

## Section A

**You are advised to spend no longer than 40 minutes answering this section.**

**Here is a copy of the pre-release material.**

**DO NOT** attempt Tasks 1, 2 and 3 now.

Use the pre-release material and your experience from attempting the tasks before the examination to answer Question 1.

### **Pre-release material**

An auction company has an interactive auction board at their sale rooms, which allows buyers to place bids at any time during the auction. Before the auction starts, the sellers place their items in the sale room with a unique number attached to each item (item number). The following details about each item need to be set up on the interactive auction board system: item number, number of bids, description and reserve price. The number of bids is initially set to zero.

During the auction, buyers can look at the items in the sale room and then place a bid on the interactive auction board at the sale room. Each buyer is given a unique number for identification (buyer number). All the buyer needs to do is enter their buyer number, the item number and their bid. Their bid must be greater than any existing bids.

At the end of the auction, the company checks all the items and marks those that have bids greater than the reserve as sold. Any items sold will incur a fee of 10% of the final bid to be paid to the auction company.

Write and test a program or programs for the auction company.

- Your program or programs must include appropriate prompts for the entry of data, data must be validated on entry.
- Error messages and other output need to be set out clearly and understandably.
- All variables, constants and other identifiers must have meaningful names.

You will need to complete these **three** tasks. Each task must be fully tested.

#### **Task 1 – Auction set up.**

For every item in the auction the item number, description and the reserve price should be recorded. The number of bids is set to zero. There must be at least 10 items in the auction.

#### **Task 2 – Buyer bids.**

A buyer should be able to find an item and view the item number, description and the current highest bid. A buyer can then enter their buyer number and bid, which must be higher than any previously recorded bids. Every time a new bid is recorded the number of bids for that item is increased by one. Buyers can bid for an item many times and they can bid for many items.

#### **Task 3 – At the end of the auction.**

Using the results from TASK 2, identify items that have reached their reserve price, mark them as sold, calculate 10% of the final bid as the auction company fee and add this to the total fee for all sold items. Display this total fee. Display the item number and final bid for all the items with bids that have not reached their reserve price. Display the item number of any items that have received no bids. Display the number of items sold, the number of items that did not meet the reserve price and the number of items with no bids.

1. All variables, constants and other identifiers should have meaning full names.

Name two variables you used for Task 1 and state the purpose of each one.

Variable 1 .....

Purpose.....

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Variable 2 .....

Purpose.....

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.....[4]

2. Explain how you performed unique validation check for item numbers in **Task-1**. You may include proper pseudo code or programming statements as part of your explanation.

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.....[3]

[5]

(b) Explain how your program identifies items which receive no bits. You may include proper pseudo code or programming statements as part of your explanation.

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(c) Explain how will you check if the item is sold or unsold in **Task 3**.

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.....[4]

## Section B

1. This is a section of program code.

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1 Total = 100.00
2 PRINT 'Enter the height of each member of your class, one at a
  time, when prompted'
3 FOR Count = 1 TO 30
4   PRINT 'Enter a height in metres'
5   INPUT Height
6   Total = Total + Height
7   PRINT Total / 30
8   Count = Count + 1
9 NEXT Count
```

(a) There are **three** errors in this code.

State the line numbers that contain the errors and describe how to correct each error.

Error 1 .....

Correction .....

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Error 2 .....

Correction .....

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Error 3 .....

Correction .....

.....[3]

(b) State the purpose of this program.

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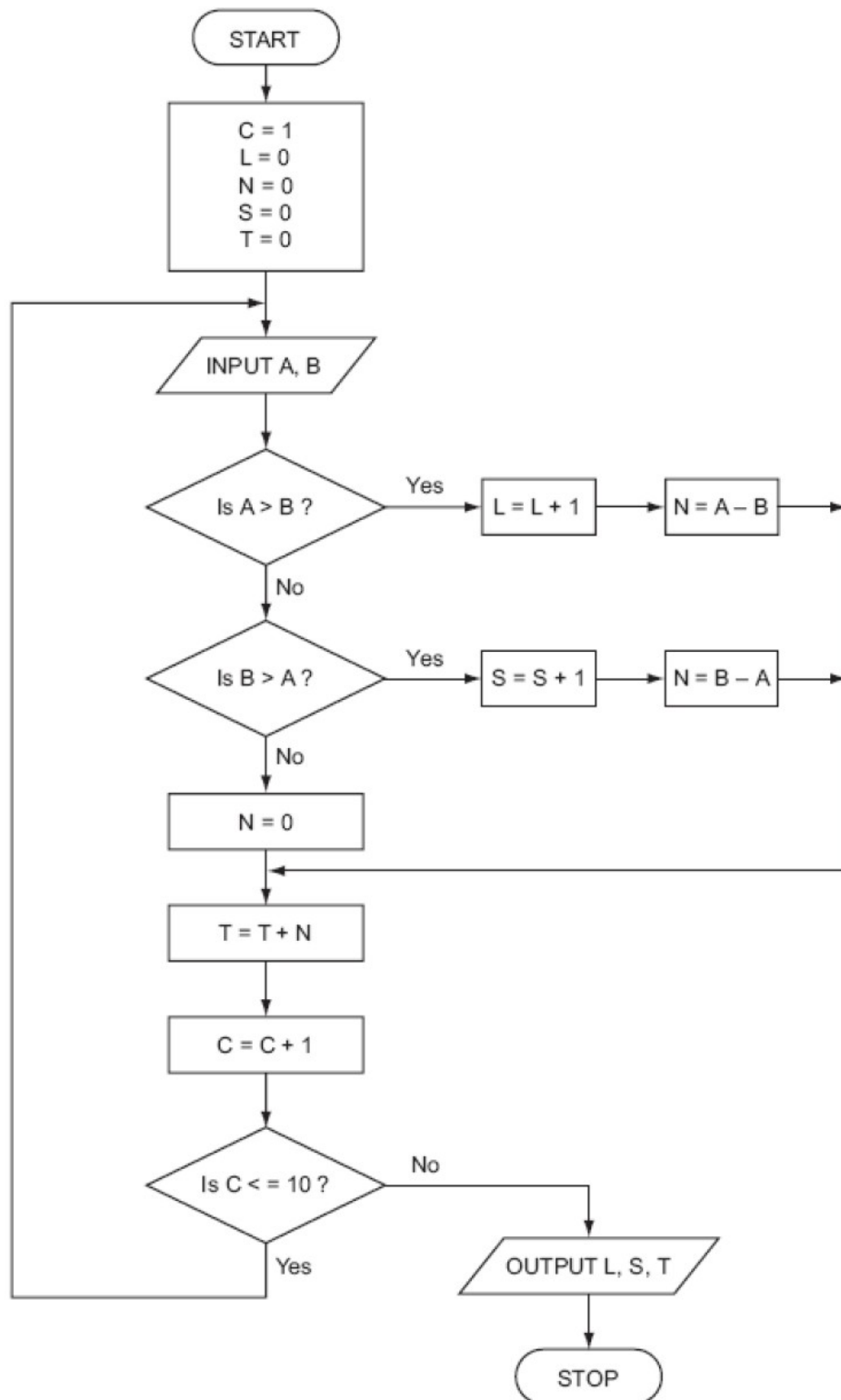
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.....[1]

Write an algorithm using pseudo code to solve the problem.

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3. Study the following flowchart very carefully





(a) Complete the trace table for the following set of data:

8, 4,    3, 1,    5, 8,    4, 2,    1, 3,    2, 2,    1, 2,    5, 5,    4, 0,    5, 4

C	L	N	S	T	A	B

[5]

(b) What will be the final output from the algorithm?

L = .....

S= .....

T= .....

[2]

4. A programmer wants to test the speed readings of 5000 cars. The fastest speed is 435.31 km/h and the lowest speed is 40 km/h. The programmer uses selection and repetition statements as part of the program. Explain, using programming statements, how selection and repetition could be used in this program.

Selection .....  
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Repetition .....  
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5. An online fruit tree specialist sells fruit trees in various sizes. A database table, TREETAB, shows the tree type and, for each size, the price and whether they are in stock.

Tree Type	Size1	Size1 In	Size2	Size2 In	Size3	Size3 In
Apple	10.95	Yes	14.95	Yes	29.95	Yes
Apple	12.95	Yes	14.95	Yes	29.95	Yes
Cherry	24.95	No	34.95	No	59.95	Yes
Fig	19.95	Yes	29.95	No	49.95	Yes
Guava	19.95	No	29.95	No	59.95	No
Nectarine	8.50	Yes	11.95	Yes	19.95	Yes
Olive	19.95	No	39.95	Yes	59.95	Yes
Peach	9.25	No	11.95	Yes	19.95	Yes
Pear	10.95	Yes	14.95	Yes	29.95	Yes
Plum	8.95	Yes	11.95	Yes	19.95	Yes
Pomegranate	12.95	No	18.95	Yes	34.95	No
Quince	34.95	Yes	44.95	Yes	84.95	No

(a) Complete the table to show the most appropriate data type for each of the fields.

Field	Data type
Tree Type	
Size3	
Size2 In	

[3]

(b)The results from the query-by-example grid should show all types of the fruit trees that are out of stock for all three sizes and should be listed in alphabetical order by type. Identify the **three** errors in the query-by-example grid.

Field:	Tree In	Size1 In	Size2 In	Size3 In	
Table:	TREETAB	TREETAB	TREETAB	TREETAB	
Sort:	Descending				
Show:					<input type="checkbox"/>
Criteria:		=No	=Yes	=No	
or:					

Error 1 .....

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Error 2 .....

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Error 3 .....

.....[3]

6. Describe, giving an example for each, the following data types used in programming.

**Integer**

Description

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.....

Example

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**String**

Description

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Example

.....[3]