UNIVERSITY OF LONDON

IMPERIAL COLLEGE OF SCIENCE, TECHNOLOGY AND MEDICINE

EXAMINATIONS 1996

BEng Honours Degree in Computing Part III
BSc Honours Degree in Mathematics and Computer Science Part III
MSc Degree in Computing Science
for Internal Students of the Imperial College of Science, Technology and Medicine

This paper is also taken for the relevant examinations for the
Diploma of Membership of Imperial College
Associateship of the City and Guilds of London Institute
Associateship of the Royal College of Science

PAPER 3.23

HUMAN-COMPUTER INTERACTION

Thursday, May 2nd 1996, 2.00 - 4.00

Answer THREE questions

For admin. only: paper contains
5 questions
2 pages (excluding cover page)

1a Briefly summarise the main products and processes suitable for evaluating user interfaces. For each process, state whether or not it is likely to be suitable for choosing between two input devices for a new system, justifying your answers.

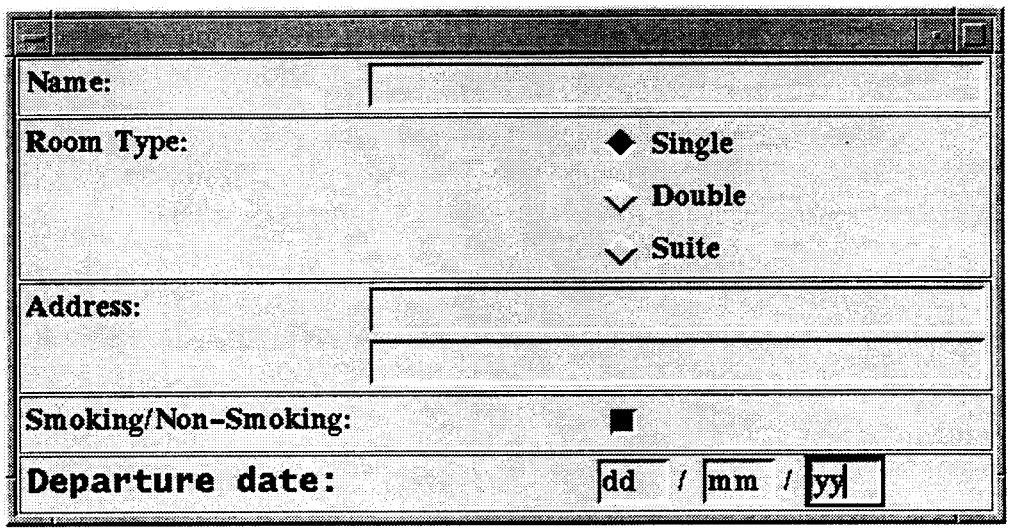
b You have prototyped a system for a large company to be used by their staff. The users need to 'pan' over a large graphical display of a network, which is too large to be seen in detail as a whole. You have a choice between two input devices: a trackball and a joystick.
Describe how you would prepare to evaluate which was the better device for the system, illustrating (*i*) the criteria, and (*ii*) the tasks involved.

2a Using an appropriate notation, give a hierarchical breakdown of the joint task of selling and buying a train ticket from a dispenser similar to those used by London Underground, which also sells travelcards of varying range and duration.

b Show how the dialogue and states of interaction can be represented diagrammatically. What is the relation between this diagram and your notation for part *a*?

c Briefly describe the dialogue styles which are used.
Discuss how much could be retained and which new features would be needed if tickets were to be ordered via a web browser?

3. Imagine a hotel of the future, where guests register with an Automated Reception, by filling in a form like the following on a computer screen.



a What guidelines are broken by the above form?

b Suppose that a guest wants to book a wake-up call and breakfast. Design another form on which the guest can type in his/her requirements. You should list what information you are trying to collect, and give a sketch of the form.

c Suppose you are asked to implement your form design in part *b* using Tcl/Tk. State what widgets you would use to capture the data for the wake-up fragment of your design. Draw a widget hierarchy for this fragment and then write a Tcl/Tk script which creates your widgets. (DO NOT write code for the layout, i.e. packing, or functionality, i.e. command options).

The parts of this question carry, respectively, 20%, 40% and 40% of the total marks.

4a i Briefly describe the main steps and considerations in designing physical workspace.

ii Briefly explain how the considerations relate to the design of a boxing simulation game to be used by children in a funfair amusement arcade.

iii Supplement your answer by commenting on the possible introduction of virtual reality headsets and platform movement.

b Briefly describe some of the interaction problems that the users of hypertext/hypermedia systems might experience, and suggest how a system designer might reduce or resolve them by both workspace and system design for a web browser.

The parts of this question carry, respectively, 70% and 30% of the total marks.

5a Explain the difference between user-centred and participatory design approaches, in terms of

i motivation and background

ii tools and methods employed

iii control of the design process.

Outline how task analysis would differ in the approaches.

b Briefly give two reasons why cooperation between individuals/organizations may fail, and three reasons why CSCW tools may fail.

c State the attributes that a computer program might exhibit to justify being called an 'agent', and say how they could help a user with interaction tasks.