



JARAMOGI OGINGA ODINGA UNIVERSITY OF SCIENCE AND TECHNOLOGY
SCHOOL OF INFORMATICS AND INNOVATIVE SYSTEMS
UNIVERSITY EXAMINATION FOR THE DEGREE OF BACHELOR SCIENCE IN
INFORMATION SYSTEMS
3RDYEAR 1ST SEMESTER 2018/2019 ACADEMIC YEAR
MAIN CAMPUS

COURSE CODE: IIS 3312

COURSE TITLE: HCI AND USABILITY

EXAM VENUE:

STREAM:

DATE:

EXAM SESSION:

TIME: 2.00 HOURS

INSTRUCTIONS:

1. Answer Question 1 (Compulsory) and ANY other two questions
2. Candidates are advised not to write on the question paper
3. Candidates must hand in their answer booklets to the invigilator while in the examination room

QUESTION ONE [30 MARKS]

- a) Siala group of hotels has installed a sandwich making robot to supply room service sandwiches at any hour of the day. The hotel also has an automated delivery system that will take the completed sandwich to a specified room. You have been asked to program a software agent interface that guests can use /phone to order sandwiches.
- i. Write a short scenario describing how a guest would order a sandwich using your interface. (5 marks)
 - ii. Provide a hierarchical task description of the sandwich ordering process. Note particularly where there might be choice points or alternative methods. Also explain your criteria for the level of decomposition used. (5 marks)
- b) Define ergonomics and explain how the following factors affect the levels of interactions.
- i. The physical environment of the interaction
 - ii. Health issues
 - iii. Arrangement of controls and displays (6 marks)
- c) The Goals of Interaction Design on Usability and User Experience Goals are critical on the interaction design, Discuss any four of these goals based on the Usability and User experience (8 marks)
- d) Briefly explain the following types of evaluation that enables designers understand the system usability
- i. Interpretive evaluation (2 marks)
 - ii. Heuristic evaluation (2 marks)
 - iii. Cognitive walkthrough (2 marks)

QUESTIONS TWO [20 MARKS]

- a) The Interdisciplinary Design Science of Human-Computer Interaction (HCI) combines knowledge and methods associated with many professionals. Discuss at least *six* professionals associated with HCI. (6 marks)
- b) Describe three types of human memory (6 marks)
- c) Briefly explain why it is important to choose an appropriate font face and font size when designing interactive software and any associated documentation. (2 marks)

- d) The following screen-shot is taken from the Microsoft XP operating system. As can be seen, it helps users to manage the security settings for their computer.



Briefly describe the main features of this interface that you feel will support the user of this operating system. (Hint: you do not need to describe the detailed operation of any of the particular services; you do need to comment of the interface design, choice of widgets etc). (6 marks)

QUESTIONS THREE [20 MARKS]

- a) List and explain any **FOUR** techniques for building a good Usability Design. (6 marks)
- b) By default the Android Twitter app shows users notifications about all sorts of things like if they were mentioned in a tweet, if someone likes their tweet, if they get a new follower, etc. Some users like these notifications but others find them annoying. Figure 1 shows the sequence of screens necessary to disable notifications for "Mentions, replies, and photo tags". Answer the following questions about this sequence of screenshots:
- i. Describe a pro and a con of using each of the following methodologies to determine if the Twitter app is usable in terms of this task. (5 marks)

- ii. Use Heuristic Evaluation with Nielsen's 10 Heuristics to identify five positive or negative aspects of this interaction sequence. (5marks)

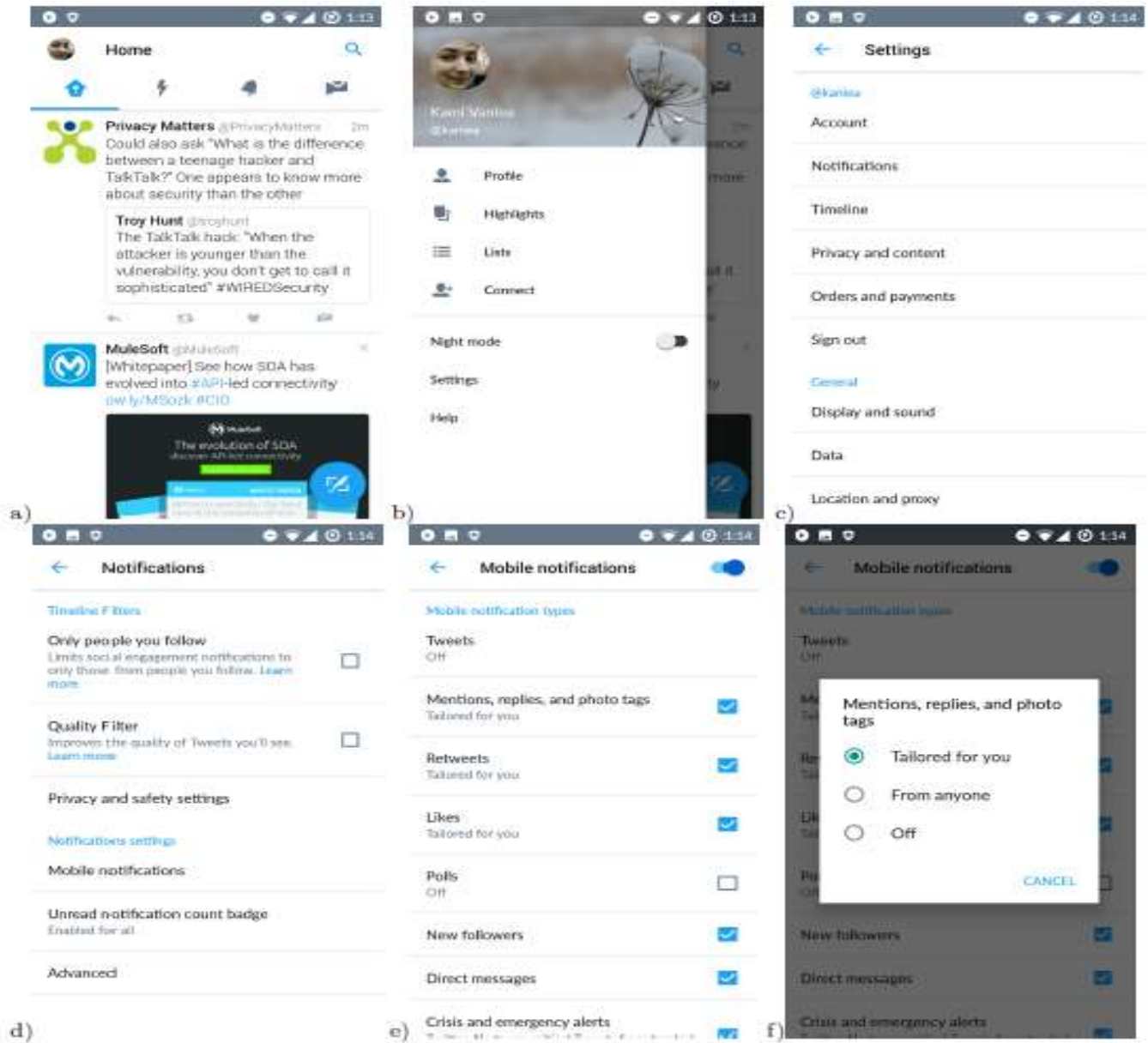


Figure 1: Sequence of screenshots of the twitter app.

- c) List and explain two reasons why formative evaluation must be low cost. (4 marks)

QUESTIONS FOUR [20 MARKS]

- a) User interfaces Designers have several models including Norman's seven stages of action to choose from while coming up with UI. Discuss Norman's Four principles out of seven stages action model (8 marks)
- b) A number of HCI researchers have recently criticised task analysis. Task analysis, typically, assumes error-free, expert performance. These critics argue that task analysis also fails to consider 'contextual factors'. Users may be able to perform tasks and sub-tasks using an interface under ideal conditions. However, they may have great difficulty when they are faced with the 'contextual' issues that characterise 'real' working environments. For example, a colleague may interrupt you while you are trying to print a document. Task analysis, typically, does not model the effects of these interruptions. Do you consider that these criticisms are significant problems for the design of interactive computer systems? (6 marks)
- c) Define the following terms (6marks)
- i. Ethnographic observation
 - ii. Integration
 - iii. Usability

QUESTION FIVE [20 MARKS]

- a) Briefly explain why a designer's model of a system will be different from the end-users'. (4 marks)
- b) Task analysis breaks users activities into a series of goals and sub-goals. In order to print a document, you must first select the 'print' command. You must then select the printer, the number of copies and so on. Describe the benefits that task analysis can offer to the design of interactive computer systems. (8 marks)
- c) Explain the concept of usability and describe its components (4 marks)
- d) Discuss the significance of the theory of mental models for interface design (4marks)