

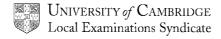
NOVEMBER 2002

MARK SCHEME

MAXIMUM MARK: 90

SYLLABUS/COMPONENT: 5216

DIPLOMA IN COMPUTING



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1. a) (i)-Pre written/readily available software
     (ii)-Software written for a specific application.
                                                                                  (2)
  b) -Pre tested
     -Fewer bugs
     -Cheaper because development costs are shared
     -Training available
     -Ready immediately
     -User groups often available.
     -May not always do precisely what is required.
     (1 per -, max 4)
                                                                                  (4)
2.a) (i)-Data processed together at some non sensitive time
     (ii)-Data processed at time of input/input processed quickly enough to effect the
     next input.
       (2)
  b) (i)-e.g. payroll
     -large quantities of data/data requires similar processing
     (ii) e.g. Computer control
     -Need for action based on sensor input.
                                                                                  (4)
3.a) (i)4,6,8,10
                                                                                  (1)
     (ii)4,6,8,10,12
                                                                                  (1)
 b) Any sensible modification for either.
                                                                                  (2)
4. a) Candidate number
                                     2/4 (1) bytes(1)
                             10/30 (1)
              name
     Number of subjects
                                     (1)
                             1
     Gender
                             1
                                     (1)
     Date of birth
                             6/8
                                     (1)
              Total
                             18/44 bytes
               *200 (1)
                             3600/8800
              +10% (1)
                             3960/7680
              /1024 (1)
                             3.9/7.5 Kbytes
     (Max 6)
                                                                                  (6)
  b) -Nothing but floppy disk
     -because of the size of the file.
                                                                                  (2)
5.a) (i)-Source code is the code written in hll/written by programmer.
     (ii)-Object code is in executable form.
     -The translator turns the source code into the object code.
                                                                                  (3)
  b) When translator finds
     -wrong (reserved) words
     -wrong syntax in instruction construction
     -wrong use of variables
     messages are produced for user.
                                                                                  (2)
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6.a) -Time slices
     -round robin
     -giving each terminal processor time
     -Use of flags
     -Mention of polling
     (1 per -, max 3)
                                                                                   (3)
  b) -On-line system which implies...
     -up to date records, meaning...
     -that they must be held/amended centrally
     -Any record can be queried from any terminal.
     (1 per -, max 3)
                                                                                   (3)
7. a) -Size of array calculated
     -Location of array decided...
     -according to data type/size
     -Locations reserved
     -Array named in look up table.
     -Size of array stored in table
     -Lower bound of array stored in table
     -Upper bound of array stored in table
     -Data type stored in table
     -Address of first element stored in table.
     (1 per -, max 4)
                                                                                   (4)
  b) -Index set to 0
     -Array(index) searched
     -If = Item then 'found'
     -Else increment index and repeat
     -Until found or error report.
     (1 per -, max 4)
                                                                                   (4)
8.
     -Text file...
     -small amount of data...
     -not time sensitive transmission.
     -Video file...
     -Large amount of data
     -which must be transmitted in a standard time frame.
     (1 per -, max 4)
     -Different volumes per second...
     -mean that different transfer rates are appropriate...
     -some applications cannot be run without a high bit rate.
     (1 per -, max 2)
                                                                                   (6)
9. a) -The software is appropriate to many applications within a skill area.
                                                                                   (1)
 b) -e.g. Control of a robot on a production line.
     -This is a one-off application.
                                                                                   (2)
```

10. e.g.

- -Baud rate...
- -so that processors are sending/receiving at the same speed/data would become confused otherwise.
- -Parity...
- -must either be odd or even/otherwise correct data would not be accepted.
- -Echoing back...
- -If one device expects echoing and the other doesn't there will be a freeze while one waits.

(6)

- 11. -Data flow diagrams/system flow charts...
 - -show the way that data enters and leaves the system and...
 - -the storage locations of different data...
 - -and how the data relates to each other during processing.
 - -Jackson Structure Diagram
 - -shows how the solution can be split into modules...
 - -using the top down approach...
 - -and showing the links between the modules.

(1 per -, max 3 per type, max 6)

(6)

- 12. a) -Passive system is one where the information is not altered.
 - -e.g. a quote is obtained from a database which remains unchanged during the enquiry.
 - -Interactive system is one where the information is altered by the user.
 - -e.g. Customer makes a payment, record must be altered to reflect this. (4)
 - b) -Individual should be able to see data held about them...
 - -to be able to check that data is correct.
 - -Individual should have right of appeal to third party
 - -organisation may disagree with their request.
 - -Data should be relevant
 - -The storing of irrelevant data is only useful if for some unpublished reason.
 - -Data should not be held longer than necessary...
 - -when bill paid there is no longer any reason for details of account to be kept.
 - -Data should not be passed on to other users..
 - -in order to protect privacy
 - -Data should only be used for original purpose...
 - -in order to protect user from use that is not acceptable.

(6)

- 13. -Restricts access to computer system
 - -Helps customer to determine what they want...
 - -because choices are given at each stage.
 - -Example fits a tree structure for the information.
 - -Easy to operate/suits a touch screen.
 - -Easy to test
 - -Results are predictable

(1 per -, max 4)

(4)

14. -Digital camera

- -takes electronic image...
- -fed into laptop (portable) computer.
- -Area of improvement airbrushed out
- -replaced by images taken from a library of products
- -Dimensions and colours can be altered.
- -Final result printed out for customer.
- -Mark available for comment about hard copy/storage facilities (1 per -, max 6)

(6)

15. User:

- a) -Explanation of software aimed at person who uses the system.
- b) -Installation instructions
 - -Input methods
 - -Example outputs
 - -Examples of valid input
 - -Error message explanations.

Technical:

- a) -Used by computer literate to maintain the system
- b) -Program coding
 - -Variables used
 - -Data structure details
 - -Detailed algorithms.

(1 per -, max 3 per type, max 6) (6)

TOTAL(90)