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Department of COMPUTER SCIENCE AND ENGINEERING

MINOR REPORT

[22UHUC500- SOFTWARE ENGINEERING AND PROJECT MANAGEMENT]

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A-2: Study the concept “USABILITY”, **Prepare** a report on USABILITY of at least two UI’s of major software products you have seen.

Business Scenario: Here we are taking Microsoft and Google as major software products.

Theory:

ISO defines usability as "The extent to which a product can be used by specified users to achieve specified goals with effectiveness, efficiency, and satisfaction in a specified context of use."

- **Learnability:** How easy is it for users to accomplish basic tasks the first time they encounter the design?
- **Efficiency:** Once users have learned the design, how quickly can they perform tasks?
- **Memorability:** When users return to the design after a period of not using it, how easily can they reestablish proficiency?
- **Satisfaction:** How pleasant is it to use the design?

Design:

USABILITY IU'S OF AT LEAST TWO MAJOR PRODUCTS:

1. Usability Analysis of Microsoft Teams

Microsoft Teams is a collaboration and communication platform used by businesses for chatting, video conferencing, file sharing, and more. It’s part of the Microsoft 365 suite and has seen a surge in usage during the rise of remote work.

Usability Evaluation:

1. Learnability:

- **Strengths:** Microsoft Teams offers a familiar interface for users who have used other Microsoft Office products. The menu system is cleanly organized with intuitive labels such as "Teams", "Chat", "Calendar", and "Files".
- **Weaknesses:** New users may struggle initially to understand some advanced features like creating channels, managing permissions, or integrating third-party apps. However, the initial learning curve is manageable due to helpful tooltips and tutorials.

2. Efficiency:

- **Strengths:** Once learned, Microsoft Teams becomes a very efficient tool for managing communications and collaboration. The ability to have persistent chats, schedule meetings, and integrate with Office apps (like Word, Excel, and OneNote) streamlines daily workflows.
- **Weaknesses:** The software can feel sluggish when handling large teams or multiple chat channels. Switching between different teams, chats, and file sections might take extra clicks compared to more lightweight alternatives.

3. Memorability:

- **Strengths:** Users who have used the system tend to remember the core navigation easily. The structure is logical, with the most common functions (chat, meetings, teams) placed on the left-hand sidebar.
- **Weaknesses:** Users who return after a break may find it challenging to locate less frequently used features such as integration settings or file version history.

4. Error Handling:

- **Strengths:** Error messages in Microsoft Teams are usually clear and provide guidance on how to resolve issues. For instance, if a user tries to join a meeting with an incorrect link, Teams provides actionable feedback.

- **Weaknesses:** The platform occasionally experiences glitches during calls or video meetings, with vague error messages like "something went wrong," leaving users with little direction on what went wrong or how to fix it.

5. Satisfaction:

- **Strengths:** Overall, Microsoft Teams provides a pleasant user experience, especially for collaborative work. The integration with Microsoft Office applications adds convenience and satisfaction.
- **Weaknesses:** Some users report frustration with the platform's performance issues, especially during video conferencing or file uploads in large groups.

Usability Analysis of Google Search

Google Search is one of the most widely used web services in the world, offering quick and relevant search results across a wide range of topics. Its simplicity and effectiveness make it a prime example of good usability. Below is a detailed analysis of Google Search using the five key usability principles: Learnability, Efficiency, Memorability, Error Handling, and Satisfaction.

1. Learnability

Strengths:

- **Simplicity:** Google's homepage is extremely minimalistic, featuring only a search bar and a few buttons. This clean design allows users to quickly understand how to use the core function of the product—searching for information—without needing any instructions.
- **Autocomplete and Suggestions:** As users begin typing, Google provides suggestions, making the experience more intuitive for both new and experienced users. Autocomplete helps guide users toward common queries, improving their ability to find the information they need even if they aren't sure how to phrase it.

Weaknesses:

- **Advanced Search Options:** Although basic search is easy, advanced features like search operators (e.g., **site:**, **intitle:**, etc.) and filters (date, file type) are not

immediately visible. While these features exist and are helpful, new users may not discover them easily.

2. Efficiency

Strengths:

- **Speed:** Google Search is extremely fast, often returning results in less than a second. This high efficiency makes it ideal for users who need information quickly, contributing to a smooth user experience.
- **Relevance:** The algorithm used by Google tends to return highly relevant results on the first page, reducing the time spent scrolling through irrelevant links. The presence of features like Knowledge Graphs, People Also Ask, and Featured Snippets further streamlines the search experience.

Weaknesses:

- **Ads and Sponsored Content:** Sponsored ads at the top of the search results can sometimes clutter the interface and make it harder for users to distinguish between ads and organic results, slightly reducing efficiency for those focused on finding the best answers quickly.

3. Memorability

Strengths:

- **Consistent Interface:** The layout of Google Search has remained mostly unchanged for years, with minor updates to keep it modern and functional. This consistency makes it easy for users to remember how to use the platform even after long breaks.
- **Visual Hierarchy:** The search bar's central placement and the minimalistic design of the homepage make it very easy for users to remember where and how to start searching.

Weaknesses:

- **Advanced Features:** For users who do not frequently use advanced search functions (such as filtering by date or searching by image), these options can be easily forgotten as they are somewhat hidden from the main interface.

4. Error Handling

Strengths:

- **Did You Mean?:** When a user misspells a word or inputs a query with errors, Google offers helpful suggestions like "Did you mean?" followed by the corrected search term. This helps users correct their mistakes without needing to start the search over again.
- **Robust Algorithm:** Even when users input ambiguous or incomplete queries, Google's algorithm is generally good at guessing the intended search and returning useful results.

Weaknesses:

- **Ambiguous Search Queries:** When queries are too broad or ambiguous, Google can still return a massive volume of results, which can overwhelm users and make it difficult to find the right answer quickly. Although this is more of a problem with the user's query formulation, it is a point where the system could offer more tailored guidance (e.g., suggesting to narrow the search).

5. Satisfaction

Strengths:

- **User-Friendly Design:** The clean, uncluttered design of Google Search makes it a joy to use for most people. The lack of distractions on the homepage makes the user feel focused and in control.
- **Instant Gratification:** The speed at which results are delivered, along with the relevance of those results, creates a satisfying experience. Features like instant previews of websites and featured snippets provide immediate answers to user queries without requiring a click-through.
- **Voice Search:** Google's integration with Google Assistant and Voice Search functionality adds another layer of satisfaction by enabling hands-free search, enhancing accessibility and convenience.

Sample input and output:

There is no specific input and output for this type of question as these are based on GUI so displaying and understanding (i.e UI/UX) is the way of input and output for this question

References:

- 1) Herbert Schildt, Java-The Complete Reference, 9th Edition, Tata McGraw Hill, 2014.
- 2) Grady Booch, Object-Oriented Analysis and Design with Applications, 3rd Edition, Pearson Education, 2007.