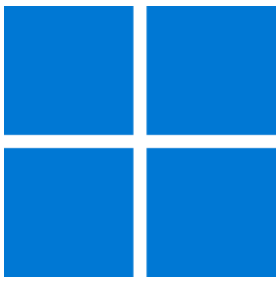
Windows App SDK



Deal or Not

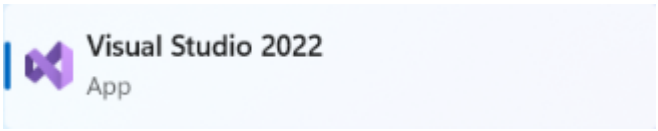
Deal or Not

Deal or Not shows how you can create simple box-opening game where every so often you can choose to accept a deal, or not and continue but risk winning a smaller amount, the last box will be the amount won, unless you took the deal, using a toolkit from **NuGet** using the **Windows App SDK**.

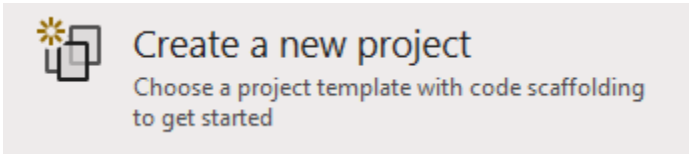
Step 1

Follow **Setup and Start** on how to get **Setup** and **Install** what you need for **Visual Studio 2022** and **Windows App SDK**.

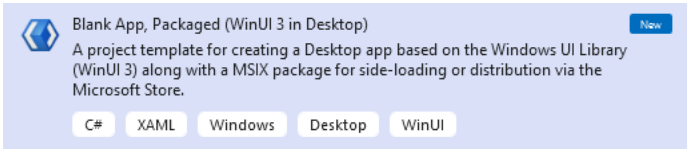
In **Windows 11** choose **Start** and then find or search for **Visual Studio 2022** and then select it.



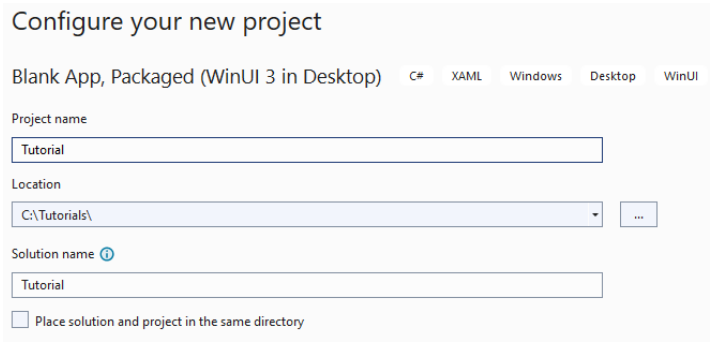
Once **Visual Studio 2022** has started select **Create a new project**.



Then choose the **Blank App, Packages (WinUI in Desktop)** and then select **Next**.

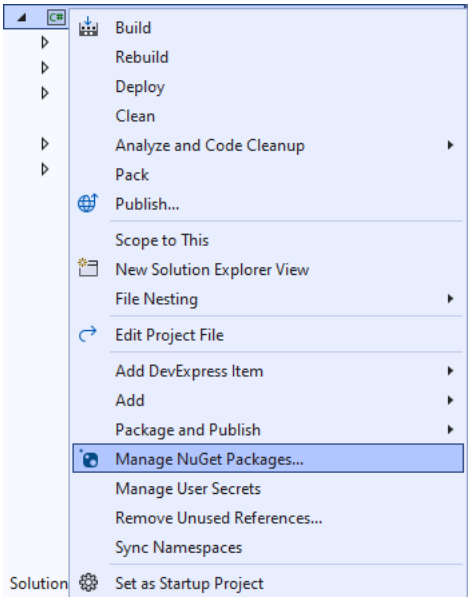


After that in **Configure your new project** type in the **Project name** as *DealOrNot*, then select a Location and then select **Create** to start a new **Solution**.



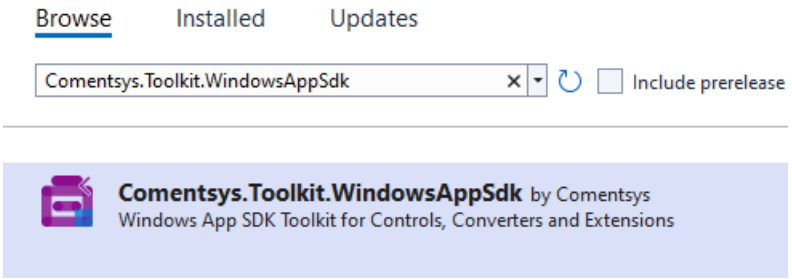
Step 2

Then in **Visual Studio** within **Solution Explorer** for the **Solution**, right click on the **Project** shown below the **Solution** and then select **Manage NuGet Packages...**



Step 3

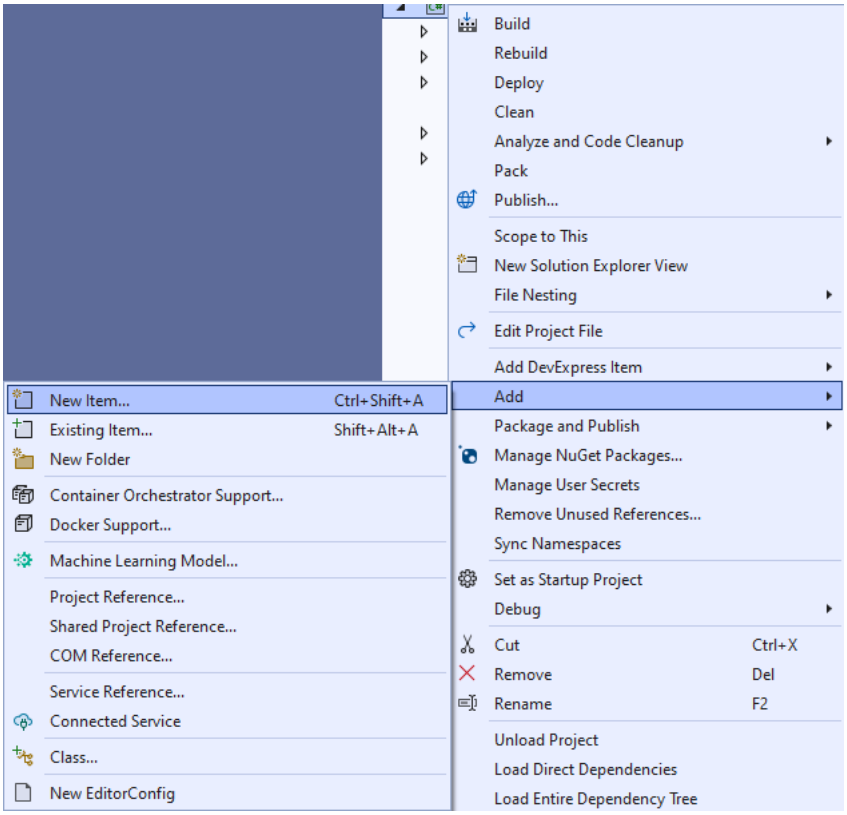
Then in the **NuGet Package Manager** from the **Browse** tab search for **Comentsys.Toolkit.WindowsAppSdk** and then select **Comentsys.Toolkit.WindowsAppSdk by Comentsys** as indicated and select **Install**



This will add the package for **Comentsys.Toolkit.WindowsAppSdk** to your **Project**. If you get the **Preview Changes** screen saying **Visual Studio is about to make changes to this solution. Click OK to proceed with the changes listed below.** You can read the message and then select **OK** to **Install** the package,, then you can close the **tab** for **Nuget: DealOrNot** by selecting the **x** next to it.

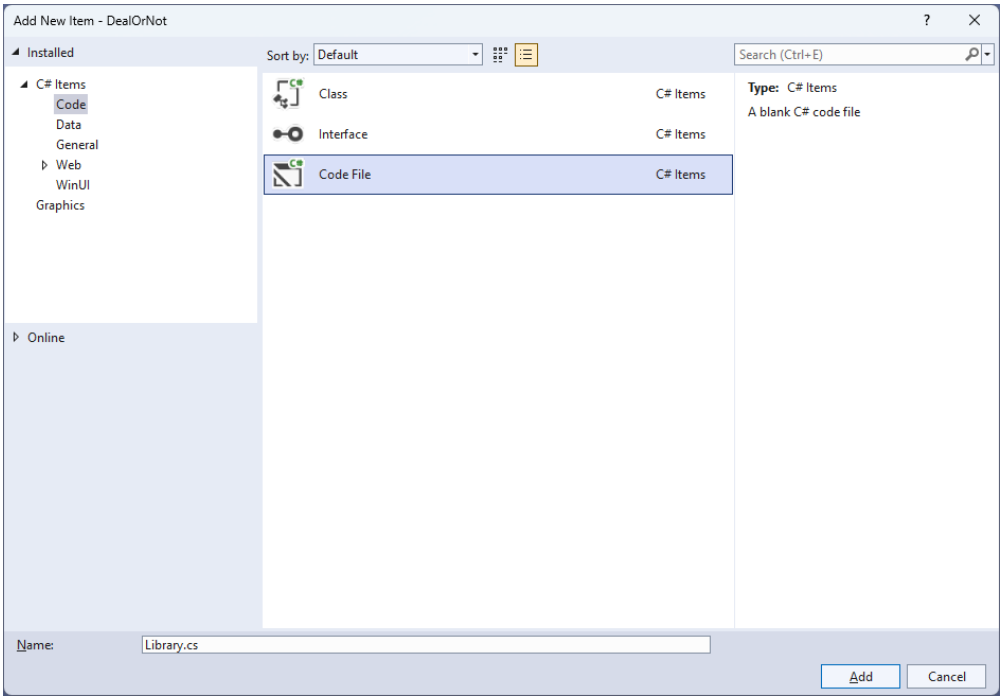
Step 4

Then in **Visual Studio** within **Solution Explorer** for the **Solution**, right click on the **Project** shown below the **Solution** and then select **Add** then **New Item...**



Step 5

Then in **Add New Item** from the **C# Items** list, select **Code** and then select **Code File** from the list next to this, then type in the name of *Library.cs* and then **Click** on **Add**.



Step 6

You will now be in the **View** for the **Code** of *Library.cs*, within this first type the following **Code**:

```
using Comentsys.Toolkit.WindowsAppSdk;
using Microsoft.UI;
using Microsoft.UI.Text;
using Microsoft.UI.Xaml;
using Microsoft.UI.Xaml.Controls;
using Microsoft.UI.Xaml.Media;
using Microsoft.UI.Xaml.Shapes;
using System;
using System.Collections.Generic;
using System.Globalization;
using System.Linq;
using Windows.UI;

public class Library
{
    private const string title = "Deal or Not";
    private const int rate = 5;
    private static readonly double[] amounts =
    {
        0.01, 0.10, 0.50, 1, 5, 10, 50, 100, 250, 500, 750,
        1000, 3000, 5000, 10000, 15000, 20000, 35000, 50000, 75000, 100000, 250000
    };
    private static readonly string[] colors =
    {
        "0026ff", "0039ff", "004dff", "0060ff", "0073ff", "0086ff",
        "0099ff", "0099ff", "0099ff", "00acff", "00bfff",
        "ff5900", "ff4d00", "ff4000", "ff3300", "ff2600", "ff2600",
        "ff2600", "ff2600", "ff1a00", "ff1c00", "ff0d00",
    };
    private static readonly string[] names = {
        "a", "b", "c", "d", "e", "f", "g", "h", "i", "j", "k",
        "l", "m", "n", "o", "p", "q", "r", "s", "t", "u", "v"
    };
    private readonly Random _random = new((int)DateTime.UtcNow.Ticks);
    private readonly List<double> _values = new();

    private int _turn;
    private bool _over;
    private bool _dealt;
    private double _amount;
    private Dialog _dialog;

    // Choose, Get Color, Get Background & Get Amount

    // Get Offer & Select Box

    // Add Box

    // Add Row, Layout & New
}
```

Class defined so far *Library.cs* has **using** for package of **Comentsys.Toolkit.WindowsAppSdk** and others.

Step 7

Still in the **Class** for *Library.cs* after the **Comment** of **// Choose, Get Color, Get Background & Get Amount** type the following **Methods**:

```
private List<int> Choose(int minimum, int maximum, int total) =>
Enumerable.Range(minimum, maximum)
    .OrderBy(r => _random.Next(minimum, maximum))
        .Take(total).ToList();

private Color GetColor(string hex)
{
    byte r = byte.Parse(hex[0..^4], NumberStyles.HexNumber);
    byte g = byte.Parse(hex[2..^2], NumberStyles.HexNumber);
    byte b = byte.Parse(hex[4..^0], NumberStyles.HexNumber);
    return Color.FromArgb(255, r, g, b);
}

private Color GetBackground(double amount)
{
    var position = Array.FindIndex(amounts, a => a.Equals(amount));
    return GetColor(colors[position]);
}

private Grid GetAmount(double value, Color background)
{
    Grid grid = new()
    {
        Background = new SolidColorBrush(background)
    };
    TextBlock text = new()
    {
        Text = string.Format(new CultureInfo("en-GB"), "{0:c}", value),
        HorizontalAlignment = HorizontalAlignment.Center,
        VerticalAlignment = VerticalAlignment.Center,
        Foreground = new SolidColorBrush(Colors.White),
        Margin = new Thickness(10),
        FontSize = 33
    };
    grid.Children.Add(text);
    return grid;
}
```

Choose is used to select a list of randomised numbers, **GetColor** is used to get a **Color** from the hex representation of the colour and **GetBackground** will use this to get the appropriate background colour based on the amount passed in. **GetAmount** will be used to display an amount with an appropriate colour.

Step 8

While still in the **`Class`** for *Library.cs* after the **Comment** of **`// Get Offer & Select Box`** type in the following **Methods** for **`GetOffer`** to generate an offer and **`SelectBox`** used when picking a box.

```
private double GetOffer()
{
    int count = 0;
    double total = 0.0;
    foreach (double value in _values)
    {
        total += value;
        count++;
    }
    double average = total / count;
    double offer = average * _turn / 10;
    return Math.Round(offer, 0);
}

private async void SelectBox(Button button, string name)
{
    if (!_over)
    {
        if (_turn < names.Length)
        {
            button.Opacity = 0;
            _amount = _values[Array.IndexOf(names, name)];
            bool response = await _dialog.ConfirmAsync(
                GetAmount(_amount, GetBackground(_amount)));
            if (response)
            {
                if (!_dealt && _turn % rate == 0 && _turn > 1)
                {
                    double offer = GetOffer();
                    bool accept = await _dialog.ConfirmAsync(
                        GetAmount(offer, Colors.Black), "Deal", "Not");
                    if (accept)
                    {
                        _amount = offer;
                        _dealt = true;
                    }
                }
                _turn++;
            }
        }
        if (_turn == names.Length || _dealt)
            _over = true;
    }
    if (_over)
    {
        object content = _dealt ?
            GetAmount(_amount, Colors.Black) :
            GetAmount(_amount, GetBackground(_amount));
        await _dialog.ConfirmAsync(content, "Game Over", null);
    }
}
```

Step 9

While still in the **`Class`** for *Library.cs* after the **Comment** of **`// Add Box`** type in the following **Method**:

```
private void AddBox(StackPanel panel, string name, int value)
{
    Button button = new()
    {
        Name = $"box.{name}",
        Margin = new Thickness(5)
    };
    button.Click += (object sender, RoutedEventArgs e) =>
        SelectBox((Button)sender, name);
    StackPanel box = new()
    {
        Width = 100
    };
    Rectangle lid = new()
    {
        Height = 10,
        Fill = new SolidColorBrush(Colors.DarkRed)
    };
    Grid front = new()
    {
        Height = 75,
        Background = new SolidColorBrush(Colors.Red)
    };
    Grid label = new()
    {
        Width = 50,
        Background = new SolidColorBrush(Colors.White),
        HorizontalAlignment = HorizontalAlignment.Center,
        VerticalAlignment = VerticalAlignment.Center
    };
    TextBlock text = new()
    {
        TextAlignment = TextAlignment.Center,
        FontWeight = FontWeights.Bold,
        Foreground = new SolidColorBrush(Colors.Black),
        FontSize = 32,
        Text = value.ToString()
    };
    label.Children.Add(text);
    front.Children.Add(label);
    box.Children.Add(lid);
    box.Children.Add(front);
    button.Content = box;
    panel.Children.Add(button);
}
```

AddBox is used to add a box that can be selected when **Clicked** to the game and give it a game-specific appearance using various elements to create the look-and-feel of the box that can be selected.

Step 10

While still in the **`Class`** for *Library.cs* after the **Comment** of **`// Add Row, Layout & New`** type in the following **Methods** of **`AddRow`** which will add a row of boxes for the game, **`Layout`** which will create the look-and-feel for the game and **`New`** which will start a game.

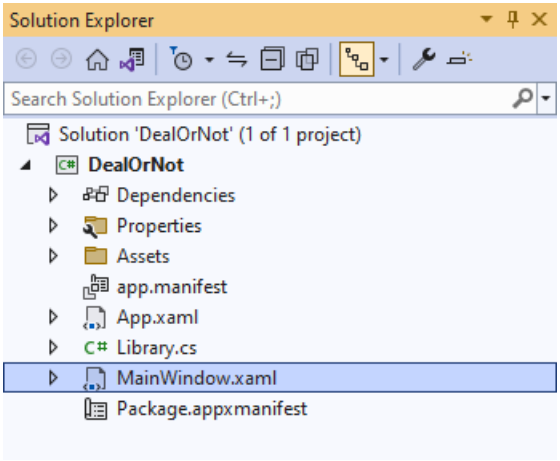
```
private StackPanel AddRow()
{
    int count = 0;
    StackPanel panel = new();
    int[] rows = { 5, 6, 6, 5 };
    for (int r = 0; r < 4; r++)
    {
        StackPanel places = new()
        {
            Orientation = Orientation.Horizontal,
            HorizontalAlignment = HorizontalAlignment.Center
        };
        for (int column = 0; column < rows[r]; column++)
        {
            AddBox(places, names[count], count + 1);
            count++;
        }
        panel.Children.Add(places);
    }
    return panel;
}

private void Layout(Grid grid)
{
    grid.Children.Clear();
    Viewbox view = new()
    {
        Child = AddRow()
    };
    grid.Children.Add(view);
}

public void New(Grid grid)
{
    _turn = 0;
    _amount = 0;
    _over = false;
    _dealt = false;
    _dialog = new Dialog(grid.XamlRoot, title);
    var positions = Choose(0, names.Length, names.Length);
    foreach (var position in positions)
    {
        _values.Add(amounts[position]);
    }
    Layout(grid);
}
```

Step 11

Then from **Solution Explorer** for the **Solution** double-click on **MainWindow.xaml** to see the **XAML** for the **Main Window**.



Step 12

In the **XAML** for **MainWindow.xaml** there be some **XAML** for a **`StackPanel`**, this should be **Removed** by removing the following:

```
<StackPanel Orientation="Horizontal"
HorizontalAlignment="Center" VerticalAlignment="Center">
    <Button x:Name="myButton" Click="myButton_Click">Click Me</Button>
</StackPanel>
```

Step 13

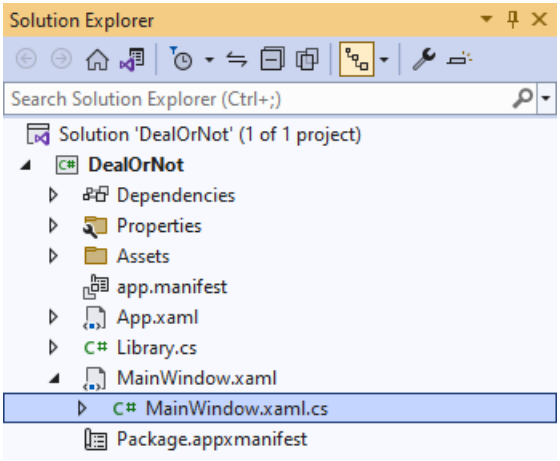
While still in the **XAML** for **MainWindow.xaml** above **`</Window>`**, type in the following **XAML**:

```
<Grid>
    <Viewbox>
        <Grid Margin="50" Name="Display"
        HorizontalAlignment="Center"
        VerticalAlignment="Center" Loaded="New"/>
    </Viewbox>
    <CommandBar VerticalAlignment="Bottom">
        <AppBarButton Icon="Page2" Label="New" Click="New"/>
    </CommandBar>
</Grid>
```

This **XAML** contains a **`Grid`** with a **`Viewbox`** which will scale a **`Grid`**. It has a **`Loaded`** event handler for **`New`** which is also shared by the **`AppBarButton`**.

Step 14

Then, within **Solution Explorer** for the **Solution** select the arrow next to **MainWindow.xaml** then double-click on **MainWindow.xaml.cs** to see the **Code** for the **Main Window**.



Step 15

In the **Code** for **MainWindow.xaml.cs** there be a **Method** of **`myButton_Click(...)`** this should be **Removed** by removing the following:

```
private void myButton_Click(object sender, RoutedEventArgs e)
{
    myButton.Content = "Clicked";
}
```

Step 16

Once **`myButton_Click(...)`** has been removed, type in the following **Code** below the end of the **Constructor** of **`public MainWindow() { ... }`**:

```
private readonly Library _library = new();

private void New(object sender, RoutedEventArgs e) =>
    _library.New(Display);
```

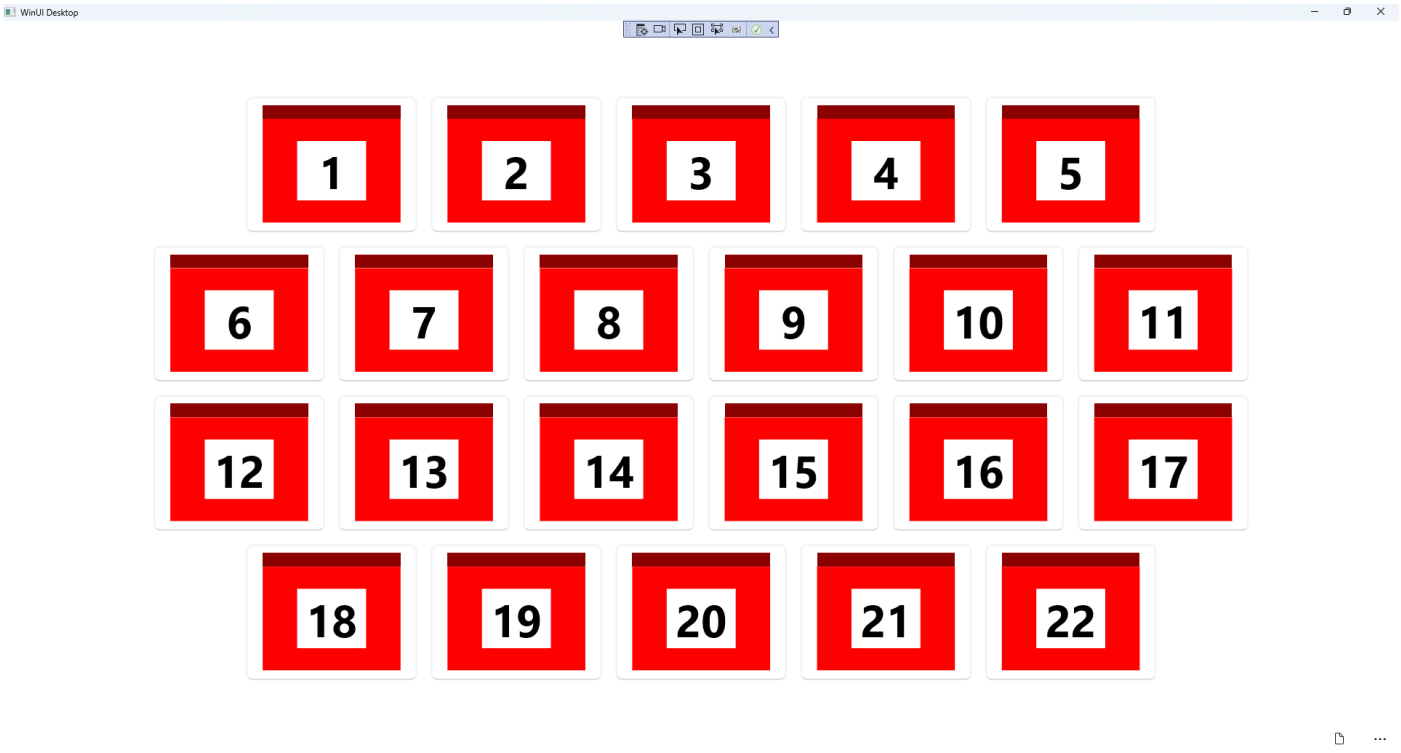
Here an **Instance** of the **Class** of **`Library`** is created then below this is the **Method** of **`New`** that will be used with **Event Handler** from the **XAML**, this **Method** uses Arrow Syntax with the **`=>`** for an Expression Body which is useful when a **Method** only has one line.

Step 17

That completes the **Windows App SDK** application. In **Visual Studio 2022** from the **Toolbar** select **DealOrNot (Package)** to **Start** the application.

Step 18

Once running you can then select one of the boxes and an amount will be displayed but each five turns, then you'll have the chance to take a **Deal** or **Not** and can continue until there is just one box left, which you'll win the amount, but if you took the **Deal** then you win that amount instead, or you can select *New* to start a new game.



Step 19

To **Exit** the **Windows App SDK** application, select the **Close** button from the top right of the application as that concludes this **Tutorial** for **Windows App SDK** from tutorialr.com!