THE UNITED REPUBLIC OF TANZANIA

NATIONAL EXAMINATIONS COUNCIL

ADVANCED CERTIFICATE OF SECONDARY EDUCATION EXAMINATION

136/2 **COMPUTER SCIENCE 2**

(For Both School and Private Candidates)

Duration: 3 Hours **ANSWERS** **Year: 2025**

Instructions

1. This paper consists of **three (3)** questions.
2. Answer **two (2)** questions including question **one (1)**
3. Save your work on the desktop in the folder named by your **Examination Number.**
4. Save your work by using the 1997-2003 version of the MS Office software.
5. Check whether the **printed** work(s) are similar to the **softcopy** saved in the folder.
6. Submit printed codes and screenshots together with the softcopy of your work(s)
7. Cellular phones and any unauthorised materials are **not** allowed in the examination room.
8. Type your **Examination Number** on every page of your softcopy work(s).

1. (a) The Director of Hope secondary school wants to automate the system for students to join the upper class. The school has been using manual system to enforce the students to pass by-laws. Recently, this system has become less efficient due to the increased number of students' enrolment. The pass marks in each subject is 40% and a student must pass at least two subjects out of three to join the higher class. Develop a C++ program that will enable the school to achieve the goal. The program should:

   (i) prompt a user to input registration number, name, and marks of three subjects for five students.

   (ii) display the total number and names of students who qualified to join the higher class.

   (iii) display the total number and names of students who failed to join the higher class.

```cpp
#include<iostream>
using namespace std;
int main()
{
    int x[5],mark1[5],mark2[5],mark3[5],y=0,z=0;
    string name[5],grade[5];
    for(int i=0;i<5;i++)
    {
        cout<<"Enter registration number for student "<<i+1<<" : ";
        cin>>x[i];
        cout<<"Enter name of student "<<i+1<<" : ";
        cin>>name[i];
        cout<<"Enter marks of subject 1: ";
        cin>>mark1[i];
        cout<<"Enter marks of subject 2: ";
        cin>>mark2[i];
        cout<<"Enter.marks of subject 3: ";
        cin>>mark3[i];
        if((mark1[i]>=40 && mark2[i]>=40) || (mark1[i]>=40&&mark3[i]>=40)||mark2[i]>=40 && mark3[i]>=40)
        {
            grade[i]="pass";
            y++;
        }
        else
        {
            grade[i]="fail";
            z++;
        }
    }
    cout<<"The total Number who qualified to join the higher class ="<<y<<endl;
    cout<<"Their Names are "<<endl;
    for(int i=0;i<5;i++)
    {
        if(grade[i]=="pass")
        {
            cout<<name[i]<<endl;
        }
    }
    cout<<endl;
    cout<<"The total Number who failed to join the higher class ="<<z<<endl;
    cout<<"Their Names are "<<endl;
        for(int i=0;i<5;i++)
    {
        if(grade[i]=="fail")
        {
            cout<<name[i]<<endl;
        }
    }
    return 0;
}
```

```
Enter registration number for student 1 : 001
Enter name of student 1 : Herena
Enter marks of subject 1: 34
Enter marks of subject 2: 56
Enter marks of subject 3: 78
Enter registration number for student 2 : 002
Enter name of student 2 : Peter
Enter marks of subject 1: 23
Enter marks of subject 2: 26
Enter marks of subject 3: 40
Enter registration number for student 3 : 003
Enter name of student 3 : Fatuma
Enter marks of subject 1: 23
Enter marks of subject 2: 89
Enter marks of subject 3: 41
Enter registration number for student 4 : 004
Enter name of student 4 : Joseph
Enter marks of subject 1: 90
Enter marks of subject 2: 68
Enter marks of subject 3: 50
Enter registration number for student 5 : 005
Enter name of student 5 : Saida
Enter marks of subject 1: 26
Enter marks of subject 2: 16
Enter marks of subject 3: 39
The total Number who qualified to join the higher class =3
Their Names are
Herena
Fatuma
Joseph

The total Number who failed to join the higher class =2
Their Names are
Peter
Saida

--------------------------------
Process exited after 86.94 seconds with return value 0
Press any key to continue . . .
```

(b) A Tax officer at UMOJAWETU Company wants to analyze and track the monthly salesmen's profit at the end of the year. Due to the large number of salesmen in the company, manual analysis and tracking of profit data become challenging. The sales manager of the company consulted you to assist automating a process. Develop a C++ program that accepts the monthly profit made by each salesman. Your program should also compute and display the total profit made per year for each salesman and the maximum total profit made per year among all salesmen. (HINT: The manager provided three salesmen as a case study).

```
#include<iostream>
using namespace std;
int main(){
   int num=3;
   double max_profit=0;
   double totalprofit[num];
   int max_sman;
     double m_profit;

cout<<"******A program to calculate the montly salesman profit at the end of the year*****\n\n";
for(int i=0;i<num;i++){
    cout<<"Enter Profit for each month for saleman "<<i+1 << endl;

    for(int j=0;j<12;j++){
        cout<<"Enter Profit(In Tshs) for month  "<<j+1<<": ";
        cin>>m_profit;
        totalprofit[i]= totalprofit[i]+m_profit;
    }

    if( totalprofit[i] >= max_profit){
         max_profit = totalprofit[i] ;
         max_sman=i+1;

    }
        cout<<"\n\n\n";
}

cout<<"******ANNUAL TOTAL PROFIT FOR EACH SALES MAN******\n\n";
for(int k=0;k<num;k++){

cout<<"Total Profit made per year for salesman "<<k+1<<":"<<totalprofit[k] <<"Tshs" <<endl;
}

cout<<"\n******THE MAXIMUM TOTAL PROFIT AMONG ALL SALESMEN\n\n";
cout<<"The maximum sales profit was with salesman "<<max_sman<<endl;
cout<<"Maximum total profit is "<<max_profit << "Tshs";
}
```

```
Enter Profit for each month for saleman 1
Enter Profit(In Tshs) for month  1: 200
Enter Profit(In Tshs) for month  2: 500
Enter Profit(In Tshs) for month  3: 300
Enter Profit(In Tshs) for month  4: 400
Enter Profit(In Tshs) for month  5: 500
Enter Profit(In Tshs) for month  6: 800
Enter Profit(In Tshs) for month  7: 611
Enter Profit(In Tshs) for month  8: 352
Enter Profit(In Tshs) for month  9: 24
Enter Profit(In Tshs) for month  10: 25
Enter Profit(In Tshs) for month  11: 265
Enter Profit(In Tshs) for month  12: 54


Enter Profit for each month for saleman 2
Enter Profit(In Tshs) for month  1: 658
Enter Profit(In Tshs) for month  2: 654
Enter Profit(In Tshs) for month  3: 685
Enter Profit(In Tshs) for month  4: 658
Enter Profit(In Tshs) for month  5: 658
Enter Profit(In Tshs) for month  6: 658
Enter Profit(In Tshs) for month  7: 658
Enter Profit(In Tshs) for month  8: 658
Enter Profit(In Tshs) for month  9: 369
Enter Profit(In Tshs) for month  10: 325
Enter Profit(In Tshs) for month  11: 254
Enter Profit(In Tshs) for month  12: 214


Enter Profit for each month for saleman 3
Enter Profit(In Tshs) for month  1: 5243
Enter Profit(In Tshs) for month  2: 548
Enter Profit(In Tshs) for month  3: 245
Enter Profit(In Tshs) for month  4: 213
Enter Profit(In Tshs) for month  5: 658
Enter Profit(In Tshs) for month  6: 562
Enter Profit(In Tshs) for month  7: 685
Enter Profit(In Tshs) for month  8: 623
Enter Profit(In Tshs) for month  9: 658
Enter Profit(In Tshs) for month  10: 300
Enter Profit(In Tshs) for month  11: 500
Enter Profit(In Tshs) for month  12: 600


******ANNUAL TOTAL PROFIT FOR EACH SALES MAN******

Total Profit made per year for salesman 1:4031Tshs
Total Profit made per year for salesman 2:6449Tshs
Total Profit made per year for salesman 3:10835Tshs

******THE MAXIMUM TOTAL PROFIT AMONG ALL SALESMEN

The maximum sales profit was with salesman 3
Maximum total profit is 10835Tshs
--------------------------------
Process exited after 74.82 seconds with return value 0
Press any key to continue . . .
```

2. To solve the challenge of car parking space, the ABC Company decided to build parking garage in different areas of urban cities in Tanzania. The company charges Tshs 500 as a minimum fee per hour. If a car parked for more than one hour but less than 24 hours, charges of Tshs 200 is paid. Otherwise, additional of Tshs 2000 is paid if a car parked for more than 24 hours. You have been consulted by a company to develop a web-based system for managing the parking;

(a) Use HTML to create the interface provided in Figure 1.

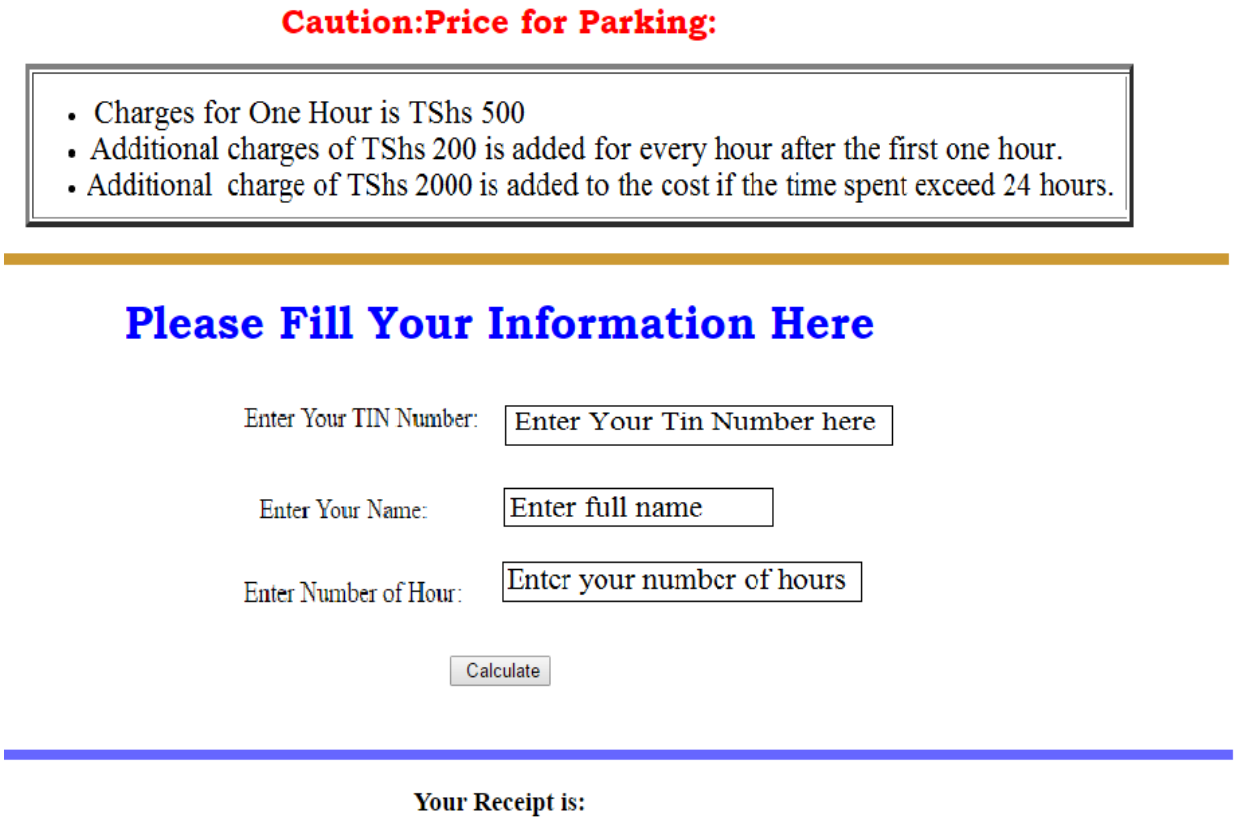


Figure 1.

Descriptions

(i) The colour, font style and the size of the texts "Caution: Price for Parking" should be red, "Bookman Old Style" and heading 2 respectively.

(ii) The font colour style and size of the texts "Please Fill Your Information

Here" to blue and "Bookman Old Style" and heading 1 respectively.

(iii) The size, colour, and width of the first horizontal line should be 8,"CC9933" and 1000, respectively.

(iv) The size, width and color of the second horizontal line should be 7, 1000 and "6666ff", respectively.

(v) The table border should be 3.

```
<!DOCTYPE html>
<html>
<head><title>number2</title>
<script>
function calc()
{
var name,hrs,Tnum,charge,total,mincharge;
 name = document.getElementById("name").value;
 Tnum = document.getElementById("num").value;
 hrs = document.getElementById("hrs").value;
 mincharge=500;
 charge;
 total;
if(name==""||hrs==""||Tnum=="")
{
   alert("Fill in the information")
}
else if(hrs>1&&hrs<=24)
{
   charge=200*(hrs-1);
   total=mincharge+charge;
}
else if(hrs>24)
{
   charge=200*(hrs-1);
   total=2000+charge+mincharge;
}
```

```
else if(hrs==1)
{
   total=mincharge;
}
else
{
   alert("Charges are provided above 1 hour only")
}
   document.getElementById("results").innerHTML=total;
}
</script></head>
<body><center>
<fieldset>
 <h2>
   <font face="Bookman Old style" color="red">Caution:Price
   for Parking</font>
 <h2>
<table border="3">
<td>
<ul>
  <li>Charges for One Hour is TShs.500</li>
  <li>Additional charges of TShs.200 is added for every hour
  after the first one hour</li>
  <li>Additional charge of TShs.2000 is added to the cost if the
  time spent exceed 24 hours</li>
<td>
</ul>
</table>
```

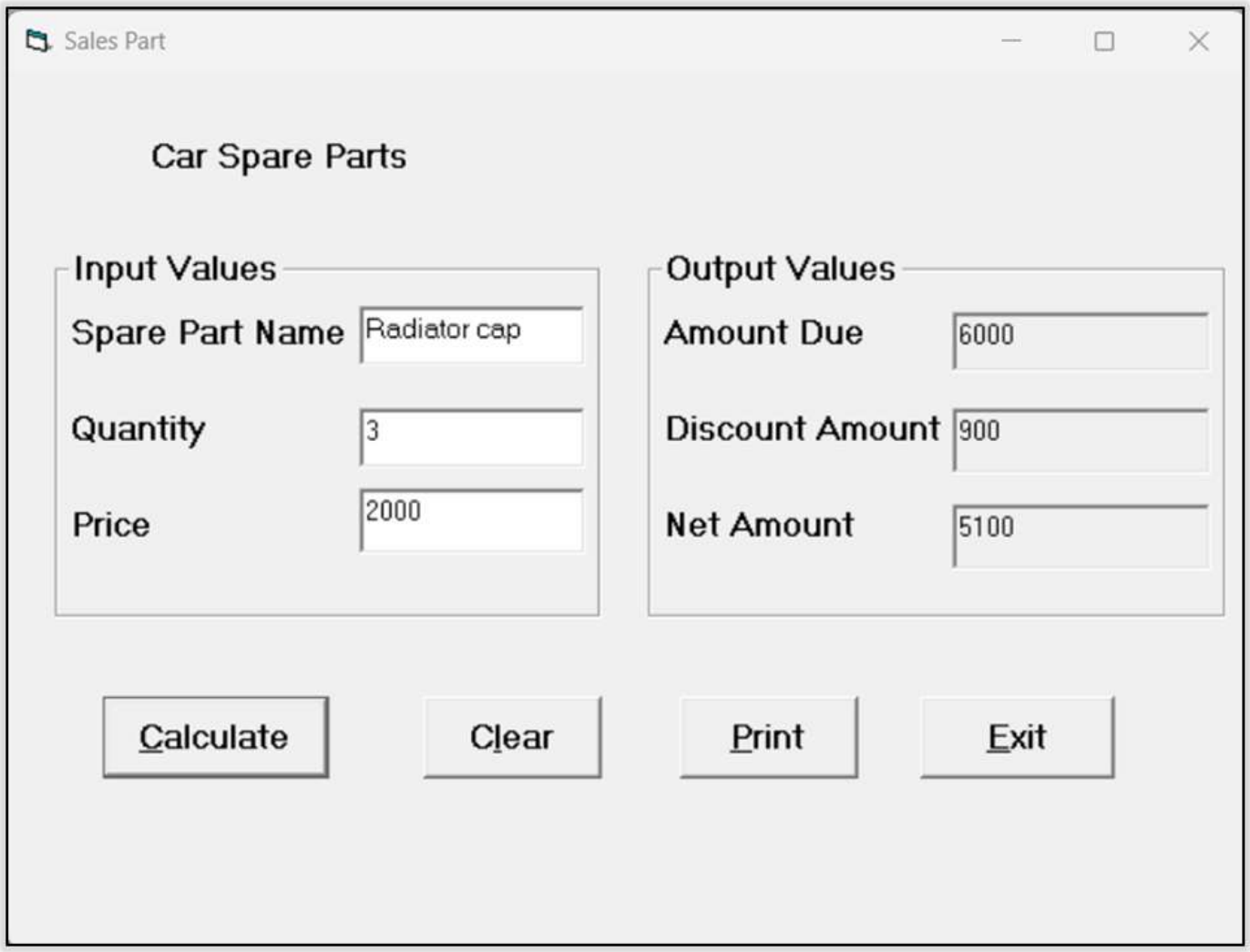
```
 <hr size="8" width="1000" color="CC9933">
 <h1>
   <font color="blue" face="Bookman Old style">Please Fill
   Your Information Here</font>
 </h1>
<form>
<table>
<tr><td>Enter Your TIN Number:</td><td><input type="text" id="num"
placeholder="Enter Your Tin Number here"></td></tr>
<tr><td>Enter Your Name:</td><td><input type="text" id="name"
placeholder="Enter full name"></td></tr>
<tr><td>Enter Number Of Hour:</td><td><input type="text" id="hrs"
 placeholder="Enter your number of hours"></td></tr>
</table>
<input type="button" onclick="calc()" value="Calculate">
<hr size="7" width="1000"  color="6666ff">
<p >Your Receipt is:</p>
<p id="results"></p></center>
</form>
</fieldset>
</body>
</html>
```

(b) Use JavaScript to activate the "Calculate" button in Figure 1 so that the program validates user inputs and computes the parking charges and display the output under the texts "Your Receipt is:"

3. Watukazini Company is doing business of selling cars and car spare parts. The company offers a 15 percent discount once a customer purchased a large quantity of spare parts. Currently, the company is using manual approach to perform computations which causes delay in providing service to customers. Suppose the company manager consulted you to develop an automation system for sales management, using a Visual Basic programming, develop a system for the company.
(a) Create an interface as shown in Figure 2.


```
Private Sub carspares_Click()
Form2.Show
Form1.Hide
End Sub

Private Sub vendors_Click()
Form2.Hide
Form1.Hide
Form3.Show
End Sub
```



(b) Activate the "Car Spare Parts" menu in Figure 2 to display interface as shown in Figure 3 when a user clicks it.

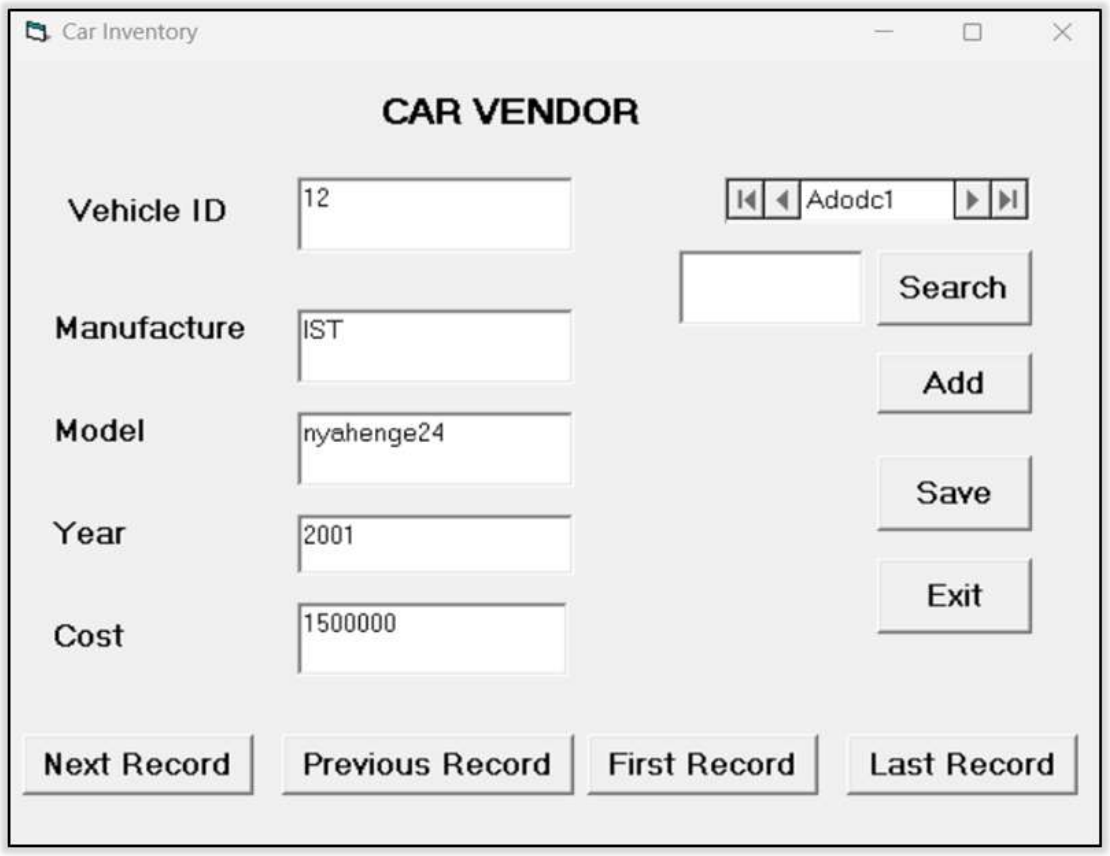
```
Public prices As Currency
Public quantities As Integer
Public sparename As String
Private Sub Command1_Click()
Dim amount As Currency
Dim discount As Currency
Dim net As Currency

prices = Val(Price.Text)
quantities = Val(Quantity.Text)
sparename = Spare.Text

Amounttext.Text = prices * quantities
Discounttext.Text = Val(Amounttext.Text) * 0.15
Nettext = Val(Amounttext.Text) - Val(Discounttext)

End Sub
Private Sub Command2_Click()
Spare.Text = ""
Quantity.Text = ""
Price.Text = ""
Amounttext.Text = ""
Discounttext.Text = ""
Nettext.Text = ""
End Sub
Private Sub Command3_Click()
prices = Val(Price.Text)
quantities = Val(Quantity.Text)
sparename = Spare.Text
If Spare.Text = "" And Quantity.Text = "" And Price.Text = "" And Amounttext.Text = "" Then
MsgBox ("Please fill in the required info")
Else
MsgBox "Spare part name:" + sparename + "Quantity:" + Str(quantities) + "Price:" + Str(prices)
+"Amount Due:"+Amounttext+"Discount Amount:"+dicounttext+"Net Amount:"+Nettext,vbOKOnly,"Summary Report"
End If
End Sub

Private Sub Command4_Click()
End
End Sub
```



(c) Activate the Calculate, Clear, Print and Exit buttons in Figure 3, so that:

(i) The discount and net amount are displayed in the respective labels after clicking the "calculate" button. (**HINT**: Net amount = Amount due – Discount amount).

(ii) The entered data is cleared from the form when the user clicks the "Clear" button.

(iii) The form is closed after clicking the "Exit" button.

(iv) The summary report is printed in the form of message box after clicking the "Print" button.

(d) Create a database called "customer" using MS Access and add a table called "vehicle" with fields shown in Figure 4.

(e) Activate the "Car Vendor" menu in Figure 2 to display the interface in Figure 4. The interface allows the company to add customer details to

the customer database.

(f) Activate the buttons Search, Add, Save and Exit in Figure 4 to perform their intended task.

```
Private Sub Command1_Click()
Adodc1.Recordset.MoveFirst
If (Text1.Text <> Text6.Text) Then
Adodc1.Recordset.MoveNext
End If
End Sub

Private Sub Command2_Click()
Adodc1.Recordset.AddNew
End Sub

Private Sub Command3_Click()
Adodc1.Recordset.Save
End Sub

Private Sub Command4_Click()
End
End Sub

Private Sub Command5_Click()
Adodc1.Recordset.MoveLast
End Sub

Private Sub Command6_Click()
Adodc1.Recordset.MoveFirst
End Sub

Private Sub Command7_Click()
Adodc1.Recordset.MovePrevious
End Sub

Private Sub Command8_Click()
Adodc1.Recordset.MoveNext
End Sub
```