

Commentary on candidate evidence

The candidate evidence has achieved the following marks for each question of section 1 of the question paper.

Candidate 1

Question 1

The candidate was awarded **1 mark** because the three comparisons needed have been stated accurately.

Question 2(a)

The candidate was awarded **1 mark** because the correct value has been stated.

Question 2(b)

The candidate was awarded **2 marks** because the contents of pointers for all nodes have been stated correctly.

Question 3(a)

The candidate was awarded **1 mark** because the array declaration indicates the correct dimensions and intended data type.

Question 3(b)

The candidate was awarded **1 mark** because the code used to assign the value to the 2D array is correct.

Question 4(a)

The candidate was awarded **2 marks** because they correctly stated that the description provided details of a persona together with a test case. The response also describes one way that the persona and test case could be used by the developers in usability testing.

Question 4(b)

The candidate was awarded **1 mark** because they correctly stated that perfective maintenance would be required and provided suitable justification.

Question 5(a)

The candidate was awarded **1 mark** because they correctly stated that the subclasses `Rectangle`, `Triangle` and `Circle` each have a specific implementation of the `calcArea()` method.

Question 5(b)(i)

The candidate was awarded **2 marks** because they correctly identified that a new object of the `Rectangle` class has been instantiated and the initial value assigned to each of its instance variables (including `area`) is correct.

Question 5(b)(ii)

The candidate was awarded **2 marks** because the output generated from each statement has been correctly stated.

Question 5(c)(i)

The candidate was awarded **0 marks** because, although they have correctly described the purpose of the method used, by referring to the wrong element of the list array, and therefore incorrectly referring to the door rather than the roof, the candidate described the effect of the statement incorrectly.

Question 5(c)(ii)

The candidate was awarded **2 marks** because they correctly stated that the code applies to an element of a superclass array of objects of type `Shape`. In addition, the candidate has correctly stated that the `getCircumference()` method is not accessible to objects of `Shape` class.

Question 5(d)(i)

The candidate was awarded **1 mark** because the condition used to implement Step 4 is correct.

Question 5(d)(ii)

The candidate was awarded **1 mark** because, although they did not indicate that the `getArea()` method should be used, the comparison of two adjacent elements of the array is correct.

Question 5(d)(iii)

The candidate was awarded **1 mark** because the code needed to implement Step 8 of the algorithm is correct.

Question 6(a)

The candidate was awarded **3 marks** because the need to open and close a connection with the database server has been identified, the need to execute a SQL query has been stated and the assignment of the query results to the array of records has been indicated.

Question 6(b)(i)

The candidate was awarded **3 marks** because the complex condition at 3.3.7 is correct, they have correctly indicated that the inner loop needs to work backwards (at 3.3.9 and at 3.3.7), and have correctly updated the contents of the array.

Question 6(b)(ii)

The candidate was awarded **4 marks** because the need for a backwards loop to process the `animalList` array was indicated (for length of `animalList`-1 down to 0) together with the need to count the number of animals in the `temp` array (set `newPosn` to `l + length of temp`). The candidate attempted to assign data to the correct position in the `animalList` array (set `animalList[newPosn]` to `animalList[i]`) and also attempted to create empty records at the start of the `animalList` array (set `animalList[i]` to null).

Question 6(b)(iii)

The candidate was awarded **2 marks** because they have indicated the need to calculate the percentage reduction (`SET(percentage to $\frac{\text{animalList}[i].\text{numberRemaining}}{\text{animalList}[\text{index}].\text{numberRemaining}} + 100$)`) and also indicated the need to display the name and percentage reduction (details indicated in the IF statement).

Candidate 2

Question 1

The candidate was awarded **1 mark** because the description of the comparisons needed is accurate.

Question 2(a)

The candidate was awarded **1 mark** because the value stored in the head pointer has been stated accurately.

Question 2(b)

The candidate was awarded **1 mark** because the contents of node 514 have been stated correctly.

Question 3(a)

The candidate was awarded **1 mark** because the intended data type and dimensions of the 2D array have been correctly identified.

Question 3(b)

The candidate was awarded **1 mark** because the value has been assigned to the 2D array correctly.

Question 4(a)

The candidate was awarded **0 marks** because use made of the persona and test case was not mentioned in the response and the testing has been incorrectly identified as end-user testing.

Question 4(b)

The candidate was awarded **1 mark** for correctly identifying the need for preventive maintenance and providing a supporting reason.

Question 5(a)

The candidate was awarded **1 mark**. They did not explain the use of overriding to replace or the code inherited from the `Shape` superclass. However, the candidate clearly stated that overriding of the superclass method would be needed to ensure that the area of a rectangle can be calculated rather than displaying the generic message associated with the superclass.

Question 5(b)(i)

The candidate was awarded **2 marks** because they correctly identified that a new object of the `Rectangle` class has been instantiated and the response correctly indicates the initial value assigned to each of its instance variables (including `area`).

Question 5(b)(ii)

The candidate was awarded **2 marks** because the output generated from each statement has been correctly stated.

Question 5(c)(i)

The candidate was awarded **1 mark** because they correctly identified that the fill colour of object `t1` will be set to red.

Question 5(c)(ii)

The candidate was awarded **2 marks** because they correctly explained that the `list` array is of type `Shape` which is polymorphic in nature since it can reference objects that belong to subclasses of the `Shape` superclass. The response also explains that the `getCircumference()` method is not accessible to `Shape` class objects.

Question 5(d)(i)

The candidate was awarded **1 mark** because the condition used with the `while` statement is correct.

Question 5(d)(ii)

The candidate was awarded **2 marks** because they correctly indicated the use made of the `getArea()` method and compared two adjacent elements of the array correctly.

Question 5(d)(iii)

The candidate was awarded **1 mark** because the code needed to implement Step 8 of the algorithm is correct.

Question 6(a)

The candidate was awarded **3 marks** because the need to open and close a connection with the database server has been identified, the need to execute a SQL query has been stated and the assignment of the query results to the array of records has been indicated.

Question 6(b)(i)

The candidate was awarded **2 marks** because they indicated the complex condition needed to control the inner loop (while `index >= 1` and `temp[index-1].readingNumber < value.readingNumber`) and also indicated that the inner loop will work backwards to process the array (`index = index - 1`).

Question 6(b)(ii)

The candidate was awarded **3 marks** because, although they attempted to count the number of animals in the `animalList` array (`pos = pos + 1`), `last` rather than `pos` has been used in the second loop. However, the candidate correctly indicated the need to count the number of animals in the `temp` array (`H = length(temp)`). In addition, they also indicated that the loop would process the array backwards (for `x = last` to `0`) and within the loop, the assignment of data to the correct position in the `animalList` array (`animalList[H+x] = animalList[x]`) has been indicated.

Question 6(b)(iii)

The candidate was awarded **1 mark**. There is an attempt to match an updated record with the previous reading, compare the percentage reduction (second if statement) and display the name and percentage reduction. However, the matching of an updated record with the previous reading is inaccurate and the calculation of the percentage reduction displayed is incomplete.

Candidate 3

Question 1

The candidate was awarded **0 marks** because they have not provided any comparisons.

Question 2(a)

The candidate was awarded **0 marks** because they have stated the incorrect value.

Question 2(b)

The candidate was awarded **1 mark** because the contents of node 514 have been stated correctly.

Question 3(a)

The candidate was awarded **1 mark** because the intended data type and dimensions of the 2D array have been correctly identified.

Question 3(b)

The candidate was awarded **1 mark** because the value has been assigned to the 2D array correctly.

Question 4(a)

The candidate was awarded **2 marks** because the response correctly indicates that a member of the development team would adopt the characteristics of the persona to perform the task described.

Question 4(b)

The candidate was awarded **0 marks** because the incorrect type of maintenance has been stated and no justification has been provided.

Question 5(a)

The candidate was awarded **1 mark**. They did not explain the use of overriding to replace or edit the code inherited from the `Shape` superclass. However, the candidate clearly stated that overriding of the superclass method would be needed to ensure that the formula used to calculate the area of each shape would be different in each case.

Question 5(b)(i)

The candidate was awarded **1 mark** because they correctly stated that the code would be used to instantiate an object of the `Rectangle` class. However, the initial value assigned to each instance variable has not been provided in the response.

Question 5(b)(ii)

The candidate was awarded **2 marks** because the output generated from each statement has been correctly stated.

Question 5(c)(i)

The candidate was awarded **1 mark** because they correctly indicated that the fill colour red will be applied to the roof of the house.

Question 5(c)(ii)

The candidate was awarded **0 marks** because they incorrectly corrected stated that `getCircumference()` is not a procedure in the program. The `getCircumference()` method has been clearly indicated in the UML class diagram.

Question 5(d)(i)

The candidate was awarded **1 mark** because the condition used to implement Step 4 is correct.

Question 5(d)(ii)

The candidate was awarded **0 marks** because the comparison of two adjacent elements of the array is incorrect and use of the `getArea()` method has not been indicated.

Question 5(d)(iii)

The candidate was awarded **1 mark** because the code needed to implement Step 8 of the algorithm is correct.

Question 6(a)

The candidate was awarded **2 marks** because they indicated the need to connect to the database server and have also indicated the assignment of data to the array of records.

Question 6(b)(i)

The candidate was awarded **1 mark** because they correctly indicated the need to work backwards through the array ($\text{index}=\text{index}-1$). The complex condition is incorrect as it doesn't refer to readingNumber and updating the contents of the array is also incorrect since temp has been assigned to list(index) but hasn't been updated within the loop.

Question 6(b)(ii)

The candidate was awarded **0 marks** because the design provided simply moves elements of array down one position and places a single empty row at the top of the array.

Question 6(b)(iii)

The candidate was awarded **1 mark** for their attempt to display the required details. The attempt to match an updated record with the previous record is incorrect as is the calculation of the percentage reduction.

Candidate 4 (selected questions)

Question 5(a)

The candidate was awarded **2 marks** because they clearly indicated that overriding is used to change or rewrite the `getArea()` code to generate different output for each subclass.

Question 5(b)(i)

The candidate was awarded **2 marks** because they clearly explained that the code has been used to create an instance of the `Rectangle` class. The candidate also indicated how initial values will be assigned to each of the instance values.

Question 5(d)(i)

The candidate was awarded **1 mark** because the condition used to implement Step 4 is correct.

Question 5(d)(ii)

The candidate was awarded **1 mark** because they correctly indicated the need to use the `getArea()` method but compared adjacent elements of the array incorrectly.

Question 5(d)(iii)

The candidate was awarded **1 mark** because the code needed to implement Step 8 of the algorithm is correct.

Question 6(a)

The candidate was awarded **2 marks** because they indicated the need to execute a SQL query to extract the data from the database and also indicated the assignment of the query results to the array of records.

Candidate 5 (selected questions)

Question 4(a)

The candidate was awarded **1 mark** because they indicated that the developers would assume the persona during final testing but did not refer to the test case provided in the scenario.

Question 4(b)

The candidate was awarded **2 marks** because they correctly stated that perfective maintenance would be needed and also provided appropriate justification.

Question 5(a)

The candidate was awarded **2 marks** because they clearly stated that overriding is used to change the behaviour of the `getArea()` method in each of the subclasses so that a different equation is applied.

Question 5(c)(ii)

The candidate was awarded **2 marks** because they clearly indicated that although element 8 of the list array is referencing a `Circle` object, the subclass method cannot be accessed since only methods associated with the parent class can be applied to elements of a superclass array.

Question 6(a)

The candidate was awarded **3 marks** because they indicated the need to connect to a database server, execute a SQL query to extract the data from the database and the assignment of query results to the array of records.

Question 6(b)(ii)

The candidate was awarded **4 marks** because they indicated the need to count the number of entries in temp array (`places = len(temp)`), the need for a loop to work backwards through the `animalList` array (`for x in range(len(animalList), 0, -1)`), attempted to assign data to correct position of `animalList` array (`set animalList[x + places] to animalList[x]`) and indicated the need to create empty records at the start of the `animalList` array (`clear animalList[x]`).