ComponentOne

# InputPanel for UWP

**ComponentOne, a division of GrapeCity**
201 South Highland Avenue, Third Floor
Pittsburgh, PA 15206 USA

**Website:** http://www.componentone.com
**Sales:** sales@componentone.com
**Telephone:** 1.800.858.2739 or 1.412.681.4343 (Pittsburgh, PA USA Office)

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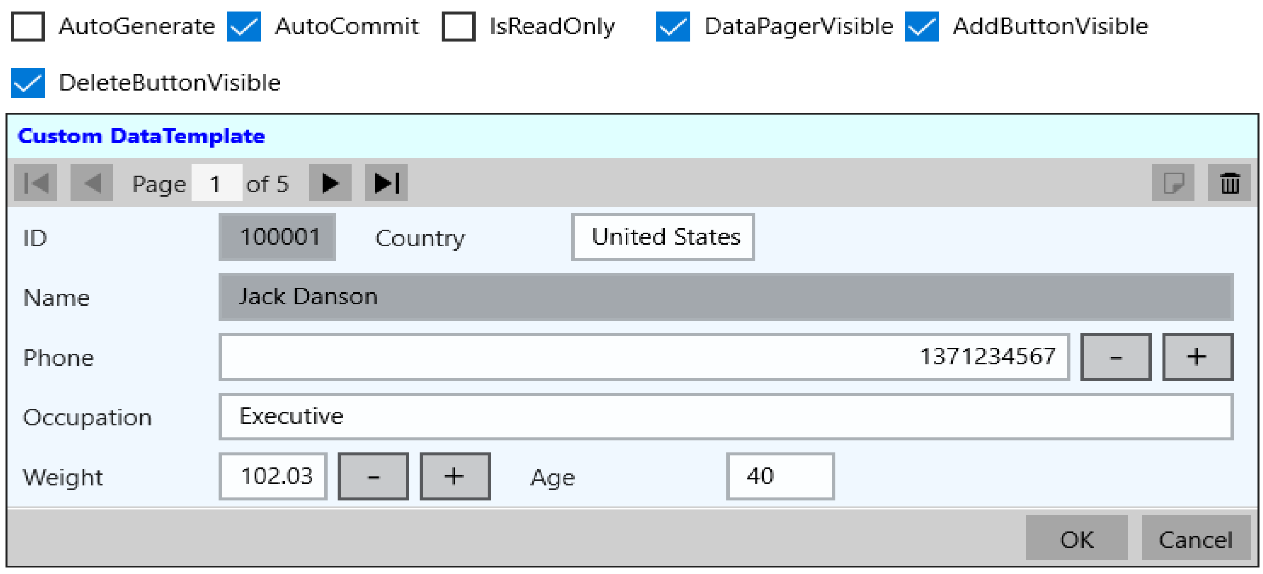
# InputPanel for UWP

**ComponentOne Studio** introduces **InputPanel for UWP**, a container control designed to create powerful data input applications with minimal effort. The control is a new paradigm to create and maintain data forms that lets you easily view, add, edit, delete, and navigate through data records.

InputPanel can be easily bound to a model object or a collection which automatically populates the UI with built-in editors and hence, there is no need to add any input components explicitly. These editors handle basic level validation for you, so you can handle the inconsistencies in user input with minimal development effort. Besides, the InputPanel control provides you the ability to customize its layout, design and appearance for easy and consistent styling.



☐ AutoGenerate ✓ AutoCommit ☐ IsReadOnly ✓ DataPagerVisible ✓ AddButtonVisible
✓ DeleteButtonVisible

**Custom DataTemplate**

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| | | | |
|---|---|---|---|
| ID | 100001 | Country | United States |
| Name | Jack Danson | | |
| Phone | 1371234567 | | |
| Occupation | Executive | | |
| Weight | 102.03 | Age | 40 |

## Help with UWP Edition

For information on installing **ComponentOne Studio UWP Edition**, licensing, technical support, namespaces, and creating a project with the controls, please visit Getting Started with ComponentOne Studio UWP Edition.

## Key Features

- **Auto-generate fields**
  InputPanel automatically generates fields on the basis of the input provided to the control. As the fields get generated, UI of the InputPanel control gets automatically populated with various components depending on the data type of the fields.

- **Add, edit and delete operations**
  InputPanel allows you to add new records, and also lets you edit and delete the current record in data source. It also allows you to delete the currently displayed record.

- **Auto-commit data**
  InputPanel allows you to automatically commit/save the changes every time the user edits the input, or customize this functionality to commit the edits after confirmation.

- **Data binding**
  InputPanel can be bound to model object data, CollectionView, ObservableCollection or any kind of collection data source with minimal code, allowing you to create a fully-navigational database browser in seconds.

- **Validation and error handling**
  InputPanel provides data validation on the user input. Validation errors appear as per the rules defined either through markup or through events.

- **Record navigation**
  InputPanel provides you the buttons to navigate through the records in the UI itself. No extra code is required to implement a pager in the control.

- **Data template support**
  InputPanel allows you to change the layout of the control by creating a user-defined data template. By default, the fields are stacked vertically; however, you can define a layout by creating your own data template as per the requirement.

- **Custom field support**
  InputPanel provides six default editors for rendering the fields on the control. However, you can also replace the standard fields with different input fields according to your requirements.

- **Shortcut keys**
  InputPanel allows you to use the keyboard to edit and navigate through the items without using mouse. The shortcut keys are automatically generated and assigned when the InputPanel control is populated with the fields from a data source.

## Object Model Summary

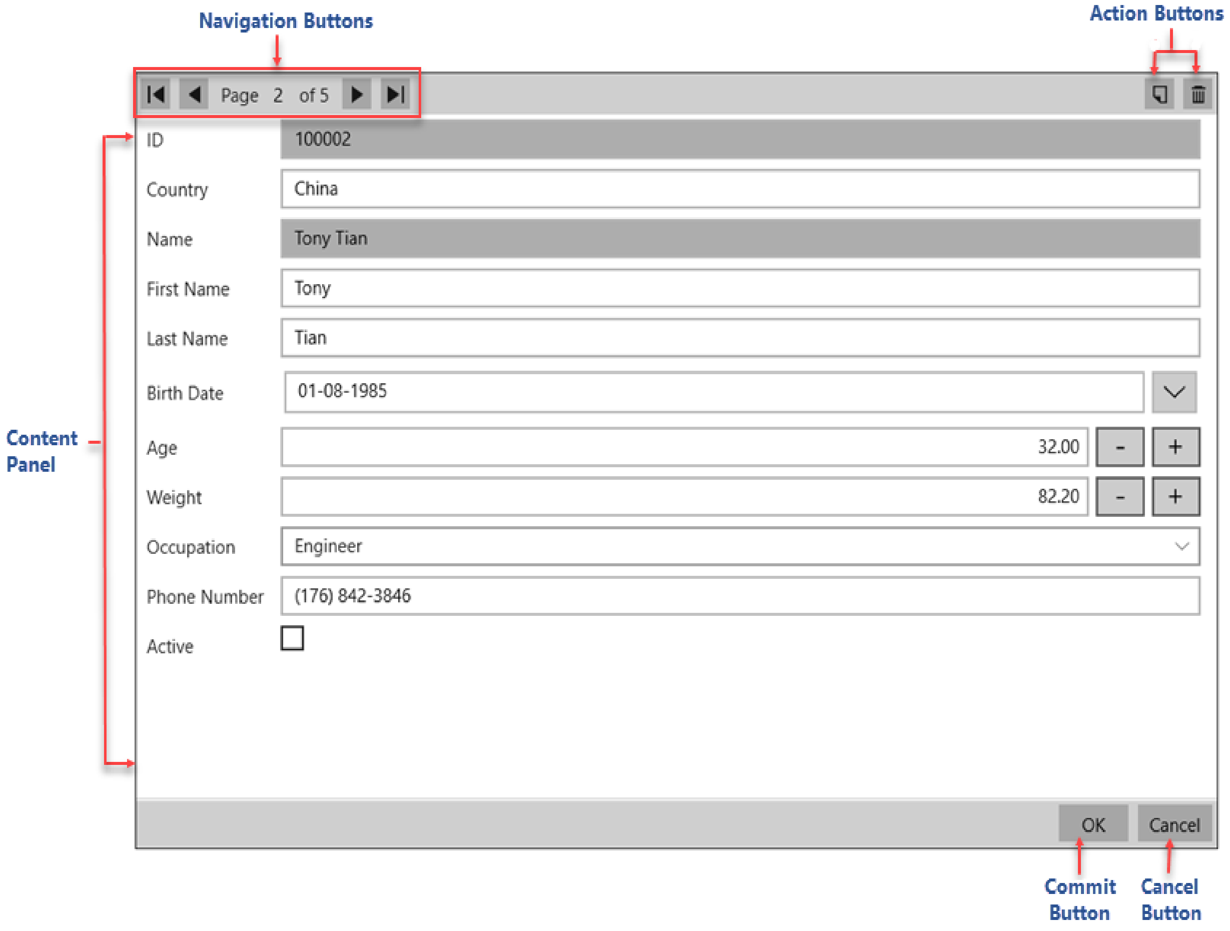
InputPanel comes with a rich object model, providing various classes, objects, collections, associated methods and properties for creating data input applications. The following table lists some of these objects and their properties.

| |
|---|
| **C1DataPager** |
| **Properties:** CanMoveItem, CanMoveToFirstItem, CanMoveToLastItem, CanMoveToNextItem, CanMoveToPreviousItem, DisplayMode, NumericButtonStyle, Source |
| **C1InputBase** |
| **Properties:** DataBinding, Header, IsReadOnly, LabelForeground |
| **C1InputCheckBox** |
| **Property:** IsThreeState |
| **C1InputComboBox** |
| **Properties:** EnumType, ItemsSource |
| **C1InputDateTimePicker** |
| **Properties:** AllowNull, EditMode |
| **C1InputMaskedTextBox** |
| **Property:** Mask |
| **C1InputNumericBox** |
| **Properties:** AllowNull, Format |
| **C1InputPanel** |
| **Properties:** AddButtonVisibility, AutoCommit, AutoGenerate, CurrentItem, DataPagerVisibility, DeleteButtonVisibility, Header, HeaderBackground, HeaderForeground, ItemsPanelTemplate, ItemsSource, ItemsTemplate, NavigationBackground, ValidationBackground, ValidationErrors |
| **C1InputPanelMaskAttribute** |
| **Property:** Mask |
| **C1InputPanelPresenter** |
| **Properties:** AutoGenerate, CurrentItem, InputControls, ItemsPanelTemplate, ItemsTemplate |
| **C1InputPanelValidationSummary** |
| **Properties:** Errors, HasErrors |

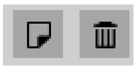
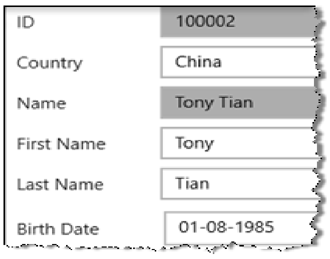
## InputPanel Elements

InputPanel control provides four types of elements: navigation buttons, action buttons, content panel, and commit/cancel button.

The following image shows the elements of the InputPanel control.



The following table describes the elements of InputPanel control:

| Element | Name | Description |
|---|---|---|
| | Navigation buttons | Allows navigation to a specific record through next/previous/first/last buttons. These buttons are provided at the top left of the InputPanel control. |
|  | Action buttons | Includes the Add button to add records and Delete button to delete records. These buttons are available at the top right of the InputPanel control. |
|  | Content Panel | Indicates the area that contains the fields in form layout where user can view/edit the records at runtime. |

| | | |
|---|---|---|
| | Commit/Cancel button | Consists of OK/Cancel button where edits are saved/committed with the OK button and cancelled using the Cancel button. These buttons are available at the bottom right of the InputPanel control. |

## InputPanel Editors

**InputPanel** provides the following six types of editors to support different types of data. The following editors get automatically rendered for their supported data types in the content panel of the InputPanel control when AutoGenerate property is set to true.

- **InputTextBox**
  The InputTextBox editor is used for fields with their data type set to string or char.

- **InputDateTimePicker**
  The InputDateTimePicker editor is used for fields with their data type set to date, time or datetime. User can edit/enter the date by selecting it from the calendar that appears on clicking the editor, and the time by using the available "+" or "-" buttons. You can modify the behavior of the field using EditMode property of C1InputDateTimePicker class.

- **InputCheckBox**
  The InputCheckBox editor is used for fields with their data type set to Boolean. This editor allows you to set the IsThreeState property of C1InputCheckBox class, to support the three states, checked, unchecked, and indeterminate state of the check box .

- **InputComboBox**
  The InputComboBox editor is used for fields with their data type set to enum. The editor displays a list of items in a drop-down menu. This editor allows you to bind to a data source using the ItemsSource property.

- **InputNumbericBox**
  The InputNumbericBox editor is used for fields with their data type set to numeric. You can increase or decrease the value by clicking the "+" and "-" buttons provided by the control. This editor allows you to set the display format using Format property of C1InputNumbericBox class.

- **InputMaskedTextBox**
  The InputMaskedTextBox editor is used for fields in which each character position maps to either a special placeholder or a literal character. Literal characters, or literals, can give visual cues about the type of data being used. This editor allows you to set the format of masked text using the Mask property of C1InputMaskedTextBox class.

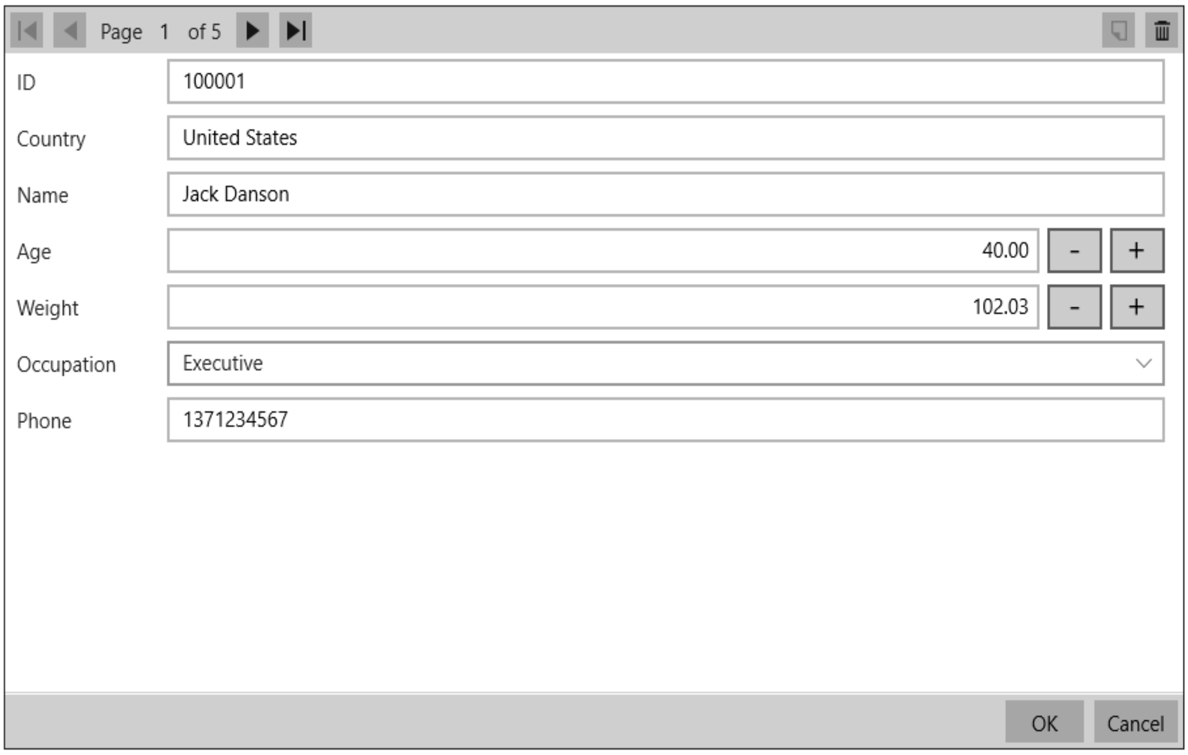
## Quick Start

This quick start familiarizes you with adding data to InputPanel using list and displaying it in the C1InputPanel control. You begin with creating a UWP application in Visual Studio, adding the C1InputPanel control to it, creating a list of items, and binding it to the C1InputPanel control.

To create a simple UWP application for adding and displaying data in the InputPanel control, follow these steps:

1. **Setting up the application**
2. **Adding and displaying data in InputPanel**

The following image shows a record displayed in the C1InputPanel control.



|  |  |
|---|---|
| ID | 100001 |
| Country | United States |
| Name | Jack Danson |
| Age | 40.00 |
| Weight | 102.03 |
| Occupation | Executive |
| Phone | 1371234567 |

### Setting up the application

To set up the application, follow these steps:

1. Create a new project and select Blank App (Universal Windows) in Visual Studio.
2. Add the C1InputPanel control to the XAML designer and set the name of the control, InPanel.
   Notice that along with C1.UWP.InputPanel, the following references automatically get added to the application.
   - C1.UWP
   - C1.UWP.Calendar
   - C1.UWP.DateTimeEditors

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### Adding and displaying data in InputPanel

To add data and display it in the C1InputPanel control, follow these steps:

1. Switch to the code view and create a class named Customer to define data.
2. Add the following code to create an enum and add properties to the class.
   - **Visual Basic**

```
Public Property ID() As String
```

```
        Get
            Return m_ID
        End Get
        Set
            m_ID = Value
        End Set
    End Property
    Private m_ID As String
    Public Property Country() As String
        Get
            Return m_Country
        End Get
        Set
            m_Country = Value
        End Set
    End Property
    Private m_Country As String
    Public Property Name() As String
        Get
            Return m_Name
        End Get
        Set
            m_Name = Value
        End Set
    End Property
    Private m_Name As String
    Public Property Age() As Integer
        Get
            Return m_Age
        End Get
        Set
            m_Age = Value
        End Set
    End Property
    Private m_Age As Integer
    Public Property Weight() As Double
        Get
            Return m_Weight
        End Get
        Set
            m_Weight = Value
        End Set
    End Property
    Private m_Weight As Double
    Public Property Occupation() As Occupation
        Get
            Return m_Occupation
        End Get
        Set
            m_Occupation = Value
        End Set
    End Property
    Private m_Occupation As Occupation
    Public Property Phone() As String
        Get
            Return m_Phone
        End Get
        Set
            m_Phone = Value
        End Set
    End Property
    Private m_Phone As String
    Public Sub New(id As String, country As String, name As String, age As Integer,
                   weight As Double, occupation As Occupation, phone As String)
        Me.ID = id
        Me.Country = country
        Me.Name = name
        Me.Age = age
        Me.Weight = weight
        Me.Occupation = occupation
        Me.Phone = phone
    End Sub
End Class

Public Enum Occupation
    Doctor
    Artist
    Educator
    Engineer
    Executive
    Other
End Enum
```

- **C#**

```
    public string ID { get; set; }
    public string Country { get; set; }
    public string Name { get; set; }
    public int Age { get; set; }
    public double Weight { get; set; }
    public Occupation Occupation { get; set; }
    public string Phone { get; set; }

    public Customer(string id, string country, string name, int age, double weight,
                    Occupation occupation, string phone)
    {
        this.ID = id; this.Country = country; this.Name = name; this.Age = age;
        this.Weight = weight; this.Occupation = occupation; this.Phone = phone;
    }
}

public enum Occupation
{
    Doctor,
    Artist,
    Educator,
    Engineer,
    Executive,
    Other
}
```

3. Creates a list of Customers and add data to the list using the following code.
    - **Visual Basic**

```
Dim data As New List(Of Customer)()
data.Add(New Customer("100001", "United States", "Jack Danson", 40, 102.03,
                      Occupation.Executive, "1371234567"))
data.Add(New Customer("100002", "China", "Tony Tian", 32, 82.2,
                      Occupation.Engineer, "1768423846"))
data.Add(New Customer("100003", "Iran", "Larry Frommer", 15, 40.432,
                      Occupation.Artist, "8473637486"))
data.Add(New Customer("100004", "Germany", "Charlie Krause", 26, 69.32,
                      Occupation.Doctor, "675245438"))
data.Add(New Customer("100005", "India", "Mark Ambers", 51, 75.45,
                      Occupation.Other, "1673643842"))
```

- **C#**

```
List<Customer> data = new List<Customer>();
data.Add(new Customer("100001", "United States", "Jack Danson", 40, 102.03,
         Occupation.Executive, "1371234567"));
data.Add(new Customer("100002", "China", "Tony Tian", 32, 82.2,
         Occupation.Engineer, "1768423846"));
data.Add(new Customer("100003", "Iran", "Larry Frommer", 15, 40.432,
         Occupation.Artist, "8473637486"));
data.Add(new Customer("100004", "Germany", "Charlie Krause", 26, 69.32,
         Occupation.Doctor, "675245438"));
data.Add(new Customer("100005", "India", "Mark Ambers", 51, 75.45,
         Occupation.Other, "1673643842"));
```

4. Bind the list to InputPanel using ItemsSource property as given in the following code.
    - **Visual Basic**

```
InPanel.ItemsSource = data
```

    - **C#**

```
InPanel.ItemsSource = data;
```

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## Data Binding

InputPanel provides data binding support that lets you populate data in the control using a single line of code. The InputPanel control can be bound to data from various data sources, such as model object data, CollectionView, ObservableCollection, or any other kind of collection data. On binding InputPanel to a data source object, fields are generated for underlying data.

Learn about these implementations in detail in the topic enlisted below.

Binding InputPanel with ObservableCollection
    Learn how to bind data using ObservableCollection in code.
Binding InputPanel with CollectionView
    Learn how to bind data using CollectionView in code.

## Binding InputPanel with ObservableCollection

Collection binding can be implemented in InputPanel using ObservableCollection which works similar to a regular collection. To bind InputPanel to an ObservableCollection, the ObservableCollection<T> class is used to obtain a collection, which acts as a binding source and then the ItemsSource property gets this collection to bind it to the InputPanel control.

Perform the following steps for data binding using ObservableCollection<T> class:

1. **Set up the application**
2. **Create a data source for InputPanel**
3. **Bind InputPanel to ObservableCollection**

### Set up the application

1. Create a UWP application.
2. Add the InputPanel control to the application and name it InPanel.

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### Create a data source for InputPanel

1. Add a new class, Employee.cs, to the application.
2. Add the data generators and fields to the class.
    - **Visual Basic**

```
'' ** fields
Private cid As Integer
Private eid As Integer
Private empoccupation As EOccupation
Private firstname As String, lastname As String
Private empfather As String
Private activeemp As Boolean
Private hiredate As DateTime
Private empweight As Double

' ** data generators
Shared rnd As New Random()
Shared firstNames As String() = "Andy|Ben|Charlie|Fred|Jack|Karl|Larry|Mark".Split("|"c)
Shared lastNames As String() = "Ambers|Cole|Danson|Myers|Paulson|Richards".Split("|"c)
Shared countries As String() = "China|India|United States|Brazil|Russia|Japan".Split("|"c)
```

    - **C#**

```
// ** fields
int id, cid;
string first, last;
string father;
EOccupation occupation;
bool active;
DateTime hired;
```

```
double weight;

// ** data generators
static Random rnd = new Random();
static string[] firstNames = "Andy|Ben|Charlie|Fred|Jack|Karl|Larry|Mark".Split('|');
static string[] lastNames = "Ambers|Cole|Danson|Myers|Paulson|Richards".Split('|');
static string[] countries = "China|India|United States|Brazil|Russia|Japan".Split('|');
```

3. Add properties to the class using the following code.
   - **Visual Basic**

```
Public Property ID() As Integer
    Get
        Return eid
    End Get
    Set
        If Value <> eid Then
            eid = Value
        End If
    End Set
End Property
Public ReadOnly Property Country() As String
    Get
        Return countries(cid)
    End Get
End Property

Public Property CountryID() As Integer
    Get
        Return cid
    End Get
    Set
        If Value <> cid AndAlso Value > -1 AndAlso Value < countries.Length Then
            cid = Value
        End If
    End Set
End Property

Public Property Occupation() As EOccupation
    Get
        Return empoccupation
    End Get
    Set
        If Value <> empoccupation Then
            empoccupation = Value
        End If
    End Set
End Property

Public Property Active() As Boolean
    Get
        Return activeemp
    End Get
    Set
        If Value <> activeemp Then
            activeemp = Value
        End If
    End Set
End Property

Public Property First() As String
    Get
        Return firstname
    End Get
    Set
        If Value <> firstname Then
            firstname = Value
        End If
    End Set
End Property

Public Property Last() As String
    Get
        Return lastname
    End Get
    Set
        If Value <> lastname Then
            lastname = Value
        End If
    End Set
End Property

Public Property Hired() As DateTime
    Get
        Return hiredate
    End Get
    Set
        If Value <> hiredate Then
            hiredate = Value
        End If
    End Set
End Property

Public Property Weight() As Double
    Get
        Return empweight
    End Get
    Set
        If Value <> empweight Then
            empweight = Value
        End If
    End Set
End Property

' some read-only stuff
Public ReadOnly Property Father() As String
    Get
        Return empfather
    End Get
End Property

' ** utilities
Private Shared Function GetString(arr As String()) As String
    Return arr(rnd.[Next](arr.Length))
End Function

' ** static value providers
Public Shared Function GetCountries() As String()
    Return countries
End Function
Public Shared Function GetFirstNames() As String()
    Return firstNames
End Function
Public Shared Function GetLastNames() As String()
    Return lastNames
End Function
```

- **C#**

```
public int ID
{
    get { return id; }
    set
    {
        if (value != id)
        {
            id = value;
        }
    }
}
public string Name
{
    get { return string.Format("{0} {1}", First, Last); }
}

public string Country
{
    get { return countries[cid]; }
}


public int CountryID
{
    get { return cid; }
    set
    {
        if (value != cid && value > -1 && value < countries.Length)
        {
            cid = value;
        }
    }
}


public EOccupation Occupation
{
    get
    {
        return occupation;
    }
    set
    {
        if (value != occupation)
        {
            occupation = value;
        }
    }
}



public bool Active
{
    get { return active; }
    set
    {
        if (value != active)
        {
            active = value;
        }
    }
}


public string First
{
    get { return first; }
    set
    {
        if (value != first)
        {
            first = value;
        }
    }
}
```

```
public string Last
{
    get { return last; }
    set
    {
        if (value != last)
        {
            last = value;
        }
    }
}


public DateTime Hired
{
    get { return hired; }
    set
    {
        if (value != hired)
        {
            hired = value;
        }
    }
}


public double Weight
{
    get { return weight; }
    set
    {
        if (value != weight)
        {
            weight = value;
        }
    }
}

// some read-only stuff
public string Father
{
    get { return father; }
}

// ** utilities
static string GetString(string[] arr)
{
    return arr[rnd.Next(arr.Length)];
}

// ** static value providers
public static string[] GetCountries() { return countries; }
public static string[] GetFirstNames() { return firstNames; }
public static string[] GetLastNames() { return lastNames; }
```

4. Create a constructor of Employee class and add the following code to it.
    - **Visual Basic**

```
Private values As Array = [Enum].GetValues(GetType(EOccupation))
Public Sub New(eid As Integer)
    ID = eid
    First = GetString(firstNames)
    Last = GetString(lastNames)
    CountryID = rnd.[Next]() Mod countries.Length
    Occupation = DirectCast(values.GetValue(rnd.[Next] _
                 (values.Length - 1)), EOccupation)
    Active = rnd.NextDouble() >= 0.5
    Hired = DateTime.Today.AddDays(-rnd.[Next](1, 365))
    Weight = 50 + rnd.NextDouble() * 50
    empfather = String.Format("{0} {1}", GetString(firstNames), Last)
End Sub
```

- **C#**

```
Array values = Enum.GetValues(typeof(EOccupation));
public Employee(int id)
{
    ID = id;
    First = GetString(firstNames);
    Last = GetString(lastNames);
    CountryID = rnd.Next() % countries.Length;
    Occupation = (EOccupation)(values.GetValue(rnd.Next
                 (values.Length - 1)));
    Active = rnd.NextDouble() >= .5;
    Hired = DateTime.Today.AddDays(-rnd.Next(1, 365));
    Weight = 50 + rnd.NextDouble() * 50;
    father = string.Format("{0} {1}", GetString(firstNames), Last);
}
```

5. Create a method, GetEmployeeList, of ObservableCollection<T> class using the following code.
   - **Visual Basic**

```
' ** static list provider
Public Shared Function GetEmployeeList(count As Integer) _
    As ObservableCollection(Of Employee)
    Dim list = New ObservableCollection(Of Employee)()
    For i As Integer = 0 To count - 1
        Dim emp As New Employee(i)
        list.Add(emp)
    Next
    Return list
End Function
```

   - **C#**

```
// ** static list provider
public static ObservableCollection<Employee> GetEmployeeList(int count)
{
    var list = new ObservableCollection<Employee>();
    for (int i = 0; i < count; i++)
    {
        Employee emp = new Employee(i);
        list.Add(emp);
    }
    return list;
}
```

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### Bind InputPanel to ObservableCollection

1. Add the following code to bind the InputPanel control with data using the ItemsSource property.
   - **Visual Basic**

```
InPanel.ItemsSource = Employee.GetEmployeeList(50)
```

   - **C#**

```
InPanel.ItemsSource = Employee.GetEmployeeList(50);
```

2. Press F5 to run the application.

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## Binding InputPanel with CollectionView

Collection binding can be implemented in InputPanel using ICollectionView, an interface with record management, filtering, grouping, and sorting functionalities. To bind InputPanel to an ObservableCollection, InputPanel can be bound to an object that implements the ICollectionView interface. In the following example, we have used the ObservableCollection<T> class as a binding source to obtain the collection and the C1CollectionView class that implements the ICollectionView interface to display the source collection. Later, bind the InputPanel control to the ICollectionView using ItemsSource property of C1InputPanel class.

Perform the following steps for data binding using ICollectionView:

1. **Set up the application**
2. **Create a data source for InputPanel**
3. **Bind InputPanel to ICollectionView**

## Set up the application

1. Create a UWP application.
2. Add InputPanel control to the application and name it InPanel.

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## Create a data source for InputPanel

1. Add a new class, Product.cs, to the application.
2. Add the following fields to the class.
   - **Visual Basic**
   ```
   Shared lines As String() = "Computers|Washers|Stoves".Split("|"c)
   Shared colors As String() = "Red|Green|Blue|White".Split("|"c)
   ```
   - **C#**
   ```
   static string[] lines = "Computers|Washers|Stoves".Split('|');
   static string[] colors = "Red|Green|Blue|White".Split('|');
   ```
3. Add the following properties and methods to the class.
   - **Visual Basic**
   ```
   <Display(Name:="Line")>
   Public Property Line() As String
       Get
           Return DirectCast(GetValue("Line"), String)
       End Get
       Set
           SetValue("Line", Value)
       End Set
   End Property

   <Display(Name:="Color")>
   Public Property Color() As String
       Get
           Return DirectCast(GetValue("Color"), String)
       End Get
       Set
           SetValue("Color", Value)
       End Set
   End Property

   <Display(Name:="Name")>
   Public Property Name() As String
       Get
           Return DirectCast(GetValue("Name"), String)
       End Get
       Set
           SetValue("Name", Value)
       End Set
   End Property

   <Display(Name:="Price")>
   Public Property Price() As Double
       Get
           Return CDbl(GetValue("Price"))
       End Get
   ```

```
        Set
            SetValue("Price", Value)
        End Set
    End Property

    <Display(Name:="Weight")>
    Public Property Weight() As Double
        Get
            Return CDbl(GetValue("Weight"))
        End Get
        Set
            SetValue("Weight", Value)
        End Set
    End Property

    <Display(Name:="Cost")>
    Public Property Cost() As Double
        Get
            Return CDbl(GetValue("Cost"))
        End Get
        Set
            SetValue("Cost", Value)
        End Set
    End Property

    <Display(Name:="Volume")>
    Public Property Volume() As Double
        Get
            Return CDbl(GetValue("Volume"))
        End Get
        Set
            SetValue("Volume", Value)
        End Set
    End Property

    <Display(Name:="Discontinued")>
    Public Property Discontinued() As Boolean
        Get
            Return CBool(GetValue("Discontinued"))
        End Get
        Set
            SetValue("Discontinued", Value)
        End Set
    End Property

    <Display(Name:="Rating")>
    Public Property Rating() As Integer
        Get
            Return CInt(GetValue("Rating"))
        End Get
        Set
            SetValue("Rating", Value)
        End Set
    End Property

    ' get/set values
    Private values As New Dictionary(Of String, Object)()
    Private Function GetValue(p As String) As Object
        Dim value As Object
        values.TryGetValue(p, value)
        Return value
    End Function
    Private Sub SetValue(p As String, value As Object)
        If Not Object.Equals(value, GetValue(p)) Then
            values(p) = value
            OnPropertyChanged(p)
        End If
    End Sub
    Protected Overridable Sub OnPropertyChanged(p As String)
        RaiseEvent PropertyChanged(Me, New PropertyChangedEventArgs(p))
    End Sub

    Public Shared Function GetLines() As String()
        Return lines
    End Function


#Region "INotifyPropertyChanged Members"

    Public Event PropertyChanged As PropertyChangedEventHandler _
        Implements INotifyPropertyChanged.PropertyChanged
```

- **C#**

```
[Display(Name = "Line")]
public string Line
{
    get { return (string)GetValue("Line"); }
    set { SetValue("Line", value); }
}

[Display(Name = "Color")]
public string Color
{
    get { return (string)GetValue("Color"); }
    set { SetValue("Color", value); }
}

[Display(Name = "Name")]
public string Name
{
    get { return (string)GetValue("Name"); }
    set { SetValue("Name", value); }
}

[Display(Name = "Price")]
public double Price
{
    get { return (double)GetValue("Price"); }
    set { SetValue("Price", value); }
}

[Display(Name = "Weight")]
public double Weight
{
    get { return (double)GetValue("Weight"); }
    set { SetValue("Weight", value); }
}

[Display(Name = "Cost")]
public double Cost
{
    get { return (double)GetValue("Cost"); }
    set { SetValue("Cost", value); }
}
```

```
[Display(Name = "Volume")]
public double Volume
{
    get { return (double)GetValue("Volume"); }
    set { SetValue("Volume", value); }
}

[Display(Name = "Discontinued")]
public bool Discontinued
{
    get { return (bool)GetValue("Discontinued"); }
    set { SetValue("Discontinued", value); }
}

[Display(Name = "Rating")]
public int Rating
{
    get { return (int)GetValue("Rating"); }
    set { SetValue("Rating", value); }
}

// get/set values
Dictionary<string, object> values = new Dictionary<string, object>();
object GetValue(string p)
{
    object value;
    values.TryGetValue(p, out value);
    return value;
}
void SetValue(string p, object value)
{
    if (!object.Equals(value, GetValue(p)))
    {
        values[p] = value;
        OnPropertyChanged(p);
    }
}
protected virtual void OnPropertyChanged(string p)
{
    if (PropertyChanged != null)
        PropertyChanged(this, new PropertyChangedEventArgs(p));
}

public static string[] GetLines()
{
    return lines;
}


#region INotifyPropertyChanged Members

public event PropertyChangedEventHandler PropertyChanged;
```

4. Create a method, GetProducts, of IEnumerable interface using the following code.
   - **Visual Basic**

```
Public Shared Function GetProducts(count As Integer) As IEnumerable
    Dim list = New ObservableCollection(Of Products)()

    Dim rnd = New Random(0)
    For i As Integer = 0 To count - 1
        Dim p = New Products()
        p.Line = lines(rnd.[Next]() Mod lines.Length)
        p.Color = colors(rnd.[Next]() Mod colors.Length)
        p.Name = String.Format("{0} {1}{2}",
                 p.Line.Substring(0, p.Line.Length - 1),
                 p.Line(0), i)
        p.Price = (rnd.[Next](1, 1000) + rnd.[Next](1, 1000) _
                  + rnd.[Next](1, 1000)) / 3
        p.Weight = (rnd.[Next](1, 100) + rnd.[Next](1, 100) _
                   + rnd.[Next](1, 300)) / 5
        p.Cost = rnd.[Next](1, 600)
        p.Volume = rnd.[Next](500, 5000)
        p.Discontinued = rnd.NextDouble() < 0.1
        p.Rating = rnd.[Next](0, 5)
        list.Add(p)
    Next
    Return list
End Function
```

- **C#**

```
public static IEnumerable GetProducts(int count)
{
    var list = new ObservableCollection<Products>();

    var rnd = new Random(0);
    for (int i = 0; i < count; i++)
    {
        var p = new Products();
        p.Line = lines[rnd.Next() % lines.Length];
        p.Color = colors[rnd.Next() % colors.Length];
        p.Name = string.Format("{0} {1}{2}",
                 p.Line.Substring(0, p.Line.Length - 1),
                 p.Line[0], i);
        p.Price = (rnd.Next(1, 1000) + rnd.Next(1, 1000) +
                  rnd.Next(1, 1000)) / 3;
        p.Weight = (rnd.Next(1, 100) + rnd.Next(1, 100) +
                   rnd.Next(1, 300)) / 5;
        p.Cost = rnd.Next(1, 600);
        p.Volume = rnd.Next(500, 5000);
        p.Discontinued = rnd.NextDouble() < .1;
        p.Rating = rnd.Next(0, 5);
        list.Add(p);
    }
    return list;
}
```

5. Add the following code to create a property, CustomerCollectionView, of ICollectionView interface which uses the C1CollectionView class to display the source collection.
   - **Visual Basic**

```
Private Shared view As ICollectionView
Public Shared ReadOnly Property CustomerCollectionView() As ICollectionView
    Get
        If view Is Nothing Then
            Dim products__1 = Products.GetProducts(50)
            view = New C1CollectionView(products__1)
        End If
        Return view
    End Get
End Property
```

   - **C#**

```
private static ICollectionView view;
public static ICollectionView CustomerCollectionView
{
    get
    {
            if (view == null)
            {
                var products = Products.GetProducts(50);
                view = new C1CollectionView(products);
            }
            return view;
        }
    }
```

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## Bind InputPanel to ICollectionView

1. Add the following code to bind the InputPanel control with data using the ItemsSource property.
   - **Visual Basic**
   ```
   InPanel.ItemsSource = CustomerCollectionView
   ```
   - **C#**
   ```
   InPanel.ItemsSource = CustomerCollectionView;
   ```
2. Press F5 to run the application.

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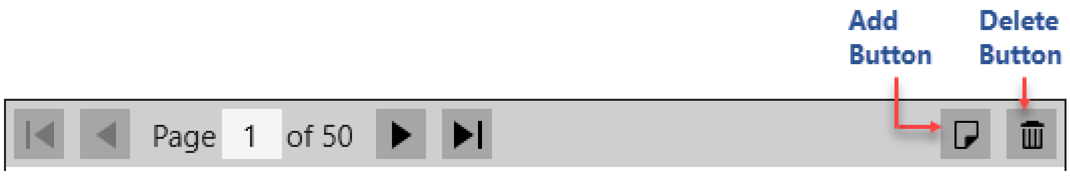
## Features

Features section comprises all the features available in InputPanel.

Add, Edit, and Delete Records
Learn how to add, edit, and delete records.
Record Navigation
Learn about the display modes provided by record navigation.
AutoGenerate Fields
Learn how to generate fields automatically in code.
AutoCommit Data
Learn how to automatically save data using code.
Data Validation
Learn how to validate data in code.
Custom Template
Learn how to create a custom template.
Keyboard Navigation
Learn about the Keyboard keys used for navigation and editing.

## Add, Edit, and Delete Records

InputPanel control comes with the Add and Delete buttons at the top right of the control. The Add button allows you to insert a new record into the collection of records and the Delete button allows you to delete the currently displayed record in a single click. The following image shows the Add and Delete buttons available in the InputPanel control.



InputPanel also allows you to edit the records, however, the control does not provide any dedicated button for editing. You can simply select a field in the displayed record and edit the content in it.

InputPanel allows you to set the visibility of the Add button through AddButtonVisibility property and Delete button through DeleteButtonVisibility property of C1InputPanel class. By default, the visibility of these buttons is set to **Visible**, however, you can hide the buttons using the following code:

Visual Basic

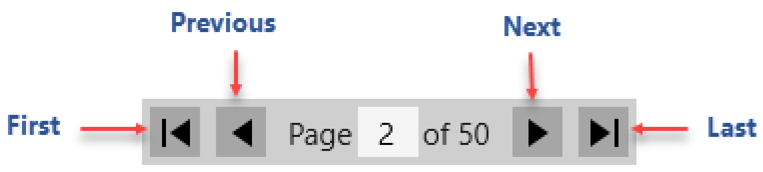
```
InPanel.AddButtonVisibility = Visibility.Collapsed
InPanel.DeleteButtonVisibility = Visibility.Collapsed
```

C#

```
InPanel.AddButtonVisibility = Visibility.Collapsed;
InPanel.DeleteButtonVisibility = Visibility.Collapsed;
```

## Record Navigation

InputPanel provides record navigation for making it easy to scroll through the records without any code implementation. InputPanel navigation enables movement to the first, previous, next, and last record of a collection. It also allows you to jump to a particular record by entering the specific record number. The following image shows the navigation buttons available in the InputPanel control.



The following table provides information about the navigation buttons and options provided by the InputPanel control:

| Name | Description |
|---|---|
| First | Moves to the first record. |
| Previous | Moves to the previous record. |
| Current Record | Shows the current record number. |
| Total Records | Shows the total number of records that can be displayed. |
| Next | Moves to the next record. |
| Last | Moves to the last record. |

InputPanel allows you to set the visibility of the navigation panel through DataPagerVisibility property of C1InputPanel class. By default, the visibility of the panel is set to **Visible**, however, you can hide the panel using the following code:

Visual Basic

```
InPanel.DataPagerVisibility = Visibility.Collapsed
```

C#

```
InPanel.DataPagerVisibility = Visibility.Collapsed;
```

## Auto-generate Fields

InputPanel fields are automatically generated on the basis of data type of a particular field. Auto-generation of fields in InputPanel is supported through AutoGenerate property of InputPanel class, which is set to true by default. However, you can set the value of the AutoGenerate property to false if you want to create the fields on your own.

You can set the value of AutoGenerate property in XAML as well as code view.

### In XAML

To set the value of the AutoGenerate property in XAML view, use the following code.

XAML
```
<InputPanel:C1InputPanel x:Name="InPanel" AutoGenerate="False"/>
```

### In Code

To set the value of the AutoGenerate property in code view, use the following code.

Visual Basic
```
InPanel.AutoGenerate = False
```

C#
```
InPanel.AutoGenerate = false;
```

## Auto-commit Data

InputPanel allows you to automatically save the data without having to click the OK button. The auto-commit feature is supported in InputPanel through AutoCommit property of InputPanel class, which automatically saves the data after every input and is set to true by default. However, you can set the AutoCommit property to false for saving the edits after some confirmation or on clicking the OK button.

You can set the value of AutoCommit property in XAML as well as code view.

### In XAML

To set the value of the AutoCommit property in XAML view, use the following code.

XAML
```
<InputPanel:C1InputPanel x:Name="InPanel" AutoCommit="False"/>
```

### In Code

To set the value of the AutoCommit property in code view, use the following code.

Visual Basic
```
InPanel.AutoCommit = False
```

C#
```
InPanel.AutoCommit = false;
```

## Data Validation

**InputPanel** comes with data validation support to provide users the ability to check invalid user input. It supports property level validation through standard and custom attribute markup. You can apply the markup in code to validate data in diverse scenarios, such as checking for unnecessary spaces, null values, or special characters in text, or putting limits on the age being entered in a numeric. In addition, InputPanel provides an event to apply validation rules.

Learn about these implementations in detail in the topic enlisted below.

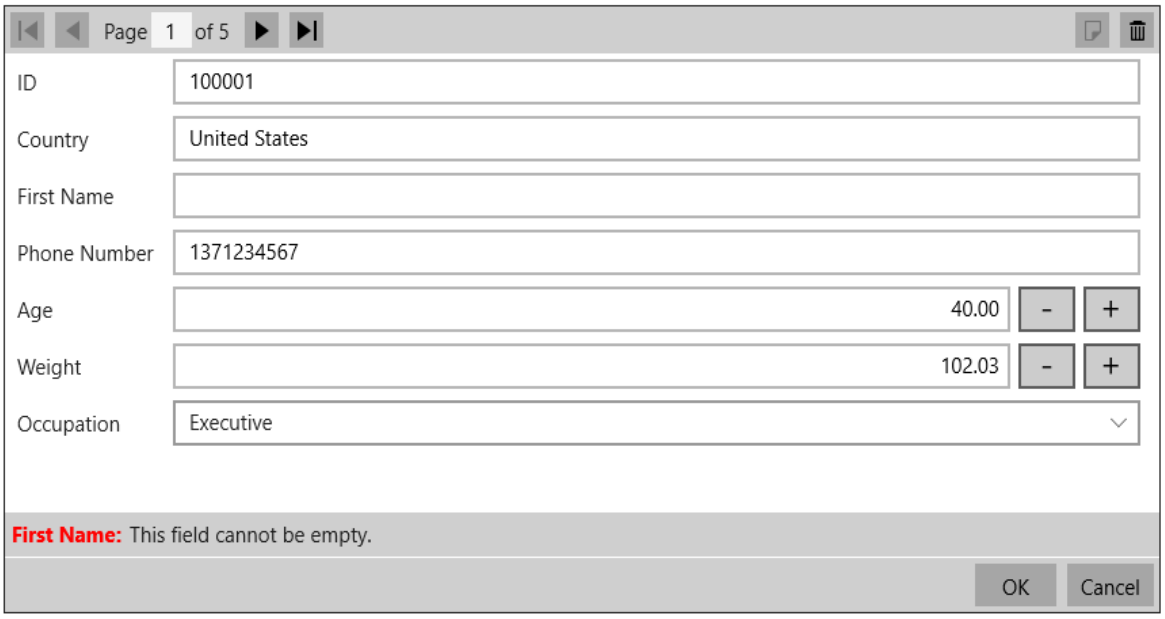
Property level validation
    Learn how to implement property level validation in code.
Data validation through event
    Learn how to apply different transformations in code.

## Property Level Validation

InputPanel provides property level validation for validating user input in scenarios where built-in validation fails or remains insufficient. In this type of validation, data validation rules are specified inside the property setter code. InputPanel supports two types of markup to implement property level validation.

- **Standard attribute markup**
- **Custom attribute markup**

The following image shows property level validation on entering invalid inputs.



| | |
|---|---|
| ID | 100001 |
| Country | United States |
| First Name | |
| Phone Number | 1371234567 |
| Age | 40.00 |
| Weight | 102.03 |
| Occupation | Executive |

**First Name:** This field cannot be empty.

### Standard attribute markup

You can apply property level validation on user input by adding standard attribute markup inside the property setter code in the application. The control directly uses classes available in **System.ComponentModel.DataAnnotations** namespace to access the markup.

The following code illustrates adding standard attribute markup inside property setter code to apply validation. This example uses the sample created in Quick Start.

- **Visual Basic**

```
<Display(Name:="First Name")>
<Required(ErrorMessage:="This field cannot be empty.")>
Public Property Name() As String
    Get
        Return m_Name
    End Get
    Set
        m_Name = Value
    End Set
End Property
Private m_Name As String

<Display(Name:="Phone Number")>
<Required(ErrorMessage:="This field cannot be empty.")>
Public Property Phone() As String
    Get
        Return m_Phone
    End Get
    Set
        m_Phone = Value
    End Set
End Property
Private m_Phone As String
```

- **C#**

```
[Display(Name ="First Name")]
[Required(ErrorMessage = "This field cannot be empty.")]
public string Name { get; set; }

[Display(Name ="Phone Number")]
[Required(ErrorMessage = "This field cannot be empty.")]
public string Phone { get; set; }
```

### Custom attribute markup

InputPanel also supports custom attribute markup for achieving property level validation. Custom markup is useful in scenarios where users want to customize the validation rules as per their business needs. In addition, custom markup lets you combine multiple validation rules on an input field. For instance, custom markup allows validating Phone Number for null or white spaces as well as for minimum and maximum length in a single validation rule.

The steps given below illustrate creating and applying customized attribute markup in code for property level validation. This example uses the sample created in Quick Start.

1. Create a class, **CustomValidator**, and define validation rules to check for null or white spaces as well as minimum and maximum length of the Phone Number field.
    - **Visual Basic**

```
Public Class CustomValidator
    Public Shared Function ValidatePhoneNumber(PhoneNumber As String) _
        As ValidationResult
        If String.IsNullOrWhiteSpace(PhoneNumber) Then
            Return New ValidationResult("Phone number cannot be empty.",
                                        New List(Of String)() From {"Phone"})
        ElseIf PhoneNumber.Length > 12 OrElse PhoneNumber.Length < 9 Then
            Return New ValidationResult("Phone number should be more than 8 digits" +
                 " and less than 12 digits.", New List(Of String)() From {"Phone"})
        Else

            Return ValidationResult.Success
        End If
    End Function
End Class
```

    - **C#**

```
public class CustomValidator
{
    public static ValidationResult ValidatePhoneNumber(string PhoneNumber)
    {
        if (string.IsNullOrWhiteSpace(PhoneNumber))
        {
            return new ValidationResult("Phone number cannot be empty.",
                                        new List<string>() { "Phone" });
        }
        else if (PhoneNumber.Length > 12 || PhoneNumber.Length < 9)
        {
            return new ValidationResult("Phone number should be more than 8 digits"
             + " and less than 12 digits.", new List<string>() { "Phone" });
        }

        else
        {
            return ValidationResult.Success;
        }
    }
}
```

2. Add the custom attribute markup in the property setter code to validate the input entered in Phone Number field.
    - **Visual Basic**

```
<Display(Name:="Phone Number")>
<CustomValidation(GetType(CustomValidator), "ValidatePhoneNumber")>
Public Property Phone() As String
    Get
        Return m_Phone
    End Get
    Set
        m_Phone = Value
    End Set
End Property
Private m_Phone As String
```

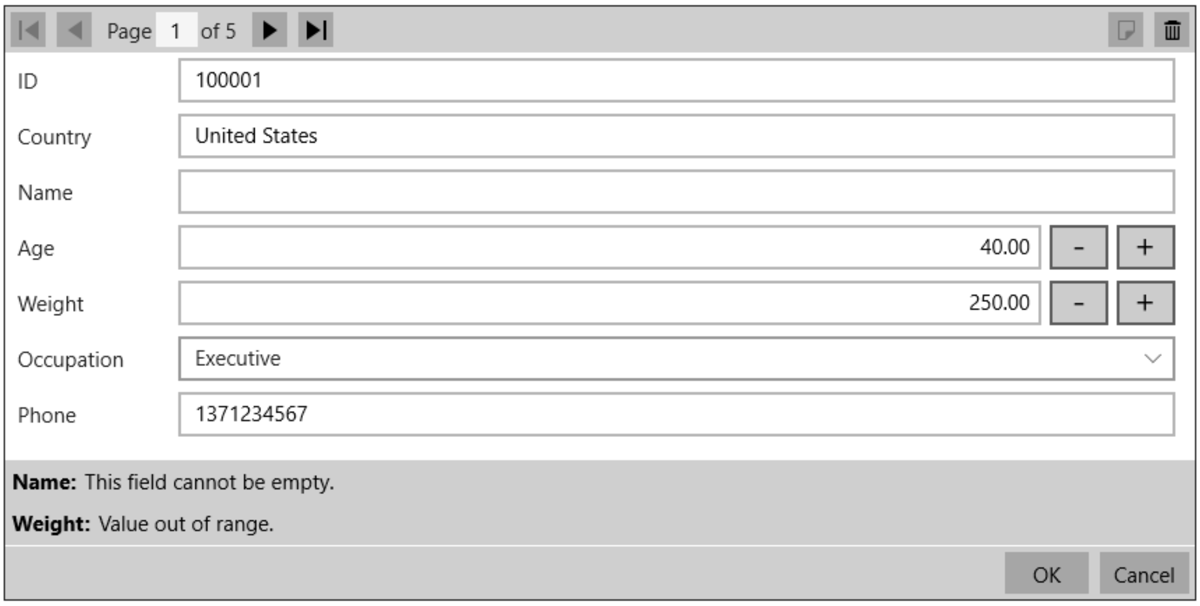
- **C#**

```
[Display(Name = "Phone Number")]
[CustomValidation(typeof(CustomValidator), "ValidatePhoneNumber")]
public string Phone { get; set; }
```

## Data Validation through Event

InputPanel provides another way of handling input validation through event. The control comes with the ValidateCurrentItem event that can be used for validating user input.

The following image shows validation applied through event.



| | |
|---|---|
| ID | 100001 |
| Country | United States |
| Name | |
| Age | 40.00 |
| Weight | 250.00 |
| Occupation | Executive |
| Phone | 1371234567 |

**Name:** This field cannot be empty.

**Weight:** Value out of range.

To implement data validation through event, subscribe the ValidateCurrentItem event of InputPanel and add validation rules in the event handler in code. The following code shows how to apply validation using event. This example uses the sample created in Quick Start.

- **Visual Basic**

```
Dim customer As Customer = TryCast(InPanel.CurrentItem, Customer)

If customer IsNot Nothing Then
    Dim errorList = New ObservableCollection(Of ErrorInfo)()

    If customer.Name IsNot Nothing AndAlso String.IsNullOrWhiteSpace _
        (customer.Name.ToString()) Then
        errorList.Add(New ErrorInfo() With {
   .ErrorInputName = "Name",
    .ErrorContent = "This field cannot be empty."
})
    End If
    If customer.Weight > 150 Then
        errorList.Add(New ErrorInfo() With {
    .ErrorInputName = "Weight",
    .ErrorContent = "Value out of range."
})
    End If
    InPanel.ValidationErrors = errorList
    If errorList.Count > 0 Then
        e.Cancel = True
    End If
End If
```

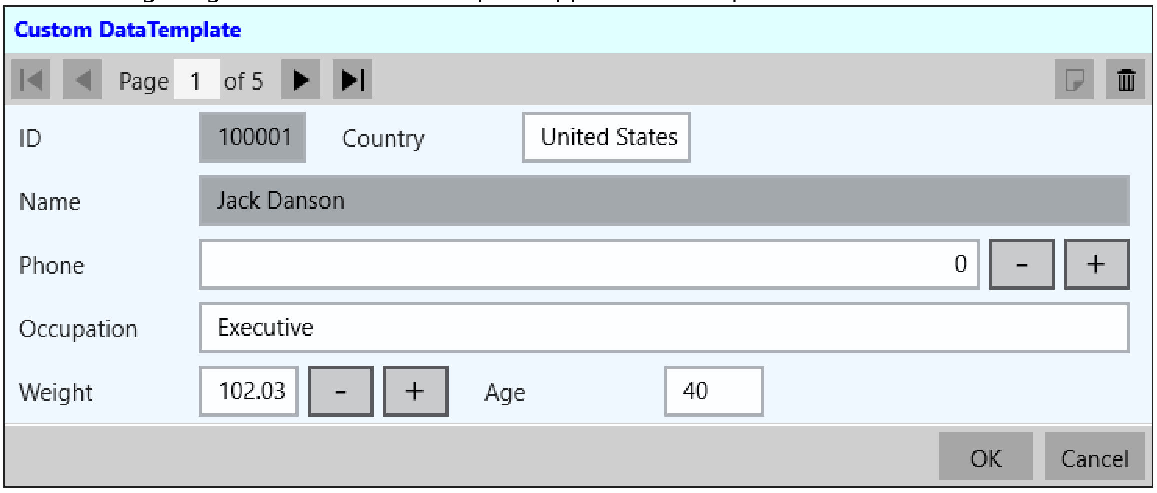
- **C#**

```
Customer customer = InPanel.CurrentItem as Customer;

if (customer != null)
{
    var errorList = new ObservableCollection<ErrorInfo>();

    if (customer.Name != null && string.IsNullOrWhiteSpace(
        customer.Name.ToString()))
    {
        errorList.Add(new ErrorInfo { ErrorInputName = "Name",
                      ErrorContent = "This field cannot be empty." });
    }
    if (customer.Weight > 150)
    {
        errorList.Add(new ErrorInfo { ErrorInputName = "Weight",
                      ErrorContent = "Value out of range." });
    }
    InPanel.ValidationErrors = errorList;
    if (errorList.Count > 0)
    {
        e.Cancel = true;
    }
}
```

## Custom Template

InputPanel provides you the flexibility to create your own custom template to change the InputPanel layout according to your requirements. Creating a custom template provides you the ease of creating a form with compact UI and according to the application you are using it in. The control allows you to use DataTemplate to define a different layout and change the way the control appears.

The following image shows a custom template applied to the InputPanel control.



Custom DataTemplate

Page 1 of 5

| | | | |
|---|---|---|---|
| ID | 100001 | Country | United States |
| Name | Jack Danson | | |
| Phone | 0 | | |
| Occupation | Executive | | |
| Weight | 102.03 | Age | 40 |

You can create a custom template using DataTemplate to change the layout of the control using the following steps. This example uses the sample created in Quick Start. In this example, a data template is created that contains a StackPanel comprising two StackPanels with horizontal orientation. These two inner StackPanels consists of the editors that are required to be aligned horizontally and the outer StackPanel consists of the editors that are to be aligned vertically. The InputPanel accesses this data template through ItemsSource property to customize the UI elements.

The example also showcases the customization of the InputPanel header template using the HeaderTemplate property of C1InputPanel class.

> Note that all the editors are stacked vertically by default, so you need to set the value of AutoGenerate property to false before making any changes to alignment of the editors.

1. Add the following namespaces inside the <Page> tag in XAML view.

   XAML

   ```
   xmlns:c1="using:C1.Xaml"
   xmlns:c1input="using:C1.Xaml.InputPanel"
   ```

2. Add the following code after the <Page> tag to apply the DataTemplate with the editors, some of which are

stacked vertically and some horizontally.

XAML copyCode

```
<Page.Resources>
    <DataTemplate x:Key="InputPanelCustomDataTemplate">
        <StackPanel Background="AliceBlue">
            <StackPanel Orientation="Horizontal">
                <c1input:C1InputTextBox Header="ID" DataBinding="{Binding ID,
Mode=OneWay}" IsReadOnly="True" LabelForeground="{Binding LabelForeground,
ElementName=InPanel}"></c1input:C1InputTextBox>
                <c1input:C1InputTextBox Header="Country" DataBinding="{Binding
Country, Mode=TwoWay, UpdateSourceTrigger=PropertyChanged}" IsReadOnly="{Binding
IsReadOnly, ElementName=InPanel}" LabelForeground="{Binding LabelForeground,
ElementName=InPanel}"></c1input:C1InputTextBox>
            </StackPanel>
            <c1input:C1InputTextBox Header="Name" DataBinding="{Binding Name,
Mode=OneWay}" IsReadOnly="True" LabelForeground="{Binding LabelForeground,
ElementName=InPanel}"></c1input:C1InputTextBox>
            <c1input:C1InputNumericBox Header="Phone" DataBinding="{Binding
Phone, Mode=TwoWay, UpdateSourceTrigger=PropertyChanged}" IsReadOnly="{Binding
IsReadOnly, ElementName=InPanel}" LabelForeground="{Binding LabelForeground,
ElementName=InPanel}"></c1input:C1InputNumericBox>
            <c1input:C1InputTextBox Header="Occupation" DataBinding="{Binding
Occupation, Mode=TwoWay, UpdateSourceTrigger=PropertyChanged}"
IsReadOnly="{Binding IsReadOnly, ElementName=InPanel}" LabelForeground="{Binding
LabelForeground, ElementName=InPanel}"></c1input:C1InputTextBox>
            <StackPanel Orientation="Horizontal">
                <c1input:C1InputNumericBox Header="Weight" DataBinding="{Binding
Weight, Mode=TwoWay, UpdateSourceTrigger=PropertyChanged}" IsReadOnly="{Binding
IsReadOnly, ElementName=InPanel}" LabelForeground="{Binding LabelForeground,
ElementName=InPanel}"></c1input:C1InputNumericBox>
                <c1input:C1InputTextBox Header="Age" DataBinding="{Binding Age,
Mode=TwoWay, UpdateSourceTrigger=PropertyChanged}" IsReadOnly="{Binding
IsReadOnly, ElementName=InPanel}" LabelForeground="{Binding LabelForeground,
ElementName=InPanel}"></c1input:C1InputTextBox>
            </StackPanel>
        </StackPanel>
    </DataTemplate>

    <ItemsPanelTemplate x:Key="ItemsPanel">
        <StackPanel Orientation="Vertical"  Margin="20"/>
    </ItemsPanelTemplate>
</Page.Resources>
```

3. Add the following code inside the <Grid> tag to customize the InputPanel and it's header template.

XAML copyCode

```
<c1input:C1InputPanel x:Name="InPanel" AutoGenerate="False"
ItemsPanelTemplate="{StaticResource ItemsPanel}" ItemsTemplate="{StaticResource
InputPanelCustomDataTemplate}" HeaderBackground="LightCyan"
HeaderFontWeight="Bold" Margin="20, 40, 150,340">
<c1input:C1InputPanel.HeaderTemplate>
        <DataTemplate>
```

```
            <StackPanel>
                <TextBlock Text="Custom DataTemplate" Margin="6"
Foreground="Blue" />
            </StackPanel>
        </DataTemplate>
    </c1input:C1InputPanel.HeaderTemplate>
</c1input:C1InputPanel>
```

## Keyboard Navigation

InputPanel provides keyboard support that can be used to navigate through the records. The keyboard navigation keys can replace the use of mouse by allowing you to edit and navigate through the records. The keys and their corresponding actions are listed below:

| **Keys** | **Actions** |
|---|---|
| Left key (←) | Navigates to the previous item. |
| Right key (→) | Navigates to the next items. |
| Ctrl + Home / Ctrl + Left key | Moves the current item to the first position. |
| Ctrl + End / Ctrl + Right key | Moves the current item to the last position. |
| Insert | Adds a new record. |
| Enter | Commits the edit operation. |
| Escape | Cancels the edit operation. |
| Delete | Deletes the current record. |

# Working with InputPanel

Working with InputPanel section assumes that you are familiar with the basics and features of the InputPanel control and know how to use it in general. The following section provides information on auxiliary functionality offered by InputPanel.

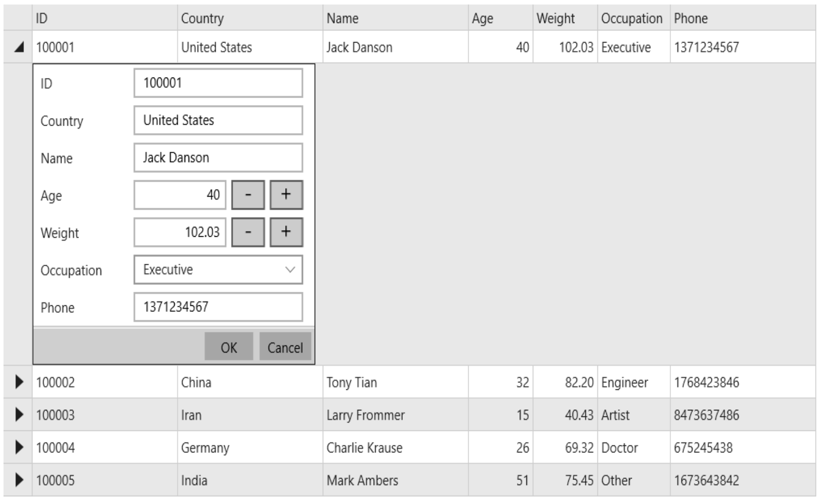
Integrating InputPanel with FlexGrid
Learn how to integrate InputPanel with FlexGrid in code.

## Integrating InputPanel with FlexGrid

InputPanel supports integration with FlexGrid to display data in details part of a row in a compact layout. The control can be embedded with ComponentOne's FlexGrid control to display the data by means of row details template. Using this template, InputPanel can be embedded with each row of the FlexGrid control, in a collapsible section.

To integrate InputPanel with FlexGrid, you need to define the template where you add the InputPanel control in the RowDetailsTemplate property of the FlexGrid control.

The following image shows an InputPanel integrated with a FlexGrid through RowDetailsTemplate.



| | ID | Country | Name | Age | Weight | Occupation | Phone |
|---|---|---|---|---|---|---|---|
| ◢ | 100001 | United States | Jack Danson | 40 | 102.03 | Executive | 1371234567 |

| | |
|---|---|
| ID | 100001 |
| Country | United States |
| Name | Jack Danson |
| Age | 40 - + |
| Weight | 102.03 - + |
| Occupation | Executive |
| Phone | 1371234567 |

OK Cancel

| | ID | Country | Name | Age | Weight | Occupation | Phone |
|---|---|---|---|---|---|---|---|
| ▶ | 100002 | China | Tony Tian | 32 | 82.20 | Engineer | 1768423846 |
| ▶ | 100003 | Iran | Larry Frommer | 15 | 40.43 | Artist | 8473637486 |
| ▶ | 100004 | Germany | Charlie Krause | 26 | 69.32 | Doctor | 675245438 |
| ▶ | 100005 | India | Mark Ambers | 51 | 75.45 | Other | 1673643842 |

### To integrate InputPanel with FlexGrid

- **Step 1: Set up the application**
- **Step 2: Create a data source**
- **Step 3: Bind FlexGrid to the data source**

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### Step 1: Set up the application

1. Create a UWP application and add a FlexGrid control.
2. Create a data template in the **RowDetailsTemplate** property of FlexGrid to display the InputPanel control in the details part of the row.

XAML copyCode
```
<FlexGrid:C1FlexGrid x:Name="FlexGrid" Margin="20,50,0,10" HorizontalAlignment="Left"
  AlternatingRowBackground="{Binding GroupRowBackground, ElementName=FlexGrid}" >
    <FlexGrid:C1FlexGrid.RowDetailsTemplate>
        <DataTemplate>
            <InputPanel:C1InputPanel x:Name="InPanel" CurrentItem="{Binding}"
              HorizontalAlignment="Left"/>
        </DataTemplate>
    </FlexGrid:C1FlexGrid.RowDetailsTemplate>
</FlexGrid:C1FlexGrid>
```

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### Step 2: Create a data source

1. Switch to the code view and create a Customer class to add records to the InputPanel containing id, name, country, age, weight, and contact number of the customers, and an enumeration to accept values for Occupation field.
   - **Visual Basic**

```
Public Class Customer
    Public Property ID() As String
        Get
            Return m_ID
        End Get
        Set
            m_ID = Value
        End Set
    End Property
    Private m_ID As String
    Public Property Country() As String
        Get
            Return m_Country
        End Get
        Set
            m_Country = Value
        End Set
    End Property
    Private m_Country As String
    Public Property Name() As String
        Get
            Return m_Name
        End Get
        Set
            m_Name = Value
        End Set
    End Property
    Private m_Name As String
    Public Property Age() As Integer
        Get
            Return m_Age
        End Get
        Set
            m_Age = Value
        End Set
    End Property
    Private m_Age As Integer
    Public Property Weight() As Double
        Get
            Return m_Weight
        End Get
        Set
            m_Weight = Value
        End Set
    End Property
    Private m_Weight As Double
    Public Property Occupation() As Occupation
        Get
            Return m_Occupation
        End Get
        Set
            m_Occupation = Value
        End Set
    End Property
    Private m_Occupation As Occupation
    Public Property Phone() As String
        Get
            Return m_Phone
        End Get
        Set
            m_Phone = Value
        End Set
    End Property
    Private m_Phone As String

    Public Sub New(id As String, country As String, name As String, age As Integer, weight As Double, occupation As Occupation,
    phone As String)
        Me.ID = id
        Me.Country = country
        Me.Name = name
        Me.Age = age
        Me.Weight = weight
        Me.Occupation = occupation
        Me.Phone = phone
    End Sub
End Class

Public Enum Occupation
    Doctor
    Artist
    Educator
    Engineer
    Executive
    Other
End Enum
```

- **C#**

```
public class Customer
{
    public string ID { get; set; }
    public string Country { get; set; }
    public string Name { get; set; }
    public int Age { get; set; }
    public double Weight { get; set; }
    public Occupation Occupation { get; set; }
    public string Phone { get; set; }

    public Customer(string id, string country, string name, int age,
                    double weight, Occupation occupation, string phone)
    {
        this.ID = id;
        this.Country = country;
```

```
            this.Name = name;
            this.Age = age;
            this.Weight = weight;
            this.Occupation = occupation;
            this.Phone = phone;
        }
    }

    public enum Occupation
    {
        Doctor,
        Artist,
        Educator,
        Engineer,
        Executive,
        Other
    }
```

2. Create a private method, **InitializeFlexGrid**, in the class constructor and add the following code to create a collection of records.
    - **Visual Basic**

```
Dim data As New List(Of Customer)()
data.Add(New Customer("100001", "United States", "Jack Danson",
         40, 102.03, Occupation.Executive, "1371234567"))
data.Add(New Customer("100002", "China", "Tony Tian",
32, 82.2, Occupation.Engineer, "1768423846"))
data.Add(New Customer("100003", "Iran", "Larry Frommer",
         15, 40.432, Occupation.Artist, "8473637486"))
data.Add(New Customer("100004", "Germany", "Charlie Krause",
         26, 69.32, Occupation.Doctor, "675245438"))
data.Add(New Customer("100005", "India", "Mark Ambers",
         51, 75.45, Occupation.Other, "1673643842"))
```

    - **C#**

```
List<Customer> data = new List<Customer>();
data.Add(new Customer("100001", "United States", "Jack Danson",
          40, 102.03, Occupation.Executive, "1371234567"));
data.Add(new Customer("100002", "China", "Tony Tian",
          32, 82.2, Occupation.Engineer, "1768423846"));
data.Add(new Customer("100003", "Iran", "Larry Frommer",
          15, 40.432, Occupation.Artist, "8473637486"));
data.Add(new Customer("100004", "Germany", "Charlie Krause",
          26, 69.32, Occupation.Doctor, "675245438"));
data.Add(new Customer("100005", "India", "Mark Ambers",
          51, 75.45, Occupation.Other, "1673643842"));
```

3. Call the **InitializeFlexGrid** method in the MainPage class constructor.

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### Step 3: Bind FlexGrid to the data source

1. Bind the **FlexGrid** control to **Customer** class (refer Quick Start) in code view.
    - **Visual Basic**

```
'Bind FlexGrid to Customer and allow cell merging
FlexGrid.ItemsSource = data
```

    - **C#**

```
//Bind FlexGrid to Customer and allow cell merging
FlexGrid.ItemsSource = data.ToList<Customer>();
```

2. Debug the application to see if any error exist.
3. Press **F5** to run your application and see the output.

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## InputPanel Samples

With the C1Studio installer, you get InputPanel samples that help you understand the implementation of the product. The C# and VB samples are available at the default installation folder-
Documents\ComponentOne Samples\UWP\C1.UWP.InputPanel.

The C# sample available at the default installation location is as follows:

| **Sample** | **Description** |
|---|---|
| InputPanelSamples | This sample demonstrates an example of binding data to InputPanel in code. |

The VB sample available at the default installation location is as follows:

| **Sample** | **Description** |
|---|---|
| InputPanelSamples | This sample demonstrates an example of binding data to InputPanel in code. |