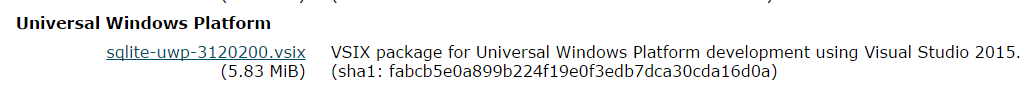
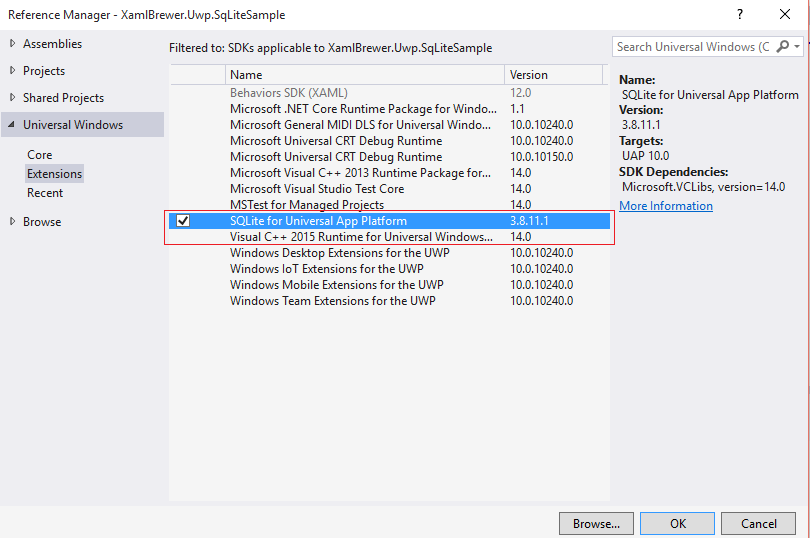
**פרויקט ספר טלפונים**

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.

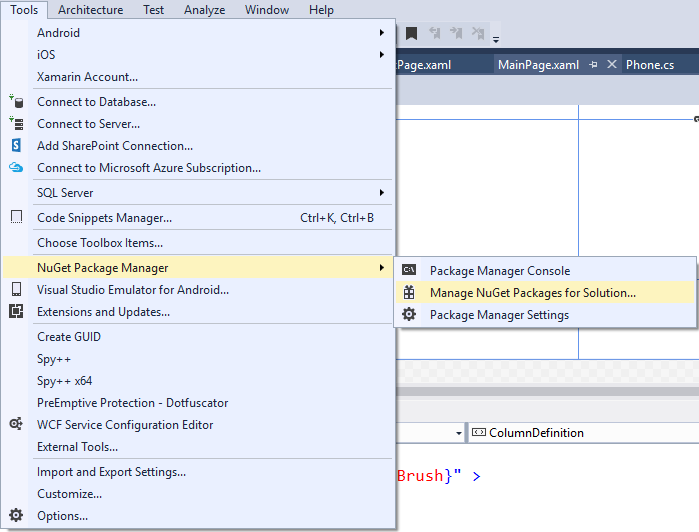
1. **פתיחת פרויקט UWP חדש**

* הוספת ייחוס ל- SQLite for Universal Windows Platform ול- C++ Runtime
* (Universal Windows -> Extensions Reference Manager-> Add Reference->)

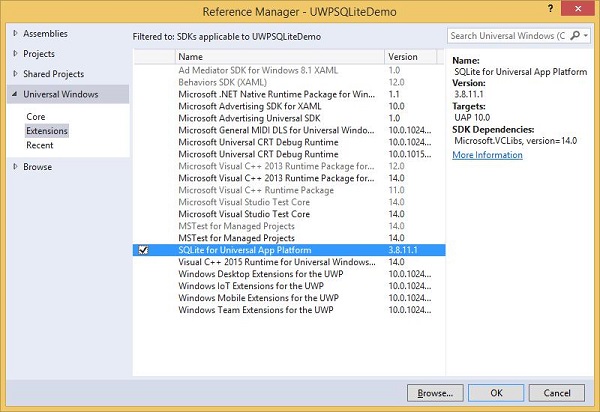


1. בשלב זה האפליקציה יכולה כבר לגשת ל-SQLite אבל זה די מורכב לעבוד ישירות מול המנוע של מסד הנתונים, לכו כדאי להתקין את ה-.NET Wrapper של SQLite על מנת לפשט את העבודה.

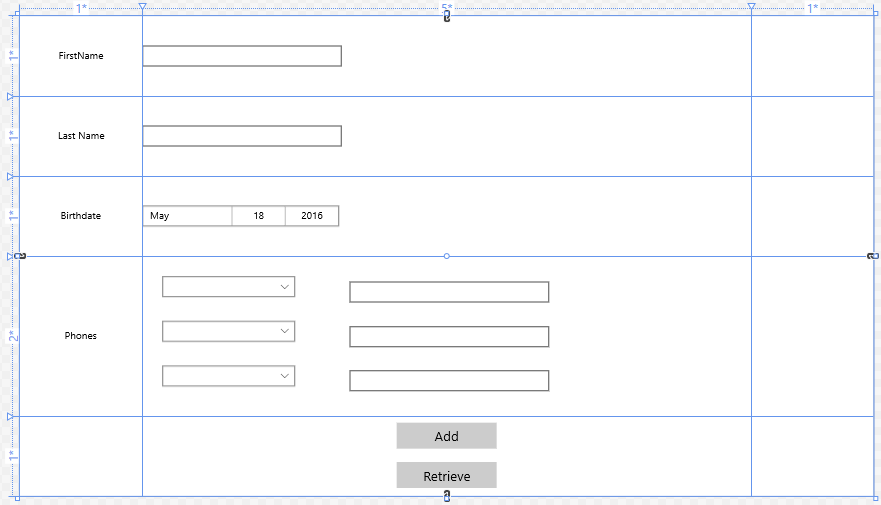
נצרף את ה-Wrapper – SQLite.Net-PCL באמצעות לפרויקט Nuget:



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();  } |