

Paper 2

Section A

In preparation for the examination candidates should attempt the following practical tasks by **writing and testing a program or programs**.

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.

(a)



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- (i) Declare a constant that can be used in Task 1. [1]

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- (ii)** Declare any two identifiers that are used in Task 2. **[2]**

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- (b) (i)** Show the design of your algorithm to complete Task 2 using pseudocode, programming statements or a flowchart.

Do include any of the validation checks in your algorithm.

[8]

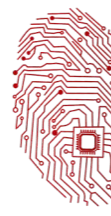
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(e) Explain **Task 1**. You may include programming statements as part of your explanation.

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SECTION B

1. The design for a computer program contains the following algorithm shown in pseudocode.

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01 INPUT A
02 INPUT B
03 C = 0
04 IF A = B THEN
05     B = 1
06 ELSE
07     WHILE B > A
08         B = B - A
09         C = C + 1
10     END WHILE
11     A = B
12 END IF
```

- (a) Define the following terms. For each, give an example from the algorithm.

(i) Selection

[2]

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(ii) Iteration

[2]

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- (b) What is nesting? Explain with an example.

[3]

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(c) Explain the difference between the use of $A = B$ on line 4 and line 11, by referring to the type of operation. [4]

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2. Write an algorithm/pseudocode or otherwise to declare an array of size 10, and runs a counter loop from 1 to 10. Input a number then save it to the array. [7]

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3. A database, ZAKATHON, was set up to show the workshop dates, prices and number of students for a course at an auditorium specialising in Computer Science workshops.

WORKSHOP	WORKSHOP DATE	NUMBER OF VIP SEATS	NUMBER OF GENERAL SEATS	PRICE OF VIP SEAT (RS)	PRICE OF GENERAL SEAT (RS)
O-Level (P1)	4 – May – 2016	40	80	2500	2000
O-Level (P2)	8 – May - 2016	30	90	2700	2300
AS-Level (P1)	6 – May – 2016	45	50	3500	3000
AS-Level (P2)	11 – May – 2016	35	65	3700	3300
A2-Level (P3)	20 – May - 2016	40	45	4500	4000
A2-Level(P4)	24 – May - 2016	30	60	4700	4300

- (a) Give the number of fields that are in each record.

[1]

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- (b) State the data type you would choose for each of the following fields.

Workshop

Number of VIP Seats

Price of General Seats [3]

- (c) The query-by-example grid below selects all the workshops with more than 35 seats in VIP and more than 65 seats in the general.

Field:	WORKSHOP	WORKSHOP DATE	NUMBER OF VIP SEATS	NUMBER OF GENERAL SEATS
Table:	ZAKATHON	ZAKATHON	ZAKATHON	ZAKATHON
Sort:	Ascending			
Show:	✓			
Criteria:			>35	>65
or:				



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Show what would be output from the query-by-example using WORKSHOP only. [2]

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(d) Complete the query-by-example grid below to select all the workshops with at least fifty seats In general and show the Workshop, Workshop Date and Price of General Seats Rs in Workshop Date Order.

Field:				
Table:				
Sort:				
Show:	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Criteria:				
or:				

[6]