University of Baghdad
College of Engineering
Civil Engineering Department

برمجة (2)

Computer Programming

Second Year Class
Date: June, 2013
Time: 3 Hours
First Attempt

Q1: Write the codes of the function (remote) which detects the most remote point from the origin (0,0) among (N) points .

```
Function remote (n As Integer, ParamArray cor()) As Integer
Dim Max as Single
Max = 0
For i = 0 To n - 1
d = Sqr(cor(i, 0) ^ 2 + cor(i, 1) ^ 2)
If d > Max Then
remote = i
End If
Next i
End Function
```

Q2: Write the required codes to read the values of height and width of (N) rectangles from a file and check how many ones lie , completely, inside the circle (R).

```
Private Sub Command2_Click()
Dim N,NN, i, j, fnum As Integer
Dim w, h, R, D  As Single
Dim fname As String
On Error GoTo last
cd1.Filter = "All Files (*.*)|*.*|Text Files|*.txt"
cd1.FilterIndex = 2
cd1.DefaultExt = "txt"
cd1.CancelError = True
cd1.ShowOpen
If Trim(cd1.FileName) = "" Then
MsgBox "Cancelled By the User"
Exit Sub
Else
fname = cd1.FileName
fnum = FreeFile()
NN = LOF(fnum)
End If
Open fname For Input As #fnum
N = InputBox("Enter No. of Points")
If NN > N Then
y = MsgBox("There is no Enough Data, Press Ok to Continue", vbOKCancel Or vbQuestion, "Worrining")
If y = 1 Then Exit Sub
If y = 2 Then End
Else
R = InputBox("Enter the Radios of the Circle")
For i = 1 To N
Input #fnum, w, h
D = Sqr((w / 2) ^ 2 + (h / 2) ^ 2)
If D <= R Then
```

```
j = j + 1
End If
Next i
End If
Close #fnum
Text1.Text = Str(j)
last:
End Sub
```

Q3: Write a computer program to calculate the values of the function ($6X^2 - 3X+10$) in a selected range ($X_{start} - X_{end}$) according to a given interval and draw these values in a picture control of form2.

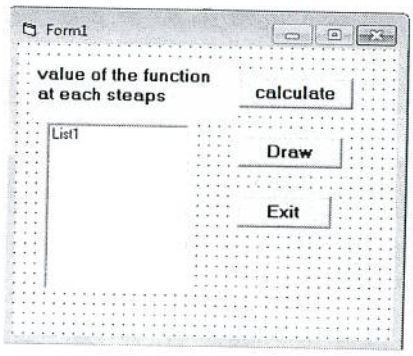
Note:

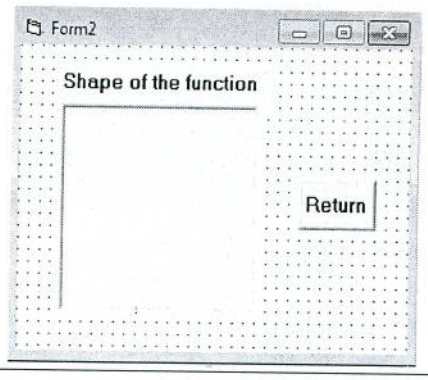
- **Use Hscroll bar to select the value of step between sections.**
- **Use inputbox for any entered data and Msgbox for any recommendation.**

Form1

```
Private Sub Command1_Click()
Dim x1, x2, x3, xx, y As Single
Dim st, i As Integer
if  Hscroll 1.value=0  then
y = MsgBox("Select the value of step, Press Ok to Continue", vbOKCancel Or vbQuestion, "Worrining")
If y = 1 Then Exit Sub
If y = 2 Then End
Else
st = Hscroll 1.value
x1 = InputBox(" Value of the start X- coordinate is ")
x2 = InputBox(" Value of the end X- coordinate is ")
n = Abs((x1 - x2) / st)
xx = x1
Do While (i < n)
y = (6*xx ^ 2) - 3 * xx +10
List1.AddItem y
xx = xx + st
Loop
End Sub

Private Sub Command2_Click()
Dim x, y, max, j As Single
Dim i, c As Integer
If List1.ListCount = 0 Then
y = MsgBox(("The value of the fuction at x range should be calculated first",  vbOKCancel Or
vbQuestion, "Worrining")
If y = 1 Then Exit Sub
If y = 2 Then End
Else
Form1.Hide
Form2.Show
Form2.p1.Cls
x = Form2.p1.Width
y = Form2.p1.Height
max = List1.List(0)
```





```
For i = 1 To List1.ListCount - 1
If Val(List1.List(i)) > max Then max = Val(List1.List(i))
Next i
For i = 0 To List1.ListCount - 1
yy = Val(List1.List(i))
j = x / (List1.ListCount)
Form2.p1.PSet (j * i, (y - yy * y / max))
Next i
End If
End Sub

Private Sub Command3_Click()
End
End Sub
```

Form2

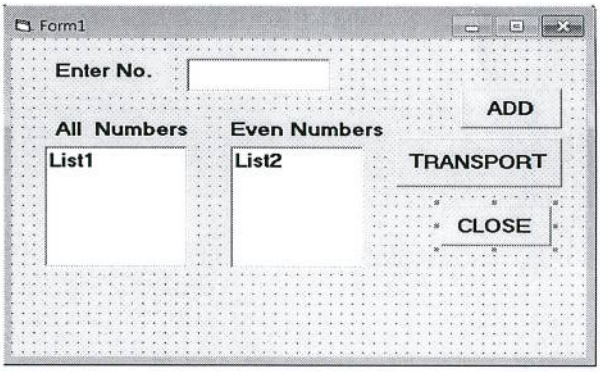
```
Private Sub Command1_Click()
form2.Hide
Form1.Show
End Sub
```

Q4: Write a complete computer program to do the following functions :

- Create a control which contains (N) integer numbers (term by term).
- Transfer all the even numbers to other control.

```
Private Sub Command1_Click()
If Trim(Text1.Text) = "" Then
y = MsgBox("Missing data, Press ok to continue", vbOKCancel Or vbQuestion, "Worrining")
If y = 1 Then Exit Sub
If y = 2 Then End
Else
List1.AddItem Text1.Text
End If
End Sub

Private Sub Command2_Click()
Dim i As Integer
If  List1.ListCount = 0 then
y = MsgBox("Generate  list1 first, Press ok to continue", vbOKCancel Or vbQuestion, "Worrining")
If y = 1 Then Exit Sub
If y = 2 Then End
Else
For i = 0 To List1.ListCount-1
If  val(List1.List(i)) = int(val(List1.List(i)) Then
List2.AddItem List1.List(i)
List1.RemoveItem  i
i = i - 1
End If
Next i
End If
End Sub
```



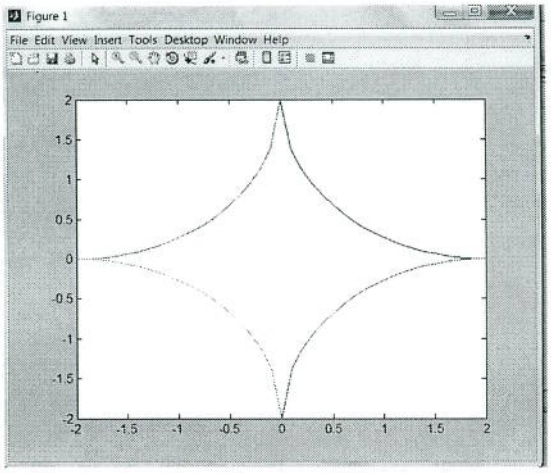

```
Private Sub Command3_Click()
End
End sub

Private Sub Text1_KeyPress(KeyAscii As Integer)
If KeyAscii < Asc("0") Or KeyAscii > Asc("9") Then
KeyAscii = 0
End If
End Sub
```

MATLAB SOFTWARE: ATTEMPT ALL THE QUESTION.

Q1: Write the required codes to draw the shape that shown in Fig (1).

```
clc
clear
R= input('Enter the diameter of the circle');
x1=0:0.1:R;
x2=0:-0.1:-R;
n=size(x1);
for i=1:n(2)
y1(i)= (R^2 - (x1(i)- R)^2)^0.5-R;
y2(i)= ((R)^2- (x2(i) + R)^2)^0.5-R;
y3(i)= (R^2 - (x1(i)- R)^2)^0.5-R;
y4(i)= (R^2 - (x2(i)+ R)^2)^0.5-R;
end
plot(x1,-y1,x2,-y2,x1,y3, x2,y4)
```



Q2:

a- Its required to calculate the area surrounding by the curve of the ellipsoid $(\frac{X^2}{9} + \frac{Y^2}{16} = 1)$. Write a computer program to do this function.

```
clc
clear
syms x
y= ((1-x^2/9)*16)^0.5;
z= int(y,3,3)
```

b- Write the required codes to generate the matrix C (5,5) that shown below:

$$C = \begin{bmatrix} 0 & 1 & 1 & 1 & 1 \\ 2 & 0 & 1 & 1 & 1 \\ 2 & 2 & 0 & 1 & 1 \\ 2 & 2 & 2 & 0 & 1 \\ 2 & 2 & 2 & 2 & 0 \end{bmatrix}$$

```
for i=1:5
   for j=1:5
      if i==j
         C(i,j) = 0;
         elseif i<j
            C(i,j) = 1;
      else
               C(i,j) = 2;
      end
   end
end
disp(C)
```

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V. BASIC LANGUAGE : ATTEMPT THREE QUESTIONS.

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Q2: Write the required codes to read the values of height and width of (N) rectangle from a file and check how many ones lie completely inside the circle (R).

Q3: Write a computer program to calculate the values of the function ($6X^2 - 3X+10$) in a selected range ($X_{start} - X_{end}$) according to a given interval and draw these values in a picture control of form2.

Note:

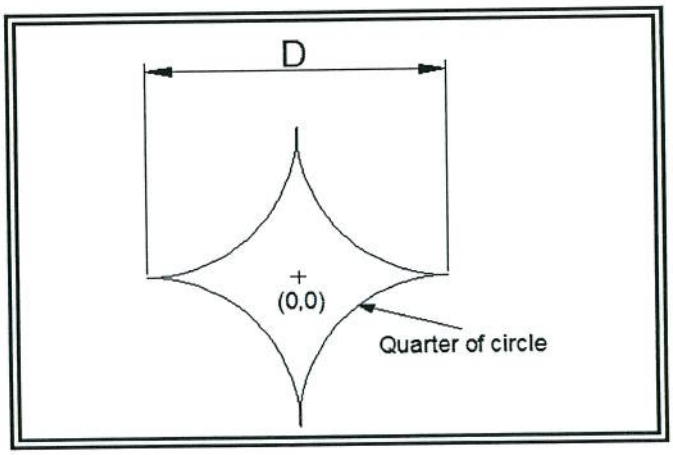
- **Use Hscroll bar to select the value of step between sections.**
- **Use inputbox for any entered data and Msgbox for any recommendation.**

Q4: Write a complete computer program to do the following functions :

- Create a control which contains (10) integer numbers (term by term).
- Transfer all the even numbers to another control.

MATLAB SOFTWARE: ATTEMPT ALL THE QUESTION.

Q1: Write the required codes to draw the shape that shown in Fig (1).



Fig(1)

Q2:

a- Its required to calculate the area surrounding by the curve of the ellipsoid $(\frac{X^2}{9} + \frac{Y^2}{16} = 1)$. Write a computer program to do this function.

b- Write the required codes to generate the matrix C (5,5) that shown below:

$$C = \begin{bmatrix} 0 & 1 & 1 & 1 & 1 \\ 2 & 0 & 1 & 1 & 1 \\ 2 & 2 & 0 & 1 & 1 \\ 2 & 2 & 2 & 0 & 1 \\ 2 & 2 & 2 & 2 & 0 \end{bmatrix}$$

COMPUTER LAB : ATTEMPT ALL THE QUESTIONS.

Complete the following sentences?

1. In v. basic language to resize any label in the form we need to use --------- and -----properties.
2. In v. basic language there are two color properties ---------- and ----------.
3. All the objects in v. basic language have caption property except text object has ---------- property.
4. In v. basic language to hide any vision control at running time we need to use ---------- property.
5. In v. basic language the programming process is based on the idea of events such as ----------, ---------- and ----------.
6. ---------- Function, usually used in v. basic language to display a message for the user and get a return value.
7. ----------property used in v. basic language to represent the number of items in the list.
8. ----------In v. basic language the different between list and combo box control.
9. In v. basic language, there are two controls that enable the user to generate a range of data with specified Min, Max and increment value which are ---------- and ----------.
10. In MATLAB language, let A be a matrix so to convert each rows into columns we need to use the transpose symbol which is ----------, to find the determent of the matrix A we need to use the order ---------- and to find the inverse of the matrix A we will use the commend ----------.
11. In MATLAB language to find the differentiation of a polynomial we used the function ---------- and to find the polynomial integration we use the function ----------.
12. In MATLAB language to plot multiple curves (functions) on a single graph you may use ----------commend.
13. In MATLAB language to determines the values of y(x) for x=0 to x=5 where $y(x) = x^2$, we write the code ----------.