

NOVEMBER 2002

MARK SCHEME

MAXIMUM MARK : 90

SYLLABUS/COMPONENT : 5216

DIPLOMA IN COMPUTING



UNIVERSITY *of* CAMBRIDGE
Local Examinations Syndicate

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)
name 10/30 (1)
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)

- 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. (2)
 -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.
 (1 per -, max 3 points, max 6) (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)