Cambridge International Advanced Level

MARK SCHEME for the May/June 2015 series

9608 COMPUTER SCIENCE

9608/33

Paper 3 (Written Paper), maximum raw mark 75

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 will not enter into discussions about these mark schemes.

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Page 2		Mark Scheme	Syllabus	Paper	
		Cambridge International A Level – May/June 2015	9608	33	
1	(a) (i)	Wrong assignment operator (should be ':=' not '=')		1	
	(ii)	0 is not a digit		1	
	(iii)	'B' is not a number		1	
	(b)	<pre><assignmentstatement> ::= <u><variable> :=</variable></u></assignmentstatement></pre>		1 + 1 1 1 + 1 1	
	(c) (i)	Use of <u>software</u> (idea of using) to implement a <u>hardware</u> set-up (idea of implementing / simulating / emulating)			
	(ii)	e.g. no need to acquire client hardware for testing / reduces set-up time for test system / common development system for all developers			
	(iii)	e.g. software emulation runs slower than real hardware / not possible to emulate some hardware		1	
				Total: 13	
2	(a)	Description Type of	of LAN		
		any packet the listening computer receives may be part of a message for that computer	with ators at i end	1	
		connection provided through an access point st	ar	1	
		a process for handling collisions has to be implemented	less	1	
		listening computer only receives packets that are addressed to this computer 1 mark for correct arrow(s) from each description		1	
	(b) (i)	Server: central computer stores files that are to be downloaded		1	

Cambridge International A Level - May/June 2015 9608 33 (ii) Command: user can send action/instruction (or by example, e.g. change directory) that are carried out on server 1 (iii) Anonymous: allows user to access files user does not need to identify themselves to server 1 (iii) Anonymous: allows user to access files user does not need to identify themselves to server 1 3 (a) A Phishing B Virus C a standalone piece of software which can reproduce itself automatically D sending unsolicited emails to a distribution list 1 (b) e.g. phishing problem: identity fraud / misuse of financial data solution: ignore email / don't respond to email e.g. virus problem: computer may stop working // lost files solution: running anti-virus software 1 (c) cipher text: encrypted text which is not understandable private key: key only known to owner that can be used to encrypt message to confirm author of message (2 can be used by owner to decrypt a message to confirm author of message (2 can be used by owner to decrypt a message to confirm author of message (2 can be used by owner to decrypt a message thereby ensuring only owner can read message 1 (d) • Manager encrypts email • using his/her private key 1 (iii) DECLARE ThisHouseNo - 34 1 (iii) DECLARE ThisHouseNo - 34 1 (b) (i) TYPE WeatherStation DECLARE Station D DECLARE Statio	Pa	age 3	Mark Scheme	Syllabus	Paper
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(iii) Anonymous: allows user to access files user does not need to identify themselves to server 1 3 (a) A Phishing B Virus C a standalone piece of software which can reproduce itself automatically D sending unsolicited emails to a distribution list 1 (b) e.g. phishing problem: identify fraud / misuse of financial data solution: ignore email / don't respond to email e.g. virus problem: computer may stop working // lost files solution: running anti-virus software 1 (c) cipher text: encrypted text which is not understandable private key: key only known to owner that can be used to encrypt message thereby ensuring only owner can read message 1 (d) • Manager encrypts email • using public key of colleague • colleague decrypts email • using his/her private key 1 (d) • Manager encrypts email • using his/her private key 1 (d) • Manager encrypts email • using his/her private key 1 (d) • Manager encrypts email • using his/her private key 1 (iii) DECLARE ThisHouseNo - 34 1 (iii) DECLARE ThisHouseNo - 110 1 DECLARE ThisHouseNo : 110 1 1 (iii) StationID : STRING DECLARE StationID : STRING DECLARE StationID : STRING DECLARE TaisHouseNo : 115] OF INTEGER 1 (iii) StationID is hashed to produce home location		that are carried out on server		1	
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(d) • Manager encrypts email 1 • using public key of colleague 1 • colleague decrypts email 1 • using his/her private key Total: 12 4 (a) (i) HomeAddress.ThisHouseNo - 34 1 (ii) DECLARE ThisHouseNo: 110 1 DECLARE ThisTown: [Brightown, Arunde, Shoram] 1 (b) (i) TYPE WeatherStation 1 DECLARE StationID : STRING 1 DECLARE Temperature : ARRAY[115] OF INTEGER 1 (ii) StationID is hashed to produce home location 1 (iii) StationID is free insert record 1 Else use overflow method to find free location 1		(c)	cipher text : encrypted text which is not understandable private key : key only known to owner that can be used to encryp message to confirm author of message // can be used by owner to message thereby ensuring only owner can read message	ot decrypt a	1
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Total: 11		(ii)	StationID is hashed to produce home location If home location is free insert record Else use overflow method to find free location		1 1 1
					Total: 11

Page	e 4	Combridge Intern	Mark Sche	me Move	/	Sy	villabus	Paper
		Cambridge Intern	iational A L	evel – May	June 2	015	9608	33
5 (a) (i)		Circuit 1					
			А	В	Х			1
			0	0	1			
			0	1	0			
			1	0	0			
			1	1	0			
	(ii)		(Circuit 2				
			А	В	Х			1
			0	0	1			
			0	1	0			
			1	0	0			
			1	1	0			
(b) (i)	circuit 1 $\overline{\overline{A+B}}$ circuit 2 $\overline{\overline{A}}$. \overline{B}						1 1
	(ii)	$\overline{A+B} \equiv \overline{A} \cdot \overline{B}$						1
(c)	$\overline{\overline{(A.B)}} + B$						
		$\frac{1111}{(A.B)}$						1
		+B bar over whole express	sion					1 1
(d)	$\overline{(AP)}$ + P						
•		$(A.D) + D$ $= \overline{(A.B)} \overline{B}$						1
		$= (A,B).\overline{B}$						1
		$=A.(B.\overline{B})$						1
		= A.0						1
		-0						max 3
		allow f.t. from (c)						
								Total: 11

Page 5	Mark Scheme Syllabus	Paper
	Cambridge International A Level – May/June 2015 9608	33
		Γ
6 (a)	Control system	1
(b)	Any three different items – max 6 marks	
	heater / water pump / blinds pump for altering temperature / watering / light level actuator for	1 1 1
	fan for distributing air / water pump / blinds motor analogue to digital converter / digital to analogue convertor converts analogue signal from sensor to digital value for processing /	1

	converts digital signal to analogue signal for controlling actuator	1
	microprocessor	1
	executes control software warning device (speaker/buzzer/light)	1
	to give warning if conditions out of range / hardware malfunction	1
		max 6
(c) (i)	output of system (alter temperature / light level / soil moisture) affects input from sensors	2
	continuous	3
(ii)	min / max / ideal / mean / extreme temperature // sampling rate // tolerance interval	1
(iii)	reading from sensor is compared with parameter appropriate action is taken (by example)	2
(d) (i)	reading available for processing reading value is 4	1 1
(ii)	AND #B00000100 // AND #&04 // AND #4 1 mark for AND, 1 mark for address mode, 1 mark for mask, 1 mark for indication of numbering system	max 3
		Total: 18