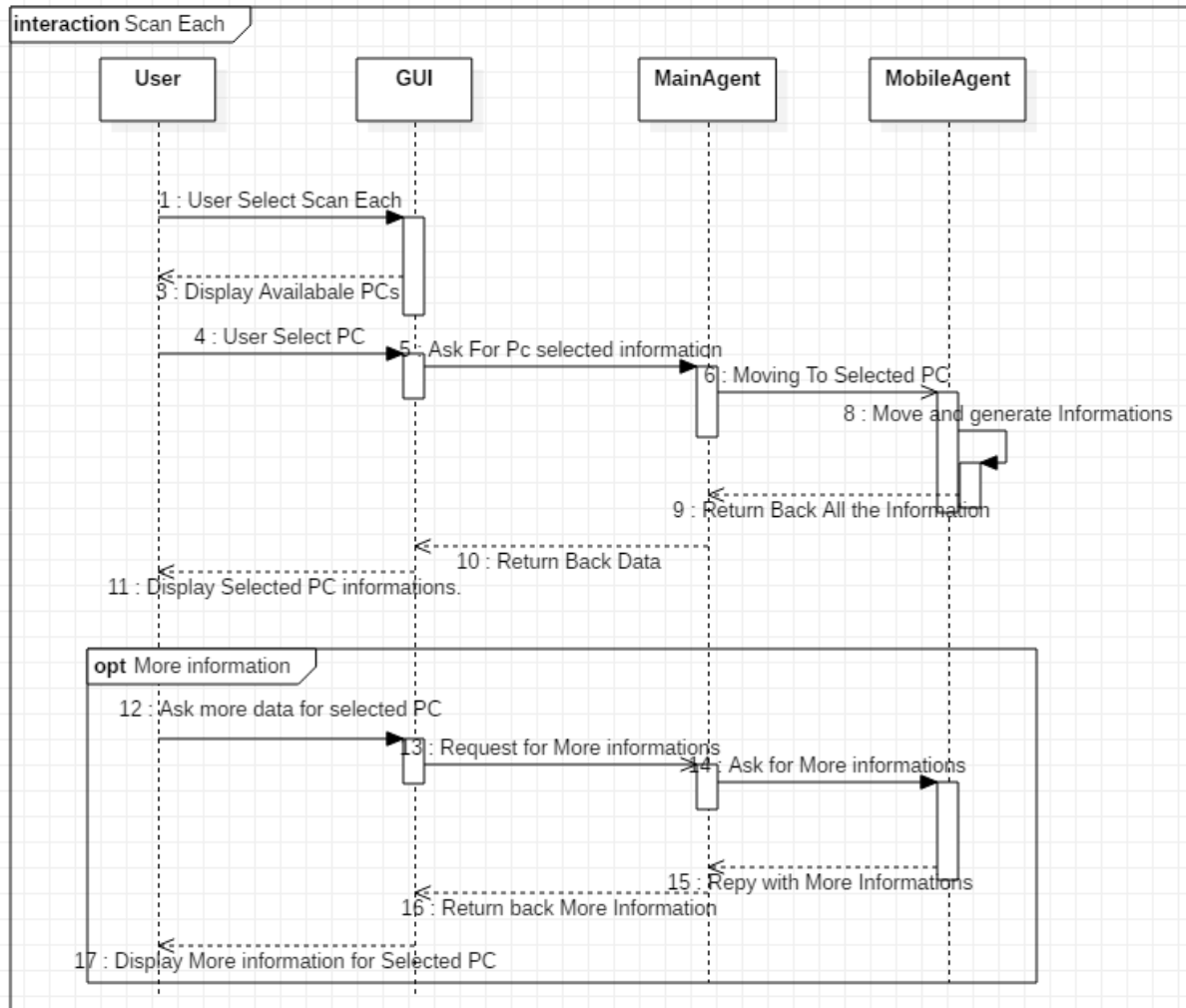
Beside building the Application we did the design of the system using UML Diagrams, to show the structural side and the behavioral side of our System, here is the diagrams:

- **Class Diagram:**

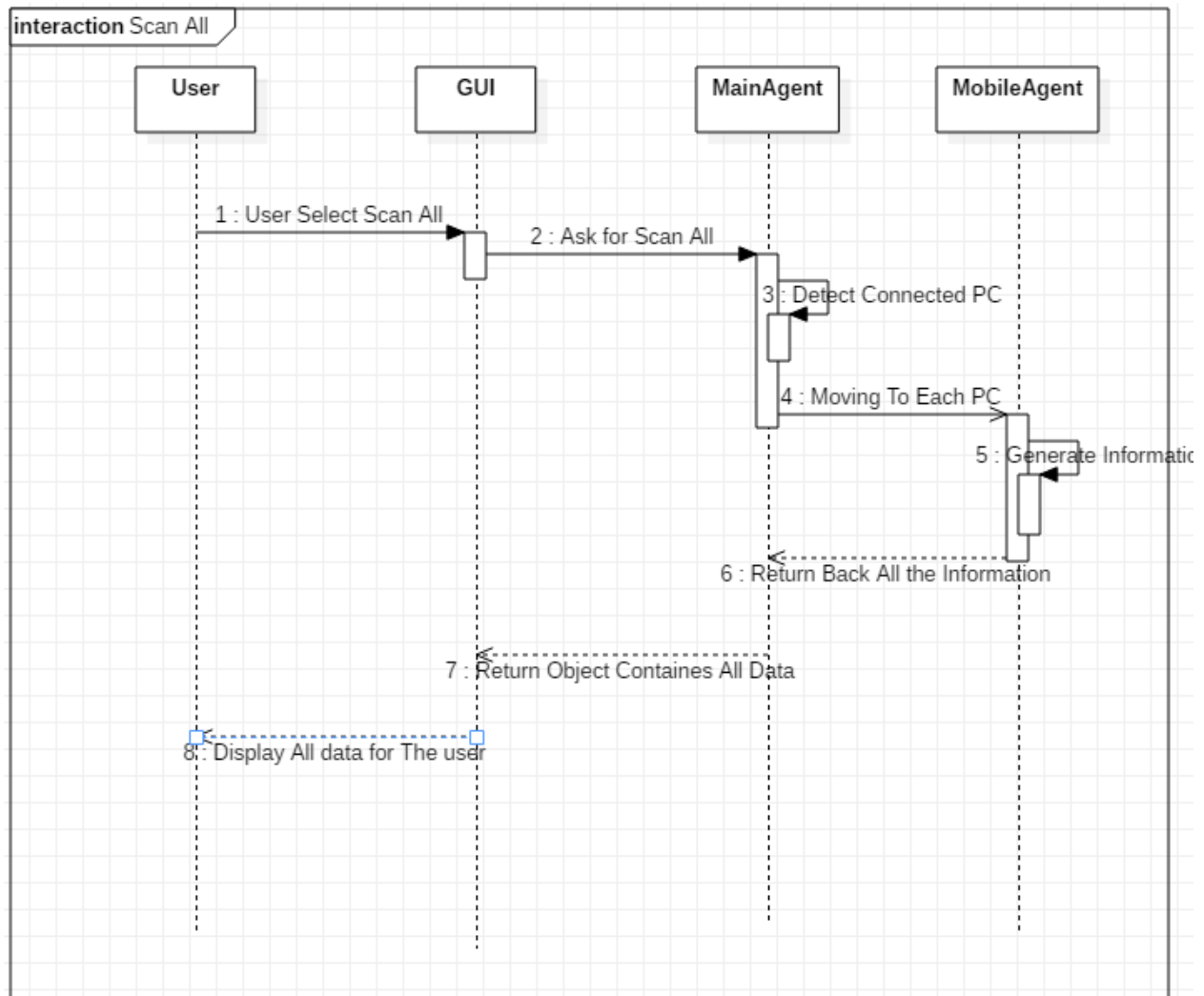


- **Sequence Diagram:**

- **Scan Each:**



- **Scan All:**



Perspectives and Conclusion:

Our system can be extended to have more functionalities, such as monitoring other PC's in the Network, install and configure other PC in the Network from one PC and many more, this example shows the power of the Multi Agents System that can be used in order to create complex systems with complex architecture and constraints with the help of agents.