

MARK SCHEME for the October/November 2008 question paper

0420 COMPUTER STUDIES

0420/01

Paper 1, maximum raw mark 100

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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.

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1 Generally, one mark per valid point. Two examples can gain two marks.

(a) mouse

pointing device/controls cursor
input device
allows user to select options from a menu
used in windows environment
uses buttons/scroll wheels(s)/touch pad

[2]

(b) search engine

used on the Internet
to locate web sites/web pages/other links
based on input of certain key phrases/words

[2]

(c) buffer

temporary memory/storage area
compensates for speed differences of device and CPU
for data being transferred/downloaded between components of a computer system
allows other functions to take place at same time

examples

printer
keyboard

[2]

(d) RAM

random access memory
memory that can be read from and written to
temporary storage/volatile/memory lost on switching off computer
holds user work/programs/data

[2]

(e) download

transfer/copy a file/data/program
from a central computer/host computer/server
to a smaller computer/remote station/user's computer

[2]

2 Any **two** from:

development time is faster

easier to debug

easier to modify/update/understand/edit

leads to a structured approach

can use several programmers to work on individual modules at the same time

complex/large problem/task is broken down into simpler/smaller tasks

[2]

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- 3 marks: 1 mark for correct for/to loop
 1 mark for BOTH input and output in the correct place
 1 mark for finding out how many negative numbers input

e.g. **for** x = 1 **to** 100

input n

if n < 0 **then** neg = neg + 1

next x

print neg

[3]

- 4 Any **two** from:
 viruses
 hacking then changing/deleting data (NOT just hacking)
 surges in electricity supply
 loss of electricity supply/power
 fault in computer/storage device/storage media
 incorrect shutdown of computer system
 fault occurs during transmission of data

Any **two matching above named ways**:

antivirus software
 use of passwords (and ids)/firewall
 anti-surge power supply unit
 UPS
 back up data regularly
 back up data regularly
 retransmission

[4]

- 5 Any **two** from:
 actual musical notes now generated by software
 digital sampling
 software can autocorrect notes/rhythm
 can play back a section straight after written (notes appear on screen)
 don't need to understand music notation to write a score
 instruments play back through electronic effects machines
 mixers/samplers are computer controlled
 use of electronic/digital synthesisers
 electronic keyboards can now simulate any instrument
 music notes automatically printed out in correct format

[2]

- 6 (a) Any **one** from:
 no need to individually price goods/can change prices easily
 shop assistants at tills don't need to know prices
 less chance of fraud (can't change price by simply altering price tag)
fewer staff because of unmanned checkouts

[1]

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(b) Any **one** from:
 produces an itemised bill
 permits unmanned checkouts/use of hand held devices whilst shopping (giving a shorter queuing time)
 less chance of errors in final bill [1]

(c) Any **three** points from:
 bar code read/scanned/entered by POS
 item code identified
 subtracts 1 from number of that item in stock (stock file)
 when number in stock < minimum stock level
 system **automatically** re-orders new stock
 when new stock arrives, number of item in stock is increased
 printouts of stock levels produced for manager [3]

7 (a) Any **one** from:
 fewer cashiers needed/less money on wages
 fewer branches needed/less money on rates or rent
 less actual cash handling/fewer chances of robbery
 can attract more customers (from home and abroad)
 can offer full banking facilities (may not be possible at smaller branches) [1]

(b) Any **one** from:
 can lose customers due to lack of personal touch
 initial outlay on computers/software can be expensive
 greater risk of fraud/hacking and therefore loss of money
 need to set up call centres (can be expensive) [1]

(c) Any **two** from:
 no time wasted travelling to the bank
 easier/faster to manage accounts
 no money spent on travelling expenses going to bank
 no embarrassment asking for loans face to face with a manager
 possible to still bank even when banks closed/can bank 24/7
 don't have to wait for post/immediate payments can be made
 disabled people don't have to travel to a bank
 less chance of being robbed for cash [2]

(d) Any **two** from:
 hackers can intercept data/risk of fraud
 no personal touch
 customers can easily mis-manage their accounts
 increase in phone bills
 without broadband, ties up the phone line
 increased risk of losing personal data [2]

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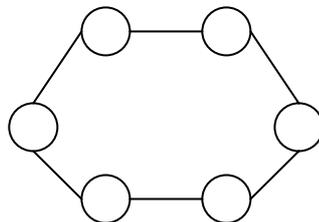
8 (a) keyed/typed in twice/compared to stored password [1]

(b) (i) encrypt the data [1]

(ii) Any **one** from:
 read only access
 back up the files regularly
 generations of files [1]

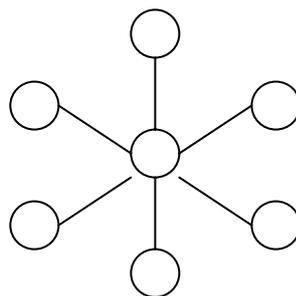
(c) Any **two** from:
 data must be up to date
 data can only be read/used for the purpose for which it was collected
 data must be accurate
 data must be destroyed/deleted when no longer required/don't keep longer than necessary
 data user must register what data is used/stored
 data must be used/collected fairly and lawfully
 data must be held securely
 data must be protected from accidental damage
 only authorised people can have access to data
 fines imposed for data mis-use
 data should not be passed on to a 3rd party without owner's permission
 person can view data and have it changes/removed if incorrect
 safe harbour [2]

9 ring network



(1 mark)

star network



(1 mark)

Any other **three** points from:

star:

- shared resources
- cable failure isolates/affects only the work station where cable failed
- if one station/connection fails the other devices are not affected
- if the central hub breaks down, the whole network fails
- it is easier to identify faults using this type of topology
- it is easy to expand this type of network

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ring:

- shared resources
- less efficient than star because it needs to travel through all other work stations first to get to destination work station
- a faulty connection between two stations can cause network failure
- it is difficult to add a new station/device as it has to come between 2 existing stations
- this type works well during heavy loading
- it is possible to create large networks using this topology

(NOTE: can get a maximum of 3 marks from advantages/disadvantages if diagrams missing or incorrect) [3]

- 10 (a)** Any **two** points from:
- speed of the traffic
 - information from number plates
 - traffic violation information (e.g. jumped red light)
 - number of vehicles on road/at junctions
 - whether vehicles are stationary/moving/timing of vehicles
- [2]

- (b)** Any **two** from:
- (fibre optic)cables connected to computer
 - radio waves/use of transmitters
 - use of satellite/microwave technology
- [2]

- (c)** Any **two** from:
- can keep traffic moving freely.....
 - since system can control light sequences (i.e. timing) and traffic signs
 - helps to prevent traffic build up/jams
 - can reduce pollution levels (less stationary traffic)
 - can re-route traffic using electronic signs if accident has occurred
 - no need to employ/train human traffic controllers
- [2]

- 11 (a)** Any **two** points from:
- local service provider receives Mike's outbound message
 - the destination email address is analysed
 - service provider looks (service provider) server that handles inbound messages for destination email address
 - email 'bounced' with error message if not found
 - message is then sent to destination service provider server
 - Asif logs onto his computer
 - message is downloaded when he opens up his in box
 - Asif opens the attached file
- [2]

- (b)** Any **two** from:
- size of file attachment may be too large/take too long to download
 - potential for sending viruses
 - receiver may not have correct software to read attachment
 - ISP could be down
- [2]

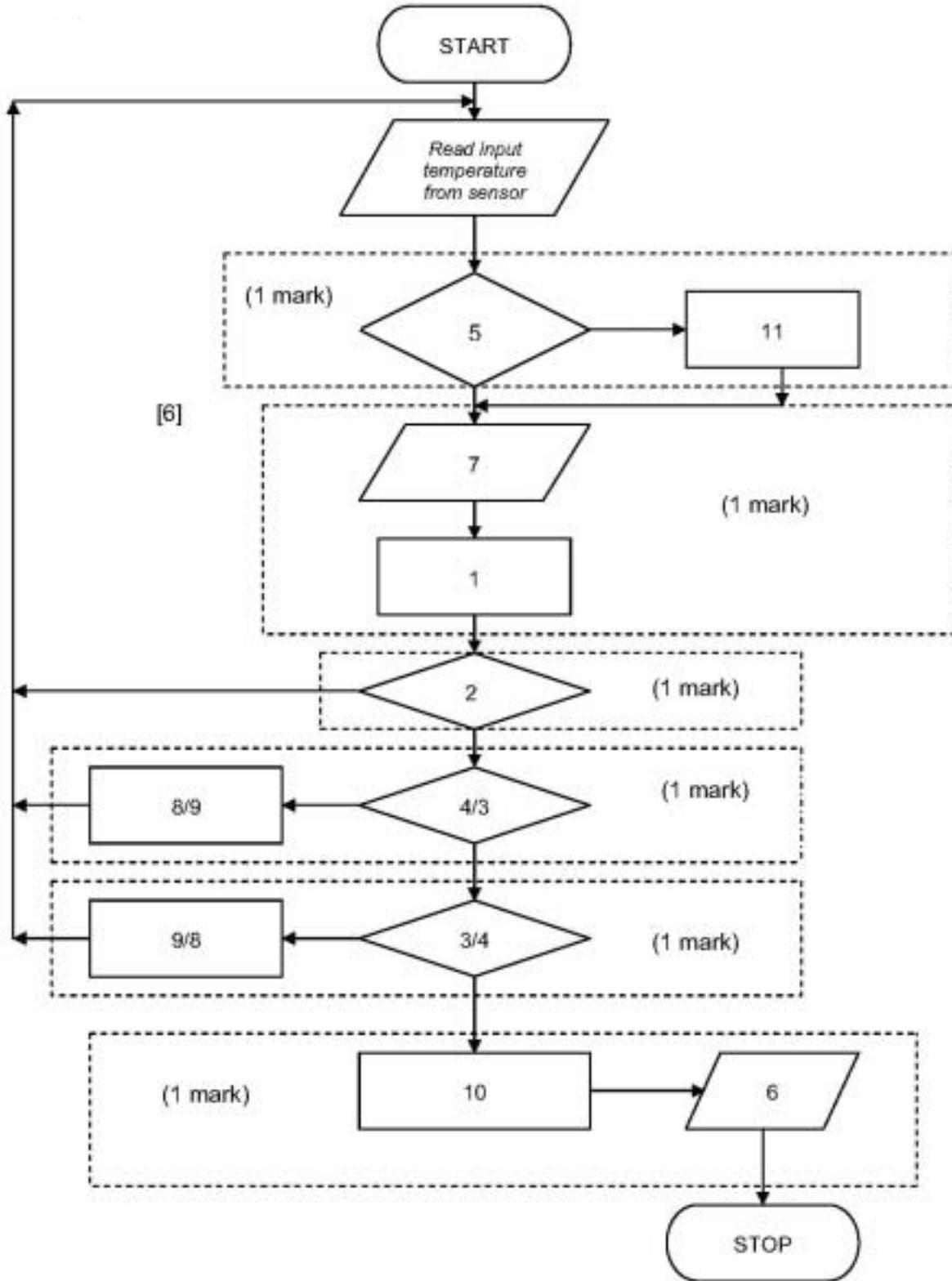
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- 12 (a) (i) 4 [1]
- (ii) = B3 * C3 [1]
- (iii) = SUM(D3:D9) OR
= D3 + D4 + D5 + D6 + D7 + D8 + D9 [1]
- (iv) D7, D10 [1]
- (b) Any **three** points from:
 save the spreadsheets
 load images of stock from clipart } max of
 download images of stock from the internet } 2 marks
 scan in images/photographs of the shop/stock } for input
 upload images of shop and stock from a digital camera } of images
 load up word processor/DTP software
 type in the required text
 paste/import/insert picture into document
 paste/import/insert spreadsheet (data) into document
 insert/paste charts into document
 edit the images (e.g. crop, re-size, etc.)
 format report (e.g. fonts, layout in columns, etc.) [3]
- 13 (a) Any **four** from (order doesn't matter):
 definition of the problem
 description of existing situation
 evaluation of existing solutions
 consideration of alternative solutions
 feasibility study/report
 fact finding/investigation technique....
example of technique (questionnaire, interview, document search, observation)
 objectives of proposed solution/requirements specification [4]
- (b) Any **two** from:
 re-training
 loss of jobs/entrenchment
 de-skilling
 health problems from over-use of computers
 becomes easier to search for/organise information rather than doing it manually
 no filing to do [2]
- (c) Any **two** from:
 wider audience
 less expensive than advertising in the press
 more information can be made available (e.g. pictures of cars)
 can do automatic calculations (e.g. monthly re-payments)
 can have a smaller showroom
 fewer sales staff needed
 can allow on-line test drive booking (etc.) [2]

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- 16 (a)** Any **one** point from:
 3D visual world
 created by a computer
 computer simulation [1]
- (b)** Any **two** from:
 data gloves
 data goggles/visors
 special suits fitted with sensors [2]
- (c)** Any **two** from:
 3D output of the surroundings
 sound effects
 smells/simulated smells
 movement [2]
- (d)** Any **one** from:
 medical training
 general teaching
 investigating problems in nuclear/chemical plants
 3D games
 design (of chemical plants, nuclear plants, bridges, buildings, etc.)
 virtual tours [1]

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[6]

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18 (a) customer code/borrower number/customer number [1]

(b) Any **three** points from:

computer reads record from book file
 compares date due back
 11th November 2008/this date
 if date due back < November 11th
 using borrower number/customer code/customer number
 reads corresponding record from borrower/customer file
 address is read from the record
 mail merge/email automatically sent to customer/borrower
 read next file
 until end of file

[3]

19 Marking points

correct loop
 correct inputs
 check for type and calculate itemcost
 action taken if type NOT 1, 2 or 3
 calculate totalcost
 calculate the average totalcost
 both outputs in the correct place

Sample algorithm:

total cost = 0

for x = 1 **to** 1000 (1 mark)

input type, partcost (1 mark)

if type = 1 **then** itemcost = partcost * 1.5}

if type = 2 **then** itemcost = partcost * 2.5} (1 mark)

if type = 3 **then** itemcost = partcost * 5.0}

else print error (1 mark)

 totalcost = totalcost + itemcost (1 mark)

print itemcost

next x

average = totalcost/1000 (1 mark)

print average (1 mark)

[5]