**פרויקט ספר טלפונים**

1. **התקנת SQLite על המחשב המקומי**
* הורדת הקובץ [sqlite-uwp-3120200.vsix](https://www.sqlite.org/2016/sqlite-uwp-3120200.vsix) (או גרסה חדשה יותר אם יש) מהאתר <https://www.sqlite.org/download.html>.
* התקנה.
1. **פתיחת פרויקט UWP חדש**
* הוספת ייחוס ל- SQLite for Universal Windows Platform ול- C++ Runtime
* (Universal Windows -> Extensions Reference Manager-> Add Reference->)



1. בשלב זה האפליקציה יכולה כבר לגשת ל-SQLite אבל זה די מורכב לעבוד ישירות מול המנוע של מסד הנתונים, לכו כדאי להתקין את ה-.NET Wrapper של SQLite על מנת לפשט את העבודה.

נצרף את ה-Wrapper – SQLite.Net-PCL באמצעות לפרויקט Nuget:



ונוסיף לפרויקט Reference ל-Wrapper:



1. **MainPage – מבנה ה-XAML:**



|  |
| --- |
|  <Grid Background = "{ThemeResource ApplicationPageBackgroundThemeBrush}" > <Grid.ColumnDefinitions> <ColumnDefinition Width="\*"></ColumnDefinition> <ColumnDefinition Width="5\*"></ColumnDefinition> <ColumnDefinition Width="\*"></ColumnDefinition> </Grid.ColumnDefinitions> <Grid.RowDefinitions> <RowDefinition Height="\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> <RowDefinition Height="2\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> </Grid.RowDefinitions> <StackPanel Grid.Column="1" Grid.Row="0"> <TextBlock Name="txtPersonDB" FontSize="20" Margin="3"></TextBlock> <TextBlock Name="txtPhoneDB" FontSize="20" Margin="3"></TextBlock> </StackPanel> <TextBlock Grid.Column="0" Grid.Row="0" Text="FirstName" FontFamily="20" HorizontalAlignment="Center" VerticalAlignment="Center"/> <TextBox Name="txtFirstName" Grid.Column="1" Grid.Row="0" FontFamily="20" HorizontalAlignment="Left" VerticalAlignment="Center" Width="300"/> <TextBlock Grid.Column="0" Grid.Row="1" Text="Last Name" FontFamily="20" HorizontalAlignment="Center" VerticalAlignment="Center"/> <TextBox Name="txtLastName" Grid.Column="1" Grid.Row="1" FontFamily="20" HorizontalAlignment="Left" VerticalAlignment="Center" Width="300"/> <TextBlock Grid.Column="0" Grid.Row="2" Text="Birthdate" FontFamily="20" HorizontalAlignment="Center" VerticalAlignment="Center"/> <DatePicker Name="birthDatePicker" Grid.Column="1" Grid.Row="2" /> <TextBlock Grid.Column="0" Grid.Row="3" Text="Phones" FontFamily="20" HorizontalAlignment="Center" VerticalAlignment="Center"/> <Grid Grid.Column="1" Grid.Row="3" Margin="20"> <Grid.ColumnDefinitions> <ColumnDefinition Width="\*"></ColumnDefinition> <ColumnDefinition Width="2\*"></ColumnDefinition> </Grid.ColumnDefinitions> <Grid.RowDefinitions> <RowDefinition Height="\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> </Grid.RowDefinitions> <ComboBox Name="cboPhoneType1" Grid.Column="0" Grid.Row="0" Width="200" Margin="10"></ComboBox> <ComboBox Name="cboPhoneType2" Grid.Column="0" Grid.Row="1" Width="200" Margin="10"></ComboBox> <ComboBox Name="cboPhoneType3" Grid.Column="0" Grid.Row="2" Width="200" Margin="10"></ComboBox> <TextBox Name="txtPhone1" Grid.Column="1" Grid.Row="0" FontFamily="20" HorizontalAlignment="Left" VerticalAlignment="Center" Width="300"/> <TextBox Name="txtPhone2" Grid.Column="1" Grid.Row="1" FontFamily="20" HorizontalAlignment="Left" VerticalAlignment="Center" Width="300"/> <TextBox Name="txtPhone3" Grid.Column="1" Grid.Row="2" FontFamily="20" HorizontalAlignment="Left" VerticalAlignment="Center" Width="300"/> </Grid> <StackPanel Grid.Column="1" Grid.Row="4" > <Button Name="Add" Content="Add" HorizontalAlignment="Center" VerticalAlignment = "Center" Click="Add\_Click" Margin="10" Width="150" FontSize="20"/> <Button Name="Retrieve" Content="Retrieve" HorizontalAlignment="Center" VerticalAlignment = "Center" Click="Retrieve\_Click" Width="150" Margin="10" FontSize="20"/> </StackPanel> </Grid> |

1. **מבנה נתונים**

|  |
| --- |
| public class Person{ [PrimaryKey, AutoIncrement] public int Id { get; set; } [MaxLength(20)] public string FirstName { get; set; } [MaxLength(20)] public string LastName { get; set; } public DateTime DayOfBirth { get; set; } [SQLite.Net.Attributes.Ignore] public List<Phone> PhoneList { get; set; }} |

|  |
| --- |
| public class Phone { [PrimaryKey, AutoIncrement] public int Id { get; set; } [MaxLength(8)] public string PhoneNumber { get; set; }  public PhoneType PhoneType { get; set; } public int PersonID { get; set; } [SQLite.Net.Attributes.Ignore] public Person Person { get; set; } } public enum PhoneType { Mobile, Work, Fax, Home} |

1. **בניית טבלאות**

תחילה נבדוק שהטבלאות קיימות, במידה ולא נבנה אותם:

|  |
| --- |
| public sealed partial class MainPage : Page{ string path = Path.Combine(Windows.Storage.ApplicationData.Current.LocalFolder.Path,  "db.sqlite");. . . public MainPage() { this.InitializeComponent(); using (var connection = new SQLiteConnection(new  SQLite.Net.Platform.WinRT.SQLitePlatformWinRT(), path)) { if (!TableExists<Person>(connection)) { var c = connection.CreateTable<Person>(); TableMapping info = connection.GetMapping(typeof(Person)); txtPersonDB.Text = info.TableName + " just Created"; } if (!TableExists<Phone>(connection)) { var c = connection.CreateTable<Phone>(); TableMapping info = connection.GetMapping(typeof(Phone)); txtPhoneDB.Text = info.TableName + " just Created"; } }private bool TableExists<T>(SQLiteConnection connection){ var cmd = connection.CreateCommand($"SELECT name FROM sqlite\_master  WHERE type='table' AND name='{typeof(T).Name}'"); return cmd.ExecuteScalar<string>() != null;} |

1. **ComboBox**

באמצעות ה-ComboBox ניתן לבחור סוגים של מספרי טלפון (בית, נייד, פקס, עבודה), סוגי הטלפונים מיוצגים באמצעות enum:

|  |
| --- |
| public enum PhoneType { Mobile, Work, Fax, Home} |

|  |
| --- |
| public sealed partial class MainPage : Page{ . . . List<PhoneType> PhoneTypeList = new List<PhoneType> { PhoneType.Fax,  PhoneType.Home, PhoneType.Mobile, PhoneType.Work }; public MainPage() { . . . cboPhoneType1.ItemsSource = PhoneTypeList; cboPhoneType2.ItemsSource = PhoneTypeList; cboPhoneType3.ItemsSource = PhoneTypeList; }} |

1. **הוספת רשומה**

|  |
| --- |
| private void Add\_Click(object sender, RoutedEventArgs e){ Person person = new Person(); person.LastName = txtLastName.Text; person.FirstName = txtFirstName.Text; person.DayOfBirth = birthDatePicker.Date.DateTime; using (var connection = new SQLiteConnection(new  SQLite.Net.Platform.WinRT.SQLitePlatformWinRT(), path)) { var s = connection.Insert(person); Phone phone; if (txtPhone1.Text != string.Empty) { phone = new Phone(); phone.PersonID = person.Id; phone.PhoneNumber = txtPhone1.Text; phone.PhoneType = (PhoneType)cboPhoneType1.SelectedValue; var p =connection.Insert(phone); } if (txtPhone2.Text != string.Empty) { phone = new Phone(); phone.PersonID = person.Id; phone.PhoneNumber = txtPhone2.Text; phone.PhoneType = (PhoneType)cboPhoneType2.SelectedValue; var p = connection.Insert(phone); } if (txtPhone3.Text != string.Empty) { phone = new Phone(); phone.PersonID = person.Id; phone.PhoneNumber = txtPhone3.Text; phone.PhoneType = (PhoneType)cboPhoneType3.SelectedValue; var p = connection.Insert(phone); }} |

1. **פורמט תאריך**
* מימוש IValueCobverter

|  |
| --- |
| public class StringFormatConverter : IValueConverter{ public object Convert(object value, Type targetType, object  parameter, string language) { var format = parameter as string; if (!String.IsNullOrEmpty(format)) return String.Format(format, value); return value; } public object ConvertBack(object value, Type targetType, object  parameter, string language) { throw new NotImplementedException(); }} |

* הצהרה על מחלקת הפורמט ב-XAML

|  |
| --- |
| <Page.Resources> <local:StringFormatConverter x:Key="StringFormatConverter" /></Page.Resources> |

* הגדרת הפורמט בפקד הרלבנטי

|  |
| --- |
| <TextBlock **Text="{Binding DayOfBirth,**  **Converter={StaticResource StringFormatConverter},**  **ConverterParameter='{}{0:dd/MM/yyy}'}"**  Margin="20,0,20,8" FontSize="16" Foreground="DarkGray"  Opacity="0.8" /> |

1. **מעבר לדף הבא - PersonListPage**

|  |
| --- |
| private void Retrieve\_Click(object sender, RoutedEventArgs e){ Frame.Navigate(typeof(PersonListPage));} |

1. **PersonListPage.xaml**

|  |
| --- |
| <Page.Resources> <local:StringFormatConverter x:Key="StringFormatConverter" /> </Page.Resources> <Grid> <Grid.RowDefinitions> <RowDefinition Height="10\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> </Grid.RowDefinitions> <ListView x:Name="listPersons" Grid.Row="0"  SelectionChanged="listPersons\_SelectionChanged"> <ListView.ItemTemplate> <DataTemplate> <StackPanel> <StackPanel Orientation="Horizontal"> <TextBlock Text="{Binding LastName}"  Margin="20,0,20,8" FontSize="24"  FontStyle="Italic"  FontWeight="SemiBold" Foreground="DarkBlue" /> <TextBlock Text="{Binding FirstName}"  Margin="20,0,20,8" FontSize="24"  FontStyle="Italic"  FontWeight="SemiBold" Foreground="DarkBlue" /> </StackPanel> <TextBlock Text="{Binding DayOfBirth,  Converter={StaticResource StringFormatConverter},  ConverterParameter='{}{0:dd/MM/yyy}'}"  Margin="20,0,20,8" FontSize="16" Foreground="DarkGray"  Opacity="0.8" /> </StackPanel> </DataTemplate> </ListView.ItemTemplate> </ListView> <Button Name="btnReturn" Content="Go Back" Grid.Row="1"  FontSize="20" Click="btnReturn\_Click"  HorizontalAlignment="Center"></Button></Grid> |

1. **הצגת רשימת אנשים**

|  |
| --- |
| public sealed partial class PersonListPage : Page{ string path =  Path.Combine(Windows.Storage.ApplicationData.Current.LocalFolder.Path,  "db.sqlite"); public List<Person> list; public PersonListPage() { this.InitializeComponent(); using (var connection = new SQLiteConnection(new  SQLite.Net.Platform.WinRT.SQLitePlatformWinRT(), path)) { list = connection.Table<Person>().ToList(); listPersons.ItemsSource = list; }} |

1. **בחירה באיש קשר בשביל להציג את פרטיו**

|  |
| --- |
| private void listPersons\_SelectionChanged(object sender,  SelectionChangedEventArgs e){ Person selected\_person = e.AddedItems.First() as Person; using (var connection = new SQLiteConnection(new  SQLite.Net.Platform.WinRT.SQLitePlatformWinRT(), path)) { List<Phone> phone\_list =  connection.Table<Phone>().Where(item=>item.PersonID ==  selected\_person.Id).ToList(); selected\_person.PhoneList = phone\_list; Frame.Navigate(typeof(PersonPage), selected\_person); }} |

1. **מעבר לדף הבא הכולל קבלת פרמטר**

|  |
| --- |
|  Frame.Navigate(typeof(PersonPage), selected\_person); |

1. **חזרה לדף קודם**

|  |
| --- |
| private void btnReturn\_Click(object sender, RoutedEventArgs e){ Frame.GoBack();} |

1. **PersonPage.xaml**

|  |
| --- |
| <Grid> <Grid.RowDefinitions> <RowDefinition Height="\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> <RowDefinition Height="5\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> <RowDefinition Height="\*"></RowDefinition> </Grid.RowDefinitions> <TextBlock Name="txtName" Grid.Row="1" FontSize="25"  Foreground="DarkBlue" Margin="5"></TextBlock> <ListView Name="lstPhones" Grid.Row="2"> <ListView.ItemTemplate> <DataTemplate> <StackPanel Orientation="Horizontal"> <TextBlock Text="{Binding PhoneType}"  Margin="20,0,20,8" FontSize="24"  FontStyle="Italic"  FontWeight="SemiBold" Foreground="DarkBlue" /> <TextBlock Text="-" FontSize="24"  FontStyle="Italic"  FontWeight="SemiBold" Foreground="DarkBlue" /> <TextBlock Text="{Binding PhoneNumber}"  Margin="20,0,20,8" FontSize="24"  FontStyle="Italic"  FontWeight="SemiBold" Foreground="DarkBlue" />  </StackPanel> </DataTemplate> </ListView.ItemTemplate> </ListView> <Button Name="btnReturn" Content="Go Back" Grid.Row="3"  FontSize="20" Click="btnReturn\_Click"  HorizontalAlignment="Center"></Button></Grid> |

1. **הצגת פרטי Person**

|  |
| --- |
| public sealed partial class PersonPage : Page{ public PersonPage() { this.InitializeComponent(); } protected override void OnNavigatedTo(NavigationEventArgs e) { base.OnNavigatedTo(e); var p = (Person)e.Parameter; txtName.Text = p.FirstName + " " + p.LastName; if (p.PhoneList != null && p.PhoneList.Count() > 0) { lstPhones.ItemsSource = p.PhoneList; } } |

1. **חזרה לדף קודם**

|  |
| --- |
| private void btnReturn\_Click(object sender, RoutedEventArgs e){ Frame.GoBack();} |