Software User Interface and User Experience

Homework #1
Due: Thursday, September 12, 2024 by 11:59 PM
Email Help Cut-off: Thursday, September 12 @ 5:00PM
Maximum Points: 30

Submission Instructions

This homework assignment must be turned-in electronically via Canvas. Type in your responses to each question (right after the question in the space provided) in this MS-Word document. You may use as much space as you need to respond to a given question.

Academic Integrity Notice:
The use of external resources is prohibited (including but not limited to websites). You are permitted to use the course textbook (linked below), notes during the lecture, and my lecture slides. The responses should be your own and *in your own words*. Answers/solutions should *not* be shared among students. If you have questions, contact your professor.

Name: Jack Dina

This homework investigates the fundamental concepts of software architecture, quality attributes, and architectural styles. Additionally, it focuses on the application of appropriate architecture styles for various applications.

Corresponding Reading:
- **Chapter 1-3:** User Interface Design and Evaluation, 1st Edition, by Debbie Stone et al., Morgan Kaufmann Publishers, 2005, ISBN-13: 9780120884360.
- **Chapter 1-2:** Interaction Design: Beyond Human-Computer Interaction, 5th Edition, by Helen Sharp et al., Wiley, 2019, ISBN: 978-1-119-54725-9.

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1. What techniques might we use to evaluate different UI designs to determine which design to use? Pick **one** to describe how it can be used. **[2 points]**

   A/B testing is a very popular evaluation technique used to look at two different UI designs. You basically give two different versions of the same UI to customers and

have them use them both. You then compare the data generated by those designs and make a conclusion about which one is better based on whichever one generates more positive results.

2. What is the relationship (how are the related _and_ different) between **usability** and **user experience**? It should be clear what both of them are. **[3 points]**

   Usability determines how positive a user experience is. The more usable the better a user experience should be. Usability is how easy it is to use a UI and a website. This includes how easy it is to navigate and how easy it is to manage. User experience is determined by all aspects of your website and not just usability. The user experience is the relationship that the customer had with your website and how well they interacted with it.

3. Interview Design. Consider you are working for a company that builds automotive software and you want to consider interviewers with users to understand the user expectations and experience. The answer should provide:
   - Explanation of the design (structured, unstructured, semi-structured) and the reason for your choice. **[2 points]**
   - _At least 5_ questions that would ask. **[4.5 points]**
   - Rationale/reasoning for your questions and what you aim to gather from your survey. **[2.5 points]** (If you opt to have a larger set of questions to better support your answer, you can consider grouping them in your discussion.)

   1.What are the dashboard features that you use most frequently?

   2.How easy is it to manipulate the car's controls when you are driving?

   3.Do you find yourself often fidgeting with the dashboard to complete your task?

   4.Are there any controls that you feel prevent you from being able to focus while you drive?

   5.What are some control features that you notice when you are in your car

   My structure for the interview is a semi-structure that way we can follow an organized path for my interview and still allow the customer to provide as much of a clear explanation for their needs as they can. My questions are a mix of open questions and closed questions.

   My first question is to understand what controls the user is working with the most. It's open ended so we can get a starting point with the UI to focus on. Next I ask how easy it is to work with the car's controls when they are driving. This is also open ended so that way we can target key features to focus on for development. The third question is

meant to find out if there are any features that are potentially causing a poor user experience or are causing any distractions. It's meant to be a closed yes or no question, but elaboration may be necessary. The fourth question is also meant to focus on potentially distracting features that may cause issues for the user and their experience when driving. Like the third question it's meant to be a closed yes or no question that can be elaborated on. The final question is meant to inform us on what features of the car are most noticed by our user. This is an open question because we would likely ask why after the users response.

4. User Profiles and Requirements. Using the prior example, define 3 detailed user profiles (can consider this as three groups) for your system _and_ identify them to your requirements.
   ● User Characteristics **[6 points = 2 points each group]**

User Characteristic	*[Define Group1]*	*[Define Group2]*	*[Define Group3]*
Age	16-25	26-50	50-80
Physical Limitations	May have some physical limitations in sight, hearing, or physical ableness. Heights will vary.	May have some physical limitations in sight, hearing, or physical ableness. Heights will vary.	May have some physical limitations in sight, hearing, or physical ableness. May have a handicap or some other disability. Heights will vary.
Educational Background	May have minimal educational qualifications or no educational qualifications.	May have minimal educational qualifications.	May have minimal educational qualifications.
Computer/IT Use	Probably have medium to high use of computers or IT.	May have high, little, or no experience with computers or IT.	Likely has little or no experience with computers or IT.
Motivation	Probably very motivated to use the car's UI and controls to play music or put in an address.	Likely very motivated to use the car's UI for navigation or music.	Likely less motivated to use the car's UI for much beyond radio or navigation.
Attitude	Attitude may vary depending on reliability of technology and number of services.	Attitude may vary depending on reliability of technology and number of services.	Attitude may vary depending on reliability and complicatedness of technology.

● User Characteristics and Requirements **[4 points]**

User Characteristic	Car UI Requirements
Will range in age from ages 16-80+	The car's UI needs to have safety features to accommodate new drivers and elderly drivers.
May be full bodied or have physical limitations.	May need to be customizable for people with flexibility issues.
Users may have very little experience with computer technology.	Keep the design simple and easy to use.
May be more or less motivated to use some of the features and controls of the vehicle.	Prioritize more commonly used controls to ensure a more positive experience for the customer.
Users may have a negative attitude towards the UI if there are too many options.	Keep the design simple.
Users may have hearing or sight issues.	Provide safety features that give the user warnings and alerts that keep them safer.

5. UI Critique and Improvement. Critique the UI provided and provide an updated version that you believe improves the original design. The answer should include:
   - Discussion of the positive and negative elements (what works and what has problems) **[2 points]**
   - Updated version of the UI to address identified issues. **[2 points]**
   - Justification for new design (why is better) **[2 points]**

Original Design for a group messaging app (e.g., competitor to GroupMe/WhatsApp):
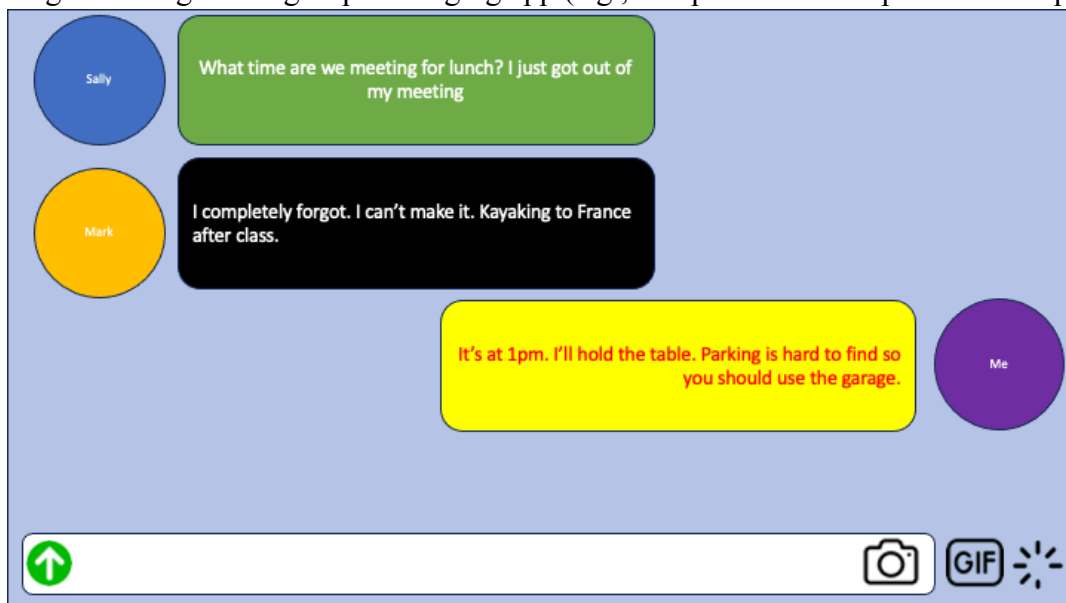
Note: PPT has the mock-up of the design as well for ease of modification

Discussion of positives and negatives:

A positive is that it has few buttons that are easy to identify and each message is clearly separated. Your messages are on a separate part of the screen so you can clearly see your own messages. Names of different people are color coded which makes identifying who is talking very easy.

Some negatives are that the text is very very small in the name. The text boxes are all different colors which is completely unnecessary and distracting. The send message button should be on the right not the left because most users are right handed. Maybe make a design setting to be able to switch it to the left, but right should be default. The loading button isn't clear on what its for and seems like it could be for anything. It would also make sense to put the photos button outside of the text bar just for continuity with the gif button.

Updated Version:
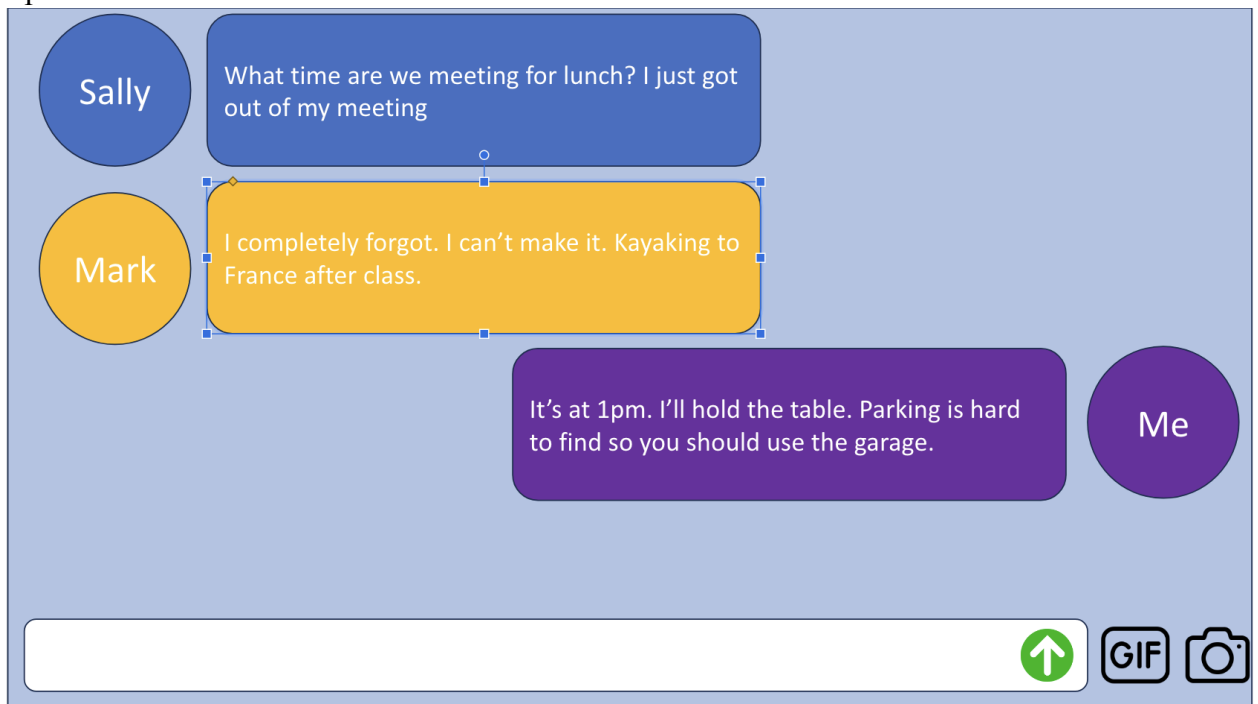
Justification of new design:

The first thing I did was expand the size of the names to make it more visible. THe next thing I did was match the colors of the text boxes to everyone and made the text the same color. I also expanded the text and made sure it was all left aligned for continuity. I removed the loading button because it was unclear what it did and moved the camera button to be outside of the text box for continuity reasons. I also moved the send button to the right for ease of use for most users who are right handed.