

Human Computer Interaction Tutorial

Example Exam Questions 1

The following questions are from a combination of several past exams with some modifications to match them to the current instructor's exam-writing style. Solutions to the questions will be posted after the last tutorial.

1 Twitter (new example question)

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, ect. 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:

1. 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.
 - A/B test using time on task
 - Think Aloud
 - Interview
 - Cognitive Walkthrough using Personas
2. Use Heuristic Evaluation with Nielsen's 10 Heuristics to identify five positive or negative aspects of this interaction sequence.
3. Analyze this sequence of interactions using GOMS. Assume the following variable names represent the time required to do each action. List out all the necessary actions and use them to construct the formula that would calculate the amount of time necessary to complete the actions in Figure 1. In class we only learned the KVM model thus far, so please treat the person's finger pressing the screen the same way you would handle a mouse.
 - p - point to an area on the screen
 - b - press a button (physical or virtual)
 - h - home the hand on a position on the screen
 - d - draw a straight line on the screen using a finger
 - k - open keyboard
 - c - type one character
 - m - mentally preparing for executing physical actions

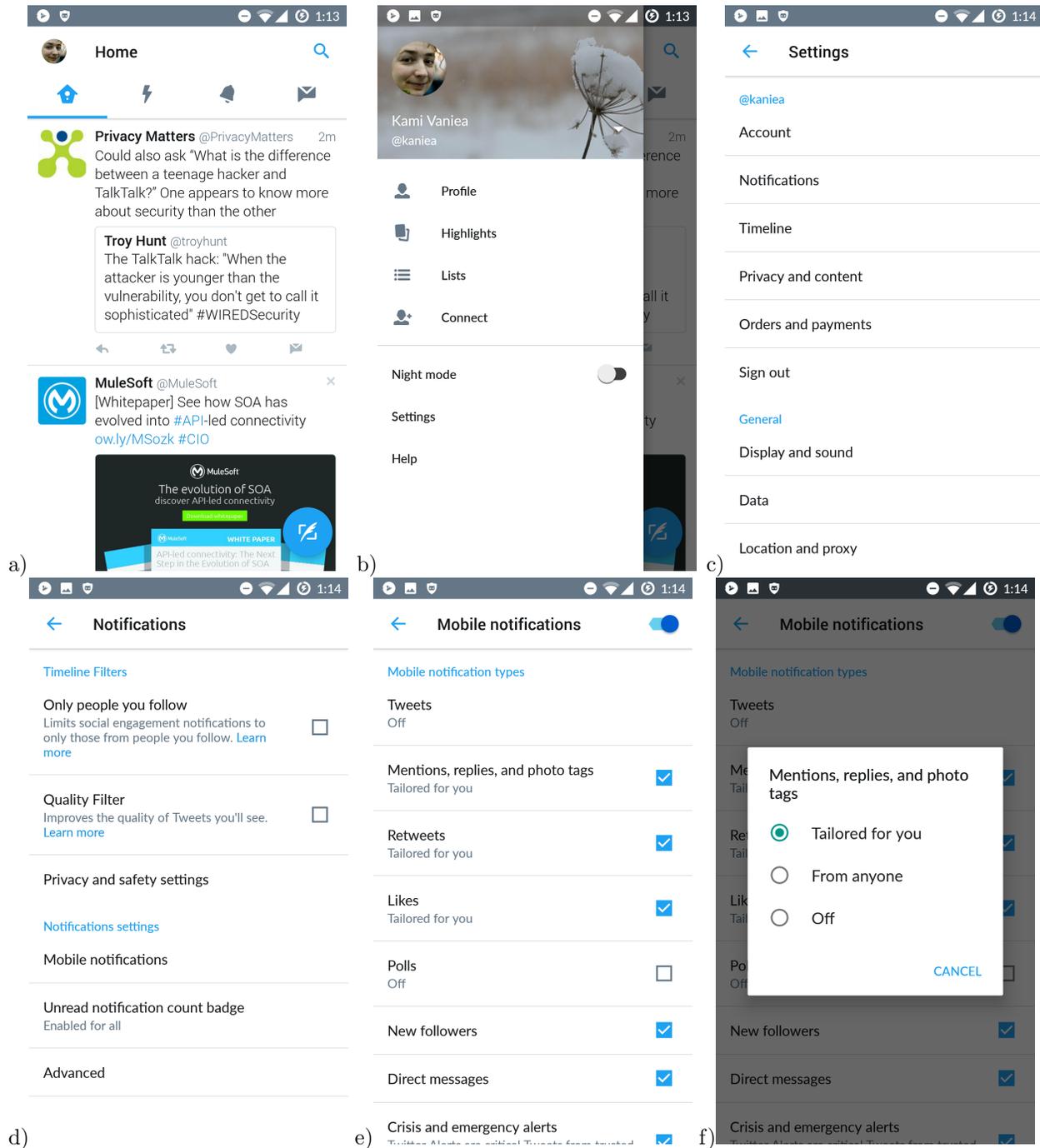


Figure 1: Sequence of screenshots of the twitter app.

2 Modern Hotel (2009 exam)

A modern hotel 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 phone to order sandwiches.

1. Write a short scenario describing how a guest would order a sandwich using your interface.
2. 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.
3. Use a state diagram to describe the dialogue between the system and the user. Note any additional issues this raises about the system that need to be resolved in the design.
4. Would you use a voice recognition system or ask the user to push phone buttons to enter responses? Explain the relative advantages and disadvantages of each for this particular situation.
5. Do you think the agent should be programmed with a distinct personality? Explain why or why not.

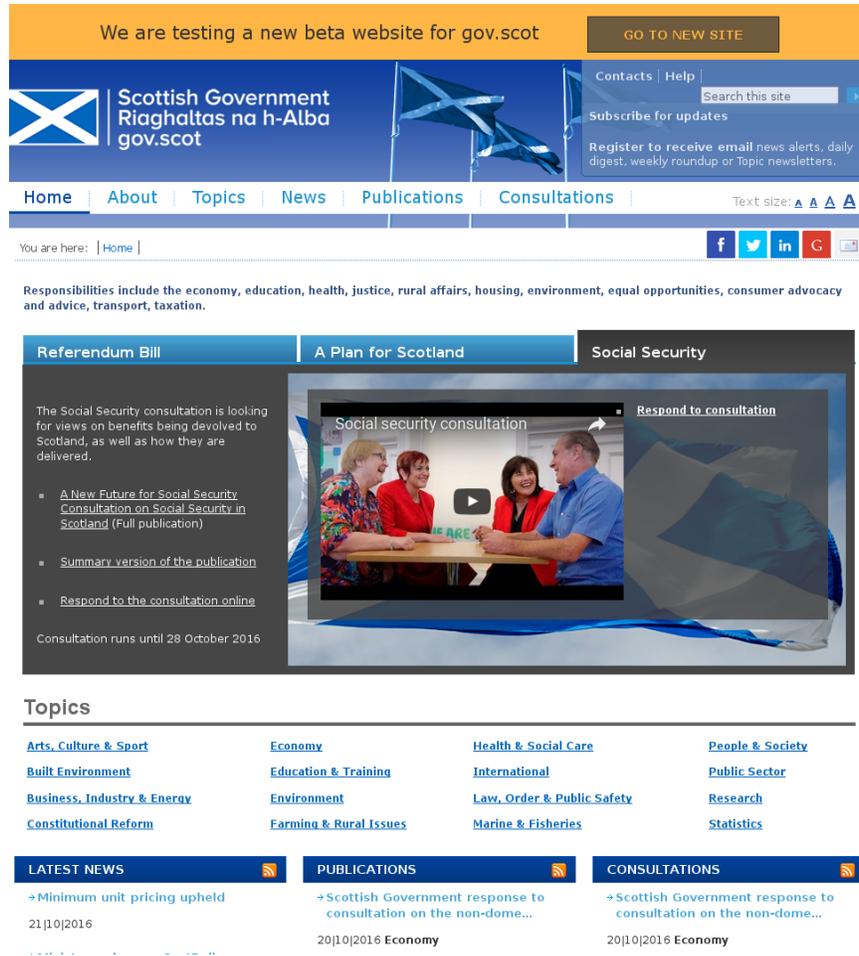


Figure 2: Scottish government web page.

3 New web page (2010 exam, heavily modified)

Figure 2 shows the front page of the Scottish government website. You have been asked to design a version of the page that can be viewed on small screens such as a mobile phone or PDA.

1. How would you identify the needs of mobile users accessing the page? Keep in mind that the page needs to provide the same functionality and content as the current page. So you need to focus on identifying layout-related needs.
2. How would you evaluate your new design? Give a full outline of an empirical study of usability. Be specific about what you would measure, under what conditions, and how you would decide if any differences in usability, relative to the full size page, were meaningful?

4 Extra resources

The following are provided as part of the tutorial document, but they would not be provided as part of an exam.

Nielsen's 10 Heuristics

Visibility of system status

Match between system and the real world

User control and freedom

Consistency and standards

Error prevention

Recognition rather than recall

Flexibility and efficiency of use

Aesthetic and minimalist design

Help users recognize, diagnose, and recover from errors

Help and documentation