Project-CIS232_TL

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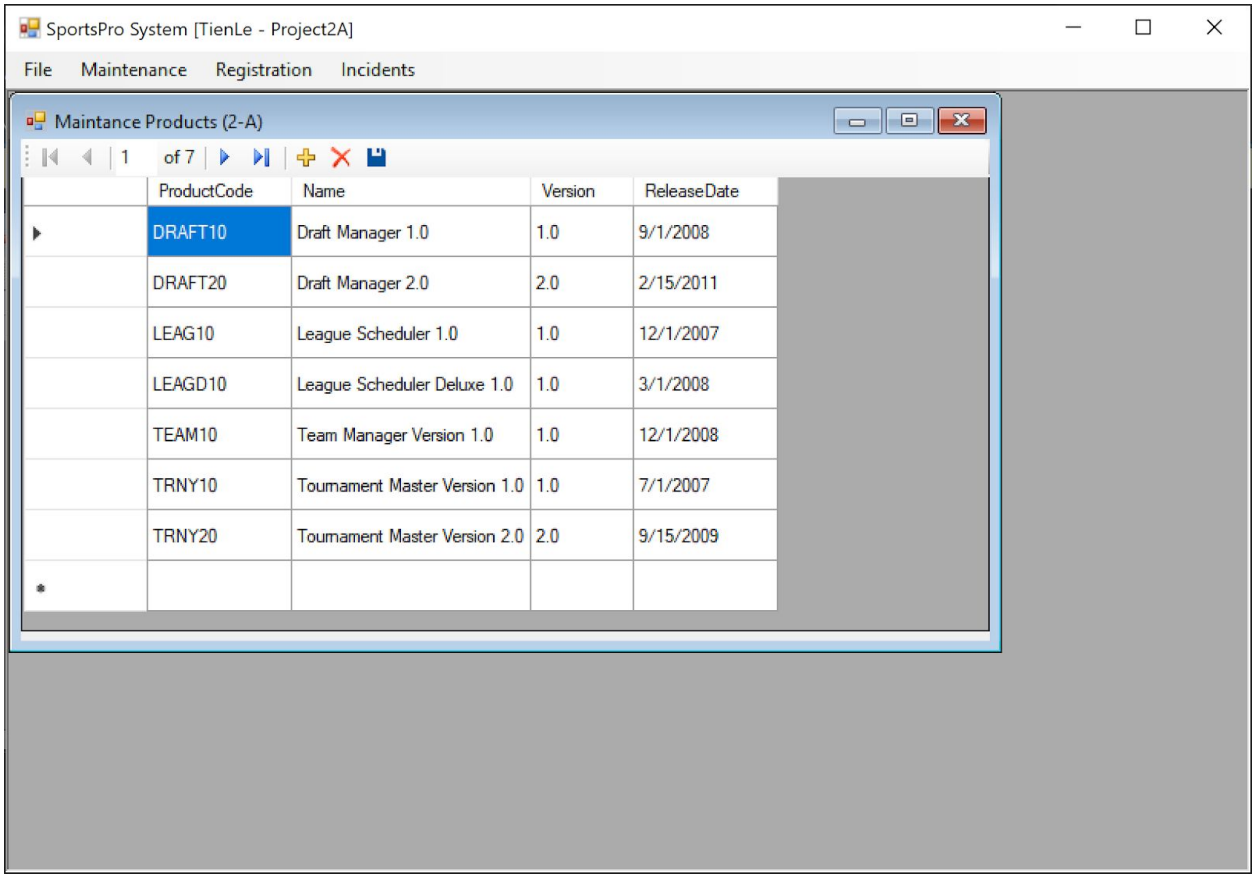
Project 2A: Maintenance Products

The main form and the Product Maintenance form



Project items

Name	Description
frmMain	The main form for the SportsPro application. The IsMdiContainer property for this form is set to True so it can contain MDI child forms. To provide access to the child forms, the main form includes a menu
frmProductMaintenance	A child form that lets the user add, update, and delete rows in the Products table.
TechSupportDataSet2A	A typed dataset with a single table named Products.

Operation of the main form

- The main form is the MDI parent form for the SportsPro application. The user can choose commands from this form's menu to display the child forms of the application.
- To exit the application, the user can choose the File → Exit command or click the main form's Close button

The main form items

- The main form includes a status bar that displays my name: Tien Le
- The menu control for the main form should include the following menus

Name	Description
File	Export Incidents (5-B) Exit
Maintenance	Maintain Products (2-A) Maintain Customers (2-B) Maintain Registrations (3-E) Maintain Technicians (5-G)
Registration	Display Customers by Product (5-F)
Incidents	Create Incident (3-B) Update Incident (3-C) Display Open Incidents (3-A) Display Open Incidents by Technician (3-D) Display Incidents by Product (2-C) Create Mailing List (5-C) Display Incidents by Product and Technician (5-D) Display Incidents by Customer (5-E)

Operation of the Product Maintenance form

- The Product Maintenance form should be displayed when the user chooses the Maintenance → Maintain Products command from the menu on the main form.
- The user can use the navigator control and the DataGridView control to display, add, modify, or delete rows in the Products table.
- To close the Product Maintenance form, the user can click the form's Close button

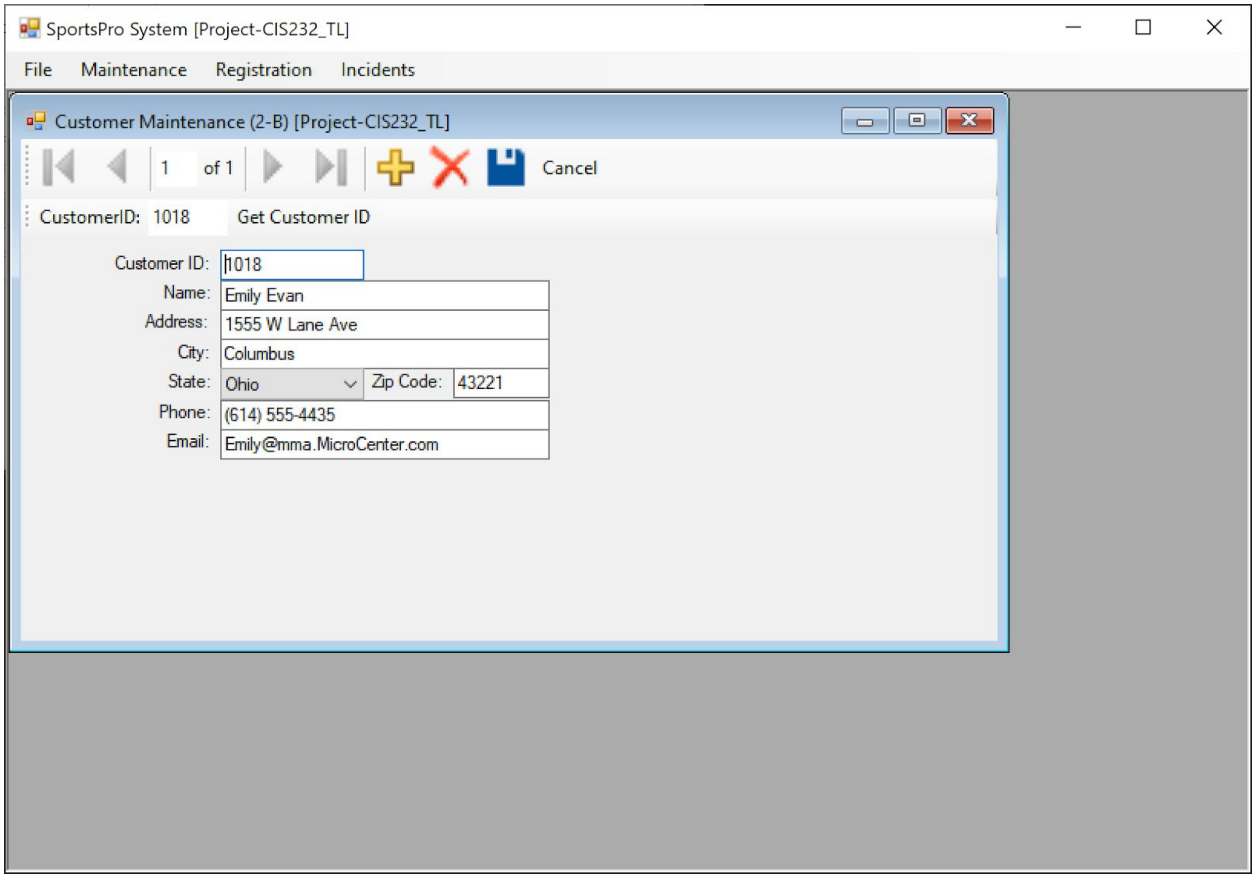
Code

```
Imports System.Data.OleDb
Public Class frmProductMaintenance
```

```
      Private Sub ProductsBindingNavigatorSaveItem_Click(sender As Object, e
As EventArgs) Handles ProductsBindingNavigatorSaveItem.Click
      Me.Validate()
      'Me.ProductsBindingSource.EndEdit()
      'Me.TableAdapterManager.UpdateAll(Me.TechSupportDataSet2A)
      Try
            Me.ProductsBindingSource.EndEdit()
            Me.TableAdapterManager.UpdateAll(Me.TechSupportDataSet2A)
      Catch ex As DBConcurrencyException
            MessageBox.Show("A concurency error occurred. " &
                        "One or more rows were not updated or
deleted.", "Concurrency Exception")
            Me.ProductsTableAdapter.Fill(Me.TechSupportDataSet2A.Products)
      Catch ex As DataException
            MessageBox.Show(ex.Message, ex.GetType.ToString)
            ProductsBindingSource.CancelEdit()
      Catch ex As OleDbException
            'ex.Message & vbCrLf & "You are being re-directed back to the
Main Window", ex.GetType.ToString
            MessageBox.Show("OLEDB Error: " & ex.Message & vbCrLf,
ex.GetType.ToString)
      End Try
      End Sub

      Private Sub frmProductMaintenance_Load(sender As Object, e As
EventArgs) Handles MyBase.Load
      'TODO: This line of code loads data into the
'TechSupportDataSet2A.Products' table. You can move, or remove it, as needed.
      Me.ProductsTableAdapter.Fill(Me.TechSupportDataSet2A.Products)
      End Sub

      Private Sub ProductsDataGridView_DataError(ByVal sender As Object,
ByVal e As System.Windows.Forms.DataGridViewDataErrorEventArgs) Handles
ProductsDataGridView.DataError
      Dim row As Integer = e.RowIndex + 1
      Dim errorMessage As String = "A data error has occurred. " & vbCrLf &
            "Row" & row & vbCrLf & "Error: " & e.Exception.Message
      MessageBox.Show(errorMessage, "Data Error")
      End Sub
End Class
```

Project 2B: Customer Maintenance

The Customer Maintenance form



Project items

Name	Description
frmCustomerMaintenance	A form that lets the user add, update, or delete customer rows.
Main	A module that contains a procedure for formatting a zip code.
TechSupportDataSet2B	A typed dataset with two tables named Customers and States

Operation of the Customer Maintenance form

- The Customer Maintenance form should be displayed when the user chooses the Maintenance → Maintain Customers command from the menu on the main form.

- The user can use the binding navigator control and the text boxes and combo box to display, add, modify, and delete a customer. The user can also enter a customer ID in the second toolbar and then click the Get Customer button to display the data for a customer.

Code

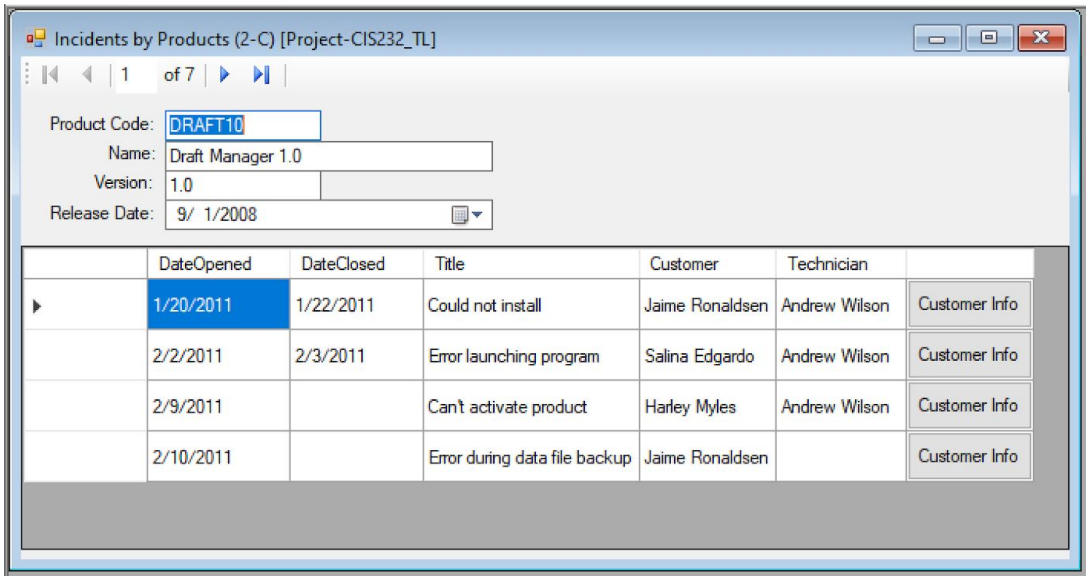
```
Public Class frmCustomerMaintenance
      Private Sub CustomersBindingNavigatorSaveItem_Click(sender As Object, e
As EventArgs) Handles CustomersBindingNavigatorSaveItem.Click
      'Me.Validate()
      'Me.CustomersBindingSource.EndEdit()
      'Me.TableAdapterManager.UpdateAll(Me.TechSupportDataSet2B)
      'save changes
      If IsValidData() Then
            Try
                  Me.Validate()
                  Me.CustomersBindingSource.EndEdit()
                  Me.TableAdapterManager.UpdateAll(Me.TechSupportDataSet2B)
            Catch er As FormatException
                  MessageBox.Show(er.Message, er.GetType.ToString)
                  Me.CustomersBindingSource.CancelEdit()
            Catch er As OleDb.OleDbException
                  MessageBox.Show(er.Message, er.GetType.ToString)
                  Me.CustomersBindingSource.CancelEdit()
            Catch er As Exception
                  MessageBox.Show(er.Message, er.GetType.ToString)
                  Me.CustomersBindingSource.CancelEdit()
            End Try
      End If
      End Sub
      Private Function IsValidData() As Boolean
      If CustomersBindingSource.Count > 0 Then
            Return IsPresent(CustomerIDTextBox, "CustomerID") AndAlso
                  IsPresent(NameTextBox, "Name") AndAlso
                  IsPresent(AddressTextBox, "Address") AndAlso
                  IsPresent(CityTextBox, "City") AndAlso
                  IsPresent(StateComboBox, "State") AndAlso
                  IsPresent(ZipCodeTextBox, "Zip Code") AndAlso
                  IsPresent(PhoneTextBox, "Phone Number") AndAlso
                  IsPresent(EmailTextBox, "Email Address")
      Else
            Return True
      End If
```

```
      End Function
      Private Function IsPresent(ByVal control As Control,
            ByVal name As String) As Boolean
      If control.GetType.ToString = "System.Windows.Forms.TextBox" Then
            Dim textBox As TextBox = CType(control, TextBox)
            If textBox.Text = "" Then
                  MessageBox.Show(name & " is a required field.", "Entry
Error")
                  textBox.Select()
                  Return False
            Else
                  Return True
            End If
      ElseIf control.GetType.ToString = "System.Windows.Forms.ComboBox" Then
            Dim comboBox As ComboBox = CType(control, ComboBox)
            If comboBox.SelectedIndex = -1 Then
                  MessageBox.Show(name & " is a required field.", "Entry
Error")
                  comboBox.Select()
                  Return False
            Else
                  Return True
            End If
      End If
      Return False
      End Function

      Private Sub frmCustomerMaintenance_Load(sender As Object, e As
EventArgs) Handles MyBase.Load
      Dim b As Binding = ZipCodeTextBox.DataBindings("Text")
      AddHandler b.Format, AddressOf frmMain.FormatZipCode
      AddHandler b.Parse, AddressOf frmMain.UnformatZipCode
      'TODO: This line of code loads data into the
'TechSupportDataSet2B.States' table. You can move, or remove it, as needed.
      Me.StatesTableAdapter.Fill(Me.TechSupportDataSet2B.States)
      'TODO: This line of code loads data into the
'TechSupportDataSet2B.Customers' table. You can move, or remove it, as
needed.
      Me.CustomersTableAdapter.Fill(Me.TechSupportDataSet2B.Customers)

      End Sub

      Private Sub FillByCustomerIDToolStripButton_Click(sender As Object, e
As EventArgs) Handles FillByCustomerIDToolStripButton.Click
```

```
      'parameterized query to search by CustomerID
      Try
            'The following 2 lines dont work
            'Dim CustomerID As Integer =
Convert.ToInt32(CustomerIDTextBox.Text)

'Me.CustomersTableAdapter.FillBy(Me.TechSupportDataSet2A.Customers,
CustomerID)
            'The following line is the default one generated by Visual Studio

Me.CustomersTableAdapter.FillByCustomerID(Me.TechSupportDataSet2B.Customers,
CType(CustomerIDToolStripTextBox.Text, Integer))
      Catch er As FormatException
            MessageBox.Show("Customer ID must be an integer", "Entry Error")
            CustomerIDToolStripTextBox.Text = ""
      Catch er As System.Exception
            MessageBox.Show(er.Message, er.GetType.ToString)
            CustomerIDToolStripTextBox.Text = ""
      End Try
      End Sub
      Private Sub btnCancel_Click(sender As Object, e As EventArgs) Handles
btnCancel.Click
      'Cancel button
      CustomersBindingSource.CancelEdit()
      End Sub
End Class
```

Project 2C: Incidents by Customers

The Incidents by Product form



The Customer form

Project items

Name	Description
frmProductIncident	A Master/Detail form that displays the data for a product and lists the incidents for that product.
frmCustomer	A form that displays the data for a customer.
sTechSupportDataSet2C	A typed dataset with three tables named Products, Incidents, and Customers.

Operation of the Incidents by Product form

- The Incidents by Product form should be displayed when the user chooses the Incidents → Display Incidents by Product command from the menu on the main form.
- The user can use the binding navigator control to scroll through the products and display the product and incident data.
- To display the customer information for an incident, the user clicks the Customer Info button for that incident.

Operation of the Customer form

- The Customer form should be displayed when the user clicks a Customer Info button on the Incidents by Product form.
- After reviewing the customer data, the user can click the form's Close button to close the form and return to the Incidents by Product form

Code (frmProductIncidents)

```
Public Class frmProductIncidents
      Private Sub frmProductIncidents_Load(sender As Object, e As EventArgs)
Handles MyBase.Load
      'TODO: This line of code loads data into the
'TechSupportDataSet2C.Incidents' table. You can move, or remove it, as
needed.
      'Me.IncidentsTableAdapter.Fill(Me.TechSupportDataSet2C.Incidents)
      'TODO: This line of code loads data into the
'TechSupportDataSet2C.Products' table. You can move, or remove it, as needed.
      'Me.ProductsTableAdapter.Fill(Me.TechSupportDataSet2C.Products)
      Try
            Me.IncidentsTableAdapter.Fill(Me.TechSupportDataSet2C.Incidents)
            Me.ProductsTableAdapter.Fill(Me.TechSupportDataSet2C.Products)
      Catch er As Exception
            MessageBox.Show(er.Message, er.GetType.ToString)
      End Try
      End Sub

      Private Sub IncidentsDataGridView_CellContentClick(sender As Object, e
As DataGridViewCellEventArgs) Handles IncidentsDataGridView.CellContentClick
      'event handler to get customer id and display customer info in child
form
      If e.ColumnIndex = 5 Then
            Dim rowIndex As Integer = e.RowIndex
            Dim rowType As DataGridViewRow =
IncidentsDataGridView.Rows(rowIndex)
```

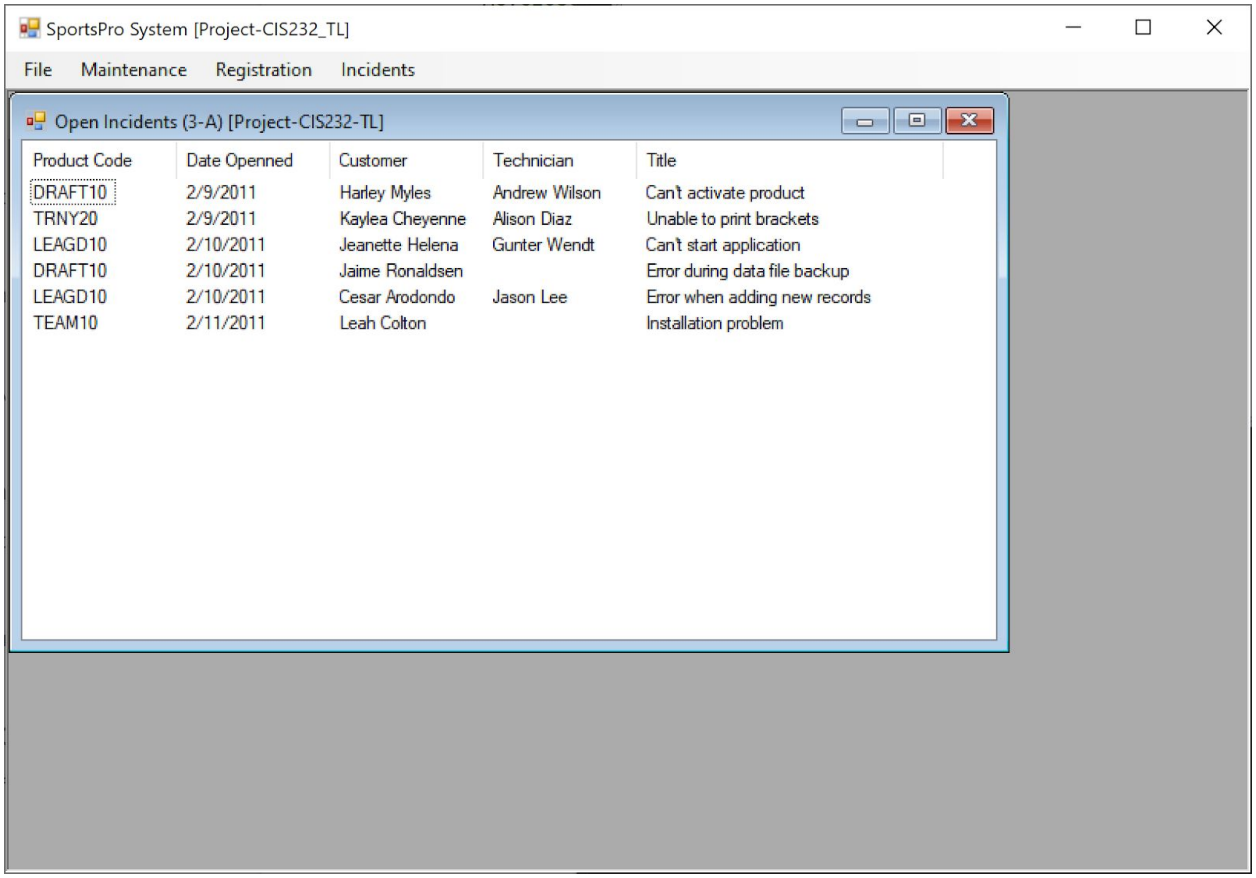
```
            Dim rowCell As DataGridViewCell = rowType.Cells(3)
            Dim customerNameParameter As String = rowCell.Value
            Dim customerIDParameter As Integer =
Me.IncidentsTableAdapter.GetDataByName(customerNameParameter)
            Try
                  'Type Casting will not work
                  'Dim customerInstance As Customer =
CType(row.DataBoundItem, Customer)
                  'open instance of child form
                  Dim newMDIChild As New frmCustomer
                  newMDIChild.customerID = customerIDParameter
                  newMDIChild.MdiParent = frmMain
                  newMDIChild.Show()
            Catch er As Exception
                  MessageBox.Show(er.Message, er.GetType.ToString)
            End Try
      End If
      End Sub
End Class
```

Code (frmCustomer)

```
Public Class frmCustomer
      Public customerID As Integer
      Private Sub frmCustomer_Load(sender As Object, e As EventArgs) Handles
Me.Load
      'fill the datatable with the global variable
      Try
            Me.CustomersTableAdapter.Fill(Me.TechSupportDataSet2C.Customers,
customerID)
      Catch ex As System.Exception
            System.Windows.Forms.MessageBox.Show(ex.Message)
      End Try
      'code that wires procedure to format event (p. 103)
      Dim b As Binding = ZipCodeTextBox.DataBindings("Text")
      AddHandler b.Format, AddressOf frmMain.FormatZipCode
      AddHandler b.Parse, AddressOf frmMain.UnformatZipCode
      End Sub

      Private Sub btnClose_Click(sender As Object, e As EventArgs) Handles
btnClose.Click
      'close button
      Me.Close()
      End Sub
End Class
```

Project 3A: Open Incidents

The Open Incident form



SportPro project item

Name	Description
frmOpenIncidents	A form that displays open incidents in a ListView control.

TechSupportData project items

Name	Description
Incident	A business class that represents a single incident.
TechSupportDB	A database class that contains a method that returns a connection object

	for the TechSupport database.
IncidentDB	A database class that contains methods for working with the Incidents table in the TechSupport database.
CustomerDB	A database class that contains methods for working with the Customers table in the TechSupport database.
TechnicianDB	A database class that contains methods for working with the Technicians table in the TechSupport database

Operation of the Open Incidents form

- The Open Incidents form should be displayed when the user chooses the Incidents → Display Open Incidents command from the menu on the main form.

Code (frmOpenIncidents)

```
Imports TechSupportData
Public Class frmOpenIncidents
      Private Sub frmOpenIncidents_Load(sender As Object, e As EventArgs)
Handles MyBase.Load
      Dim listIncident As List(Of Incident)
      Try
            listIncident = IncidentDB.GetOpenIncidents()
            If listIncident.Count > 0 Then
                  Dim incident As Incident
                  For i As Integer = 0 To listIncident.Count - 1
                  incident = listIncident(i)
                  lvIncidents.Items.Add(incident.ProductCode)

lvIncidents.Items(i).SubItems.Add(CDate(incident.DateOpened).ToShortDateStrin
g)
                  lvIncidents.Items(i).SubItems.Add(incident.CustomerName)
                  lvIncidents.Items(i).SubItems.Add(incident.TechnicianName)
                  lvIncidents.Items(i).SubItems.Add(incident.Title)
                  Next
            Else
                  MessageBox.Show("There are currently no open incidents.",
"Notice")
                  Me.Close()
            End If
```

```
      Catch ex As Exception
            MessageBox.Show(ex.Message, ex.GetType.ToString)
            Me.Close()
      End Try
      End Sub
End Class
```

Code (Incident)

```
Public Class Incident
      Private m_IncidentID As Integer
      Private m_CustomerID As Integer
      Private m_ProductCode As String
      Private m_TechID As Nullable(Of Integer)
      Private m_DateOpened As Date
      Private m_DateClosed As Nullable(Of Date)
      Private m_Title As String
      Private m_Description As String
      Public Property IncidentID() As Integer
      Get
            Return m_IncidentID
      End Get
      Set(ByVal value As Integer)
            m_IncidentID = value
      End Set
      End Property
      Public Property CustomerID() As Integer
      Get
            Return m_CustomerID
      End Get
      Set(ByVal value As Integer)
            m_CustomerID = value
      End Set
      End Property
      Public Property ProductCode() As String
      Get
            Return m_ProductCode
      End Get
      Set(ByVal value As String)
            m_ProductCode = value
      End Set
      End Property
      Public Property TechID() As Nullable(Of Integer)
      Get
            If m_TechID.HasValue() Then
```

```
            Return m_TechID
      Else
            Return Nothing
      End If
End Get
Set(ByVal value As Nullable(Of Integer))
      m_TechID = value
End Set
End Property
Public Property DateOpened() As Date
Get
      Return m_DateOpened
End Get
Set(ByVal value As Date)
      m_DateOpened = value
End Set
End Property
Public Property DateClosed() As Nullable(Of Date)
Get
      If m_DateClosed.HasValue Then
            Return m_DateClosed
      Else
            Return Nothing
      End If
End Get
Set(ByVal value As Nullable(Of Date))
      m_DateClosed = value
End Set
End Property
Public Property Title() As String
Get
      Return m_Title
End Get
Set(ByVal value As String)
      m_Title = value
End Set
End Property
Public Property Description() As String
Get
      Return m_Description
End Get
Set(ByVal value As String)
      m_Description = value
End Set
```

```
	End Property
	Public ReadOnly Property CustomerName() As String
	Get
		Return CustomerDB.GetCustomerName(CustomerID)
	End Get
	End Property
	Public ReadOnly Property TechnicianName() As String
	Get
		Return TechnicianDB.GetTechnicianName(TechID)
	End Get
	End Property
End Class
```

Code (TechSupportDB)

```
Imports System.Data.OleDb
Public Class TechSupportDB
	Public Shared Function GetConnection() As OleDbConnection
	Dim connectionString As String = "Provider =
Microsoft.Jet.OLEDB.4.0;Data Source=C:\Bob\TechSupport.mdb"
	Return New OleDbConnection(connectionString)
	End Function
End Class
```

Code (IncidentDB)

```
Imports System.Data.OleDb
Public Class IncidentDB
	Public Shared Function GetOpenIncidents() As List(Of Incident)
	Dim openIncidents As New List(Of Incident)
	Dim connection As OleDbConnection = TechSupportDB.GetConnection
	Dim selectstatement As String = "SELECT CustomerID, ProductCode,
TechID, DateOpened, Title " &
	"FROM Incidents " &
	"WHERE DateClosed Is NULL "

	Dim selectCommand As New OleDbCommand(selectstatement, connection)
	Try
		connection.Open()
		Dim reader As OleDbDataReader = selectCommand.ExecuteReader()
		Dim incident As Incident
		Do While reader.Read
			incident = New Incident
			incident.CustomerID = CInt(reader("CustomerID"))
			incident.ProductCode = reader("ProductCode").ToString
```

```
                incident.DateOpened = CDate(reader("DateOpened"))
                incident.Title = reader("Title").ToString
                If IsDBNull(reader("TechID")) Then
                incident.TechID = Nothing
                Else
                incident.TechID = CInt(reader("TechID"))
                End If
                openIncidents.Add(incident)
          Loop
          reader.Close()
    Catch ex As OleDbException
          Throw ex
    Finally
          connection.Close()
    End Try
    Return openIncidents
    End Function
End Class
```

Code (CustomerDB)

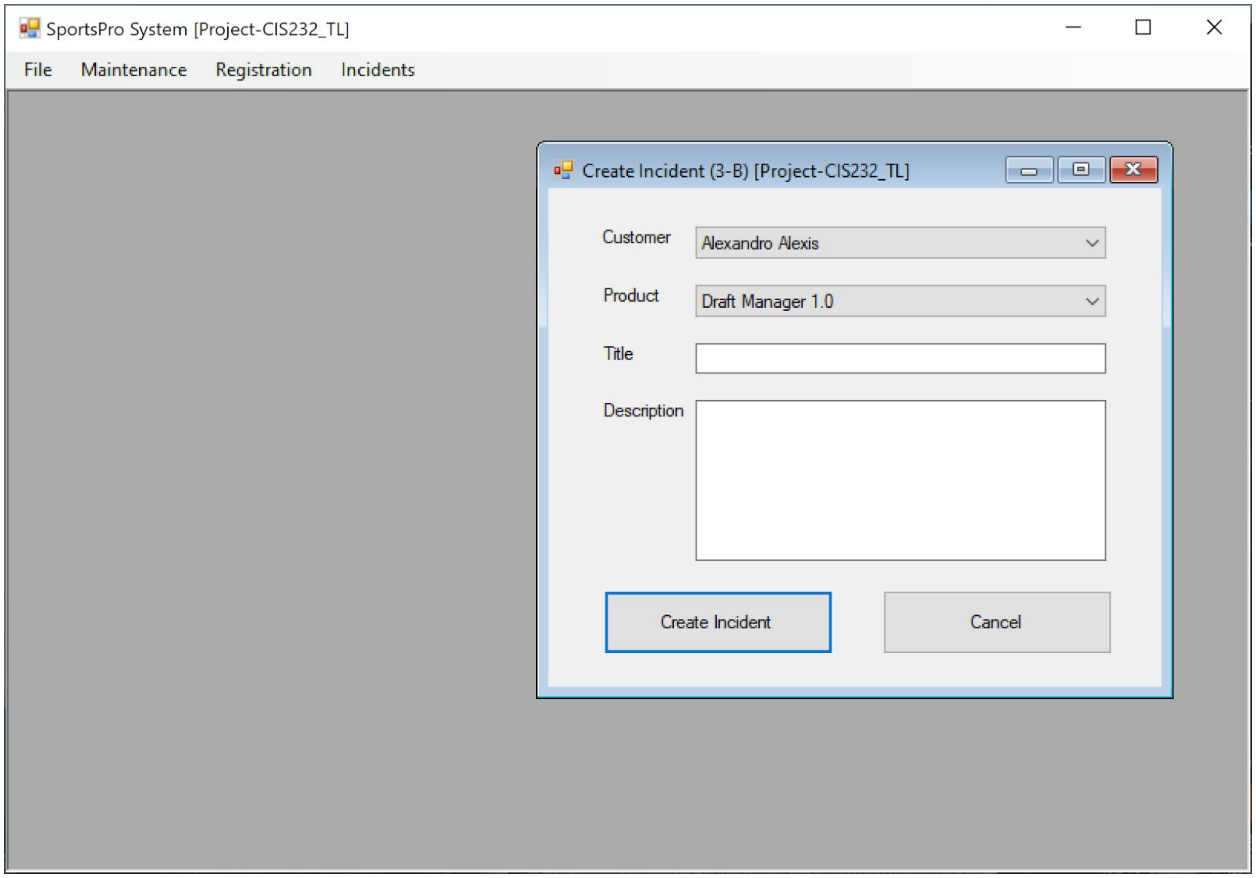
```
Imports System.Data.OleDb
Public Class CustomerDB
    Public Shared Function GetCustomerName(ByVal customerID As Integer) As
String
    Dim connection As OleDbConnection = TechSupportDB.GetConnection
    Dim selectCommand As New OleDbCommand()
    Dim customerName As String

    selectCommand.Connection = connection
    selectCommand.CommandText =
          "SELECT Name " &
          "FROM Customers " &
          "WHERE CustomerID = " & customerID
    Try
          connection.Open()
          customerName = selectCommand.ExecuteScalar.ToString
          connection.Close()
    Catch ex As Exception
          Throw ex
    End Try
    Return customerName
    End Function
End Class
```

Code (TechnicanDB)

```
Imports System.Data.OleDb
Public Class TechnicianDB
      Public Shared Function GetTechnicianName(ByVal techID As Integer) As
String
      Dim connection As OleDbConnection = TechSupportDB.GetConnection
      Dim selectCommand As New OleDbCommand()
      Dim technicianName As String

      Dim objTechName As Object

      selectCommand.Connection = connection
      selectCommand.CommandText =
            "SELECT Name " &
            "FROM Technicians " &
            "WHERE TechID = " & techID
      Try
            connection.Open()
            objTechName = selectCommand.ExecuteScalar()
            If objTechName Is Nothing Then
                  technicianName = ""
            Else
                  technicianName = objTechName.ToString
            End If
            connection.Close()
      Catch ex As Exception
            Throw ex
      End Try
      Return technicianName
      End Function
End Class
```

Project 3B: Create an incident

The Create Incident form



SportsPro project items

Name	Description
frmCreateIncident	A form that lets the user add a new incident to the Incidents table.
Validator	A class that contains generic data validation methods.

TechSupportData project items

Name	Description
Incident	A business class that represents a single incident.

Customer	A business class that represents a single customer.
Product	A business class that represents a single product.
TechSupportDB	A database class that contains a method that returns a connection object for the TechSupport database.
IncidentDB	A database class that contains methods for working with the Incidents table in the TechSupport database.
CustomerDB	A database class that contains methods for working with the Customers table in the TechSupport database.
ProductDB	A database class that contains methods for working with the Products table in the TechSupport database.
RegistrationDB	A database class that contains methods for working with the Registrations table in the TechSupport database.

Operation

- The Create Incident form should be displayed when the user chooses the Incidents → Create Incident command from the menu on the main form.
- To create an incident, the user selects the customer and product from the combo boxes, enters a title and description, and clicks the Create Incident button. If the incident is accepted, a confirmation message is displayed and the form is closed.
- To close the form without creating an incident, the user clicks the Cancel button

Code (frmCreateIncident)

```
Imports TechSupportData
Public Class frmCreateIncident
    Private Sub btnCancel_Click(sender As Object, e As EventArgs) Handles
btnCancel.Click
        Me.Close()
    End Sub
    Private Sub btnCreate_Click(sender As Object, e As EventArgs) Handles
btnCreate.Click
```

```
        'Check if title and desription is filled. If not, display error
message and return to form
        'Then, check if customer is associated with product
        'Then, set value to incident table
        'Display successful then close the form
        Try
            If Validator.IsPresent(txtTitle, "Title") AndAlso
Validator.IsPresent(txtDesc, "Description") Then
                If
RegistrationDB.ProductRegistered(cboCustomer.SelectedValue,
cboProduct.SelectedValue) Then
                    Dim incident As New Incident
                    incident.CustomerID = CInt(cboCustomer.SelectedValue)
                    incident.ProductCode = cboProduct.SelectedValue
                    incident.Title = txtTitle.Text
                    incident.Description = txtDesc.Text
                    Try
                        IncidentDB.AddIncident(incident)
                        MessageBox.Show("Successfully added incident",
"Confirmation")
                        Me.Close()
                    Catch ex As Exception
                        MessageBox.Show(ex.Message, ex.GetType.ToString)
                    End Try
                Else
                    MessageBox.Show("Customer and Product does not match",
"Error")
                End If
            End If
        Catch ex As Exception
            MessageBox.Show(ex.Message, ex.GetType.ToString)
        End Try
    End Sub

    Private Sub frmCreateIncident_Load(sender As Object, e As EventArgs)
Handles MyBase.Load
        'Load combo boxes
        Me.LoadComboBoxes()
    End Sub
    Private Sub LoadComboBoxes()
        Try
            Dim customerList As List(Of Customer)
            customerList = CustomerDB.GetCustomerList
            cboCustomer.DataSource = customerList
```

```
            cboCustomer.DisplayMember = "Name"
            cboCustomer.ValueMember = "CustomerID"

            Dim productList As List(Of Product)
            productList = ProductDB.GetProductList
            cboProduct.DataSource = productList
            cboProduct.DisplayMember = "Name"
            cboProduct.ValueMember = "ProductCode"
        Catch ex As Exception
            MessageBox.Show(ex.Message, ex.GetType.ToString)
        End Try
    End Sub
End Class
```

Code (Validator)

```
Public Class Validator
    Public Shared Function IsPresent(ByVal textBox As TextBox, ByVal name As
String) As Boolean
        'Returns a Boolean value that indicates if a text box contains a
value. If not, an error message Is displayed And the focus Is set to the text
box.
        Dim check As Boolean = False
        If textBox.Text <> "" Then
            check = True
        Else
            MessageBox.Show(name + " is missing", "Error")
        End If
        Return check
    End Function
End Class
```

Code (CustomerDB // GetCustomerList Function)

```
    Public Shared Function GetCustomerList() As List(Of Customer)
        Dim customerList As New List(Of Customer)
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectStatement As String =
            "SELECT CustomerID, Name " &
            "FROM Customers " &
            "ORDER BY Name"
        Dim selectCommand As New OleDbCommand(selectStatement, connection)
        Try
            connection.Open()
            Dim reader As OleDbDataReader = selectCommand.ExecuteReader()
```

```
            Dim customer As Customer
            Do While reader.Read
                customer = New Customer
                customer.CustomerID = CInt(reader("CustomerID"))
                customer.Name = reader("Name").ToString
                customerList.Add(customer)
            Loop
            reader.Close()
        Catch ex As oledbException
            Throw ex
        Finally
            connection.Close()
        End Try
        Return customerList
    End Function
```

Code (ProductDB)

```
Public Class ProductDB
    Public Shared Function GetProductList() As List(Of Product)
        Dim productList As New List(Of Product)
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectStatement As String =
            "SELECT ProductCode, Name " &
            "FROM Products " &
            "ORDER BY Name"
        Dim selectCommand As New OleDbCommand(selectStatement, connection)
        Try
            connection.Open()
            Dim reader As OleDbDataReader = selectCommand.ExecuteReader()
            Dim product As Product
            Do While reader.Read
                product = New Product
                product.ProductCode = reader("ProductCode").ToString
                product.Name = reader("Name").ToString
                productList.Add(product)
            Loop
            reader.Close()
        Catch ex As oledbException
            Throw ex
        Finally
            connection.Close()
        End Try
        Return productList
    End Function
```

```
End Class
```

Code (IncidentDB // AddIncident Sub)

```
    Public Shared Sub AddIncident(ByVal incident As Incident)
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectstatement As String = "INSERT INTO Incidents " &
        "(CustomerID, ProductCode, DateOpened, Title, Description) " &
        "VALUES (@CustomerID, @ProductCode, @DateOpened, @Title,
@Description) "
        Dim selectCommand As New OleDbCommand(selectstatement, connection)

        selectCommand.Parameters.AddWithValue("@CustomerID",
incident.CustomerID)
        selectCommand.Parameters.AddWithValue("@ProductCode",
incident.ProductCode)
        selectCommand.Parameters.AddWithValue("@DateOpened",
CDate(DateTime.Today))
        selectCommand.Parameters.AddWithValue("@Title", incident.Title)
        selectCommand.Parameters.AddWithValue("@Description",
incident.Description)


        Try
            connection.Open()
            selectCommand.ExecuteNonQuery()
        Catch ex As OleDbException
            Throw ex
        Finally
            connection.Close()
        End Try
    End Sub
```

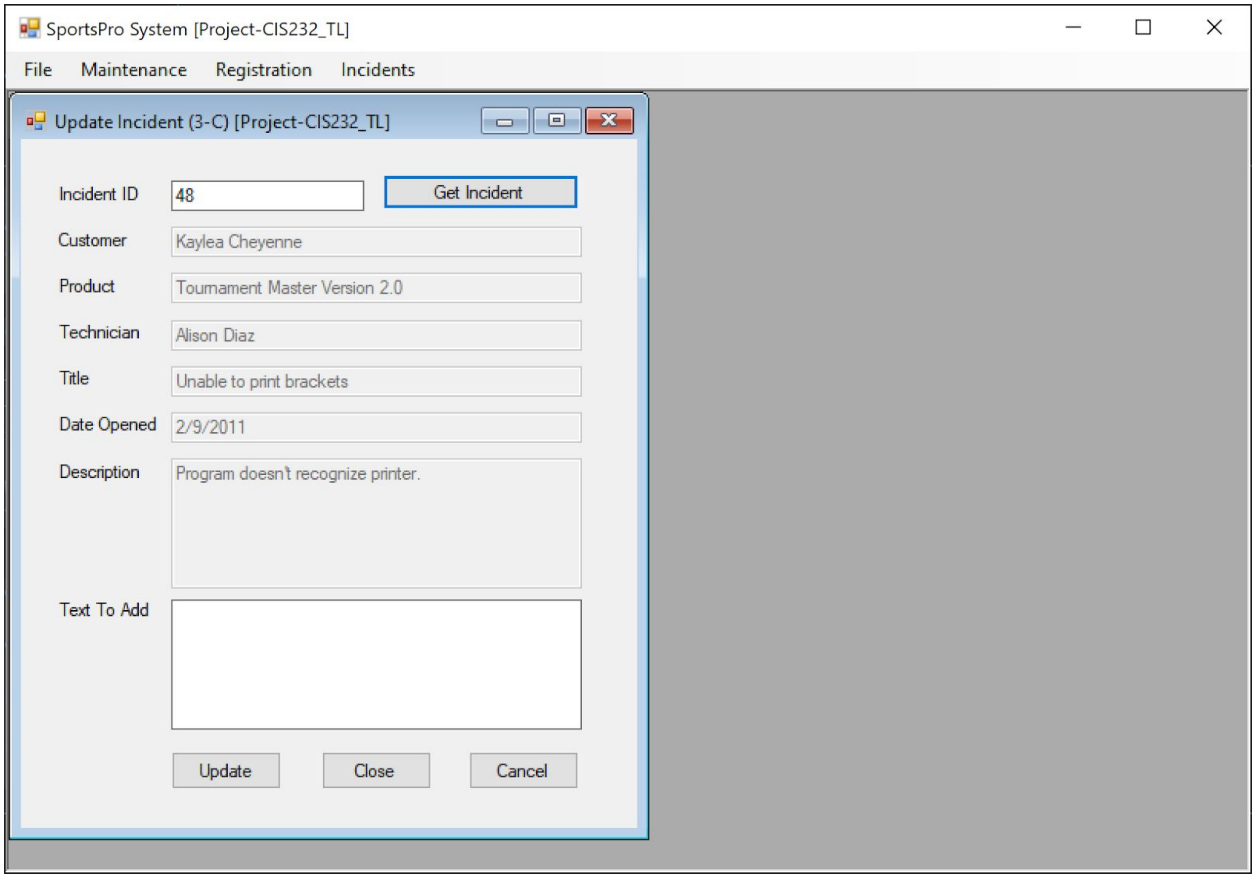
Code (RegistrationDB)

```
Imports System.Data.OleDb
Public Class RegistrationDB
    Public Shared Function ProductRegistered(ByVal customerID As Integer,
ByVal productCode As String) As Boolean
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectStatement As String =
            "SELECT Count(*) " &
            "FROM Registrations " &
            "WHERE CustomerID = @CustomerID " &
            "AND ProductCode = @ProductCode"
```

```
        Dim selectCommand As New OleDbCommand(selectStatement, connection)
        Dim check As Boolean = False

        selectCommand.Parameters.AddWithValue("@CustomerID", customerID)
        selectCommand.Parameters.AddWithValue("@ProductCode", productCode)

        Try
            connection.Open()
            Dim length = CInt(selectCommand.ExecuteScalar)
            If length > 0 Then
                check = True
            End If
            connection.Close()
        Catch ex As OleDbException
            Throw ex
        Finally
            connection.Close()
        End Try
        Return check
    End Function
End Class
```

Project 3C: Update an incident

The Update Incident form



SportsPro Project items

Name	Description
frmUpdateIncident	A form that lets the user update or close an incident
Validator	A class that contains generic data validation methods.

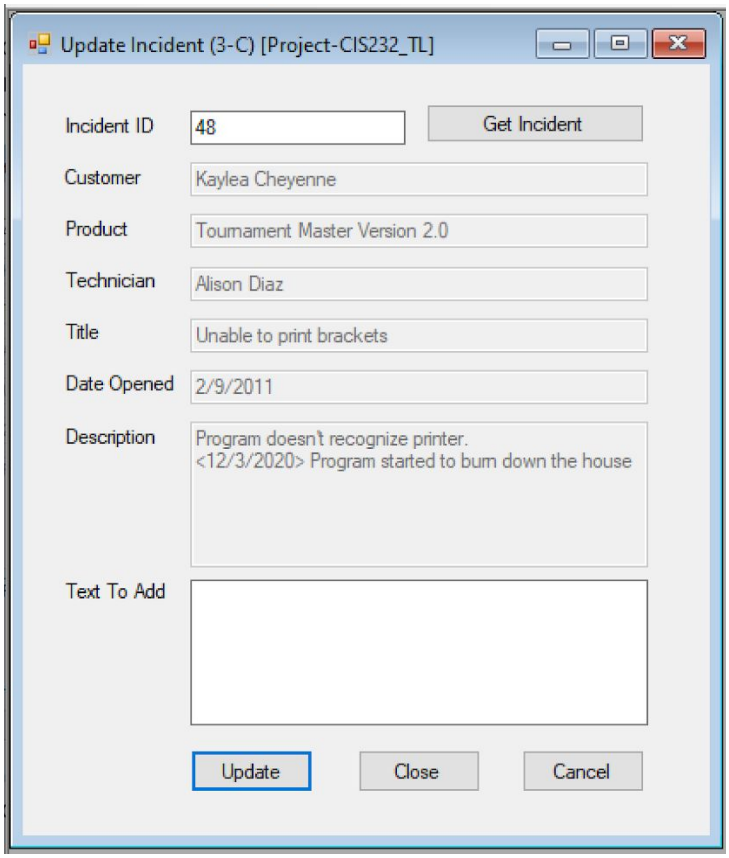
TechSupportData items

Name	Description
Incident	A business class that represents a single incident.

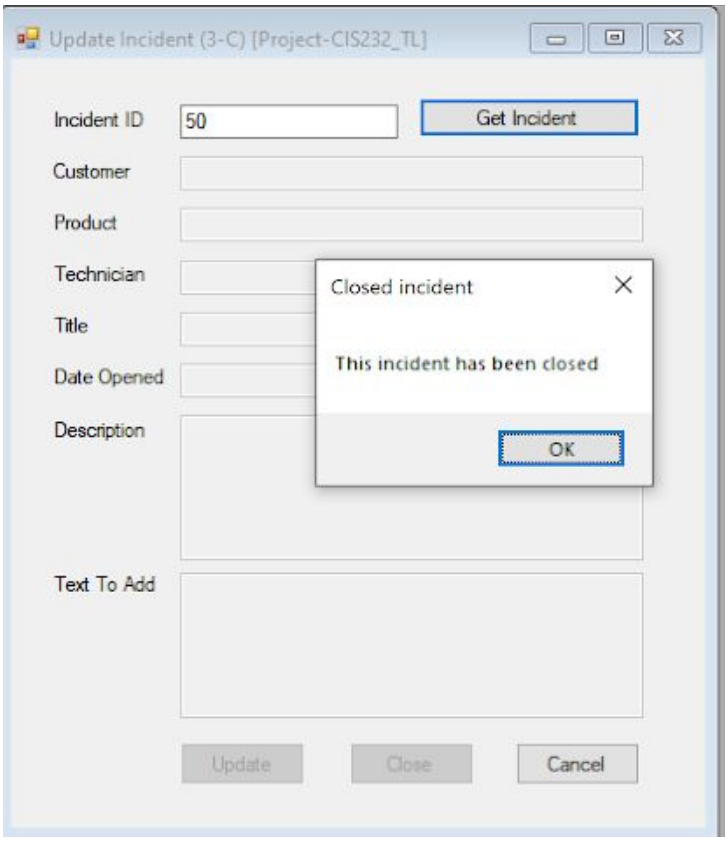
TechSupportDB	A database class that contains a method that returns a connection object for the TechSupport database.
IncidentDB	A database class that contains methods for working with the Incidents table in the TechSupport database
CustomerDB	A database class that contains methods for working with the Customers table in the TechSupport database.
TechnicianDB	A database class that contains methods for working with the Technicians table in the TechSupport database.
ProductDB	A database class that contains methods for working with the Products table in the TechSupport database

Operation

- The Update Incident form should be displayed when the user chooses the Incidents → Update Incident command from the menu on the main form.
- To update or close an incident, the user must first retrieve the incident by entering the incident ID in the Incident ID text box and clicking the Get Incident button. The application then displays the information for the incident.
- To update an incident, the user enters text to be added to the Description column in the Text to add text box and clicks the Update button.



- To close an incident, the user clicks the Close Incident button.
- *The form will not open an incident that is already closed.*
- To close the form without updating or closing an incident, the user clicks the Cancel button.



Code (frmUpdateIncident)

```
Imports TechSupportData
Public Class frmUpdateIncident
    Private Sub
btnGetIncident_Click(sender As
Object, e As EventArgs) Handles
btnGetIncident.Click
        Dim incident As
Incident
        If Validator.IsPresent(txtIncidentID, "Incident ID") AndAlso
Validator.IsInt32(txtIncidentID, "Incident ID") Then
            Dim incidentID As Integer = CInt(txtIncidentID.Text)
            incident = IncidentDB.GetIncident(incidentID)
            If incident Is Nothing Then
                MessageBox.Show("There are no incidents with this ID",
"Unknown ID")
            ElseIf Not IncidentDB.UpdateIncident(incident,
incident.Description) Then
                MessageBox.Show("This incident had been closed", "Closed
incident")
            Else
                txtIncidentID.Text = incident.IncidentID
                txtCustomer.Text = incident.CustomerName
                txtProduct.Text = incident.ProductName
                txtTechnician.Text = incident.TechnicianName
                txtTitle.Text = incident.Title
                txtDateOpened.Text = incident.DateOpened
                txtDescription.Text = incident.Description
                txtTextToAdd.Enabled = True
                btnClose.Enabled = True
```

```
                btnUpdate.Enabled = True
            End If
        End If

    End Sub

    Private Sub btnUpdate_Click(sender As Object, e As EventArgs) Handles
btnUpdate.Click
        Dim textLong = False
        Dim incident As Incident =
IncidentDB.GetIncident(CInt(txtIncidentID.Text))
        Dim Description As String = txtDescription.Text + Environment.NewLine
+ "<" + CDate(DateTime.Today) + "> " + txtTextToAdd.Text
        If Validator.IsPresent(txtTextToAdd, "Text to add") Then
            If Description.Length > 2000 Then
                Dim result As DialogResult = MessageBox.Show("Text will be
truncated. Do you want to continue?", "Text is over 2000 letters limit",
MessageBoxButtons.YesNo)
                If result = DialogResult.Yes Then
                    textLong = True
                    Description.Substring(0, 2000)
                End If
            End If
            If Description.Length < 2000 OrElse textLong = True Then
                If IncidentDB.UpdateIncident(incident, Description) Then
                    txtDescription.Text = Description
                    txtTextToAdd.Text = ""
                Else
                    MessageBox.Show("The incident has been closed", "Unable
to add description")
                    txtTextToAdd.Text = ""
                End If
            End If
        End If
    End Sub

    Private Sub btnClose_Click(sender As Object, e As EventArgs) Handles
btnClose.Click
        Dim incident As Incident =
IncidentDB.GetIncident(CInt(txtIncidentID.Text))
        Dim result As DialogResult = MessageBox.Show("This will close the
incident. Do you want to continue?", "Close incident?",
MessageBoxButtons.YesNo)
        If result = DialogResult.Yes Then
```

```
            If IncidentDB.CloseIncident(incident) Then
                MessageBox.Show("Incident has been closed", "Notice")
                Me.Close()
            Else
                MessageBox.Show("Another user has updated this incident",
"Unable to close incident")
            End If
        End If
    End Sub

    Private Sub btnCancel_Click(sender As Object, e As EventArgs) Handles
btnCancel.Click
        Me.Close()
    End Sub
End Class
```

Code (Validator // IsInt32)

```
  Public Shared Function IsInt32(ByVal textBox As TextBox, ByVal name As
String) As Boolean
        'Returns Boolean Check if Int32
        Try
            Convert.ToInt32(textBox.Text)
            Return True
        Catch ex As FormatException
            MessageBox.Show(name + " must be an integer value", "Error")
            textBox.Select()
            textBox.SelectAll()
            Return False
        End Try
    End Function
```

Code (Incident // ProductName)

```
  Public ReadOnly Property ProductName() As String
    Get
      Return ProductDB.GetProductName(ProductCode)
    End Get
  End Property
```

Code (IncidentDB // GetIncident, UpdateIncident, CloseIncident)

```
    Public Shared Function GetIncident(ByVal incidentID As Integer) As
Incident
```

```
        Dim incident As New Incident
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectStatement As String =
            "SELECT IncidentID, CustomerID, ProductCode, TechID, " &
            "DateOpened, DateClosed, Title, Description " &
            "FROM Incidents " &
            "WHERE incidentID = @IncidentID "

        Dim selectCommand As New OleDbCommand(selectStatement, connection)
        selectCommand.Parameters.AddWithValue("@IncidentID", incidentID)

        Try
            connection.Open()
            Dim reader As OleDbDataReader =
selectCommand.ExecuteReader(CommandBehavior.SingleRow)
            If reader.Read Then
                incident.IncidentID = CInt(reader("IncidentID"))
                incident.CustomerID = CInt(reader("CustomerID"))
                incident.ProductCode = reader("ProductCode").ToString
                incident.TechID = CInt(reader("TechID"))
                incident.DateOpened = CDate(reader("DateOpened"))
                'incident.DateClosed = CDate(reader("DateClosed"))
                incident.Title = reader("Title").ToString
                incident.Description = reader("Description").ToString
            Else
                incident = Nothing
            End If
            reader.Close()
        Catch ex As OleDbException
            Throw ex
        Finally
            connection.Close()
        End Try
        Return incident
    End Function
    Public Shared Function UpdateIncident(ByVal incident As Incident, ByVal
description As String) As Boolean
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectStatement As String =
        "UPDATE Incidents " &
        "SET Description = @NewDescription " &
        "WHERE IncidentID = @IncidentID " &
        "AND Description = @Description " &
        "AND DateClosed IS NULL"
```

```
        Dim selectCommand As New OleDbCommand(selectStatement, connection)
        selectCommand.Parameters.AddWithValue("@NewDescription", description)
        selectCommand.Parameters.AddWithValue("@IncidentID",
incident.IncidentID)
        selectCommand.Parameters.AddWithValue("@Description",
incident.Description)

        Try
            connection.Open()
            Dim count As Integer = selectCommand.ExecuteNonQuery
            If count > 0 Then
                Return True
            Else
                Return False
            End If
        Catch ex As OleDbException
            Throw ex
        Finally
            connection.Close()
        End Try
    End Function
    Public Shared Function CloseIncident(ByVal incident As Incident) As
Boolean
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectStatement As String =
            "UPDATE Incidents " &
            "SET DateClosed = @DateClosed " &
            "WHERE IncidentID = @IncidentID " &
            "AND Description = @Description " &
            "AND DateClosed IS NULL"

        Dim selectCommand As New OleDbCommand(selectStatement, connection)
        selectCommand.Parameters.AddWithValue("@DateClosed",
CDate(DateTime.Today))
        selectCommand.Parameters.AddWithValue("@IncidentID",
incident.IncidentID)
        selectCommand.Parameters.AddWithValue("@Description",
incident.Description)

        Try
            connection.Open()
            Dim count As Integer = selectCommand.ExecuteNonQuery
            If count > 0 Then
```

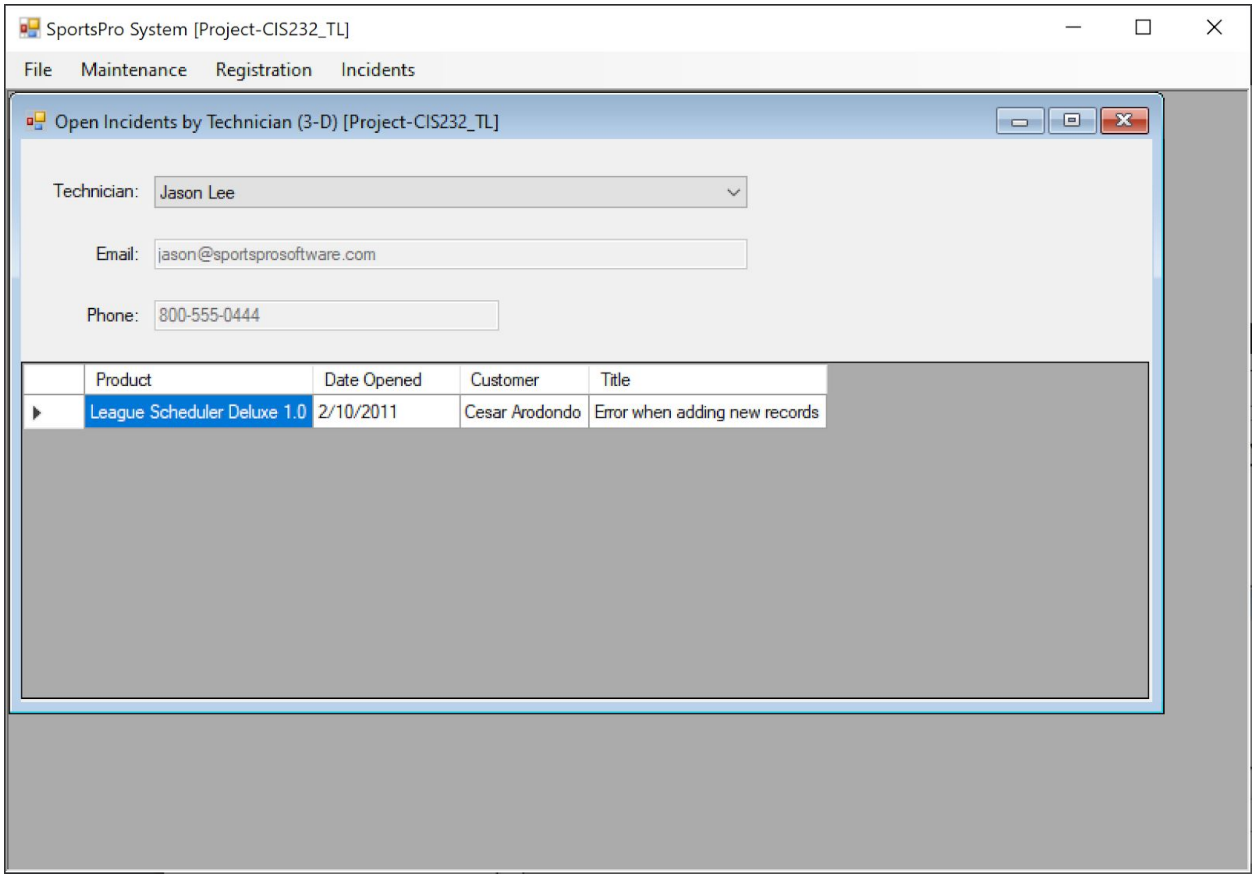
```
            Return True
        Else
            Return False
        End If
    Catch ex As OleDbException
        Throw ex
    Finally
        connection.Close()
    End Try
End Function
```

Code (ProductDB // GetProductName)

```
  Public Shared Function GetProductName(ByVal productCode As String) As
String
    Dim connection As OleDbConnection = TechSupportDB.GetConnection
    Dim selectCommand As New OleDbCommand()
    Dim productName As String

    'Dim objReturn As Object

    selectCommand.Connection = connection
    selectCommand.CommandText =
        "SELECT Name " &
        "FROM Products " &
        "WHERE ProductCode = @productCode"
    selectCommand.Parameters.AddWithValue("@productCode", productCode)

    Try
        connection.Open()
        productName = selectCommand.ExecuteScalar.ToString
        connection.Close()
    Catch ex As Exception
        Throw ex
    End Try
    Return productName
End Function
```

Project 3D: Display open incidents by technician

The Open Incidents by Technicians form



SportsPro project item

Name	Description
frmTechnicianIncidents	A form that lets the user display the open incidents for a technician.

TechSupportData project items

Name	Description
Technician	A business class that represents a single technician.
Incident	A business class that represents a single

	incident.
TechSupportDB	A database class that contains a method that returns a connection object for the TechSupport database.
TechnicianDB	A database class that contains methods for working with the Technicians table in the TechSupport database.
IncidentDB	A database class that contains methods for working with the Incidents table in the TechSupport database.
ProductDB	A database class that contains methods for working with the Products table in the TechSupport database.
CustomerDB	A database class that contains methods for working with the Customers table in the TechSupport database.

Operation

- The Open Incidents by Technician form should be displayed when the user chooses the Incidents → Display Open Incidents by Technician command from the menu on the main form.
- To display the open incidents for a technician, the user selects the technician from the combo box. In addition to the incidents, contact information for the selected technician is displayed on the form

Code (frmTechnicianIncident)

```
Imports TechSupportData
Public Class frmTechnicianIncidents
    Private tech As Technician
    Private techList As List(Of Technician)
    Private incidentList As List(Of Incident)
    Private Sub frmTechnicianIncidents_Load(sender As Object, e As EventArgs)
Handles MyBase.Load
        Me.GetTechList()
        Me.GetIncidentList()
    End Sub
    Private Sub GetTechList()
        Try
```

```
            techList = TechnicianDB.GetTechnicianList
            cboTech.DataSource = techList
        Catch ex As Exception
            MessageBox.Show(ex.Message, ex.GetType.ToString)
        End Try
    End Sub
    Private Sub GetIncidentList()
        Dim techID As Integer = CInt(cboTech.SelectedValue)
        Try
            tech = TechnicianDB.GetTechnician(techID)
            TechnicianBindingSource.Clear()
            TechnicianBindingSource.Add(tech)
            incidentList = IncidentDB.GetOpenTechnicianIncidents(techID)
            IncidentDataGridView.DataSource = incidentList
        Catch ex As Exception
            MessageBox.Show(ex.Message, ex.GetType.ToString)
        End Try
    End Sub

    Private Sub cboTech_SelectedIndexChanged(sender As Object, e As
EventArgs) Handles cboTech.SelectedIndexChanged
        Me.GetIncidentList()
    End Sub
End Class
```

Code (Technician)

```
Public Class Technician
    Private m_TechID As Integer
    Private m_Name As String
    Private m_Email As String
    Private m_Phone As String
    Public Property TechID() As Integer
        Get
            Return m_TechID
        End Get
        Set(ByVal value As Integer)
            m_TechID = value
        End Set
    End Property
    Public Property Name() As String
        Get
            Return m_Name
        End Get
        Set(ByVal value As String)
```

```
            m_Name = value
        End Set
    End Property
    Public Property Email() As String
        Get
            Return m_Email
        End Get
        Set(ByVal value As String)
            m_Email = value
        End Set
    End Property
    Public Property Phone() As String
        Get
            Return m_Phone
        End Get
        Set(ByVal value As String)
            m_Phone = value
        End Set
    End Property
End Class
```

Code (TechnicianDB // GetTechnicianList, GetTechnician)

```
    Public Shared Function GetTechnicianList() As List(Of Technician)
        Dim technicianList As New List(Of Technician)
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectstatement As String =
            "SELECT TechID, Name " &
            "FROM Technicians " &
            "ORDER BY Name "

        Dim selectCommand As New OleDbCommand(selectstatement, connection)

        Try
            connection.Open()
            Dim reader As OleDbDataReader = selectCommand.ExecuteReader()
            Dim technician As Technician
            Do While reader.Read
                technician = New Technician
                technician.TechID = CInt(reader("TechID"))
                technician.Name = reader("Name").ToString
                'technician.Phone = reader("Phone").ToString
                'technician.Email = reader("Email").ToString
                technicianList.Add(technician)
            Loop
```

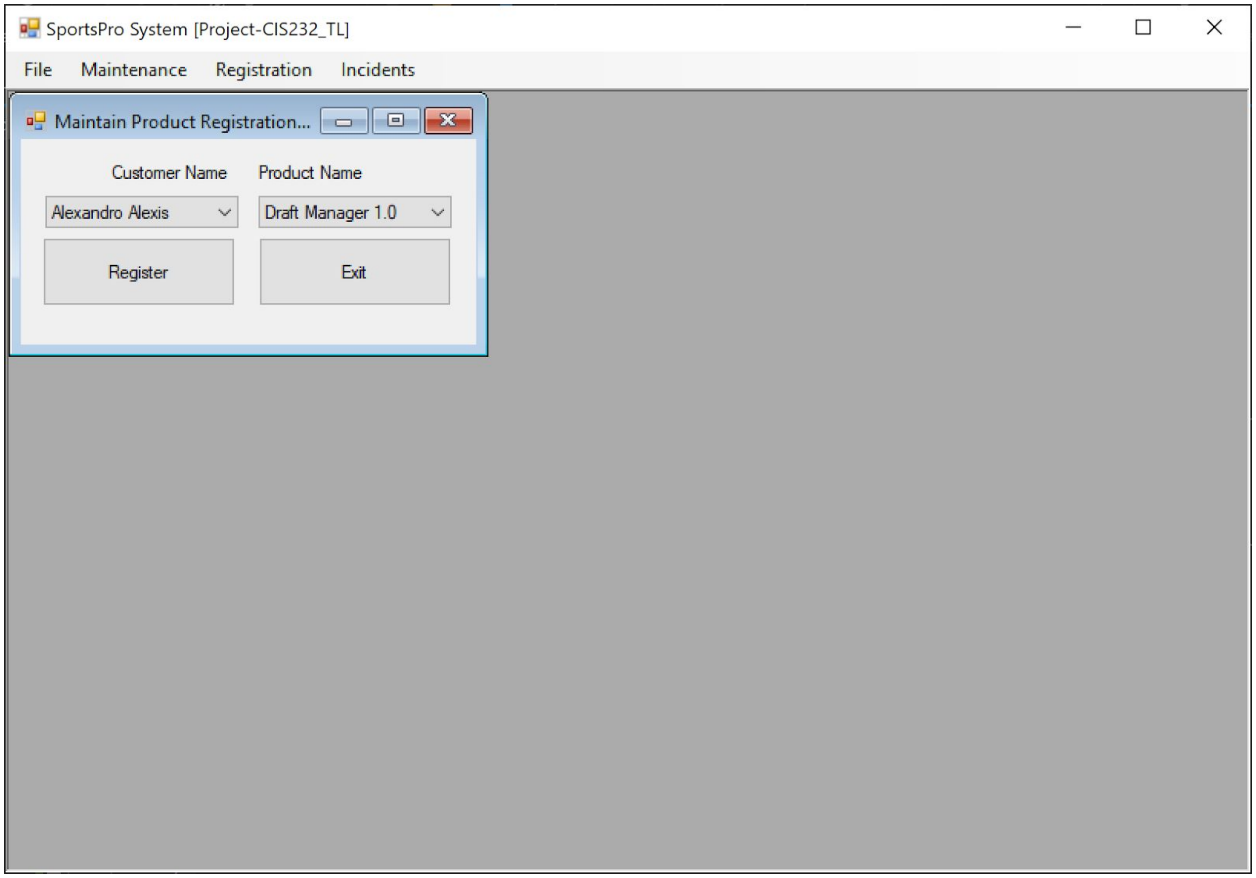
```
            reader.Close()
        Catch ex As OleDbException
            Throw ex
        Finally
            connection.Close()
        End Try
        Return technicianList
    End Function
    Public Shared Function GetTechnician(ByVal techID As Integer) As
Technician
        Dim technician As New Technician
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectstatement As String =
            "SELECT TechID, Name, Email, Phone " &
            "FROM Technicians " &
            "WHERE TechID = @TechID "

        Dim selectCommand As New OleDbCommand(selectstatement, connection)
        selectCommand.Parameters.AddWithValue("@TechID", techID)

        Try
            connection.Open()
            Dim reader As OleDbDataReader =
selectCommand.ExecuteReader(CommandBehavior.SingleRow)
            If reader.Read Then
                technician = New Technician
                technician.TechID = CInt(reader("TechID"))
                technician.Name = reader("Name").ToString
                technician.Phone = reader("Phone").ToString
                technician.Email = reader("Email").ToString
            Else
                technician = Nothing
            End If
            reader.Close()
        Catch ex As OleDbException
            Throw ex
        Finally
            connection.Close()
        End Try
        Return technician
    End Function
```

Code (IncidentDB // GetOpenTechnicianIncidents)

```
 Public Shared Function GetOpenTechnicianIncidents(ByVal techID As Integer)
As List(Of Incident)
        Dim openTechnicianIncidents As New List(Of Incident)
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectstatement As String =
            "SELECT CustomerID, ProductCode, DateOpened, Title, Description "
&
            "FROM Incidents " &
            "WHERE TechID = @TechID " &
            "AND DateClosed IS NULL "

        Dim selectCommand As New OleDbCommand(selectstatement, connection)
        selectCommand.Parameters.AddWithValue("@TechID", techID)

        Try
            connection.Open()
            Dim reader As OleDbDataReader = selectCommand.ExecuteReader()
            Dim incident As Incident
            Do While reader.Read
                incident = New Incident
                incident.CustomerID = CInt(reader("CustomerID"))
                incident.ProductCode = reader("ProductCode").ToString
                incident.DateOpened = CDate(reader("DateOpened"))
                incident.Title = reader("Title").ToString
                incident.Description = reader("Description").ToString
                openTechnicianIncidents.Add(incident)
            Loop
            reader.Close()
        Catch ex As OleDbException
            Throw ex
        Finally
            connection.Close()
        End Try
        Return openTechnicianIncidents
    End Function
```

Project 3E: Maintain product registrations

The Maintain Product Registrations form



SportsPro project items

Name	Description
frmTechnicianIncidents	A form that lets the user display the open incidents for a technician.
Validator	A class that contains generic data validation methods.

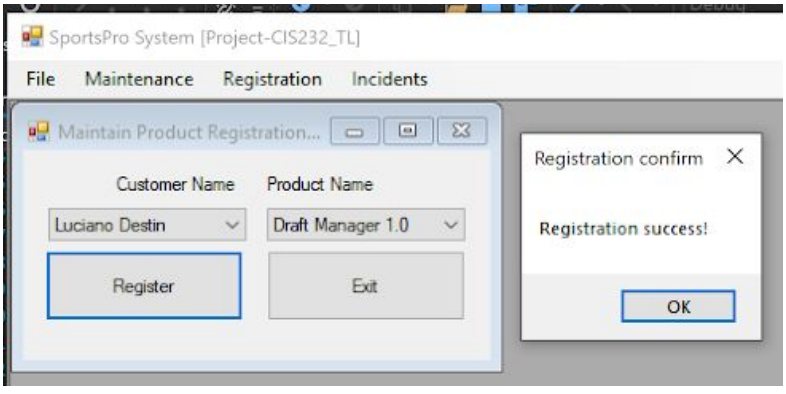
TechSupportData project items

Name	Description
Registration	A business class that represents a single registration.

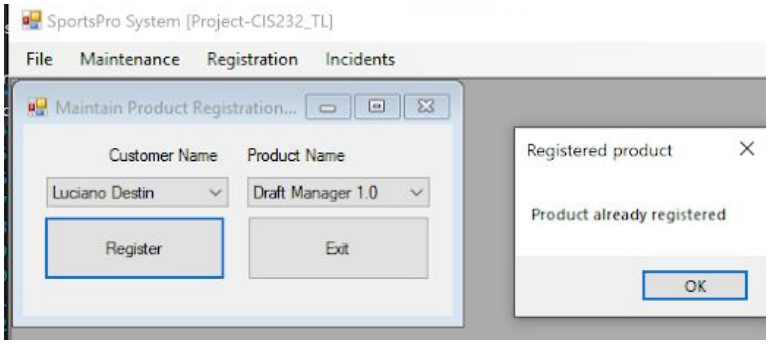
Customer	A business class that represents a single customer.
Product	A business class that represents a single product.
TechSupportDB	A database class that contains a method that returns a connection object for the TechSupport database.
CustomerDB	A database class that contains methods for working with the Customers table in the TechSupport database.
ProductDB	A database class that contains methods for working with the Products table in the TechSupport database.
RegistrationDB	A database class that contains methods for working with the Registrations table in the TechSupport database.

Operation

- The Maintain Registrations form should be displayed when the user chooses the Maintenance → Maintain Registrations command from the menu on the main form.



- To create a registration, the user selects the customer and product from the combo boxes, and clicks the Register button. If the incident is accepted, a confirmation message is displayed. If the registration already exists, an information message is displayed.



- To close the form without creating a registration, or after entering registrations, the user clicks the Exit button

Code (frmMaintainRegistrations)

```
Imports TechSupportData
Public Class frmMaintainRegistrations
    Private Sub btnRegister_Click(sender As Object, e As EventArgs) Handles
btnRegister.Click
        If RegistrationDB.ProductRegistered(cboCustomer.SelectedValue,
cboProduct.SelectedValue) Then
            MessageBox.Show("Product already registered", "Registered
product")
        Else
            Dim registration As New Registration
            registration.CustomerID = cboCustomer.SelectedValue
            registration.ProductCode = cboProduct.SelectedValue
            registration.DateOpened = CDate(DateTime.Today)
            RegistrationDB.AddRegistration(registration)
            MessageBox.Show("Registration success!", "Registration confirm")
        End If
    End Sub

    Private Sub btnExit_Click(sender As Object, e As EventArgs) Handles
btnExit.Click
        Me.Close()
    End Sub

    Private Sub frmMaintainRegistrations_Load(sender As Object, e As
EventArgs) Handles MyBase.Load
        Dim customerList As List(Of Customer)
        Dim productList As List(Of Product)
        Try
            customerList = CustomerDB.GetCustomerList
            cboCustomer.DataSource = customerList
        Catch ex As Exception
```

```
            MessageBox.Show(ex.Message, ex.GetType.ToString)
        End Try

        Try
            productList = ProductDB.GetProductList
            cboProduct.DataSource = productList
        Catch ex As Exception
            MessageBox.Show(ex.Message, ex.GetType.ToString)
        End Try
    End Sub
End Class
```

Code (Registration)

```
Public Class Registration
    Private m_CustomerID As Integer
    Private m_ProductCode As String
    Private m_RegistrationDate As Date
    Public Property CustomerID() As Integer
        Get
            Return m_CustomerID
        End Get
        Set(ByVal value As Integer)
            m_CustomerID = value
        End Set
    End Property
    Public Property ProductCode() As String
        Get
            Return m_ProductCode
        End Get
        Set(ByVal value As String)
            m_ProductCode = value
        End Set
    End Property
    Public Property DateOpened() As Date
        Get
            Return m_RegistrationDate
        End Get
        Set(ByVal value As Date)
            m_RegistrationDate = value
        End Set
    End Property
End Class
```

Code (RegistrationDB // AddRegistration)

```
    Public Shared Sub AddRegistration(ByVal registration As Registration)
        Dim connection As OleDbConnection = TechSupportDB.GetConnection
        Dim selectStatement As String =
            "INSERT INTO Registrations " &
            "(CustomerID, ProductCode, RegistrationDate) " &
            "VALUES(@CustomerID, @ProductCode, @RegistrationDate) "

        Dim selectCommand As New OleDbCommand(selectStatement, connection)
        selectCommand.Parameters.AddWithValue("@CustomerID",
registration.CustomerID)
        selectCommand.Parameters.AddWithValue("@ProductCode",
registration.ProductCode)
        selectCommand.Parameters.AddWithValue("@RegistrationDate",
registration.DateOpened)

        Try
            connection.Open()
            selectCommand.ExecuteNonQuery()
        Catch ex As OleDbException
            Throw ex
        Finally
            connection.Close()
        End Try
    End Sub
```
