Human Computer Interaction
Midterm – Spring 2017

Marks: 50

Time: 70 mins

1. A mobile company for their product is making the following features available to their normal customers.

1) Call/receive services through tactile buttons/speech
2) Games
3) Messaging services
4) Phone book
5) Speed dials
6) Ringing volume
7) Calculator
8) Alarm clock
9) Videos
10) Mail
11) iTunes Store
12) Music
13) Stocks
14) Notes
15) Camera
16) Photos
17) Health
18) Settings

(15,20,15)

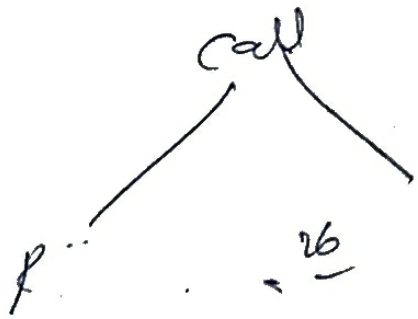
i) Build a semantic network memory model displaying the above concepts/features for kids (age: 10 and below)

ii) Propose a **simple interface** layout for these kids reflecting the above features appropriately so to maximize th performance and usage. The size of the screen is small and may hold 5-6 buttons/images on it. While proposi the interface the cognitive and non-cognitive limitations/strengths of the kids must be kept in mind.

iii) The interface created above for kids (in part ii) would be frustrating for old age people, say 65 years and abo Using Shneiderman's Interface Golden Rules:

a. Which rule(s) may be used by these people to change the interface and to suite their requirements?
b. These people generally have memory problems as well as find themselves uncomfortable using such electronic gadgets, hence likely to make mistakes and wonder around. Which rule(s) would help preve these problems to occur?
c. How the interface may now look like after the application of the rules. Justify the interface options, pr by you for old age people.

ote: Part (ii) to be proposed based on part (i).



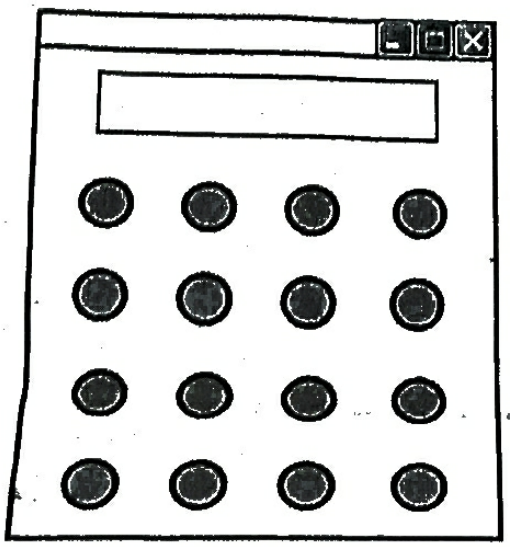
Human Computer Interaction Spring 2017
Final Examination

Instructor: Qaiser S. Durrani Date: 31 July 2017 Time: 2:40 hrs Marks: 100

Note: Your answers to the questions must be brief and precise. Carefully read the paper. You must plan your time before you proceed.

Q1.

a. Consider a calculator shown below. Assume the user is running this desktop application on a standard desktop machine using a mouse. Suggest how you would redesign this application thus effectively utilizing the concept of Fitt's law. Briefly justify the new design. (10)



b. Explain if and how this application may utilize the concept of mile high/infinite width. (4)

Q2. For a typical e-Shopping mart, create a prototype model for e-product-selection module (Domain: Shoe-Market). Write usability requirements, scenario and usability goals for e-product-selection. State your assumptions clearly, if there are any. (20)

Q3. Be brief and to the point. (30)

a. Why modeless interface may be preferred over modal while designing Delete function? Your answer must be scientifically based.

b. A company has just designed a user interface that turned out to be a disaster. You have been brought in as an HCI consultant to explain which UI principle(s) did they violate. The statements of company's engineers are:

-"We used it ourselves for over a week! We really loved it! I can't understand why we're getting all these nasty letters from our users!"

-"The users seem to be getting stuck on one screen even though the information they need to answer questions was two screens back. Can't they just remember things?"

c. While designing a system interface some functionalities/tasks are kept upfront and while rest are hidden within menus/sub-menus. What is the rationale of doing so? Give four reasons/rules from HCI perspective.

d. If we cannot recall an (event, name, place, etc.) then what could be the possible reasons for this failure? List at least three possible reasons. While designing the interfaces what possible means you may use to overcome such failures – suggest the solution against each of the failure.

e. Consider following functionalities that a mobile provides: Time, SMS, alarm setting, signal connectivity/availability, and battery availability. What should be the posture of each functionality and why (one line each)?

f. Why we may need Reengineered Task Organizational Model when we already have Task Organizational Model? Justify your answer with any specific example.

Q4. **ATM Kiosk for Blinds** (5, 5, 8, 4, 15, 8) (45)

An ATM kiosk is to be designed which also facilitates blinds. ATM can potentially provide 10 different services. However, the following typical services are important for blinds: account balance and withdraw money. The system also needs to know the account type (savings, PLS) information. The blinds may be literate or illiterate.

We will be following the Usability Engineering Life Cycle.

a. The first step of the usability life cycle is to build a fair and factual user profile (UP). For this purpose, list down at least 5 extremely relevant parameters that you would like to draw from questionnaires/surveys/interviews/observations etc to help build the user profile for the blinds.

b. Derive usability requirements matrix for the given user categories based on above (only identify those parameters which makes sense and help facilitate usability issues).

c. Write scenario of Withdraw Money.

d. Based on above mentioned steps derive Usability goals of Withdraw Money. Explain rationale of the goals.

e. Propose conceptual level design. Your design must be self explanatory with required number of screens, navigation paths, feedback mechanisms, etc. Your design must reflect the details of all services required by blinds.

f. How would you defend that the design you have created follows the Shneiderman's principles. State and defend any such five instances.

Note: State your assumptions very clearly. The system must not ask any question from the user which can easily be answered from UP. Remember a good UI design would help the user to complete the transaction successfully with minimum navigations.

Question 1: **(65 marks)**

You have been asked to design a mobile app that will allow customers to place their orders for Subway. Refer to menu card (end of question paper) and following details in order to answer the questions

A customer may order sub (sandwich) or salad. The customer may choose to order drinks, cookies and chips also. A typical sub order would include:

1. Bread among wheat, honey oat, Italian, parmesan and oregano and its size (6 inch or 12 inch). Also, the customer may choose if he/she wants it to be toasted or not.
2. Filling which could be any from classics, hot toasted subs, basics and local favorites (see menu card).
3. Extra meat, cheese etc.
4. Veggies from cucumber, lettuce, tomatoes, olives, jalapeños, onion, bell pepper etc.
5. Sauces from mayonnaise, mustard, vinegar, olive oil, barbecue, ketchup etc.
6. Finally, customer may ask for extra salt, pepper or oregano.

a) What are the methods you are most likely to use (each for user profiling and contextual task analysis) in this scenario and explain why you think those methods are best. (10)

b) Derive user characteristics and usability requirements matrix (without going through any data analysis; you may assume two user categories i.e. frequent and infrequent users). (10)

c) Design current task organization model (at least up to 3 levels). (10)

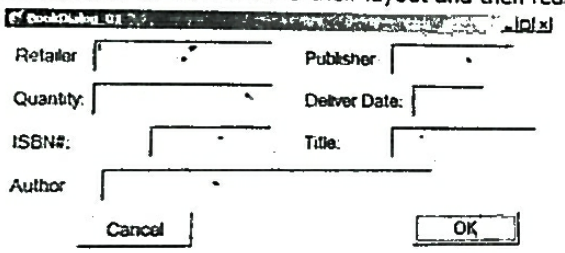
d) Devise usability goal for ordering subs. (5)

e) Design mockups of a touchscreen based mobile app for ordering Subway menu. Design main screen and then screens pertaining to ordering subs (steps 1-6). The customer can modify order any time before finally placing the order. Also add screen/s for billing. You would also include "Make it a Subway meal offer" as mentioned in menu card. The customer should be able to order in minimum span of time and steps. (25)

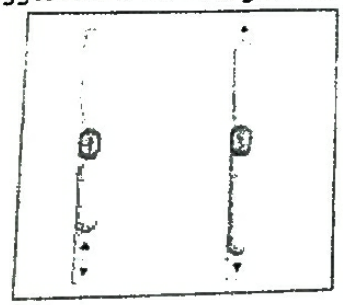
f) Which posture does this app fall into? Justify your answer. (5)

Question 2: **(20 marl**

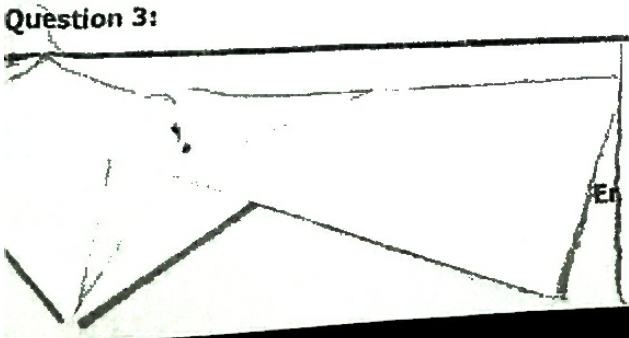
(a) Following order entry form is used by a bookstore to order books from their distributor. Identify at least three probl in it, in terms of UI controls and their layout and then redesign it. (10)



(b) Following are examples of vertical scroll bars, which design you think is better (keeping in view Fitts law)? You r suggest some new design as well. (10)



Question 3:



GIFT UNIVERSITY

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Department of Examinations

GIFT University, Pakistan

(15 marks)

For Sec A:

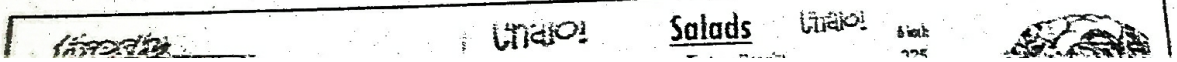
(i) A company has just designed a user interface that was an utter disaster. You have been brought in as an HCI consultant to explain what went wrong. For the quote below from the company's engineers explain what UI principle(s) did they violate?
"We used it ourselves for over a week! We really loved it! I can't understand why we're getting all these nasty letters from our users!"

(ii) While designing an ideal Kiosk user interface, say for a shopping mall, what kind of user profile (if any) you would like to have for effective communication between a user and the Kiosk. Justify?

(iii) "If the initial User Profile is not created, the system can still manage to satisfy the user needs and respond accordingly." Is this statement true or false? Justify.

For Sec B:

Describe at least three problems that you identified during heuristic evaluation of the project assigned to you. Which of Neilson ten usability heuristics was being violated and what was the solution in your point of view.



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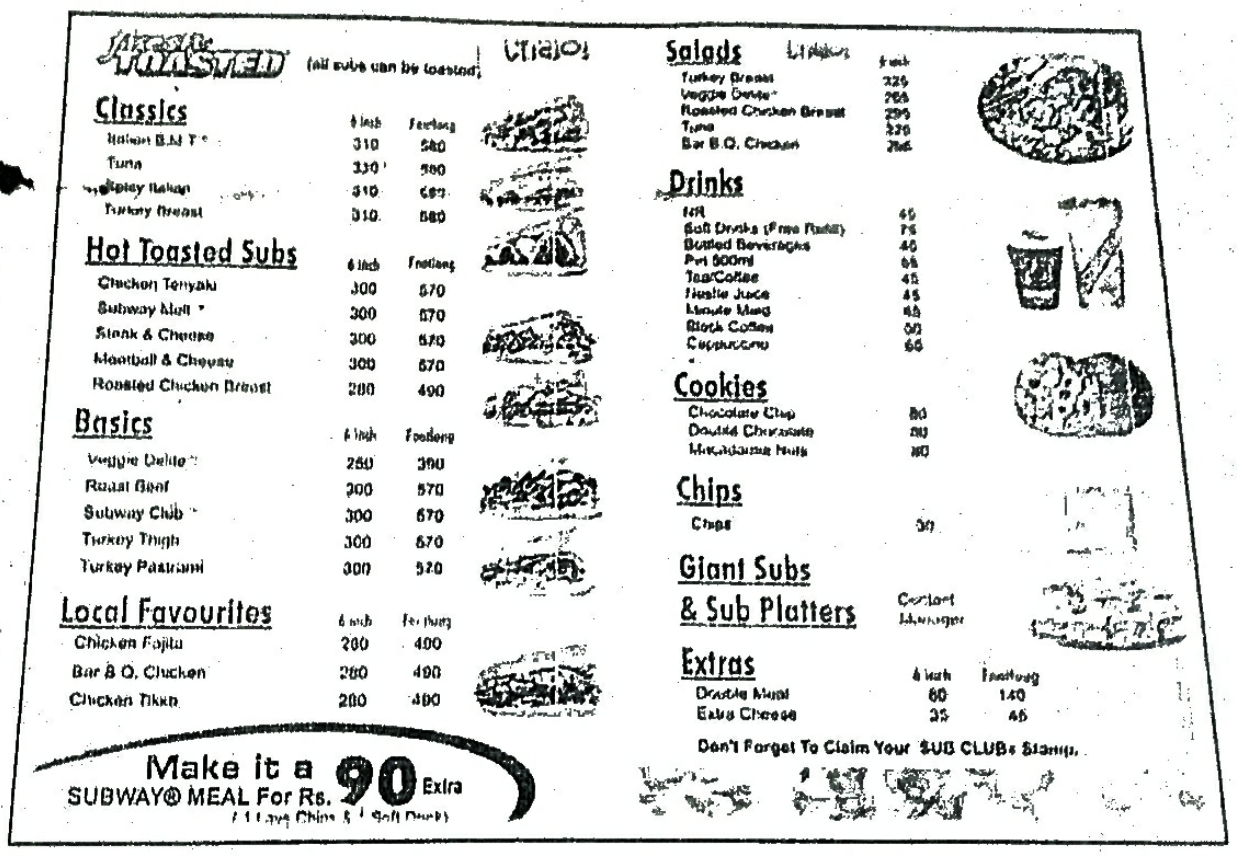

End of Question Paper

GIFT UNIVERSITY

GUJRANWALA

(Chartered by the Govt. of the Punjab, Recognized by HEC)

EXA-115

Department of Computer Sciences

Human computer Interaction (CS-436)

Final Term Examination
Spring 2016

Lecturers: Dr. Qaiser Durrani, Tayyaba Sana

Time: 3 Hours **Total Marks: 100**

Candidate Name: _____ **Candidate Roll No:** _____

Instructions to Candidates:

- Candidates are required to sit on the seats assigned to them by the invigilators.
- Do not open this question paper until you have been told to do so by the invigilator.
- Please fill in exam specific details in space provided (both Question Paper and Answer Sheet).
- This is a Closed Book Exam. "Closed book examinations" refer to examinations where the candidate may no into the examination room any study materials (including textbooks, study guides, lecture notes, printed notes web pages, hand written notes and any audio/visual aid).
- **Attempt all questions.**
- Do not write anything on question paper except Name and Roll Number.

For Sec A: **(15 marks)**

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Department of Examinations
GIFT University, Pakistan

Question 1: **(10 Marks)**

A worker is assigned to listen to thousands of short audio files, classify each as good or no good, and record the results. To do this he chooses to use existing tools: the folder showing all the files he needs to classify, the audio player, and excel. He starts out slowly, using the following procedure: From the directory window, double click on a filename to pop up the audio player, click on the play button to hear the file, click on the excel tab in the taskbar to expose that window, click on the correct cell, enter "g" or "n" in that cell, click on the directory window to expose it again, and repeat the process for the next file. a. Assuming that it takes 1 second to listen to each file, use the GOMS keystroke level model to predict how many seconds per file this job will take. **Write each step clearly for calculation. Assume user uses mouse to perform task and initially hand is on keyboard.**

Question 2: **(50 Marks)**

Farmers in a typical village of Pakistan face the following problems:

1. No prior information about the weather (rain, storm, temperature, etc.)
2. No good information about the seed (price, quality and availability)
3. No good information about urea (price, quality and availability)
4. Load shedding schedule

The lack of the above information in a timely manner results in a loss of revenue and productivity. Most of the farmers are illiterate. Almost all of them carry simple mobile phones. Different farmers may have different problems and priorities so system to be designed should behave accordingly to solve their problems.

For information given above solve the following:

a. Write 3 most relevant questions that you may like to ask the farmers to build their user profile. (6)
b. From (a) above and user categories, create Usability Requirements Matrix. (9)
c. Define and justify usability goals for the tasks mentioned above. Give appropriate justification for goals of each category. (10)
d. Create a conceptual level design reflecting the above all mentioned tasks. You must show overall and individual screens as per need of users, identi[illegible] the navigation among the screens/tasks (20)
e. Justify that for the above design at least 3 Schneider man's Principles were followed. (5)

Write your assumptions clearly (if any). Follow specific templates for requirement matrix and usability goals.

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engineers explain what UI principle(s) did they violate?
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Question 3: **(40 Marks)**

a) What is posture for each of the following functionality/description given below and why? Write meaningful reasons. (6)

Functionality	Posture	Reason
Microsoft Excel		
ATM		
Control panel for airplane		

b) Possibility and probability are two concepts discussed while designing interfaces. Under which scenarios possibility should be used and where probability must be considered. You may explain your point through one example each. (6)

c) Give two reasons why you may wish to use a low-fidelity prototype instead of a high-fidelity one. (4)

d) What is the concept of Safe Exploration and how does it gets implemented in our systems? (4)

e) Draw the model of Human Information Processor System. Identify all the parts (memories, processors). Show the relationship among these parts. For a blind person which particular processor and memory part may not be working? Briefly explain. (10).

f) What is a storyboard and how it is being utilized in HCI? Is storyboarding a good replacement to create interface design instead of full conceptual level design effort that we did in the class. Is anything missing in storyboard concept or it is a complete UI design effort. Justify. (10)

End of Question Paper.