

# UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International Diploma Advanced Level

## MARK SCHEME for the May/June 2006 question paper

### CAMBRIDGE INTERNATIONAL DIPLOMA IN COMPUTING

5216

maximum mark 90

These mark schemes are published as an aid to teachers and students, to indicate the requirements of the examination. They show the basis on which Examiners were initially instructed to award marks. They do not indicate the details of the discussions that took place at an Examiners' meeting before marking began. Any substantial changes to the mark scheme that arose from these discussions will be recorded in the published *Report on the Examination*.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes must be read in conjunction with the question papers and the *Report on the Examination*.

- CIE will not enter into discussion or correspondence in connection with these mark schemes.

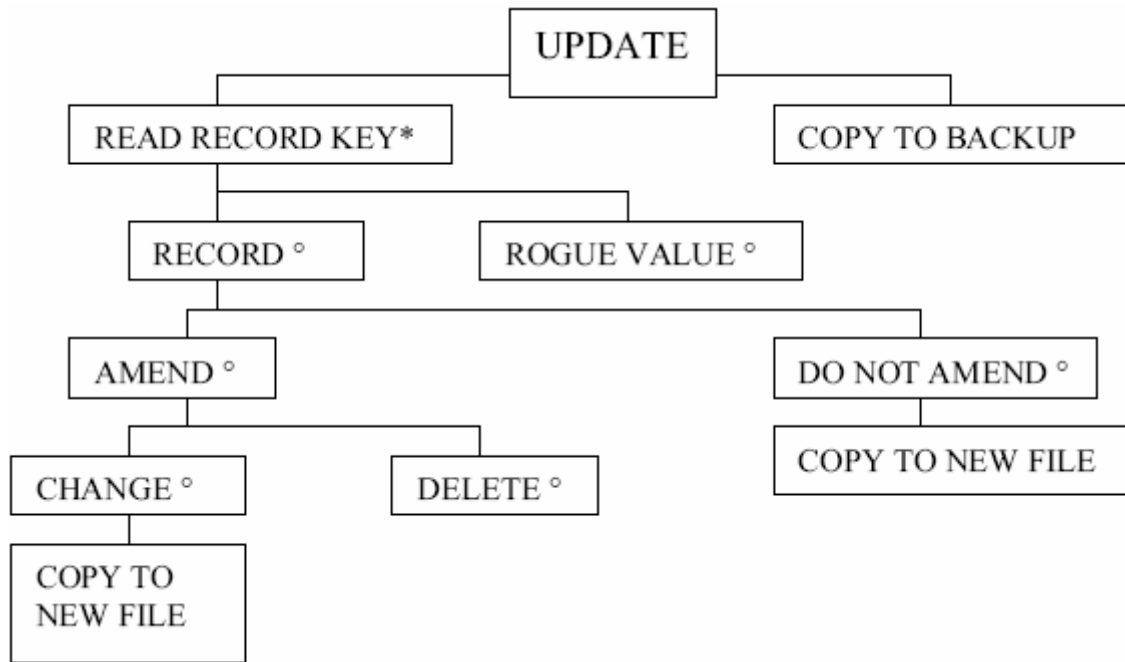
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- 1 (a) -RAM is volatile/ROM is not  
 -RAM loses contents when power is switched off/ROM does not  
 -RAM is usually larger than ROM  
 (1 per -, max 2) [2]  
 -RAM used to store data/os/software currently in use  
 -ROM used to store bootstrap/boot/start up program [2]
- (b) (i) -word processor/Spreadsheet/Database  
 -spreadsheet/accounting software  
 -DTP/Painting package/word processor [3]
- (ii) -hard drive to store software/OS/user files  
 -large storage facility/readily accessible/readily editable  
 -CDRW to produce backup files and archive material  
 -writable but semi permanent/portable/small size  
 -DVD to import software/play music while working  
 -software readily available on DVD [6]
- 2 (i) -windows  
 -icons  
 -menus  
 -pointer controlled  
 -e.g. used for inexperienced user  
 (1 per-, max 2 for description, max 3) [3]
- (ii) -mirrors printed form  
 -spaces for insertion of data  
 -some spaces require positive response  
 -can use drop down choices  
 -radio buttons  
 -data input from postal order forms/teleordering/...  
 (1 per-, max 2 for description, max 3) [3]
- 3 (a) -RSI  
 -wrist supports  
 -dry eye or similar  
 -anti glare screens  
 -back problems  
 -ensure a properly designed chair is used  
 -headaches  
 -change the refresh rates/ensure ventilation  
 -credit 'regular breaks' once  
 (1 per -, max 3 types, max 6) [6]
- (b) Positive:  
 -allows communication  
 -large amounts of educational material  
 -allows students to access information to help with studies and to enjoy their learning  
 -allows student to learn at own speed/at own times
- Negative:  
 -many sites do not give accurate information  
 -many sites give access to inappropriate material  
 -many sites encourage breaking laws (downloading music/ordering drugs/watching pornography)  
 -sites available to buy coursework/helps to cheat in examinations  
 -may allow hacker into your system/viruses prevalent  
 (1 per -, max 3 for each of positive and negative points, max 5) [5]

Page 3	Mark Scheme	Syllabus
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- 4 (a) -LAN is geographically small area/WAN over a larger area  
 -LAN may be hard wired/WAN requires other medium for communication  
 -LAN much easier to keep secure/WAN is prone to hacking  
 (1 per -, max 2) [2]
- (b) (i) -all machines feed off central data bus/Use of terminators/shared hardware  
 -wiring is simple [2]
- (ii) -all machines separately connected to central hub/server/...  
 -breakdown of one machine/wire does not affect whole network/rate of data transmission is greater [2]
- (c) (i) -set of rules  
 -to control communication [2]
- (ii) -to enable standardisation  
 -to enable one layer to be altered without altering the entire protocol  
 -enables manufacturers to design hardware and software for a particular layer  
 (1 per -, max 2) [2]
- 5 (a) Advantages:  
 -fewer bugs because each set of programming commands is shorter  
 -algorithm is more easily understood  
 -many programmers can be employed, one on each of the modules  
 -programmers can use their expertise on particular techniques  
 -testing can be more thorough on each of the modules  
 -allows library programs to be inserted  
 -all of which saves time and means the finished program can be completed more quickly
- Disadvantages:  
 -can lead to problems with variable names  
 -means documentation of modules must be thorough  
 -can lead to problems when modules are linked because links must be thoroughly tested  
 (1 per -, max 4 advantages, max 5) [5]

(b) Example diagram, flowchart is just as acceptable.



Mark points:

- distinct layers/modules represented
  - problem shown as most important/top
  - use of repeat in some way (\*loop/...)
  - correct condition to end loop
  - use of backup as separate module
  - condition to amend or not/(°)
  - condition to alter or delete/(°)
  - result copied to new file
- (1 per -, max 5, max 3 if no diagram attempted)

[5]

- 6 -provides environment for application software to be executed  
 -provides for software to be translated via compiler/interpreter/assembler  
 -controls hardware of computer system  
 -allows communication from hardware via interrupts  
 -provides human access via HCI  
 -provides utility programs to carry out housework  
 -provides library routines for frequently desired tasks  
 -makes the computer act in the desired fashion/mention of batch/multi user...
- (1 per -, max 4)

[4]

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- 7 (a) text/character/string  
text/character/string/alphanumeric  
date/Integer  
boolean [4]
- (b) 10-30  
5-20  
2,4,6,8  
1  
(Total = 18-59)  
+ 10%  
\* 1000  
Div 1024 (1000)  
Answer (19-64) Kb  
(1 per unbracketed line, max 4) [4]
- (c) (i) -to store little used data  
-in case it is needed in the future  
-so that it can be removed from main file  
-to allow space for other data  
(1 per -, max 2) [2]
- (ii) -sensible interval (1 – 7 days)  
-onto sensible medium (floppy disk/CD-RW/Zip drive/tape)  
-sensible reason (file small/medium easily accessible/medium portable)  
-more than one copy made  
-one copy kept away from main computer system  
-keep a transaction copy between backups  
(1 per -, max 4) [4]
- 8 (a) (i) Check that the data input is what was meant to have been input.
- (ii) Check on the data entered to ensure that it is sensible/follows given rules. [2]
- (b) -range check  
-on day/month/year to ensure that they are acceptable  
-format check  
-e.g. dd/mm/yy  
-character check  
-e.g. check to ensure there are 6 numeric characters and 2 /  
(1 per -, max 2 per pair, max 2 pairs, max 4) [4]

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- 9 (a)** -scanner for photograph already available  
 -image is digitized  
 -digital/video camera  
 -USB connection to input image  
 -image may then be enhanced  
 -image may be manipulated/colour contrast edited  
 -image may be cropped  
 (1 per -, max 4) **[4]**
- (b)** -means of dealing with errors that may occur  
 -how to look after the hardware  
 -how to insert photos/take photos/insert shirts  
 (1 per -, max 2) **[2]**
- (c)** -Pointers  
 -within individual customer record  
 -to start and end of image  
 -images compressed  
 -using file compression utility  
 -e.g. storing area of single colour rather than individual bits  
 (1 per -, max 4) **[4]**
- 10** Operational:  
 -reports driven by meeting a certain condition  
 -running low on a particular type of shirt so that more need to be ordered  
 -running out of a type of ink  
 -reporting that a sales target has been met which e.g. may trigger a bonus payment for the operator
- Strategic:  
 -reports created from the large amount of data collected during normal operations  
 -data is selectively abridged in order that the manager can make some use of it  
 -proportions of sales at different times of day/days of week/weeks of year  
 -sales made by different workers analysed  
 (1 per -, max 6) **[6]**