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CS 510: Voice Assistants

Homework 1

Designing VUIs

Step 1- Select Use case

Use Case: Add calendar event for hair cut

Application name: "Calendar event"

Step 2 – Brainstorm Keywords

Keywords: date, day, time, place, conflict, busy, calendar, book

Step 3 – Personality and Style

Ben (He/him) is younger with an American accent and a pleasant voice.

Ben is friendly, loyal, resourceful, humble

Step 4 – Conversation Starters

- Dialogue Starters:
 - Hey Ben, I need add an event to the calendar
 - Hey Ben, Add haircut appointment to the calendar

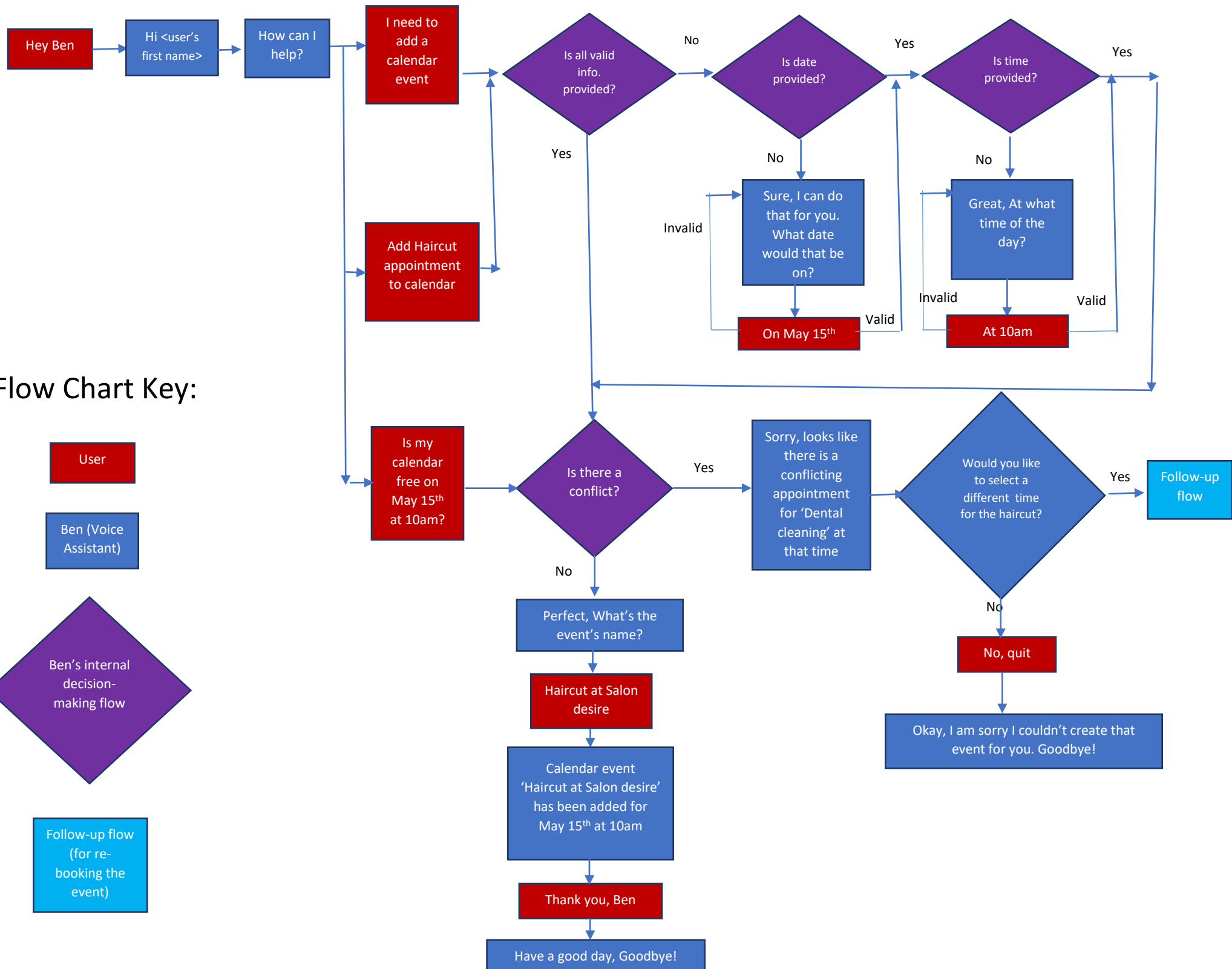
- Hey Ben, Is my calendar free on May 15th at 10am
- Follow up sentences:
 - Can you add a recurring event every two months?
 - Can you remind me one day before the event?
 - Can you remind me to make recurring appointments at the salon?

Step 5 – Sample Dialogs

Human	Voice Assistant
1. Hey Ben, I need to add a calendar event	
	2. Sure, I can do that for you. What date would that be on?
3. On May 15th	
	4. Great, At what time of the day?
5. At 10 am	

	6. Perfect, What's the event's name?
7. Haircut at Salon desire	
	8. Calendar event 'Haircut at Salon desire' added for May 15 th at 10am
9. Thank you Ben	
	10. Have a good day, Goodbye!

Step 6 – Conversational Flow Diagram



Step 7 – Review and Reflection

Overall, building the flow chart for the voice assistant to add a calendar event was challenging and enjoyable. The hardest part was properly adding the decision statements to quicken the response cycle to the user. I initially added a decision box to ask for the name of the event after asking for the date and time from the user. But later decided to move it towards the end so we don't waste time if user decides to quit when there is a conflict for the specific timeslot already. Adding the decision trees was the most enjoyable part as it made me think deeply to get to the optimal flow of the conversation.

The use of conversational markers such as 'Sure, I can do that for you', 'Okay, I am sorry I couldn't create that event for you' makes the event more human like. The assistant being programmed to ask for date and time of the event only when those details were not provided by user initially gave it human like qualities. Also, when time conflict arises the assistant asks if user would like to select a different time which is nice and human-like.

The conversation can be called successful if user's needs are met accurately and efficiently. So, if the user's objective is not met or if there are too many iterations to achieve the end goal of the conversation then VUI needs to be improved. Properly utilizing VUI design principles such as proper error handling, handling ambiguous user input and utilizing right confirmation strategies will help to make a successful assistant.

For analytics, it would be good to keep track of

- a. Percentage of user inputs that were wrongly recognized in the overall conversation
- b. Number of iterations before successful completion of the conversation due to issues with the VUI not recognizing the user input
- c. Tracking bias in speech recognition and measuring percentage of mistakes with different subsets of users
- d. Using the three-tiered confidence approach to see what percentage of user inputs fell into each of the three tiers of the approach. If the lowest bucket is consistently high, then assessing the speech recognition engine for design accuracy

I like my voice assistant so far, but would like to improve it to add helpful responses such as 'I am sorry, I think you might have provided an invalid input, can you please try again?' to the user when they provide an invalid date and time, so they recognize it and provide the right response, rather than just asking the user to provide date/time repeatedly. Also, adding 'user silence' scenarios into the flow chart, in which cases indicating to the user what the VUI can do and gently asking what they would like to do

now with the VUI. Finally, giving the user an option to reschedule the existing appointment to a different time so the current appointment can be scheduled is another design approach to consider.