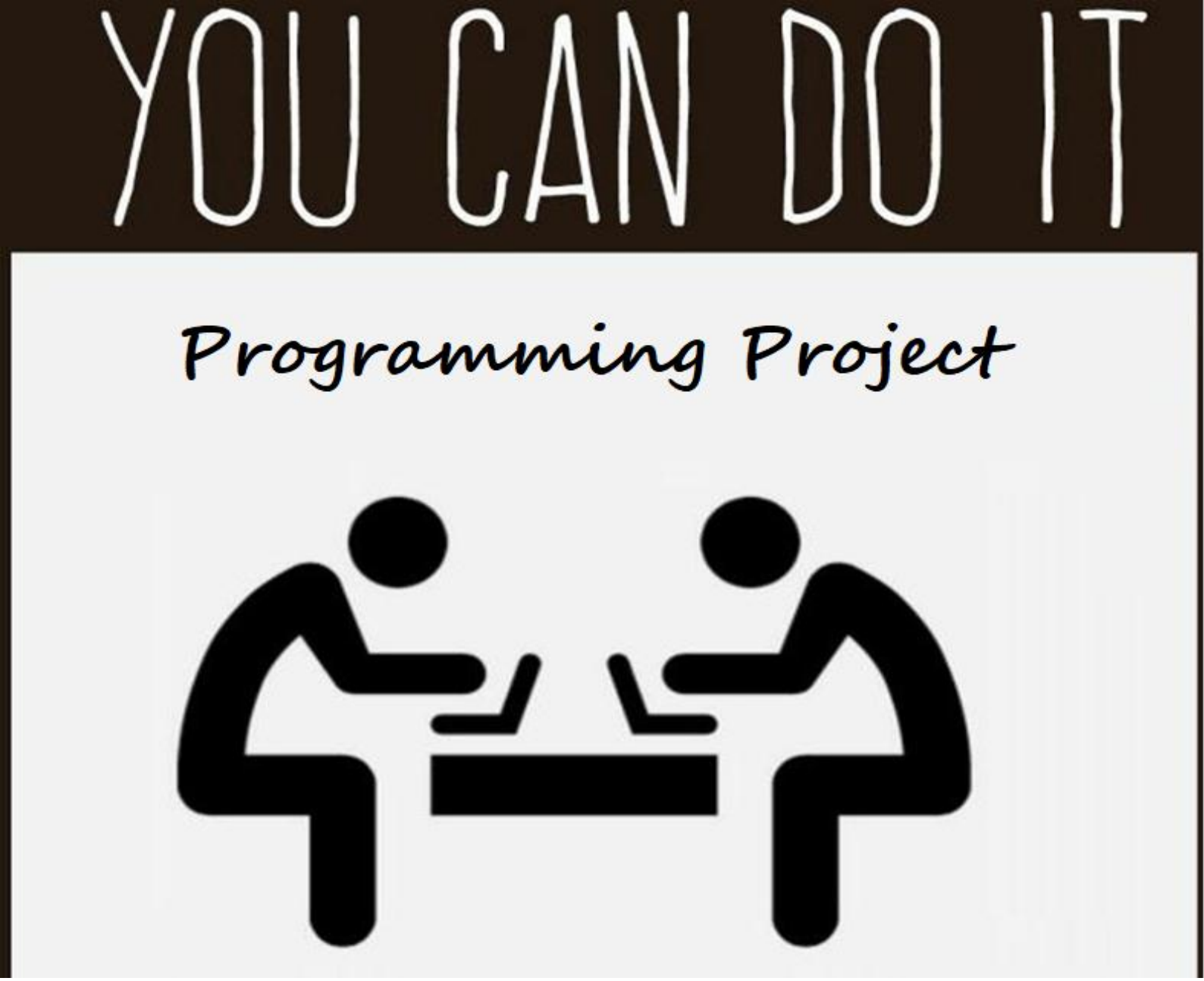

CS Programming Project Model Questions on Pre-release 2019

Name of participant: ……

Class/Section: ……

- Based on Pre-Release Material issued by CAIE for the Summer 2019 exams (This will also be used in Mock Exams)
- 100% related to syllabus
- It contains multiple tasks to design the solution, to code and to test their solutions.

Here is a copy of 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.

Q1) When you performed the tasks, you may have used constants. [2+2]
Write suitable declarations for **two** of these. State what you used each one for.

Constant in task 1 .....

Use .....

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Constant in task 3 .....

Use .....

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Q2) Fill in the following identifier table for task 1: [2+2]

Variable	Data Type	Purpose

Q3) Arrays are data structures. State how do you decide size of array in task 1? [2]

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Q 4) State arrays you have used in task 1 (3 arrays only): [3+3]

Data structure name	Data Type	Purpose

Q5) Fill in the following identifier table for task 2 (2 variables only): [4]

Variable	Data type	Description

Q 6) State arrays you have used in task 2 (2 arrays only): [4]

Data structure name	Data Type	Purpose

Q7) Fill in the following identifier table for task 3 (3 variables only): [3+3]

Variable	Data type	Description

Q 8) Write an algorithm to complete **Task 1**, using **either** pseudo code, programming statements **or** a flowchart. Do not include declaration of variable. [6]

Q 9) Write an algorithm to complete **Task 2**, using **either** pseudo code, programming statements **or** a flowchart. Do not include declaration of variable. You can assume that the task 2 is already completed.[6]

Q 10) Write an algorithm to complete **Task 3**, using **either** pseudo code, programming statements **or** a flowchart. Do not include declaration of variable. You can assume that the task 1 & 2 are already completed. [6]

Q 11) Explain how do you validate that there are at least 10 items for auction. Include programming statement to support your explanation. [5]

Explanation: .....

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Programming Statements: .....

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Q 12) Give **three** different data sets that could be used to check your validation rules for **Task 1**.

Explain why you chose each data set. [2+2+2]

Data set 1: .....

Reason for choice: .....

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Data set 2: .....

Reason for choice: .....

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Data set 3: .....

Reason for choice: .....

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Q 13) Explain how do you ensure that item numbers are unique. Include programming statement to support your explanation. [4]

Explanation: .....

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Programming Statements: .....

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Q 14) Draw flowchart to input and store description and reserve price, assign item number and initialise number of bids with 0 in task 1. [6]

Q 15) Describe how do you assign unique number to each buyer in task 2 with the help of programming statements. [4]

Explanation: .....

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Programming Statements: .....

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Q 16) Explain how do you confirm that offered bid is greater than existing bid with the help of programming statement in task 2. [1 + 2+3]

Validation Rule: .....

Explanation: .....

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Programming Statement for validation:

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Q 17) Give **two** different data sets that could be used to check validation rules in Q 16.

Explain why you chose each data set. [2+2]

Data set 1: .....

Reason for choice: .....

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Data set 2: .....

Reason for choice: .....

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Q 18) Comment on efficiency of code you have written in Q 16 above. [2]

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Q 19) Write down programming statements to input item number to bid in task 2 including validation check. [3]

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Q 20) Write down pseudo code to initialise COUNTing and TOTALing variables of task-3. [4]

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Q 21) Explain how do you mark an item "SOLD". You should include programming statements to support your explanation. [5]

Explanation: .....

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Programming Statements: .....

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Q 22) Draw program flowchart for the programming statements you have written in Q 21. [5]

Q 23) Explain how do you display item number of the item that has received the highest bid. You should include programming statements to support your explanation. [5]

Explanation: .....

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Programming Statements: .....

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Q 24) Explain how do you display item number of the item that has received the highest number of bids. You should include programming statements to support your explanation. [5]

Explanation: .....

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Programming Statements: .....

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Q 26) It is decided that item number is entered by seller. Explain how you ensure that the item numbers entered are unique. You should include programming statements to support your explanation. [5]

Explanation: .....

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Programming Statements: .....

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Q 25) Explain how do you search and confirm that item number entered by buyer is valid or invalid in task 2. You should include programming statements to support your explanation. [5]

Explanation: .....

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Programming Statements: .....

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