

Exercises: 6.01.2019

Task 1

The formalisation of these (pre-)conditions requires the formal representation of the speaker's:

- beliefs about the task and about the dialogue;
- commitments, willingness and abilities to perform certain actions;
- goals that can be achieved by means of dialogue acts;
- assumptions about what addressees know and do not know; their goals; and their commitments, abilities, and willingness to perform certain actions.

Please study the primitive concepts which are used to formulate the (pre-)conditions of the dialogue acts and corresponding update effects are listed in the Tables 1 for dialogue acts with general-purpose communicative functions.

Tabelle 1: Semantic primitives for formalizing dialogue act (pre-)conditions.

Concept	Definition
	Mental attitudes towards information
Bel (A, p, σ)	agent A possesses the information represented by the proposition p , with belief strength σ ; σ represents A 's certainty that p is true σ can have the values 'firm' and 'weak'
KnowVal (A, z)	A possesses information which allows him to compute the value of z
Want (A, τ)	agent A has goal τ
	Mental attitudes towards actions
CanDo (A, α)	agent A is able to perform action α
WillDo (A, α, C_α)	agent A is willing to perform action α if condition C_α is fulfilled; C_α may be 'empty', i.e. the universally true statement \top
CommitDo (A, α, C_α)	agent A is committed to perform action α if condition C_α is fulfilled; C_α may be 'empty', i.e. the universally true statement \top
CommitRefrain (A, α, C_α)	agent A is committed not to perform action α if condition C_α is fulfilled; C_α may be 'empty', i.e. the universally true statement \top
ConsidDo (A, α, B, C_α)	agent A is considering action α to be performed by B if condition C_α is fulfilled; C_α may be 'empty', i.e. the universally true statement \top ; B may be identical to A
Interest (A, α)	means that action α is of interest to agent A

Task 2

Given the primitives in Table 1, specify pre-, goal and expected effect(-s) conditions for the following dialogue acts:

- SET QUESTION expressed in the utterance *'What day in May did you want to travel?'*
- SET ANSWER: *'On the 12th of May'*
- REQUESTs: *'Book this flight for me'* and *'Could you book this flight for me, please?'*

Task 3

Using the primitives in Table 1 design a plan for REQUEST to a robot to open a door and robot's

- (1) ACCEPT and
- (2) DECLINE REQUEST.

Specify, hereby, pre-conditions, goal(-s) and effects for all dialogue acts.