MAS: Activity 6 – Agent Interaction Protocols

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The **Java Agent DEvelopment Framework (Environment) – or JADE**[1] has built-in support for a series of popular agent interaction protocols. In this activity you will focus on the FIPA Request and Call For Proposal (CFP) protocols. The protocols will help you implement a smart wake-up call scenario, whereby a *personal assistant* agent chooses how to wake its user up based on the available devices and the given user preferences.

Tasks: (see page 2 for a detailed roadmap)
(NOTE: work programmatically only)

- Work in pairs to implement communication between a PersonalAgent and a set of ambient agents running on two different machines.
- Start two containers on two different machines: a main container and a slave container. See support code. Adjust host settings accordingly to ensure reachability.
- Implement a Request Protocol between the PersonalAgent and the PreferenceAgent.
- Implement a CFP Protocol between the PersonalAgent and the ambient agents.

Must read (from resources:)

- Jade Programmer's Guide and JADEProgramming-Tutorial-for-beginners for general information on Jade behavior programming.
- The code in src/examples/protocols from jade-4.4.0-examples for examples of Request- and CFP- protocol implementations.

Resources:
Root Jade site: `http://jade.tilab.com/`
Main documentation + papers page: `http://jade.tilab.com/papers-index.htm`
Documentation at: `http://jade.tilab.com/doc/index.html`
Tutorial: `http://jade.tilab.com/doc/tutorials/JADEProgramming-Tutorial-for-beginners.pdf`
Programmer's Guide: `http://jade.tilab.com/doc/programmersguide.pdf`

[1] `http://en.wikipedia.org/wiki/Java_Agent_Development_Framework`

Roadmap:

- Start the containers on two different machines using the provided support code.
- Use the implementation of the Personal, BraceletAgent and PhoneAlarmAgent and PreferenceAgent
- Complement the `PreferenceAgent` implementation. The agents provides a preference for waking up a sleeping user, depending on datetime (day in week - monday, friday, saturday - and time in day). Three wake-up modes are available: *hard*, *soft* and *super-soft*.

- Augment the code of the implementation of the BraceletAgent and PhoneAlarmAgent specifying that:
  - BraceletAgent provides *soft* and *super-soft* wakeup modes.
  - PhoneAlarmAgent provides *soft* and *hard* wakeup modes.

- The PersonalAgent has the following tasks :
  - Initiate a request protocol to the PreferenceAgent asking him to provide the preference for a *day in week* + *time of day* combination.
  - Initiate a CFP protocol to the ambient agents asking which one can perform a wake-up using the *mode* retrieved from the PreferenceAgent.
  - Initiate a request protocol to the agent selected as a result of the CFP protocol asking the winner agent to actually wake up the user

NOTE: work in pairs. One member implements the `PersonalAgent` and the other one implements the `PreferenceAgent` and the ambient agents.

Cum să raportați activitatea:

- **la sfârșitul laboratorului:** trimiteți arhiva conform cu instrucțiunile de mai jos.
- **la terminarea taskurilor** aferente laboratorului (înainte de următorul laborator, altfel cu depunctare): trimiteți din nou arhiva, conform cu aceleași instrucțiuni, eventual adăugând ceva la nume.

Conținutul arhivei: numai directorul `src`, arhivat într-o arhivă cu numele `PrenumeNume_MAS-N.zip`, unde `N` este numărul laboratorului pe care l-ați rezolvat.

Cum trimiteți: trimiteți arhiva în atașament la un mesaj către adresa alex.sorici+mas@gmail.com. Dacă adresa este corectă și există atașament, veți primi un mesaj automat de confirmare.

Notă: Folosiți adresa de mai sus numai pentru a trimite activitatea de laborator. Pentru alte probleme folosiți modalitățile de contact indicate la curs.