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Cambridge International AS & A Level

Cambridge Assessment International Education
Cambridge International Advanced Subsidiary and Advanced Level

COMPUTER SCIENCE **9608/11**

Paper 1 Written Paper **October/November 2018**

MARK SCHEME

Maximum Mark: 75

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge International will not enter into discussions about these mark schemes.

Cambridge International is publishing the mark schemes for the October/November 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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Question	Answer	Marks
1(a)	**1 mark** per bullet point to **max 3** • The microphone has a diaphragm • The incoming sound waves cause vibrations • … causing a coil to move past a magnet (dynamic microphone) // changing the capacitance (condenser microphone) • An electric current is generated / changed	**3**
1(b)	**1 mark** per bullet point • The sampling resolution number of bits used to store each sample • Increasing the (sampling) resolution means a larger file size // Decreasing the (sampling) resolution means a smaller file size • Increasing the (sampling) resolution gives a more accurate representation of the analogue sound // Decreasing the (sampling) resolution gives a less accurate representation of the analogue sound • Increasing the (sampling) resolution means a greater range of values can be stored // Decreasing the (sampling) resolution gives a smaller range of values that can be stored • Increasing the (sampling) resolution reduces the quantization errors // Decreasing the (sampling) resolution causes greater quantization errors	**3**
1(c)	For **2 features** **1 mark** for identifying feature, **1 mark** for describing what it does. For example: • Cut/delete • ... Remove part of the sound file • Copy and paste • ... Replicate part of the sound • Amplify • ... Increase the volume of a section of sound	**4**
1(d)(i)	60 images are recorded per second	**1**
1(d)(ii)	**1 mark** per bullet point to **max 2** • Each frame contains (all the lines for) the complete image • All the frame data is recorded at the same time • Each frame contains all the scan lines • The number of images stored is the same as the frame rate	**2**
1(e)	**1 mark** per bullet point to **max 1** • A meta file / wrapper • Contains various different types of data	**1**

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>2(a)</td><td>Use the IP address instead of the URL</td><td>1</td></tr>
<tr><td>2(b)(i)</td><td>1 mark per correct answer

<table><tr><th>IP Address</th><th>Valid or invalid</th></tr><tr><td>21E5:69AA:FFFF:1:E100:B691:1285:F56E</td><td>Valid</td></tr><tr><td>::255.255.255.255</td><td>Valid</td></tr><tr><td>59FB::1005:CC57:6571</td><td>Valid</td></tr><tr><td>56FE::2159:5BBC::6594</td><td>Invalid</td></tr></table></td><td>4</td></tr>
<tr><td>2(b)(ii)</td><td>1 mark per correct row

<table><tr><th>Statement</th><th>Public</th><th>Private</th></tr><tr><td>192.168.2.1 is an example of this type of address</td><td></td><td>✓</td></tr><tr><td>Assigned by the Internet Service Provider (ISP)</td><td>✓</td><td></td></tr><tr><td>IP address cannot be duplicated in different networks</td><td>✓</td><td></td></tr><tr><td>Network Address Translation (NAT) is necessary to access the Internet directly</td><td></td><td>✓</td></tr></table></td><td>4</td></tr>
<tr><td>2(c)</td><td>1 mark per example to max 2

• Fibre-optic
• Wi-Fi / Radio waves
• Microwave
• Infrared</td><td>2</td></tr>
</table>

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Question	Answer	Marks
3(a)	**1 mark** per bullet point, **max 2 marks** per licence Open Source • The source code is released with program • Users can edit the source code to suit their needs • Users re-release their version under the same terms • Can be cost-free but may also need payment Shareware • Users get a free trial of the software • … which may be limited in features • No access to source code // Program cannot be edited • Then they have to pay / sign-up after the expiry date // Then they have to pay / sign-up to get full functionality // Then they have to pay / sign-up to stop unwanted pop-ups, etc.	**4**
3(b)	**1 mark** per bullet point to **max 2 marks** for chosen licence **Open Source** For example: • Hugo does not have to set up ways to take funds • Others may enhance / improve the program • Hugo can charge a fee for the App Or **Shareware** For example: • Hugo can charge for the App • Not giving away the code/people can't copy the code • … Hugo gets the sole recognition for the program • Possible legal consequences if someone does copy the code • If users need to sign up, their data can be used for marketing etc. • Customers have peace of mind that the software hasn't been maliciously edited / bugs introduced	**2**

Question	Answer	Marks
4(a)(i)	**1 mark** for each type of addressing Direct addressing • The operand is the address where the data is stored Indirect addressing • The operand is an address, that address holds another address where the data is stored	**2**

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<table>
<tr><th>Question</th><th>Answer</th><th>Marks</th></tr>
<tr><td>4(a)(ii)</td><td>1 mark per bullet point

Direct addressing:
• 20 is the address of the data

Indirect addressing:
• 20 is an address which holds the address where the data is stored</td><td>2</td></tr>
<tr><td>4(b)</td><td>1 mark for 1 correct tick
2 marks for 3 correct ticks

<table>
<tr><th>Instruction</th><th>Symbolic</th><th>Absolute</th></tr>
<tr><td>ADD 90</td><td></td><td>✓</td></tr>
<tr><td>CMP found</td><td>✓</td><td></td></tr>
<tr><td>STO 20</td><td></td><td>✓</td></tr>
</table>
</td><td>2</td></tr>
<tr><td>4(c)(i)</td><td>186</td><td>1</td></tr>
<tr><td>4(c)(ii)</td><td>BA</td><td>1</td></tr>
<tr><td>4(c)(iii)</td><td>–70</td><td>1</td></tr>
<tr><td>4(d)</td><td>1 mark per bullet point

• Outputting * (instruction 71)
• Storing 130 in 203 (instruction 72)
• Loading, incrementing accumulator and storing in 204 (instructions 73, 74 and 75)
• Incrementing Index Register (instruction 76)
• Loading 133, comparing and jumping to 81 (instructions 77, 78 and 79)
• Loading, comparing and jumping to 74 (instructions 81, 82 and 83)
• Incrementing accumulator, storing in 204 and incrementing index register, loading 130 (instructions 74–79)
• Outputting * to end (instructions 80–84)</td><td>8</td></tr>
</table>

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Instruction address	ACC	Memory address						IX (Index Register)	OUTPUT
		200	201	202	203	204	205		
70	130	130	133	130	0	0	2	0	
71									*
72					130				
73	0								
74	1								
75						1			
76								1	
77	133								
78									
79									
81	1								
82									
83									
74	2								
75						2			
76								2	
77	130								
78									
79									
80									*
81	2								
82									
83									
84									

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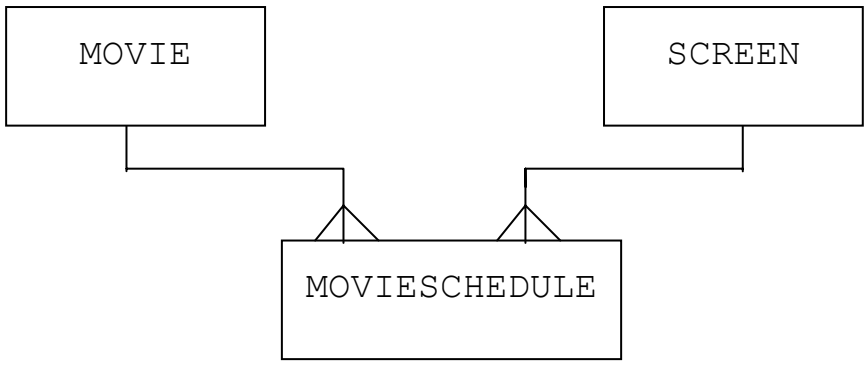
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Question	Answer	Marks
5(a)	**1 mark** per bullet point for each justification, to **max 2** **Either** Unethical • Work belongs to the company it was created for // copyright • … Kevin cannot use it without permission • It reduces the integrity of the person / profession / new company • Reference to IEEE standards in context **Or** Ethical • The program code could be open source • Kevin might own the copyright of code • Kevin may have permission to use the code • Reference to IEEE standards in context	**2**
5(b)	**1 mark** per bullet point for each justification, to **max 2** **Either** Unethical • Nadya has accepted a role / work she knows she cannot do • This reduces the integrity of the person • She may let down the new organisation who are expecting her to be able to do the work • Reference to IEEE standards in context **Or** Ethical • She is taking steps to prepare for the role • … Without expecting the company to do it • Nadya may have told the company that she didn't know the languages but that she would learn them • Reference to IEEE standards in context	**2**
5(c)	**1 mark** per bullet point for each justification, to **max 2** **Either** Ethical • The individual works as part of the team … • … therefore, the team should / will get the credit • Maria is not lying about who produced it • Reference to IEEE standards in context **Or** Unethical • Maria should identify who / where the idea originated • It prevents the individual getting recognition • Maria is not being supportive of the individual • Reference to IEEE standards in context	**2**

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Question	Answer	Marks
6(a)	**1 mark** per bullet point to **max 2** • `$age` • `$message` • `allowed`	**2**
6(b)	`Allowed`	**1**
6(c)	**1 mark** per bullet point • Passes the value in $message / message variable … • … back to the code that called it // … to replace the function call	**2**
6(d)	**1 mark** per bullet point to **max 4** • The (client web) browser requests the web page from the web server • The web server accesses the page (from its hard drive) • The web server processes / executes the PHP code … • … and produces the HTML for the web page // … the web server creates the web page • The web server returns the (HTML) web page to the client web browser	**4**

Question	Answer	Marks
7(a)	**1 mark** for each correct join  	**2**
7(b)	**1 mark** per bullet point • `MovieID` is the Primary Key `in MOVIE` • … links to `MovieID` which is the Foreign Key in `MOVIESCHEDULE` • `ScreenNumber` is the Primary Key in `SCREEN` • … links to `ScreenNumber` which is the Foreign Key in `MOVIESCHEDULE`	**4**
7(c)	**1 mark** per bullet point • `ALTER TABLE MOVIE` • `ADD (COLUMN)ProductionCompany VARCHAR(25);`	**2**

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Question	Answer	Marks
7(d)	**1 mark** per bullet point Answer 1: • `SELECT Title, Rating` • `FROM MOVIE, MOVIESCHEDULE` • `WHERE MOVIE.MovieID = MOVIESCHEDULE.MovieID` • `AND MOVIESCHEDULE.ScreenNumber = 3;` **Or** Answer 2: • `SELECT Title, Rating` • `FROM MOVIE INNER JOIN MOVIESCHEDULE` • `ON MOVIE.MovieID = MOVIESCHEDULE.MovieID` • `WHERE MOVIESCHEDULE.ScreenNumber = 3;`	**4**

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