University of Msila
Faculty of Mathematics and Computer Science
Department of Computer Science

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Duration : 1H 30

Agent Based Modelisation and Simulation Exam (1st year of Master's AI**)**

First name : : ……. Last name :…….. **/20**

➢ **Course Comprehension Questions (14 pts) :** put a cross on the **correct answers**

1- A simulation model models:
- The behavior of a system - The structure of a system X - Both
2- An agent-based model contains:
- A set of distributed and communicating entities X - A set of centralized entities - A set of entities
3- System modeling:
- Is a mandatory step in the simulation process. X - Is an optional step in the simulation process. - Is a primary step in the simulation process. X
4- The results of an agent-based simulation can be:
- A virtual laboratory X - Entities interacting X - Statistical calculations
5- Manta is an MAS (Multi Agent System) that simulates:
- A road network - A distribution of inhabitants in a city - A natural phenomenon X
6- Computer simulation consists of:
- Design a model, run it on a computer, and bring out conclusions - Design a model, analyze it, run it on a computer, and bring out conclusions - Design a model, run it on a computer, analyze it and bring out conclusions X
7- To simulate with an MAS(Multi Agent System), you need to:
- Determine the organization of the agents X - Determine the number of agents X - Determine the color of each agent
8- For a behavioral modeling , we need :
- Perception X - Structuring - Decision making X
9- The cube system allows you to:
- Study consumer psychology X - Analyze consumer opinions towards products X - Examine the number of consumers in a market
10- In Cube system, the environment is represented as :
- A grid X - A social space X - A physical space
11- In an agent-based simulation, an environment is represented by:
- The set of information carried by the agents - The set of information not carried by the agents X - The set of information outside the system
12- The system Manta contains:

- Queens X
- Workers X
- Stimuli X

13-The agent-based simulation is intended for:

- Natural systems X
- Complex systems X
- Distributed systems X

14- The Multi-Agent simulation allows for :

- Optimizing simulation time X
- Ensuring good simulation quality X
- Ensuring simulation reliability X

Exercice 1(4 pts): cite the tasks (**step by step)** of the agent instanced from this class

```
public class BlockingReceiveAgent extends Agent
 {
protected void setup() {
System.out.println("Agent "+getLocalName()+
        ": waiting for REQUEST message...");
ACLMessage msg =
blockingReceive(MessageTemplate.MatchPerformative(ACLMes
sage.REQUEST));
System.out.println("Agent "+getLocalName()+
        ": REQUEST message received. Reply and exit.");
ACLMessage reply = new
ACLMessage(ACLMessage.INFORM);
reply.addReceiver(msg.getSender());
reply.setContent("exiting");
send(reply);
doDelete();
}
protected void takeDown() {
System.out.println("Agent "+getLocalName()+": terminating");
}}
```

1-Printing a message : Agent localname :waiting for REQUEST message

2- receive messages in **blocking mode** by means of the <code>blockingReceive()</code> method

3-waiting for a message that has **a request performative**

4 Printing a message : Agent localname :REQUEST message received. Reply and exit

5-create a reply that has **INFORM performative**

6- set the **receiver address** as the **sender address** gets from the received message

7-set the **content of the reply** as exiting

8-Send the reply

9-Printing Agent localname REQUEST :terminatin **before dying**

10-Dies

Exercice 2 (2pts) : Based on the study you have done on a simulation platform, Describe the simulation steps with this platform.

- ……
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- ……
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- ……
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- ……
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- ……

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Bon Courage