

## Task 3. Improvements

Task 1 and 2 summary:

- Task 1: completed implementation of all dialogue states
- Task 2: managed to implement re-raising the question when user is silent, and also checking that the user request is in the grammar and providing a suitable error prompt (e.g. "Sorry, but there does not seem to be a person with the name ... in our system"). I did NOT, however, manage to make the code more efficient (minimising repeats). I tried to make generic states like 'Listen:' and events like 'LISTEN\_COMPLETE:' by moving them to the parent state but failed. My problem seemed to be that once the state transitioned to Listen: in the parent state the dialogue stopped. I tried to resolve this by using History: state to track and re-enter to the last active childstate.

Task 3 (errors/limitations and improvements):

- Problem: no distinction between user input being valid semantically but not in the system (e.g. "Sunday" is a valid weekday name but not an available day for booking).
  - o Current fix: added a constant 'validDay' listing all weekday names to first check that the input is a valid weekday name and instruct the user about 'invalid input'. Following this, check the grammar (i.e. "not a bookable day of week").
  - o Better solution (TBD): would be to improve the NLU by separating the grammar (i.e. what can be said) and database (i.e. what times and days can be booked per person) – enabling a more refined error handling
- Problem: with one grammar for all inputs it is possible to say, for example, "Monday" in response to "who are you meeting with?" (context is updated with "Unknown" but this problem is not caught in the code).
  - o Current fix: in the ValidInput: childstate (in AskName:) add a check for "Unknown" exception and play prompt "Sorry, I did not recognize that name." On SPEAK\_COMPLETE: added guards to transition to different states depending on the result (i.e. if "Unknown" go back to AskName).
- Problem: the system does not allow for alternative phrasing, e.g. "I want to meet with [...]" or "Ms Daniilidou, please".
- Problem: limited guidance for users, i.e. no global commands like "help"
- Problem: user can only give one piece of information at a time
- Problem: if user wants to make a change s/he needs to start over from the beginning
- Problem: limited repair and error handling, i.e. no adaptive error recovery