	Course Name:	Human Computer Interaction	Course Code:	CS 422
	Program:	CS	Semester:	Spring 2018
	Duration:	60 Minutes	Total Marks:	3+7+5+10+10
	Paper Date:	12-APR-18	Weight	15
	Section:	ALL	Page(s):	2
	Exam Type:	Midterm-2		

Student : Name: _____ **Roll No.** _____
Section: _____

Instruction/Notes: No rough sheets!

1: In each of the following cases identify whether it is gulf of execution or gulf of evaluation.

a. Imagine that a user would like to record a television show. They see the solution to this problem as simply pressing the Record button. However, in reality, to record a show on a VCR, several other actions must be taken. Gulf of Execution

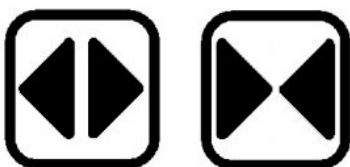
b. A user must select object and then select color to color an object in Photoshop, but the user is unable to color as he is selecting the color and then the object. Gulf of Exectuion

c. A user opens a text editor application, and saves the files after writing some text. The editor saves the files. The only way for the user to know is to check the save folder. Gulf of Evaluation

2: Your goal is to **save your sketch (drawing) in Photoshop on hard-drive**. Explain this process using seven stages of Norman's model of interaction. List all 7 stages in the right order, along with what happens in each stage.

- Setting Goal: Saving the sketch made in photo-shop on hard drive
- Intentions formulation: After completing the sketch you want to save your work
- Specify actions: Go to appropriate menu on menu bar. Select save or Ctrl+s and then you will provide desired location where the file will be saved.
- Execute actions: Point to "File" on menu bar or press Ctrl+S, select save and specify the desired location
- Perceive system state: system will give a feedback and notice the changes in system state.
- Interpret system state: From feedback you will perceive whether saving done successfully or not.
- Evaluate System state: Compare the final state with goal whether it is completed or not.

3: Consider the two symbols commonly used in elevator's control panel to open and close the door. The symbols are inviting the user to make a mistake. Without eliminating any of the functionalities that these 2 symbols provide, give a solution to minimize this kind of error. Draw you solution.



Any suitable drawing that remove or reduce the human error

- 4: Consider the following work environment analysis for an online banking application for the staff members working in the University. Using this analysis derive usability goals.

The staff members work in their own private offices. Their offices are mostly located in the most peaceful part of the university –away from the class rooms and other noise. Their offices are quite small, much like a prison cell, and this oppressive environment makes them down and depressed. All offices are air-conditioned and somewhat dark to keep away the summer heat. There are no windows. There is no team work and people avoid one another as much as possible.

Identify (at maximum 5) usability goals from this analysis. Clearly specify how you derived these goals i.e. which sentence in the analysis was used to derive the particular goal.

Goal: No dull color should be used.

Reason: Due to darkness in the offices

Goal: No extra information regarding activity is needed on screen.

Reason: As there is no interruption involve

Goal: Self-explanatory interface should be used with help material

Reason: there is No teamwork

Goal: Pleasure color should be used

Reason: as the environment is oppressive and down

Goal: They can view private information/ access to private information

Reason: As in offices are not shared so they can access private information of the organization related to them.

- 5: Specify which of Ben Schneiderman's 8 golden rules is related to each of the following statements. Also indicate (by circling) whether that principle is being violated or followed.

- a. MS Windows and all its applications uses the cross icon to dismiss/close the windows.

Principle: **Strive for consistency**

Followed or Violated

- b. When you are about to close an application with some unsaved data, the system responds "do you want to save your work".

Principle: **Support internal locus of control**

Followed or Violated

- c. The only way to save your work in a C++ editor is to right click the mouse and select save from menu.

Principle: **Seek universal usability**

Followed or **Violated**

- d. You have developed a game in which the right cursor key makes the player jump, while the up and left cursor keys makes the player go right and left respectively.

Principle: **Strive for Consistency**


Followed or **Violated**

- e. After you press the send button to send a message on a mobile phone, the next screen that you see is the home screen.

Principle: **System/informative Feedback**

Followed or **Violated**

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	Course Name:	Human Computer Interaction	Course Code:	CS2007
	Degree Program:	BSSE	Semester:	Fall 2023
	Exam Duration:	60 Minutes	Total Marks:	35
	Paper Date:	8-Nov-2023	Weight	15
	Section:	ALL	Page(s):	5
	Exam Type:	Midterm-II		

Student : Name: _____ **Roll No.** _____ **Section:** _____

Instruction/Notes: Attempt all questions. Your answers should be precise and to the point. Use the given space only. Extra sheets are not allowed. Avoid cutting or overwriting. Programmable calculators are not allowed. One sided , A4 sized , handwritten cheat sheet is allowed for mid-2 exams.

Question#1 [Marks 10 CLO-3]

Select the Best-Matching Option for Each Usability and Design Principle

1- What is the primary purpose of a conceptual model design?

- A) To provide low level implementation details
- B) To suggest high-level presentation rules
- C) To layout screen content
- D) To provide feedback to users

2- Which of the following is true about a conceptual model?

- A) It is the same as the detailed design of the interface
- B) It is the foundation or overall architecture of the interface
- C) It should be complex and comprehensive
- D) It is only concerned with screen content

3- What should the foundation of a conceptual model be like?

- A) Complex and intricate
- B) Simple, natural, and intuitive
- C) Detailed and specific
- D) Broad and ambiguous

4- In usability goal setting, what is the main purpose of establishing specific usability goals?

- A) To drive user interface design

B) To create a detailed implementation plan

C) To layout screen content

D) To provide feedback to users

5- Usability goals should be:

A) Vague and general

B) Specific, qualitative, and quantitative

C) Only quantitative

D) Only qualitative

6- What is the significance of knowing your users in navigational design?

A) To make the design more complex

B) To tailor the design to the users' needs and preferences

C) To make the design more generic

D) To ignore the users' needs

7- In navigational design, understanding what will happen when a button is pressed is important for:

A) Creating complexity

B) Ensuring predictability and consistency

C) Ignoring user expectations

D) Making the design more generic

8- A good navigational design should enable users to:

A) Feel lost and confused

B) Understand where they are in the interaction

C) Ignore user guides

D) Rely on trial and error

9- In usability goal setting, the goals should be derived from:

A) Random ideas

B) Previous tasks and general business goals

C) Ignoring user needs

D) Low-level implementation details

10- Understanding your users in navigational design helps to:

A) Make the design more user-centered

B) Ignore user preferences

C) Make the design more complex

D) Rely on the designer's preferences

Question#2 [Marks 10 CLO-3]

Scenario: An automation based system is to be developed for a toy manufacturing factory. The following summary of user profile is provided for engineers working in the factory.

Engineers are trained, salaried employees who design, purchase, install, and support production processes and equipment. They include process engineers, plant engineers, controls engineers, and other professions that support plant processes and operations. There are a total of 972 engineers, representing 9 percent of the total workforce, working in four different plants all in the same city.

User Characteristics:

Motivation & attitude towards automation: high

Educational level: Very high

Age: 30-55 years

Job and task experience levels: Moderate to high

Computer experience: Moderate to high

Frequency of computer use: Moderate

Level of training: Moderate

Medical Conditions: more than 7 percent (65) have some form of color vision deficiency. A substantial majority wear corrective lenses (77 percent).

Extract two usability requirements from the user profile given above. Highlight the characteristic because of which you extracted the requirement.

Answer:

Usability Requirement:

Related Characteristic:

Usability Requirement:

Related Characteristic:

Question#3 [Marks 5 CLO-3]

- A. Who is the Task Leader of “User Profile” activity?

- B. Which task of usability engineering lifecycle feeds directly into contextual task analysis?

Question#4 [Marks 5 CLO-2]

You are designing a point of sales system for a retail store chain. Users of the product are not very familiar with the concept of an automated system to manage the whole process. So you are designing the system while keeping in mind the “Ease of Learning” usability goal.

Write down two metrics/measures for measuring the satisfaction and training time of the users.

Answer:

Question#5 [Marks 5 CLO-2]

Match the descriptions in the first column with the appropriate usability terms in the second column.

Instructions: For each item in the first column, match it with the correct term from the second column that best describes the concept referred to by the description. Write your answers in the third column provided.

Descriptions	Usability Concepts	Your Answers
This concept emphasizes the necessity of understanding not just the users' physical capabilities, but also how they process information and make decisions, to ensure that the product aligns with their mental models and cognitive abilities.	User Profile	
Rather than being a static document, this is a dynamic aspect of the usability engineering process, evolving as more information about the users and their needs becomes available, ultimately guiding the design to better suit the target user population.	Usability Engineering Lifecycle	
This outlines how a product's user interface should be designed to accommodate users with various visual impairments, ensuring accessibility and ease of use for all potential users.	Cognitive Constraints	
This process involves a series of tasks, each building upon the last, to systematically integrate usability considerations throughout the product development lifecycle, ensuring that user needs and limitations are addressed from the outset.	User-Friendly Product Benefits for Development Organizations	
Beyond immediate user satisfaction, this aspect underscores the long-term business advantages of investing in usability, highlighting the potential for increased market share and customer loyalty as users find the product more intuitive and satisfying to use.	Usability Requirements Summary	

Human Computer Interaction Sessional-II Exam (CS4060, CS2007)

Date: November 5th 2024

Course Instructor(s)

Kiran Khurshid

Total Time (Hrs): 1

Total Marks: 50

Total Questions: 5

Solution

Roll No

Section

Student Signature

Q. No.	Marks obtained	Q. No.	Marks obtained	Q. No.	Marks obtained
1		3		5	
2		4			

Attempt all the questions on the question paper. Answer sheets are not required.

CLO #4: Design and develop user interfaces providing effective usability and user experience

Q1: Encircle one most suitable option in the MCQs given below. Read the complete question before you answer. Cutting/overwriting/choosing more than one option will not be accepted. [5 marks]

- Affordances is/are:
 - the amount of money a customer is willing to pay for the product's designing
 - the amount of money a designer demands from the customer for designing
 - clues about how an object should be used
 - a situation where an object's sensory characteristics intuitively imply its functionality
 - Both a and b
 - ☒ Both c and d
- Which of the following technique is most suitable to ensure that alignment of multiple columns is done correctly:
 - cropping
 - ☒ greying
 - splitting
 - blurring
 - None of the above
- A persona gives us:
 - Detailed information about real users
 - The details of the system's features
 - ☒ Information about an Imaginary but very specific type of user
 - All of the above
- Scenarios normally contain descriptions about:
 - Procedures and task flow information
 - A time interval
 - Envisioned feature
 - ☒ All of the above

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5. Which one of the following is NOT a golden rule of designing local structure:

- a) knowing where you are
- b) knowing what you can do
- c) knowing where you've been
- ☒ d) knowing why you are here
- e) knowing where you are going

CLO #4: Design and develop user interfaces providing effective usability and user experience

Q2: True/False: Encircle the correct option:

[10 marks]

- a) There is only one user group for any software to be developed. (True / ☒ False)
- b) User groups should be identified after the questionnaires are distributed. (True / ☒ False)
- c) A user profile is the same throughout all software being developed for a user group. (True / ☒ False)
- d) Observations must be made while doing User Profiling to ensure that no point regarding user's behaviour is missed out. (True / ☒ False)
- e) A usability goal which includes average expert time to learn a benchmark task or set of tasks, is an ease-of-learning goal. (True / ☒ False)
- f) A usability goal which uses the average novice trials as a measure is quantitative goal. (True / ☒ False)
- g) The system will respond within maximum 5 seconds of getting input sentence is an absolute, qualitative goal. (True / ☒ False)
- h) The user establishes the goal after the execution of the task. (True / ☒ False)
- i) Scenarios may also include exceptions to a situation. (True / ☒ False)
- j) When you create a persona, you refer the user by the name of that persona. (True / ☒ False)

CLO #3: Evaluate the usability and effectiveness of various software products

Q3: For each of the scenario given in the table below, identify which design principle by Norman is being applied or violated. In case it is applied give rationale for your answer and in case of violated provide a solution of how to apply it.

[20 marks]

Norman's design principles are:

Visibility, Feedback, Constraints, Mapping, Consistency, Affordance

Scenario	Design Principle	Applied / Violated	Rationale in case of applied/ Solution in case of violation
a) A hamburger menu exposes the menu after clicking on it.	Visibility	Violated	The menu should be a tab-bar menu instead.
b) The F and J buttons on the QWERTY keyboard have a small dash embossed on them.	Affordance	Applied	They are clues as to how you place your hand on it.
c) Three labelled lights are placed on the top right corner of a QWERTY keyboard to represent Caps Lock, Num Lock and Scroll Lock status.	Mapping	Violated	Place the light on the buttons.
	Feedback	Applied	Labels are bad when required for mapping.

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d) A textbox allows typing alphabets when taking input of the phone number of the user.	Constraints	Violated	The app should constraint typing alphabets in the number field.
e) The user is given the shortcut combination of Ctrl+Q to save data.	Consistency	Violated	The convention of Ctrl+S ensures consistency with the standards.
f) A stove has four burners arranged in a square layout, and their knobs are arranged in a horizontal line on the front of the stove.	Mapping	Violated	Knobs should be arranged in the same layouts as the burners.
g) The date field in a form shows a calendar for selecting the date, preventing users from typing the date manually.	Constraints	Applied	Instead of different users typing and confusing date formats, the system ensures same format by restricting wrong input.
h) The user copies 1GB file from a source folder and pastes it in the destination folder, but he is not shown the status of how many files have been copied and how many are remaining.	Feedback	Violated	User should be kept informed by showing the status.
i) The shape of the mouse is intuitive on how to place the hand on it.	Affordance	Applied	The mouse's shape provides clue as to how to place the hand on it.
j) The color scheme on all the pages of a website is kept the same	Consistency	Applied	consistence use of colour across app ensures a good design.

CLO #4: Design and develop user interfaces providing effective usability and user experience

Q4: What are low-fi prototypes? Give two examples. List down one advantage and one disadvantage of low-fi prototypes. [5 marks]

Definition: Low-fi prototypes are simple, non-functional models used for early testing.

e.g. Paper sketches, wireframes

Advantage: Quick and cost-effective for early feedback

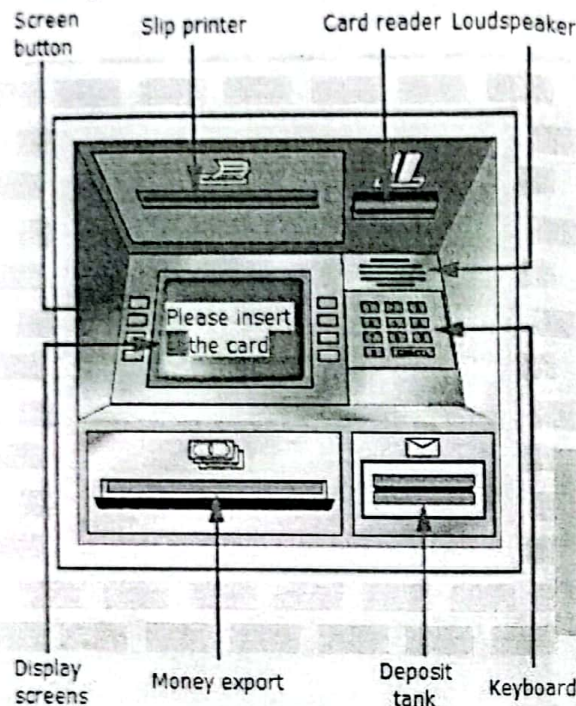
Disadvantage: Limited interactivity, which may not fully simulate user experience.

CLO #2: Analyze and critique interfaces

Q5: Write down the five tools of screen design and layout in the first column of the given table. Then, analyze how each of the tools apply on the ATM machine control panel given in the given figure. If the

tool is not applied correctly, suggest improvement in the design and layout of this ATM control panel according to the tool.

[10 marks]



Steps for using an ATM machine:

1. Insert card
2. Select language
3. Enter PIN
4. Choose transaction type
5. Enter amount (for withdrawal or deposit)
6. Confirm transaction
7. Collect cash (if withdrawing)
8. Take receipt slip (optional)
9. Remove card

Tools of screen design and layout	How is the tool applied on the design of the given ATM machine? If it is not applied correctly, suggest how to improve its design, keeping the tool in mind.
1. Grouping of items	Screen buttons, display screen, keyboard are grouped together
2. Order of items	Order of items should be acc. to the steps given. ① Card reader ② Display screen ③ keyboard (should be below the screen) ④ Money export ⑤ slip printer (money export)
3. Decoration— fonts, boxes, etc.	Simple font on the display screen is good. The boxes around the items are also good.
4. Alignment of items	Alignment of screen reader, slip printer and money exporter are tools well applied. Similarly on the right side.
5. White space between items	White space between groups, and buttons, is well used.