Engenharia Informática (DI/FCT/UNL)

2008/2009

Interacção Pessoa-Máquina

Exame Época Normal

January 22, 2008

Duration: 2h

The exam is in English. You may answer the questions in English or Portuguese. Either way, you should be concise and clear.

1) Are the following statements correct (Yes or No)? Why?
   a) In the context of mental models, the "system image" corresponds to the "interface" of a system.
   b) A command line interface offers an interaction style that is more suitable for expert users.
   c) "Affordance" refers to properties of objects that determine what kind of manipulations and operations are possible for a particular object (for example, doors afford opening). To exploit this, interface objects (buttons, icons, ...) should be made as realistic as possible.
   d) Ubiquitous computing is ideal for activities that are familiar to most of the users.
   e) We exploit Gestalt principles in a useful manner by grouping related controls together on the screen.

2) To explain the cognitive process underlying human-computer interaction the Model Human Processor was described.
   a) Name the 3 sub-systems that cooperate in this model.
   b) Explain how these building blocks are related and work together (you may use a drawing).
   c) Show how the Model Human Processor explains the sense of causality.

3) One common form of the Fitts's Law for Movement Time (MT) is

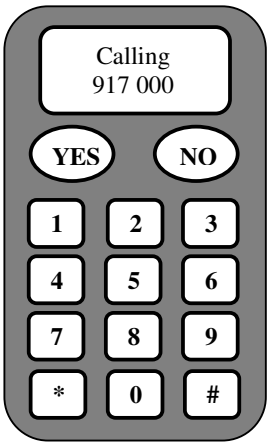
$$MT = a + b \log_2 (D/S + 1)$$

   a) What does it describes?
   b) For each of the variables (a, b, D, and S), describe what it measures

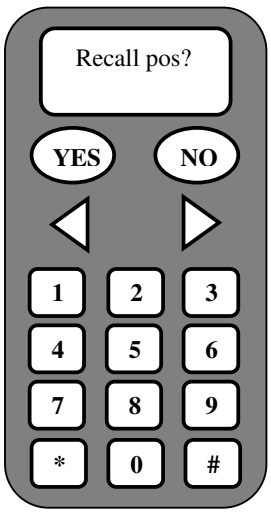
4) Name and discuss (briefly) 2 different methods of evaluation that do not involve users.

5) Consider the following mobile phones and scenarios of use:

Original phone



New phone with menu buttons

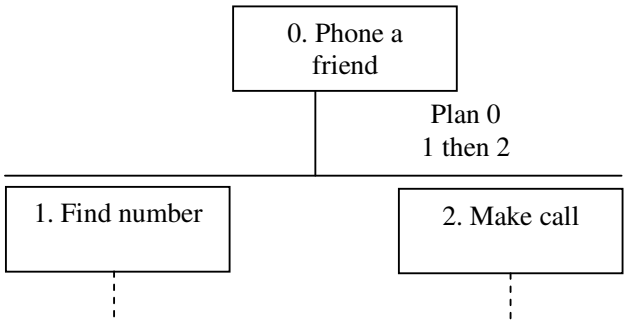


Scenario A (original phone)
Ring a friend for who I already have the number in my (paper) address book.
A.1 I look up the phone number in my address book
A.2 I dial the number into the phone
A.3 The digits appear on the phone display
A.3 I press 'YES'
A.4 The phone display says 'calling'
A.5 A few seconds later it says 'connected'
A.6 I talk to my friend
A.7 When we finish talking I press 'NO' to finish the call.

Scenario B (original phone)
I decide to ring a friend for who I don't know the number
B.1 I dial 18 (directory enquiries) into the phone
B.2 The digits '18' appear on the phone display
B.3 I press 'YES'
B.4 The phone display says 'calling'
B.5 A few seconds later it says 'connected'
B.6 I talk to the operator and ask for the number of my friend
B.7 As the operator reads the number to me, I write it down on a scrap of paper
B.8 I start to dial the number as in A.2 on.

My new phone also has a series of menus reachable using the arrow keys. These include an electronic 'phone book' of shortcut numbers on the phone. If I have stored my friend's number on my phone I can ring to a friend as follows:
Scenario C (new phone only)
I decide to ring a friend in my electronic phone book
C.1 I press the left arrow key
C.2 The phone display says 'phone book'.
C.3 I press 'YES'
C.4 The phone display says 'recall'
C.5 I press 'YES'
C.6 The phone display says 'pos?' (requesting position in phone book)
C.7 I enter the shortcut digit for my friend.
C.8 The digit appears on the phone display
C.9 I press 'YES'
C.10 The phone display says 'calling', as in A.4 on.

a) Complete the HTA for phoning using the original phone taking into account scenarios A and B only.



b) Do a complete HTA for phoning using the new phone based on scenario C only.
c) Do a complete HTA that integrates the 3 possible scenarios.
d) Point out one interface problem that you can preview from the scenario C, specifying the heuristic it violates.

GOOD WORK!