

# IB Computer Science 2

## Examination Preparation Worksheet 1 Marks Scheme

### 2 point questions

#### November 2006

4. (a) 2-D array of real/integer; [1 mark]  
(b) array of records / objects; [1 mark]
2. Award [1 mark] for each valid point.

For example:

optimise the operation of the brakes (or words to that effect – not just “to operate the brakes”);  
warning message if seat belts are not fastened;  
(possibly) warning if too close to car in front;  
warning if car passes maximum speed limit;  
+ any other use that relates specifically to safety;

[2 marks max]

#### May 2006

8. Award [1 mark] for a clear statement that the argument value is passed to the parameter of the function by the function call.

Award [1 mark] for a clear statement that the parameter appears on the function definition line or that the parameter allows data values to enter the function. [2 marks]

#### November 2005

9. When files are fragmented (pieces scattered around haphazardly on the disk) the defrag utility moves the pieces back together so they are closer to each other. [2 marks]
3. Award [2 marks] for correct answer, [1 mark] for a correct formula but a calculation error leading to an incorrect result.  
 $(8*60*60) / 1024 = 28.15 \text{ MB}$   
Accept  $8 * 60 * 60 / 1000 = 28.8 \text{ MB}$  (e.g. permit the use of 1000 instead of 1024) [2 marks]

### 3 point questions

#### November 2006

5. Award [1 mark] for each valid point.

For example:

a number is added to (each block of) the data sent;  
which is the sum of the bytes in that block;  
this value is recalculated by the receiving device and compared to the checksum;  
if the values are different the data will be re-sent;

[3 marks max]

10. (a) updating a customer's account after a withdrawal; [1 mark]  
(b) processing bank cheques; [1 mark]  
(c) ATM operation, Internet banking; [1 mark]

#### May 2006

11. (a) Award [1 mark] for the correct values of  $k$  and [1 mark] for the output.

k	m	output
4	5	34

[2 marks]

- (b) n; [1 mark]

#### November 2005

2. (a) Award [1 mark] for a list of 4 data items which are not sorted.  
Award [1 mark] for stating that the list is unsorted and so a binary search cannot be used.

Award only [1 mark] for stating that if the list contains duplicates, the binary search only finds 1 item, and the sample list contain duplicates.

[2 marks]

- (b) Binary Search; [1 mark]

5. (a) Award [2 marks] for 40960 Kb/sec  
Award [1 mark] for either of the following;  
- 40000 (5 x 1000 x 8) Kb/sec  
- 5120 KB/sec (kilobytes instead of kilobits)

[2 marks]

- (b) it is performed by hardware in the sound-card, not by software. [1 mark]

## **4 point questions**

### November 2006

12. (a)  $01111111_{(2)} = 127_{(10)}$  [2 marks]
- (b)  $10000000_{(2)} = -128_{(10)}$  [2 marks]

### November 2005

7. (a) Direct-access; [1 mark]
- (b) Sequential-access; [1 mark]
- (c) Award [1 mark] for any of the following up to [2 marks max].  
Higher storage capacity;  
Removable and thus safer for archiving;  
Tapes can be exchanged easily; [2 marks max]

10. (a) Award [1 mark] for the following or equivalent using different names:  
Analysis, Research, Investigation; [1 mark]

*Do not accept:* Design, implementation, debugging.

- (b) Award [1 mark] each for any of the following up to [3 marks max].  
*If the same idea is repeated in different words, only award a single mark for that idea.*

Programmers need specific goals to work toward.

Goals should be set by analysts, not by programmers, as the analysts are familiar with the user's needs and wishes.

Programs can only be tested and assessed according to whether they meet the original goals.

Goals need to match the USER'S needs and wishes, not the programmers.

Programmers should not waste time guessing or wondering what goals they are trying to reach.

Lazy programmers might try to finish the job quickly, using inappropriate shortcuts, if the goals are not clearly stated.

The **design specification** should be completed before implementation, and this must include a list of goals.

*Accept any reasonable statements that make it clear that:*

The **programmers** should not be setting the goals, but rather working toward goals, which were developed from, and agreed to by, the users, because this speeds up the development process by clearly focusing effort. **[3 marks max]**

*Do not accept statements that imply that it is not possible for:*

Programmers to set their own goals. The issue is that it is more **efficient** if programmers concentrate on writing good code rather than researching the problem or setting goals.

7. (a) *Award [2 marks] for any one of these.*

possible answers:

meteorology- collecting data on temperature, wind speed, humidity, etc.

automatic door control

vehicle detectors, control of entry into car park

burgler alarms - signals when doors or windows are open

etc.

**[2 marks]**

*Award [1 mark only] for a vague answer, or for an answer which mentions a correct data collection but no application (for example a thermometer to collect the temperature)*

**[2 marks]**

- (b) Computers are digital devices and signals from sensors are analog values so A-D converter is needed.

*Award [1 mark] for stating computer is digital.*

*Award marks for describing any process which changes from analog to digital, such as sampling, etc.*