Assignment P2:CS6750

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QUESTION 1

The tasks I've performed within the hour that I was cognizant have been given below.

S.No	Tasks	Goals	Interfaces	Object being Manipulated
1	Reading Emails	Clearing Inbox	Microsoft Outlook	Inbox
2	Attending Meetings	Debugging Environment Issue	Zoom Meeting Interface	RHEL 7.2 Server
3	Watch videos	Finish new Mandatory training	Internal Training Interface	My Employee Profile
4	Texting Joe	Communicate with Joe	Telegram Chat interface	Google Keyboard
5	Browse Reddit	Find images, gif and text I enjoy	My Phone Screen	Reddit Home Page

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Table 1—Tasks performed within the hour

1.1 Task 1 - Reading Emails

The Interaction was really direct. I selected a particular mail, browsed through it and on reading each and every mail my Inbox which is the object that is being manipulated is implicitly marked as read. When doing the above task I feel as if I am manipulating my Inbox directly by reading my mails rather than manipulating it through the interface that is outlook as I am able to read each mail directly, interact with my inbox as a whole and the interface just fades to the background. I spent almost none of my time thinking about the interface and spent the entirety of the time interacting with my mailbox. The interface became invisible through a mix of both practise and good design. Outlook does a good job in designing its inbox interface for new users but it's ribbon is a cluttered mess on first glance.

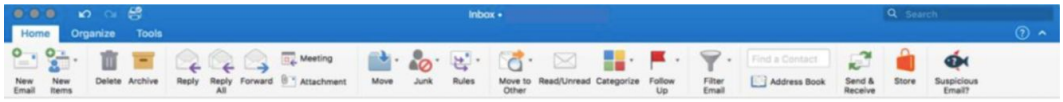

Figure 1— MS Outlook Ribbon

I've never thought more about the Inbox interface of outlook that I did now for simple operations. It is a really well designed interface

1.2 Task 2 - Attending Meetings

I had to help a colleague debug an environment issue relating to Java settings in Linux after weekend patching. The interaction was not direct at all as I was interacting through the interface i.e. putty on my colleagues computer through a shared screen on Zoom. The interaction is extremely indirect as even though I have control of my colleagues screen I was remotely interacting with the server so it was as far as it could be. I was manipulating the server through Zoom so I was never interacting with the server directly but through Zoom Screen Share. I spent no time thinking about the Zoom Interface. Zoom does a fantastic job in making its UI disappear (literally). The interface became invisible through good design there was never a time when I thought more about the interface than I do now.

1.3 Task 3 - Watch Training videos

My company provided a new mandatory training related to remote work privacy and this task involved completing this training. The task was direct as it involved watching videos and selecting MCQ's. My interaction was not direct to the object being manipulated i.e. my employee profile on my employers server. It would only be manipulated upon finishing my course. I spent a significant amount of time thinking about the interface as the course was designed in flash and it was poorly designed. The next buttons were poorly labeled and the remote buttons to answer the MCQ question worked only when accessed in a particular way. The interface was poorly designed and haphazardly sewn together to get the point across to the firm's employees working remotely.

1.4 Task 4 - Browse Reddit

The interaction with the Reddit UI was really direct and I constantly felt like I was interacting with the interface directly. I was directly manipulating the object (the Reddit homepage) directly using my phone screen. I was able to pinch the

images, highlight text, upvote comments all directly from the screen. The interface was really invisible. I spent almost no time thinking about the interface but was interacting directly with the media that was displayed on my home screen. The interface became invisible through learning. When using Reddit there is a learning curve associated with the interface. There is a lot of data posted on the interface and it becomes really difficult to browse through the clutter and get what you need out of it. I did think about the interface a lot more when I first started to use the interface as the functionality was spread across the entire interface.

QUESTION 2

A task that has become invisible by learning that I do on a regular basis is that of **MS Excel**. During my first internship at a local startup I spent a lot of time utilizing Excel. Although I've used Excel previously I only possessed a rudimentary knowledge of Excel. Upon receiving a csv file or flat files from an Access Database I would have to import them to Excel and process (create charts, calculate metrics for reports) them using Excel. Being new to Excel I would spend most of my time figuring out the interface of Excel rather than the actual steps for processing data while using excel.

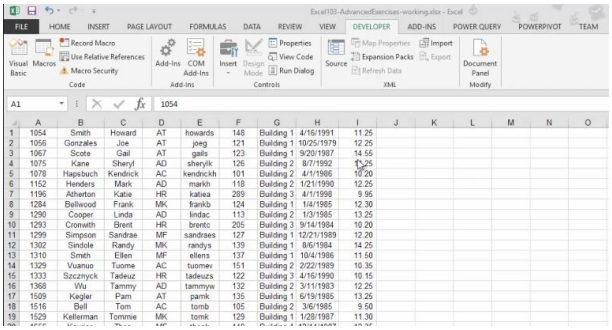

Figure 1— MS Excel Sheet

One task I had to do involved generating metrics for reports. I would get a new Access DB file that contained raw data in the same format twice every week. I used to perform these repetitive tasks on the same type of data manually every time I got them. This itself wasn't hard but tedious but once I learned about Excel Macros I could automate those tasks easily and just focused on creating the macro.

But after learning the excel at a deeper level I no longer think about the interface of excel but only at the task at hand. If I want to perform a mathematical operation I can whip up a formula using cell references, to summarise sheets I can use a pivot table. For easier analysis of similar datasheets I can create a data model with Power Pivot. From a redesign perspective, I would make the ribbons less cluttered and more descriptive to their functionality. The current ribbon design makes it hard to find the functionality that you need and even harder to know if it is applicable to one's situation.

QUESTION 3

3.1 Description

After the COVID-19 lockdowns started, I bought myself an exercise bike to stay active and to improve my mental health. So for the particular model of exercise bike that I brought there are various types of feedback that are provided which are visual, auditory and haptic.

There is a small screen mounted on top of the screen that provides the primary **visual feedback** which contains the timer, calorie count, speed and distance travelled. There is a big 'MODE' button on the screen that can be used to shift between the existing modes. On mounting the bike and starting to pedal the screen illuminates allowing the user to set the times or choose the mode of difficulty (terrain, slope). The **auditory feedback** provided by the cycle contains mainly beeps. There is a welcome tune that plays after the initial pedal to turn it on and there is a beep sound that plays when every button is pressed and a beep when the timer ends or turns off the bike.

The **haptic feedback** provided by my current exercise bike is set by the varying levels of difficulty and the how hard I have to pedal based on the input that I've set. The drawback is that it takes two or three complete pedals for the new level to be set. So I end up fidgeting with the controls more than I would like to, another set of haptic feedback is related to the heart rate sensor but this is mostly a gimmick as the sensors are placed in a suboptimal location and I hardly use this feature while exercising.

3.2 Redesign

For **Visual Feedback** redesign, for my current bike screen it can display only one data at a time i.e. it cyclically displays either the distance cycled, or the calories

burned or the time remaining a better mechanism would be to divide the screen real estate to provide the most important information at the top (eg time remaining, heart rate) and the rest in a cyclic menu.

For the **auditory feedback redesign** the bike could provide varying audio feedback such as tunes, human voice recording etc in addition to the beeps. It could also provide audio feedback as the timer progresses by providing beeps of motivation between quarter intervals with a very satisfying tune when the user finishes pedaling the time set on the timer.

The **haptic feedback** provided could be more immediate, like the difficulty level could be set immediately and it could provide haptic responses when the heart beat becomes too high and an satisfying overall haptic response when the workout ends.

3.3 Additional perception

For a new human perception that can be integrated into the cycle feedback system, I think sweat would be a fun one to approach. Sweat or perspiration would be the inevitable by product of any good workout session. The bike could detect your sweat levels and provide positive visual and auditory feedback and it could also tone down the difficulty if it detects the user is sweating too much in the beginning. My current bike handles have started to crumble because of sweat so this could possibly be integrated into the feedback system.

QUESTION 4

The first tip that I would like to explore is ***'emphasizing essential content while minimising clutter'*** . The interface from my everyday life that violates this suggestion is that of PayTM and its payment functionality. PayTM is a mobile wallet application in India with 400 million monthly users which operates similar to venmo in the United States.

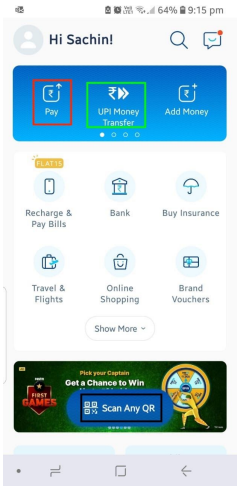

Figure 2—Homescreen of the Paytm App

The interface allows users to pay, check balance, transfer money to bank accounts and download statements among other tasks. The interface contains redundant information like the three boxes selected the Pay, Scan QR provide the exact same functionality. The box in green for UPI money transfer provides a subset of the functionality provided by the other two. On selecting Pay it immediately opens the QR Scanner. Most payments are done to a fixed set of accounts and to get to those accounts I have to swipe down an additional step. So to pay a user one user I would have to undertake 6 steps. To check the balance one would have to swipe right select Passbook and then click check balance and enter the pin to select balance. The redesign of this interface for the payment platform would replace the three buttons shown in the picture above with a single payment button, providing a check balance button on the screen as a shortcut. Unnecessary functions can be hidden from view but adding it under submenus or hiding it under the hamburger menu. Overall the menu can be easily cleaned up to reduce overall cognitive load.

I would also include shortcuts of favourite contacts like to appear on hitting pay rather than the qr scanner as it would reduce the steps to pay a user to 3. The second tip I would like to explore is ***'using multiple modalities'.*** The interface that I find that is in violation with this tip is that of a local ATM. I cannot attach a screenshot as taking photos in ATM's are really frowned upon but the menus are egregiously designed. For example upon entering your pin the main menu does not contain a cash withdrawal option but it is buried inside the 'Banking menu'. The entire menu is made of text and a lot of ATM's especially in rural areas in

India do not provide the interface in local languages, making its functionality off limits to many users. A large portion of India's population is also not literate, so this important tool is not used by Illiterate/semi-literate, underserved, unbanked, and remote users. Redesigning the menu, to contain icons, providing pictures of notes as *visual feedback* to choose denominations would go a long way in helping the semi literate and illiterate. Additionally providing *audio feedback* to read out the text in the button and including *haptic feedback* when selecting menu items would go a long way to remedy this interface.