

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

'TASK 1

```

Const NumItems As Integer = 10
Dim ItemNumbers(NumItems), ReservePrice(NumItems) As Integer
Dim ProductDescription(NumItems) As String

For count = 1 To NumItems
    ItemNumbers(count) = count 'Automatically gives a unique itemnumber
    Console.WriteLine("ITEM-" & ItemNumbers(count))
    Console.WriteLine("Please Enter Description for the Product")
    ProductDescription(count) = Console.ReadLine
    Console.WriteLine("Please Enter the Reserve Price for the Product")
    ReservePrice(count) = Console.ReadLine
Next
Console.Clear()

```

Auction set up.... Addition of products in auction first time

```

Please Enter the Reserve Price for the Product
25000
ITEM-5
Please Enter Description for the Product
T-SHIRT
Please Enter the Reserve Price for the Product
500
ITEM-6
Please Enter Description for the Product
JEANS
Please Enter the Reserve Price for the Product
4000
ITEM-7
Please Enter Description for the Product
NIKE-SHOES
Please Enter the Reserve Price for the Product
12000
ITEM-8
Please Enter Description for the Product
HAND-BAG
Please Enter the Reserve Price for the Product
5000
ITEM-9
Please Enter Description for the Product
NECK-TIE
Please Enter the Reserve Price for the Product
200
ITEM-10
Please Enter Description for the Product
CAP
Please Enter the Reserve Price for the Product
500

```

Task2- Buyer bids.

```

Dim MaxBid(NumItems), BidPrice As Decimal
Dim NumBid(NumItems), Number As Integer
Dim Choice As Char
Dim Buyer(NumItems), BuyerNumber, ItemStatus(NumItems) As String

Console.WriteLine(".....")

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

Console.WriteLine("For Bidding Press Y, else Press N")
Choice = Console.ReadLine

While UCase(Choice) = ("Y")
    Console.WriteLine("Please Enter your Buyer Number")
    BuyerNumber = Console.ReadLine

    Console.WriteLine(".....")

    For count = 1 To NumItems
        Console.WriteLine("ITEM # " & ItemNumbers(count) & " ItemDescription =" &
            ProductDescription(count) & " Max Bid =" & MaxBid(count) & " No. of Bids="
            & NumBid(count) & " ::Status = " & ItemStatus(count))
    Next
    Console.WriteLine("Please Enter the Item Number of Product you want to bid")
    Number = Console.ReadLine
    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
            Console.WriteLine("ERROR,ItemNumbers dont match, enter valid Item Number")
            Number = Console.ReadLine()
        End While

        NumBid(Number) = NumBid(Number) + 1
        Console.WriteLine("Current Highest Bid is $" & MaxBid(Number))
        Console.WriteLine("Please Enter Bid you want to place")

        BidPrice = Console.ReadLine
        If BidPrice >= MaxBid(Number) Then
            MaxBid(Number) = BidPrice
            If MaxBid(Number) >= ReservePrice(Number) Then
                Buyer(Number) = BuyerNumber
                ItemStatus(Number) = "***SOLD***"
                Console.WriteLine("Congrats You WON BID, Item sold to:" & BuyerNumber)
            Else
                ItemStatus(Number) = " ----NOT SOLD---- "
            End If
        Else
            Console.WriteLine("Your Bid must be higher than the maximum Bid")
        End If
        Console.WriteLine(" BID AGAIN Press Y, else Press N")
        Choice = Console.ReadLine
    End While

```

```

.....
Item Number= 1 ItemDescription = CAR Max Bid = 0 No. of Bids= 0
Item Number= 2 ItemDescription = MOBILE Max Bid = 0 No. of Bids= 0
Item Number= 3 ItemDescription = I-PAD Max Bid = 0 No. of Bids= 0
Item Number= 4 ItemDescription = TELEVISION Max Bid = 0 No. of Bids= 0
Item Number= 5 ItemDescription = T-SHIRT Max Bid = 0 No. of Bids= 0
Item Number= 6 ItemDescription = JEANS Max Bid = 0 No. of Bids= 0
Item Number= 7 ItemDescription = NIKE-SHOES Max Bid = 0 No. of Bids= 0
Item Number= 8 ItemDescription = HAND-BAG Max Bid = 0 No. of Bids= 0
Item Number= 9 ItemDescription = NECK-TIE Max Bid = 0 No. of Bids= 0
Item Number= 10 ItemDescription = CAP Max Bid = 0 No. of Bids= 0
For Bidding Press Y, else Press N
    
```

If buyer bids more than reserve price, item is marked **SOLD** and Buyer is updated.

Next buyers can see what items are already sold so that they don't bid for already **SOLD** items.

```

10
Current Highest Bid is $0
Please Enter Bid you want to place
600
Congratulations, You WON this BID, This item is sold to:3333
  BID AGAIN Press Y, else Press N
Y
Please Enter your Buyer Number
8888
.....
ITEM # 1 ItemDescription =CAR Max Bid =3000 No. of Bids= 1 ::Status = ----NOT SOLD----
ITEM # 2 ItemDescription =MOBILE Max Bid =30000 No. of Bids= 1 ::Status = ***SOLD***
ITEM # 3 ItemDescription =I-PAD Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 4 ItemDescription =TELEVISION Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 5 ItemDescription =T-SHIRT Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 6 ItemDescription =JEANS Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 7 ItemDescription =NIKE-SHOES Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 8 ItemDescription =HAND-BAG Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 9 ItemDescription =NECK-TIE Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 10 ItemDescription =CAP Max Bid =600 No. of Bids= 1 ::Status = ***SOLD***
Please Enter the Item Number of Product you want to bid
8
Current Highest Bid is $0
Please Enter Bid you want to place
550
    
```

```

.....
ITEM # 1 ItemDescription =CAR Max Bid =3000 No. of Bids= 1 ::Status = ----NOT SOLD----
ITEM # 2 ItemDescription =MOBILE Max Bid =30000 No. of Bids= 1 ::Status = ***SOLD***
ITEM # 3 ItemDescription =I-PAD Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 4 ItemDescription =TELEVISION Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 5 ItemDescription =T-SHIRT Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 6 ItemDescription =JEANS Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 7 ItemDescription =NIKE-SHOES Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 8 ItemDescription =HAND-BAG Max Bid =550 No. of Bids= 1 ::Status = ----NOT SOLD----
ITEM # 9 ItemDescription =NECK-TIE Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 10 ItemDescription =CAP Max Bid =600 No. of Bids= 1 ::Status = ***SOLD***
Please Enter the Item Number of Product you want to bid
1
Current Highest Bid is $3000
Please Enter Bid you want to place
2000
Your Bid must be higher than the maximum Bid
  BID AGAIN Press Y, else Press N
    
```

If Buyer bids less than highest bid, he is informed to bid higher.

```

Current Highest Bid is $3000
Please Enter Bid you want to place
123
Your Bid must be higher than the maximum Bid
BID AGAIN Press Y, else Press N
y
Please Enter your Buyer Number
5555
.....
ITEM # 1 ItemDescription =CAR Max Bid =3000 No. of Bids= 3 ::Status = ----NOT SOLD----
ITEM # 2 ItemDescription =MOBILE Max Bid =30000 No. of Bids= 1 ::Status = ***SOLD***
ITEM # 3 ItemDescription =I-PAD Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 4 ItemDescription =TELEVISION Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 5 ItemDescription =T-SHIRT Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 6 ItemDescription =JEANS Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 7 ItemDescription =NIKE-SHOES Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 8 ItemDescription =HAND-BAG Max Bid =550 No. of Bids= 1 ::Status = ----NOT SOLD----
ITEM # 9 ItemDescription =NECK-TIE Max Bid =0 No. of Bids= 0 ::Status =
ITEM # 10 ItemDescription =CAP Max Bid =600 No. of Bids= 1 ::Status = ***SOLD***
Please Enter the Item Number of Product you want to bid
99
ERROR, ItemNumbers do not match, Please enter valid Item Number

```

If Buyer enters an Item Number that is not listed, an error is displayed that
"ITEMS DO NOT MATCH, ENTER VALID ITEM #"

Effectiveness of Solution:

The solution works effectively and works on all type of Test data. Screen shots of VB Code executed are shown in Console Mode of every unusual entry by buyer and System displaying ERROR, and asking for Re-Entry.

'Task 3 - At the end of the auction.'

```

Const companyRate = 0.1 ' CONSTANT DECLARED FOR 10% AUCTION RATE OF COMPANY
Dim Total(NumItems) As Decimal
Dim Sold, NotSold, NoBid As Integer
Dim Status(NumItems) As String
Console.Clear()
Console.WriteLine(" *****END OF AUCTION*****")
Console.WriteLine(" -----AUCTION RESULTS ARE -----")
For count = 1 To NumItems
    If MaxBid(count) >= ReservePrice(count) Then
        Console.WriteLine(" Description of SOLD Items")
        Total(count) = (MaxBid(count) * companyRate) + MaxBid(count)
        Sold = Sold + 1
        Status(count) = "Sold"
        Console.WriteLine("ITEM-# " & ItemNumbers(count) & "STATUS " & Status(count) &
            "to BUYER= " & Buyer(count) & " Total Price+Auction Fee= " & Total(count))
        Console.WriteLine(".....")
    ElseIf MaxBid(count) > 0 And MaxBid(count) < ReservePrice(count) Then
        Console.WriteLine(" Description of Items not reaching the reserve price")
        NotSold = NotSold + 1
        Status(count) = "Not Sold"
        Console.WriteLine("ITEM-#" & ItemNumbers(count) & " Max Bid = " &
            MaxBid(count) & " Status= " & Status(count))
        Console.WriteLine(".....")
    ElseIf MaxBid(count) = 0 Then
        Console.WriteLine(" Description of Items having no bid")
        NoBid = NoBid + 1
        Status(count) = "No Bid"
        Console.WriteLine("ITEM-#" & ItemNumbers(count) & " Status = " &
            Status(count))
    End If
Next
Console.WriteLine(" Summary")
Console.WriteLine("Items Sold = " & Sold)
Console.WriteLine("Items that did not reach ReservePrice = " & NotSold)
Console.WriteLine("Items not Bidded = " & NoBid)
Console.ReadKey()

```

```

*****END OF AUCTION*****
-----AUCTION RESULTS ARE -----
Description of Items that have not reached the reserve price
ITEM-#1 Max Bid = 3000 Status= Not Sold
.....
Description of SOLD Items
ITEM-# 2 STATUS Soldto BUYER= 2222 Total Price + Auction Fee= 33000
.....
Description of Items having no bid
ITEM-#3 Status =No Bid
Description of Items having no bid
ITEM-#4 Status =No Bid
Description of Items having no bid
ITEM-#5 Status =No Bid
Description of Items having no bid
ITEM-#6 Status =No Bid
Description of Items having no bid
ITEM-#7 Status =No Bid
Description of Items that have not reached the reserve price
ITEM-#8 Max Bid = 550 Status= Not Sold
.....
Description of Items that have not reached the reserve price
ITEM-#9 Max Bid = 10 Status= Not Sold
.....
Description of SOLD Items
ITEM-# 10 STATUS Soldto BUYER= 3333 Total Price + Auction Fee= 660
.....
Summary
Items Sold = 2
Items that did not reach ReservePrice = 3
Items not Bidded = 5

```