

PAPER CODE NO.
COMP106

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THE UNIVERSITY
of LIVERPOOL

JUNE 2005 EXAMINATIONS

Bachelor of Science : Year 1

Human Centric Computing

TIME ALLOWED : 2 hours

INSTRUCTIONS TO CANDIDATES

Answer **ALL** questions from Section A and **TWO** questions from Section B.

If you attempt to answer more questions than the required number of questions (in any section), the marks awarded for the excess questions will be discarded (starting with your lowest mark).



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Section A

Attempt ALL questions from this section. Each question carries 10 marks.

1. (a) What is meant by Evaluation of a user interface? (2 marks)
(b) Briefly explain the difference between the Analytic method and the Empirical method for evaluating a user interface, by also identifying advantages and disadvantages of both. (8 marks)
2. Compare and contrast Command Language and Natural Language as two possible interaction styles in user interfaces. (10 marks)
3. Explain how the observance of the following two *Golden Rules* for interface design would benefit the user:
 - (a) Design dialogues to yield closure. (5 marks)
 - (b) Support internal locus of control. (5 marks)
4. (a) What is a User Model, and why is it a useful feature of an interface? (1 mark)
(b) Explain the differences between Canonical and Individual user models. (3 marks)
(c) Explain the differences between Explicit and Implicit user models. (3 marks)
(d) Explain the differences between Long Term and Short Term user models. (3 marks)



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Section B

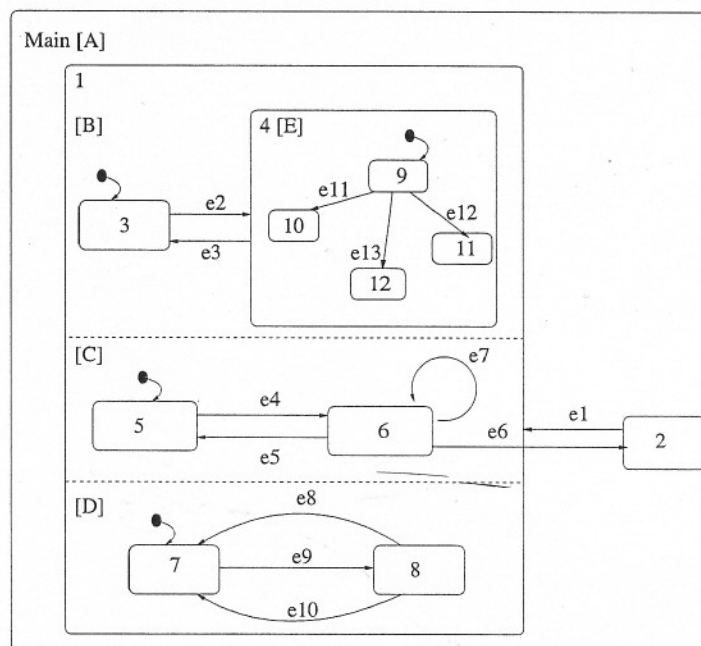
Attempt TWO questions from this section. Each question carries 30 marks. Credit will be given for the best two answers only.

1. A CD player has the two following controls, whose behaviours are independent of each another:

Control	can assume values
Volume	High/Medium/Low
Bass	On/Off

- (a) Describe the behaviour of the CD player by means of a State Transition (ST) Diagram. (15 marks)
- (b) Show how the ST diagram would be translated into a State Chart. (15 marks)

2. Create an event-action table for the following State Chart: (30 marks)





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3. Consider the following interface for a drink-machine:

1. Make your selection:

Choose drink

- ☐ Coffee (20p)
- ☐ Chocolate (20p)
- ☐ Tea (20p)

Choose Options

- ☐ Sugar (5p)
- ☐ Milk (5p)

☐ OK Press when ready

2. Insert coins

00:00

3. Press for change

Lift for change

4. Take cup when ready light is on.

☐ Ready

☐ Wait

The machine has the following behaviour:

- The buttons are lit up when pressed and become unlit if pressed again.
- Users choose one of the drinks on the left, and may add both sugar and milk, only sugar, only milk, or nothing.
- If one of the drinks is selected, pressing the button for another drink will de-select the previous drink and select the new one.
- As soon as an option is selected/unselected, the corresponding price is added to/deleted from the display.
- When the selection has been completed, the user should press on OK and start inserting money.
- The machine accepts any number of coins and can give change.
- As soon as an amount of money equal to or greater than the correct price is inserted, the machine starts producing the drink, and sets the "Wait" light on. When the drink is ready, the "Ready" light is set on.
- If the money inserted is greater than needed, the "Press for change" button's light is set on.
- When at rest, all the buttons are unlit.

Create a GOMS description of the task:

Drink a cup of white coffee

by using the drink-machine described above. Indicate also your simplifying assumptions and the complex cognitive processes you decide to bypass (if any). The description should involve at least 4 passes.

(30 marks)