PRE-RELEASE MATERIAL 2210/22 MJ-2019

O-Level Computer Science May/June 2210

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.

Task2- 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.

Identifiers: Highlighted in Green color (variables, constants or Arrays)
Important tasks: Highlighted in Yellow

Pre Release solution in VB Console Mode

‘Task 1 - Auction set up… Visual Basic Code

```
CONSTANT NumItems As Integer = 10
DECLARE ItemNumbers(NumItems) As Integer
DECLARE ReservePrice(NumItems) As Real
DECLARE ProductDescription(NumItems) As String

For i = 1 To NumItems
    ItemNumbers(i) = i //Automatically assigns a unique item number
    OUTPUT("ITEM-" & ItemNumbers(i))
    OUTPUT ("Please Enter Description for the Product")
    INPUT ProductDescription(i)
    OUTPUT("Please Enter the Reserve Price for the Product")
    INPUT ReservePrice(i)
Next
CLEARSCREEN
```

‘Task2- Buyer bids.

```
DECLARE MaxBid(NumItems), BidPrice As Real
DECLARE NumBid(NumItems), Number As Integer
DECLARE Choice As Char
DECLARE Buyer(NumItems), BuyerNumber As String

For x = 1 To NumItems
OUTPUT ("Item Number= " & ItemNumbers(x) & " ItemDescription = " & ProductDescription(x)
& "  Max Bid = " & MaxBid(x) & " No. of Bids= " & NumBid(x))
Next

OUTPUT ("For Bidding Press Y, else Press N")
       Choice = Console.ReadLine
While UCase(Choice) = ("Y")
OUTPUT ("Please Enter your Buyer Number")
INPUT BuyerNumber

For y = 1 To NumItems
OUTPUT ("Item Number= " & ItemNumbers(y) & " ItemDescription = " & ProductDescription(y)
& "  Max Bid = " & MaxBid(y) & " No. of Bids= " & NumBid(y))
Next
OUTPUT ("Please Enter the Item Number of Product you want to bid")
INPUT Number

'Validation Check so that user enters only itemNumbers of items in Auction
While Number <> 1 And Number <> 2 And Number <> 3 And Number <> 4 And Number <> 5 And
Number <> 6 And Number <> 7 And Number <> 8 And Number <> 9 And Number <> 10
OUTPUT ("ERROR, ItemNumbers do not match, Please enter valid Item Number")
INPUT Number = Console.ReadLine()
End While
NumBid(Number) = NumBid(Number) + 1
OUTPUT ("Current Highest Bid is $" & MaxBid(Number))
OUTPUT ("Please Enter Bid you want to place")
INPUT BidPrice
   If BidPrice >= MaxBid(Number) Then
      MaxBid(Number) = BidPrice
         If MaxBid(Number) >= ReservePrice(Number) Then
            Buyer(Number) = BuyerNumber
         End If
   Else
```

```
      OUTPUT ("Your Bid must be higher than the maximum Bid")
  End If
CLEARSCREEN
OUTPUT ("For Bidding Press Y, else Press N")
INPUT Choice
End While
```

'Task 3 - At the end of the auction.

```
DECLARE Total(NumItems) As Decimal
DECLARE Sold As Integer
DECLARE NotSold As Integer
DECLARE NoBid As Integer
DECLARE Status(NumItems) As String
CLEARSCREEN
OUTPUT (" *************************END OF AUCTION**************************")
OUTPUT (" Description of Sold Items")
  For v = 1 To NumItems
    If MaxBid(v) >= ReservePrice(v) Then
       Total(v) = (MaxBid(v) * 0.1) + MaxBid(v)
       Sold = Sold + 1
       Status(v) = "Sold"
       OUTPUT ("Buyer Number= " & Buyer(v) & "  ITEM # " & ItemNumbers(v) & " Total =  "
& Total(v))
    End If
 Next
OUTPUT (".............................................................")
OUTPUT (" Description of Items that have not reached the reserve price")
        For g = 1 To NumItems
            If MaxBid(g) > 0 And MaxBid(g) < ReservePrice(g) Then
                NotSold = NotSold + 1
                Status(g) = "Not Sold"
                OUTPUT ("ITEM-#" & ItemNumbers(g) & " Max Bid = " & MaxBid(g))
            End If
        Next
        OUTPUT ("................................................")
        OUTPUT (" Description of Items having no bid")
        For n = 1 To NumItems
            If MaxBid(n) = 0 Then
                NoBid = NoBid + 1
                Status(n) = "No Bid"
                OUTPUT ("ITEM-" & ItemNumbers(n))
            End If
        Next
       OUTPUT (" Summary")
       OUTPUT ("Items Sold = " & Sold)
       OUTPUT ("Items not Sold = " & NotSold)
       OUTPUT ("Items not Bidded = " & NoBid)
```