

Cambridge International AS & A Level

COMPUTER SCIENCE		9618/4
Paper 4 Practical		May/June 202
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 May/June 2021 series for most Cambridge IGCSE™, Cambridge International A and AS Level components and some Cambridge O Level components.

PUBLISHED

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.

© UCLES 2021 Page 2 of 30

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.

© UCLES 2021 Page 3 of 30

Question	Answer	Marks
1(a)	mark per bullet point Declaring record/class with name node declaring data and next node (both as Integers)	2
	Example code:	
	Visual Basic Structure node Dim Data As Integer Dim nextNode As Integer End Structure	
	<pre>Python class node: definit(self, theData, nextNodeNumber): self. Data = theData self.nextNode = nextNodeNumber</pre>	
	<pre>Java class node{ private Integer Data; private Integer nextNode; public node(Integer dataP, Integer nextNodeP){ this.Data = dataP; this.nextNode = nextNodeP; } }</pre>	

© UCLES 2021 Page 4 of 30

Question	Answer	Marks
1(b)	1 mark per bullet point	4
	Declaring array named linkedList with data type node	
	Assigning all nodes correctly as record/object nodes	
	with correct values stored	
	• declaring startPointer as 0, emptyList as 5	
	Example code:	
	Visual Basic	
	Dim linkedList(9) As node	
	linkedList(0).data = 1	
	<pre>linkedList(0).nextNode = 1</pre>	
	linkedList(1).data = 5	
	<pre>linkedList(1).nextNode = 4 linkedList(2).data = 6</pre>	
	linkedList(2).data = 6 linkedList(2).nextNode = 7	
	linkedList(3).data = 7	
	linkedList(3).nextNode = -1	
	linkedList(4).data = 2	
	linkedList(4).nextNode = 2	
	linkedList(5).data = 0	
	linkedList(5).nextNode = 6	
	linkedList(6).data = 0	
	<pre>linkedList(6).nextNode = 8</pre>	
	linkedList(7).data = 56	
	<pre>linkedList(7).nextNode = 3 linkedList(8).data = 0</pre>	
	linkedList(8).data = 0 linkedList(8).nextNode = 9	
	linkedList(9).data = 0	
	linkedList(9).data = 0 linkedList(9).nextNode = -1	
	Dim startPointer As Integer = 0	
	Dim emptyList As Integer = 5	

© UCLES 2021 Page 5 of 30

Question	Answer	Marks
1(b)	<pre>Python linkedList = [node(1,1),node(5,4),node(6,7),node(7,-1),node(2,2),node(0,6),</pre>	
	<pre>Java public static void main(String[] args) { node[] linkedList = new node[10]; linkedList[0] = new node(1,1); linkedList[1] = new node(5, 4); linkedList[2] = new node(6, 7); linkedList[3] = new node(7,-1); linkedList[4] = new node(2,2); linkedList[5] = new node(0,6); linkedList[6] = new node(0,8); linkedList[7] = new node(56, 3); linkedList[8] = new node(0,9); linkedList[9] = new node(0,-1); Integer startPointer = 0; Integer emptyList = 5; }</pre>	

© UCLES 2021 Page 6 of 30

Question	Answer	Marks
1(c)(i)	 1 mark per bullet point Procedure outputNodes taking linked list and start pointer as parameters Looping until nextNode/pointer is -1 Outputting the node data in the correct order, i.e. following pointers Updating pointer to current node's nextNode Using the correct record/class field/properties throughout Example code: 	6
	<pre>Visual Basic Sub outputNodes(ByRef linkedList, ByVal currentPointer) While (currentPointer <> -1) Console.WriteLine(linkedList(currentPointer).data) currentPointer = linkedList(currentPointer).nextNode End While End Sub</pre>	
	<pre>Python def outputNodes(linkedList, currentPointer): while(currentPointer != -1): print(str(linkedList[currentPointer].data)) currentPointer = linkedList[currentPointer].nextNode</pre>	
	<pre>Java public static void outputNodes(node[] linkedList, Integer currentPointer) { while(currentPointer != -1) { System.out.println(linkedList[currentPointer].data); currentPointer = linkedList[currentPointer].nextNode; } }</pre>	

© UCLES 2021 Page 7 of 30

Question	Answer	Marks
1(c)(ii)	Screenshot showing: 1 5 2 6 56 7	1
1(d)(i)	 1 mark per bullet point to max 7 Function taking list and both pointers as parameters Taking (integer) data as input Checking if list is full and returning False Insert the input data to the empty list node's data Following pointers to find last node in Linked List and updating last node's pointer to empty list/location where new node is added Updating empty list to it's first elements pointer Returning true when added successfully Example code: 	7
	<pre>Visual Basic Function addNode(ByRef linkedList() As node, ByVal currentPointer As Integer, ByRef emptyList As Integer) Console.WriteLine("Enter the data to add") Dim dataToAdd As Integer = Console.ReadLine() Dim previousPointer As Integer = 0 Dim newNode As node If emptyList < 0 Or emptyList > 9 Then Return False Else newNode.data = dataToAdd newNode.nextNode = -1</pre>	

© UCLES 2021 Page 8 of 30

Question	Answer	Marks
1(d)(i)	<pre>linkedList(emptyList) = newNode previousPointer = 0 While (currentPointer <> -1) previousPointer = currentPointer currentPointer = linkedList(currentPointer).nextNode End While Dim valueToWrite As Integer = emptyList linkedList(previousPointer).nextNode = valueToWrite emptyList = linkedList(emptyList).nextNode</pre>	
	Return True End If	
	End Function	
	<pre>Python def addNode(linkedList, currentPointer, emptyList): dataToAdd = input("Enter the data to add")</pre>	
	<pre>if emptyList <0 or emptyList > 9: return False</pre>	
	else: newNode = node(int(dataToAdd), -1) linkedList[emptyList] = (newNode)	
	<pre>previousPointer = 0 while(currentPointer != -1): previousPointer = currentPointer currentPointer = linkedList[currentPointer].nextNode linkedList[previousPointer].nextNode = emptyList emptyList = linkedList[emptyList].nextNode</pre>	
	return True	

© UCLES 2021 Page 9 of 30

Question	Answer	Marks
1(d)(i)	<pre>Java public static Boolean addNode(node[] linkedList, Integer currentPointer,</pre>	
	}	

© UCLES 2021 Page 10 of 30

Question	Answer	Marks
1(d)(ii)	 1 mark per bullet point Call addNode() with list, start and empty pointers and store/check return value output appropriate message if True returned and if False returned Calling outputNodes() with list and start pointer before and after addNode() 	
	Example code:	
	Visual Basic Sub Main() Dim linkedList(10) As node linkedList(0).data = 1 linkedList(0).nextNode = 1 linkedList(1).data = 5 linkedList(1).nextNode = 4 linkedList(2).nextNode = 7 linkedList(2).nextNode = 7 linkedList(3).data = 7 linkedList(3).nextNode = -1 linkedList(3).nextNode = -1 linkedList(4).data = 2 linkedList(4).nextNode = 2 linkedList(5).data = -1 linkedList(5).nextNode = 6 linkedList(6).nextNode = 6 linkedList(6).nextNode = 7 linkedList(7).data = 56 linkedList(7).nextNode = 3 linkedList(8).data = -1 linkedList(8).nextNode = 9 linkedList(9).nextNode = 9 linkedList(9).nextNode = -1 Dim startPointer As Integer = 0 Dim emptyList As Integer = 5 outputNodes(linkedList, startPointer) Dim returnValue = addNode(linkedList, startPointer, emptyList)	

© UCLES 2021 Page 11 of 30

```
Marks
Question
                                                     Answer
 1(d)(ii)
           If returnValue = True Then
              Console.WriteLine("Item successfully added")
           Else
              Console.WriteLine("Item not added, list full")
           End If
           outputNodes(linkedList, startPointer)
           Console.ReadLine()
         End Sub
         Python
         linkedList = [node(1,1), node(5,4), node(6,7), node(7,-1), node(2,2), node(-1,6),
                       node (-1,7), node (56,3), node (-1,9), node (-1,-1)]
         startPointer = 0
         emptyList = 5
         outputNodes(linkedList, startPointer)
         returnValue = addNode(linkedList, startPointer, emptyList)
         if returnValue == True:
             print("Item successfully added")
         else:
             print("Item not added, list full")
         outputNodes(linkedList, startPointer)
         Java
         public static void main(String[] args) {
              node[] linkedList = new node[10];
              linkedList[0] = new node(1,1);
              linkedList[1] = new node(5, 4);
              linkedList[2] = new node(6, 7);
              linkedList[3] = new node(7,-1);
              linkedList[4] = new node(2,2);
              linkedList[5] = new node(-1,6);
              linkedList[6] = new node(-1,7);
              linkedList[7] = new node(56, 3);
              linkedList[8] = new node(-1,9);
```

© UCLES 2021 Page 12 of 30

Question	Answer	Marks
1(d)(ii)	<pre>linkedList[9] = new node(-1,-1); Integer startPointer = 0; Integer emptyList = 5; outputNodes(linkedList, startPointer); Boolean returnValue; returnValue = addNode(linkedList, startPointer, emptyList); if (returnValue == true) { System.out.println("Item successfully added"); }else{ System.out.println("Item not added, list full"); } outputNodes(linkedList, startPointer); }</pre>	
1(d)(iii)	1 mark for screenshot showing : Linked list output Message saying Successfully added or equivalent Linked list output with 5 at the end. Example: 1 5 2 6 7 5 (being input) 1 5 2 6 7 5	1

© UCLES 2021 Page 13 of 30

Question	Answer	Marks
2(a)	1 mark per bullet point	2
	Array with identifier arrayData	
	correct 10 data items added	
	Example code:	
	Visual Basic	
	Dim arrayData(9) As Integer	
	Sub Main()	
	arrayData(0) = 10	
	<pre>arrayData(1) = 5 arrayData(2) = 6</pre>	
	arrayData(3) = 7	
	arrayData(4) = 1	
	arrayData(5) = 12	
	arrayData(6) = 13	
	arrayData(7) = 15	
	arrayData(8) = 21	
	<pre>arrayData(9) = 8 End Sub</pre>	
	Python	
	arrayData = [10, 5, 6, 7, 1, 12, 13, 15, 21, 8]	
	Java	
	<pre>int[] arrayData = new int[];</pre>	
	<pre>public static void main(String[] args) {</pre>	
	<pre>arrayData[0] = 10;</pre>	
	arrayData[1] = 5;	
	<pre>arrayData[2] = 6; arrayData[3] = 7;</pre>	
	arrayData[4] = 1;	
	arrayData[5] = 12;	
	arrayData[6] = 13;	

© UCLES 2021 Page 14 of 30

Question	Answer	Marks
2(a)	<pre>arrayData[7] = 15; arrayData[8] = 21; arrayData[9] = 8; }</pre>	
2(b)(i)	 1 mark per bullet point function linearSearch with correct identifier taking integer search value as a parameter Searching 10 times/through all array elements comparing each element to search value returning True if found returning False if not found 	6
	<pre>Visual Basic Function linearSearch(ByRef searchValue As Integer) For x = 0 To 9 If arrayData(x) = searchValue Then Return True End If Next Return False End Function</pre>	

© UCLES 2021 Page 15 of 30

Question	Answer	Marks
2(b)(i)	<pre>Python def linearSearch(searchValue): for x in range(0, 10): if arrayData[x] == searchValue: return True return False</pre>	
	<pre>Java public static Boolean linearSearch(Integer searchValue) { for (int x = 0; x < 10; x++) { if(arrayData[x] == searchValue) { return true; } } return false; }</pre>	

© UCLES 2021 Page 16 of 30

Question	Answer	Marks
2(b)(ii)	1 mark per bullet point to max 4	4
()()	Taking value as input	
	checking/casting to Integer	
	Calling linearSearch and sending input as parameter	
	Storing and checking return value	
	outputting appropriate message if found and if not found	
	Example code:	
	Visual Basic	
	Dim arrayData(10) As Integer	
	Sub Main()	
	arrayData(0) = 10	
	arrayData(1) = 5	
	arrayData(2) = 6	
	arrayData(3) = 7	
	arrayData(4) = 1	
	arrayData(5) = 12	
	arrayData(6) = 13	
	<pre>arrayData(7) = 15 arrayData(8) = 12</pre>	
	arrayData(0) = 12 $arrayData(9) = 8$	
	Console.WriteLine("Enter a number to search for")	
	Dim searchValue As Integer = Console.ReadLine()	
	Dim returnValue As Boolean = linearSearch(searchValue)	
	If returnValue = True Then	
	Console.WriteLine("Found it")	
	Else	
	Console.WriteLine("Didn't find it")	
	End If	
	End Sub	

© UCLES 2021 Page 17 of 30

```
Question
                                                                                                        Marks
                                                    Answer
 2(b)(ii)
         Python
         arrayData = [10, 5, 6, 7, 1, 12, 13, 15, 21, 8]
         searchValue = int(input("Enter the number to search for"))
         returnValue = linearSearch(searchValue)
         if returnValue == True:
             print("It was found")
         else:
             print("It was not found")
         Java
         Integer[] arrayData = new Integer[10];
         public static void main(String[] args){
              arrayData[0] = 10;
              arrayData[1] = 5;
              arrayData[2] = 6;
              arrayData[3] = 7;
              arrayData[4] = 1;
              arrayData[5] = 12;
              arrayData[6] = 13;
              arrayData[7] = 15;
              arrayData[8] = 12;
               arrayData[9] = 8;
              System.out.println("Enter the number to search for");
              Integer searchValue;
              Scanner in = new Scanner(System.in);
              searchValue = in.nextInt();
               Boolean returnValue;
              returnValue = linearSearch(searchValue);
              if (returnValue == true) {
                    System.out.println("It was found");
               }else{
                    System.out.println("It was not found");
```

© UCLES 2021 Page 18 of 30

Question	Answer	Marks
2(b)(iii)	1 mark for screenshot showing input and output for number found 1 mark for screenshot showing input and output for number not found	2
2(c)	<pre>1 mark per bullet point • Correct outer loop stop • Correct inner loop stop • Correct < in the IF • Correct teharray(y + 1) • Correct temp • Remainder matching pseudocode Example code: Visual Basic Sub bubbleSort() Dim temp As Integer = 0 For x = 0 To 9 For y = 0 To 8 If theArray(y) < theArray(y + 1) Then temp = theArray(y) theArray(y) = theArray(y + 1) theArray(y + 1) = temp End If Next Next End Sub</pre>	6

© UCLES 2021 Page 19 of 30

Question	Answer	Marks
2(c)	<pre>Python def bubbleSort(): for x in range (0, 10): for y in range(0, 9): if theArray[y] < theArray[y + 1]:</pre>	
	<pre>temp = theArray[y] theArray[y] = theArray[y + 1] theArray[y + 1] = temp</pre>	
	<pre>Java public static void bubbleSort() { int temp; for (int x = 0; x < 10; x++) { for (int y = 0; y < 9; y++) { if(theArray[y] < theArray[y+1]) { temp = theArray[y]; theArray[y] = theArray[y+1]; theArray[y] = temp; } } } }</pre>	

© UCLES 2021 Page 20 of 30

Question	Answer	Marks
3(a)	1 mark per bullet point	5
	Class named treasureChest and end	
	Question declared as string as a class attribute	
	Answer declared as integer as a class attribute	
	Points declared as integer as a class attribute	
	All 3 attributes are private	
	Example code:	
	Visual Basic	
	Class treasureChest	
	Private question As String	
	Private answer As Integer	
	Private points As Integer	
	Sub New(questionP, answerP, pointsP)	
	question = questionP	
	answer = answerP	
	points = pointsP	
	End Sub	
	End Class	
	Python	
	class treasureChest:	
	#Private question : String	
	#Private answer : Integer	
1	#Private points : Integer	
	<pre>definit(self, questionP, answerP, pointsP):</pre>	
	selfquestion = questionP	
	selfanswer = answerP	
	selfpoints = points	

© UCLES 2021 Page 21 of 30

Question	Answer	Marks
3(a)	Java import java.util.Scanner;	
	<pre>class treasureChest{ private String question; private Integer answer; private Integer points;</pre>	
	<pre>public treasureChest(String questionP, Integer answerP, Integer pointsP) { question = questionP; answer = answerP; points = pointsP; } }</pre>	
3(b)	1 mark per bullet point to max 8 • procedure declared as readData • declare array arrayTreasure with 4 elements type treasureChest • opening correct file for read • looping until EOF/5 questions •reading in and storing each group of 3 lines appropriately • creating object of type treasureChest •with question, answer and points from file as parameters •adding to next array element/appending • repeatedly for all 5 questions in correct order • Use of appropriate exception handler •appropriate output if file not found • Closing correct file	8

© UCLES 2021 Page 22 of 30

Question	Answer	Marks
3(b)	Example code:	
	Visual Basic	
	Sub readData()	
	Dim arrayTreasure(4) as treasureChest	
	Dim filename As String = "treasureChestData.txt"	
	Try	
	Dim fileReader As New System.IO.StreamReader(filename)	
	Dim question As String Dim answer, points As Integer	
	Dim numberQuestions as Integer = 0	
	While fileReader.Peek <> -1	
	question = fileReader.ReadLine()	
	answer = fileReader.ReadLine()	
	points = fileReader.ReadLine()	
	arrayTreasure(numberQuestions) = New treasureChest(question, answer, points)	
	numberQuestions += 1	
	End While	
	fileReader.Close()	
	Catch ex As Exception	
	Console.WriteLine("Invalid file")	
	End Try	
	End Sub	
	Python	
	# arrayTreasure(5) as treasureChest	
	<pre>def readData():</pre>	
	filename = "treasureChestData.txt"	
	try:	
	file= open(filename, "r")	
	<pre>dataFetched = (file.readline()).strip()</pre>	
	while(dataFetched != ""):	
	question = dataFetched	
	<pre>answer = (file.readline()).strip()</pre>	

© UCLES 2021 Page 23 of 30

Question	Answer	Marks
3(b)	<pre>points = (file.readline()).strip() arrayTreasure.append(treasureChest(question, answer, points)) dataFetched = (file.readline()).strip() file.close() except IOError: print("Could not find file")</pre>	
	<pre>Java public static void readData() { treasureChest[] arrayTreasure = new treasureChest[5]: String filename = "treasureChestData.txt"; String dataRead; String question; String answer; String points; Integer numberQuestions = 0; try{ FileReader f = new FileReader(filename); BufferedReader reader = new BufferedReader(f); dataRead = reader.readLine(); while (dataRead != null) { question = dataRead; answer = reader.readLine(); points = reader.readLine(); arrayTreasure[numberQuestions] = new treasureChest(question,</pre>	

© UCLES 2021 Page 24 of 30

Question	Answer	Marks
3(b)	<pre>catch(FileNotFoundException ex) {</pre>	
3(c)(i)	1 mark for getQuestion returning the value of question Example code:	1
	Visual Basic Function getQuestion() Return question End Function	
	<pre>Python def getQuestion(self): return selfquestion</pre>	
	<pre>Java public String getQuestion() { return question; }</pre>	

© UCLES 2021 Page 25 of 30

Question	Answer	Marks
3(c)(ii)	1 mark per bullet point	3
()()	Function checkAnswer taking in the parameter, returning Boolean	
	Comparing parameter to that object's answer	
	returning True if correct and False otherwise	
	Example code:	
	Visual Basic	
	Function checkAnswer(answerP)	
	If answer = answerP Then	
	Return True	
	Else	
	Return False	
	End If	
	End Function	
	Python	
	<pre>def checkAnswer(self, answerP):</pre>	
	<pre>if int(selfanswer) == answerP:</pre>	
	return True	
	else:	
	return False	
	Java	
	<pre>public Boolean checkAnswer(Integer answerP) {</pre>	
	if (answer == answerP){	
	return true;	
	}else{	
	return false;	
	[

© UCLES 2021 Page 26 of 30

Question	Answer	Marks
3(c)(iii)	 1 mark per bullet point Function getPoints taking attempts as parameter and returning integer If attempts is 1 returning points If attempts is 2 returns points DIV 2 If attempts is 3 or 4 returns points DIV 4 otherwise returns 0 	5
	Example code:	
	<pre>Visual Basic Function getPoints(attempts) If attempts = 1 Then Return points ElseIf attempts = 2 Then Return points \ 2 ElseIf attempts = 3 Or attempts = 4 Then Return points \ 4 Else Return 0 End If End Function</pre>	
	<pre>Python def getPoints(self, attempts): if attempts == 1: return int(selfpoints) elif attempts == 2: return int(selfpoints) // 2 elif attempts == 3 or attempts == 4: return int(selfpoints) // 4 else: return 0</pre>	

© UCLES 2021 Page 27 of 30

Question	Answer	Marks
3(c)(iii)	<pre>Java public Integer getPoints(Integer attempts) { if (attempts == 1) { return points; }else if(attempts == 2) { return Math.round(points/2); }else if(attempts == 3 attempts == 4) { return Math.round(points/4); }else { return 0; } }</pre>	
3(c)(iv)	1 mark per bullet point to max 7 Call the procedure readData() Take the question number as input from user validated between 1 and 5 Output the question stored at user's input value Read answer from user Check the answer input against question's answer looping until the answer is correct Keeping track of the number of attempts using a variable Using getPoints() and sending the number of attempts as a parameter outputting the number of points returned Using .getQuestion and .checkAnswer to access question number input by user and answer input by used	7

© UCLES 2021 Page 28 of 30

Question	Answer	Marks
3(c)(iv)	Example code:	
	Visual Basic	
	Sub Main()	
	readData()	
	Console.WriteLine("Pick a treasure chest to open")	
	Dim choice As Integer = Console.ReadLine()	
	Dim result As Boolean	
	Dim answer As Integer	
	Dim attempts As Integer = 0	
	If choice > 0 And choice < 6 Then	
	result = False	
	attempts = 0	
	While result = False	
	<pre>Console.WriteLine(arrayTreasure(choice - 1).getQuestion())</pre>	
	answer = Console.ReadLine	
	result = arrayTreasure(choice - 1).checkAnswer(answer)	
	attempts = attempts + 1	
	End While	
	<pre>Console.WriteLine(arrayTreasure(choice - 1).getPoints(attempts)) End If</pre>	
	End Sub	
	Python	
	readData()	
	<pre>choice = int(input("Pick a treasure chest to open"))</pre>	
	if choice > 0 and choice < 6:	
	result = False	
	attempts = 0	
	while result == False:	
	<pre>answer = int(input(arrayTreasure[choice-1].getQuestion()))</pre>	
	result = arrayTreasure[choice-1].checkAnswer(answer)	
	attempts = attempts + 1	
	<pre>print(int(arrayTreasure[choice-1].getPoints(attempts)))</pre>	

© UCLES 2021 Page 29 of 30

Question	Answer	Marks
3(c)(iv)	<pre>Java public static void main(String[] args) { readData(); Scanner scanner = new Scanner(System.in); System.out.println("Pick a treasure chest to open"); Integer answer; Integer choice; choice= Integer.parseInt(scanner.nextLine()); Integer attempts; if (choice> 0 && choice < 6) { Boolean result = false; attempts = 0; while (result == false) { System.out.println(arrayTreasure[choice-1].getQuestion()); answer = Integer.parseInt(scanner.nextLine()); result = arrayTreasure[choice-1].checkAnswer(answer); attempts++; } System.out.println(arrayTreasure[choice-1].getPoints(attempts)); } </pre>	
3(c)(v)	1 mark per screenshot • Screenshot: outputting 2*2 entering 4 outputting 10 • Screenshot: outputting 3000+4000 entering an incorrect value entering 7000 outputting 9	2

© UCLES 2021 Page 30 of 30