ASSIGNMENT

Activity Guidance

Create an agent dialogue, using KQML and KIF, between two agents (named Alice and Bob).

Alice is an agent designed to procure stock and Bob is an agent that controls the stock levels for a warehouse. This dialogue should see Alice asking Bob about the available stock of 50 inch televisions, and also querying the number of HDMI slots the televisions have.

Add your completed answers to your e-Portfolio.

Learning Outcomes

An understanding of the motivations for, and appropriate use of, agent-based computing.

An understanding of the main agent models in use today and their grounding in artificial intelligence research.

AGENT DIALOGUE

by Maria Ingold

Wooldridge (2009) states that *knowledge query and manipulation language* (KQML) is the “envelope” for the messages while knowledge interchange format (KIF) is the “content” within the envelope. The message structure is:

- Performative – like the message class
- Parameters – attribute / value pairs, like instance variables

The performatives relevant here:

- ask-if – if Alice wants to know if any 50-inch TVs are in stock
- ask-one – If Alice just wants the first TV in the list
- ask-all – Alice wants a list of all the available stock of 50-inch TVs, not just the first one
- tell – Bob replies to Alice

The parameters relevant here:

- :sender – Alice or Bob
- :receiver – Alice or Bob
- :language – KIF
- :ontology – Stock-Ontology (an agreed ontology between them)
- :reply-with – send a reply and tag it with an identifier
- :in-reply-to – the :reply-with identifier
- :content – the question or response

Alice asks if any 50-inch TVs are in stock:

```
(ask-if
        :sender Alice
        :receiver Bob
        :language KIF
        :ontology Stock-Ontology
        :reply-with q1
        :content ( stock 50-inch-TVs )
)
```

Bob tells Alice there are 50-inch TVs in stock:

```
(tell
        :sender Bob
        :receiver Alice
        :language KIF
        :ontology Stock-Ontology
        :in-reply-to q1
        :content ( =(stock 50-inch-TVs) (yes) )
```

Alice asks for a list of 50-inch televisions:

```
(ask-all
        :sender Alice
        :receiver Bob
        :language KIF
        :ontology Stock-Ontology
        :reply-with q2
        :content ( list 50-inch-TVs )
)
```

Bob responds to Alice's query about 50-inch televisions:

```
(tell
        :sender Bob
        :receiver Alice
        :language KIF
        :ontology Stock-Ontology
        :in-reply-to q2
        :content ( =(list 50-inch-TVs) (list_of_50-inch-TVs) )
)
```

Alice asks how many HDMI slots the 50-inch TVs have:

```
(ask-all
        :sender Alice
        :receiver Bob
        :language KIF
        :ontology Stock-Ontology
        :reply-with q3
        :content ( list hdmi 50-inch-TVs )
)
```

Bob responds to Alice's query about 50-inch televisions:

```
(tell
        :sender Bob
        :receiver Alice
        :language KIF
        :ontology Stock-Ontology
        :in-reply-to q3
        :content ( =(list hdmi 50-inch-TVs) (list_of_50-inch-TVs_with_hdmi_slots) )
)
```

References:

Wooldridge, M. (2009) *An Introduction to MultiAgent Systems*. Chichester, UK: John Wiley & Sons.