UNIVERSITY OF TORONTO SCARBOROUGH
Computer and Mathematical Sciences

DEC 2016 EXAMINATIONS
CSCC10H3S – Human-Computer Interaction

Instructor: Naureen Nizam
Duration: 2 hours

Examination Aids Allowed: NONE

Student Number: _____

Last (Family) Name(s): _____

First (Given) Name(s): _____

Lecture Section: 01

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*Do **NOT** turn this page until you have received the signal to start.*
(In the meantime, please fill out the identification section above, and read the instructions below carefully.)

This final examination consists of **6** questions on **16** pages.

When you receive the signal to start, please make sure that your copy of the examination is complete.

Good Luck!

MARKING GUIDE	
#1	_____ / **5**
#2	_____ / **5**
#3	_____ / **10**
#4	_____ / **30**
#5	_____ / **10**
#6	_____ / **40**
TOTAL	_____ /**100**

Question 1 [5 marks] – TRUE/FALSE

For each of the following statements, circle either TRUE or FALSE. No explanation for your answer is required.

Part (a) [1 mark]: Checkboxes can be used to present choices only one of which can be true at a time.

TRUE FALSE

Part (b) [1 mark]: When designing a graphical user interface, the primary purpose of a low-fidelity paper prototype is typically to capture and assess the interface's appearance.

TRUE FALSE

Part (c) [1 mark]: Questionnaires usually have a lowest cost of actual administration and analysis of any evaluation technique.

TRUE FALSE

Part (d) [1 mark]: Theories are high-level widely applicable frameworks to draw on during design and evaluation.

TRUE FALSE

Part (e) [1 mark]: Participatory design is when users become part of the design team on a part-time or full-time basis.

TRUE FALSE

Question 2 [5 marks] – COMPLETE THE TABLE

Complete the table below.

	Usability Testing	Field Studies	Analytical
Users		Natural	
Location			
Data collection type			
Type of results			Problems
Type of approach	Applied	Naturalistic	Expert

Question 3 [10 marks] – MULTIPLE CHOICE

Part (a) [2 marks]: According to the ISO 9241 standard, what does Usability mean?

a. Effectiveness, Efficiency, and Satisfaction
b. Effectiveness, Efficacy, and Satisfaction
c. Effectuality, Efficiency, and Satisfaction
d. Engaging, Effectiveness and Satisfaction

Part (b) [2 marks]: In which situation is it appropriate to employ a usability evaluation method?

a. Only when the product is implemented in the working place
b. Only when the design of the product is finished
e. It is needed throughout the entire design process

Part (c) [2 marks]: Which of the following are valid ways to avoid a bad user interface? (circle all that apply).

a. Build low-fidelity and/or high-fidelity prototypes
b. Speak to experts who study user interfaces
c. Limit the functionality the users can customize to minimize issues
d. Talk to users of the interface
e. Ensure the back-end of the system works well before presenting the users with the interface to avoid confusing the users with bugs

Part (d) [2 marks]: Which of these are part of expanding the initial conceptual model?

a. What functions will the product perform
b. What functions will the human/users perform
c. How are the functions related to each other
d. What data is required to perform the task
e. All of the above

Part (e) [2 marks]: "Netlytic" is a:

a. High-fidelity Prototyping Software
b. User Requirements Gathering Tool
c. Social Network Analyzer
d. Software Development Platform
e. None of the above

Question 4 [30 marks] – SHORT ANSWER QUESTIONS

Part (a) [2 marks]:
What does the acronym WIMP stand for? What is an example of a pre-1984 system that would be described by this acronym?

Part (b) [3 marks]:
Iterative design process is commonly used for interactive systems development. A typical model is the User-Centered Design (UCD) model for interaction design presented in class. Explain the iterative nature of this model in the development of a software application?

Part (c) [5 marks]:

What is Heuristic Evaluation? [1]

How many evaluators are recommended for conducting a Heuristic Evaluation? [1] ***(circle one)***

1-2 **3-5** **6-10** **11-20** **20+**

What are three differences between Heuristic Evaluation and User Studies? [3]

Part (d) [4 marks]:
What are the key differences between low-fidelity prototypes and high-fidelity prototypes?

Low-fidelity prototype [2 marks]:

High-fidelity prototype [2 marks]:

Part (e) [3 marks]:
Briefly describe the Wizard of Oz prototyping technique. Give one advantage and one limitation of using this technique.

Wizard of Oz technique [1 mark]:

Advantage [1 mark]:

Limitation [1 mark]:

Part (f) [3 marks]:
Briefly explain the "think-aloud method", and give one advantage and one disadvantage of this method.

Explanation:

Advantages:

Disadvantages:

Part (g) [2 marks]:
Explain the difference between scenarios and personas [2].

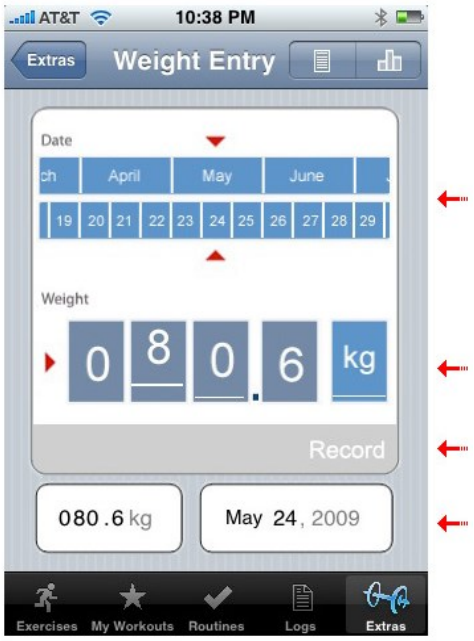
Part (h) [4 marks]:
In experimental design, what is the difference between a dependent variable and an independent variable? [2]

Explain the difference between a between-subject experimental design and a within-subject experimental design? [2]

Part (i) [4 marks]:
Describe two challenges associated with data visualization systems.

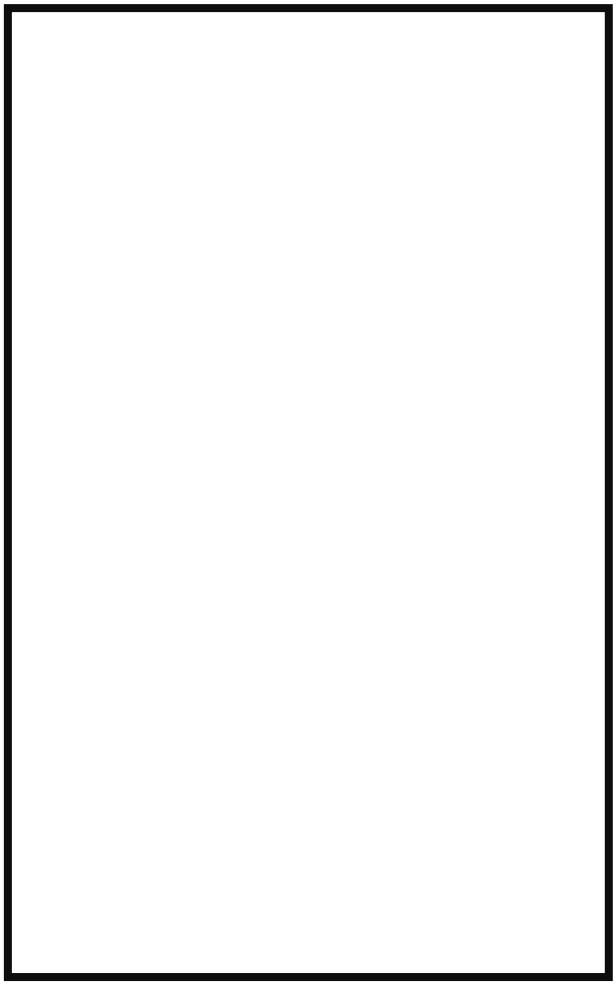
Question 5 [10 marks] – Expert Review of a Mobile Interface

The image below is taken from an iPhone app call ***iFitness***, which allows a user to enter their weight day by day on the Weight Entry screen. To do so, the user first has to flip through the months and days with a horizontal swipe to find the right date. Then, the user has to enter his/her weight digit by digit using five separate scroll fields. Finally, the user has to press the "Record" button. There are a number of design problems with this screen.



Part (a): Name <u>two</u> of Eight Golden Rules that have been violated by this mobile interface. Give a brief explanation of those rules and how they relate to the interface. [5]

Part (b): Draw a Low-Fidelity Prototype in the box below which would address the two rules violated [5 marks].



Question 6 [40 marks] – DESIGN PROJECT

Scenario:

The Air Canada Centre (ACC) is a multi-purpose indoor sporting arena located on Bay Street in the South Core district of Downtown Toronto, Ontario, Canada. It is the home of the Toronto Maple Leafs of the National Hockey League (NHL), the Toronto Raptors of the National Basketball Association (NBA) and the Toronto Rock of the National Lacrosse League (NLL). The arena is popularly known as the ACC or the Hangar. The Air Canada Centre also hosts other events, such as concerts, political conventions and video game competitions as well.

Air Canada Centre has hired you as a User Experience Designer to design and evaluate an interactive product for booking tickets online for their events. They have an online booking facility already, but it can be awkward and frustrating to identify and book the seats you want.

Given the above scenario, answer the questions below. Clearly state any assumptions you make.

1. **Users [9 marks]:**

   a. **Name three different classes of users relevant to this design project. For each class of users, provide the expected computer expertise, age range, and some other relevant demographics. [6 marks]**

Primary:

Secondary:

Tertiary:

b. Usability goals: Briefly describe three different usability goals you believe are important for the design of the online interface. For each goal, explain why you believe that particular usability goal is important. [3 marks]

First Usability Goal:

Why:

Second Usability Goal:

Why:

Third Usability Goal:

Why:

2. Requirements Analysis [15 marks]:

a) Briefly describe how you would conduct requirements analysis; include the methods as well as one advantage and one disadvantage of each method. [6 marks]

Data Collection Methods	Advantages and Disadvantages
1-	**i.**
	ii.
2-	**i.**
	ii.
3-	**i.**
	ii.

b) Predict some possible results you may obtain from the requirement analysis and Data Collection Methods described above. [3 marks]

Data Collection Methods (same as previous question)	Possible results
1-	**i.**
2-	**i.**
3-	**i.**

c) Draft three high-level requirements based on the possible results obtained through the requirement analysis (previous question). [3 marks]

Requirement Category	Requirement Details
1-	
2-	
3-	

c. Write a short persona describing a typical primary user of the interface. [3 marks]

3. Prototype. [4 marks]

a) Briefly describe how you would create a low-fidelity prototype for the online booking facility. How would you then transform your low-fidelity prototype into a high-fidelity prototype? In your answer, include any software platform you may use.

4. Evaluation [12 marks]

a) Determine the goals: Identify two goals for the evaluation sessions. [2 marks]

1.

2.

b) You have decided to conduct your evaluation using an interview. Which method (notes, audio, video, photographs) will you be using to record your data? Why? Give one pro and one con for your selected method. [3 marks]

Method and Why:

Pro:

Con:

c) Describe how you will conduct your interview sessions. [3 marks]

d) Evaluate and present the data: Propose one way to evaluate the data and one way to present the data. [4 marks]

Evaluate Data:

Present Data: