

# Customer Relationship Management (CRM)

- **What is CRM?**

**Customer relationship management (CRM)** is a technology to manage and analyze customer interactions throughout the customer lifecycle, with the goal of improving business relationships with current customers and potential customers.

By :

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# Background

- Mini CRM to Record current Customer information and potential customers
- Record every interaction between Customer and Sales Person
- Ability of show works day of Sales Person
- Ability to query all data with read only access
- As a Manager, track Sales Person activity
- Show reports as a data table and diagram with ability of export in to excel file and print in to
- The goal is simple: Improve business relationships and increase efficiency.

# My Works Day :

- show list of appointments

The image shows two screenshots of the MyWorksDay application. The top screenshot is the login screen, which has a title bar 'Login' and a background image of a padlock. It contains fields for 'User Name' and 'Password', and 'Login' and 'Cancel' buttons. The bottom screenshot is the main window, titled 'MainWindow', showing the user 'Winoto Janputra' and the date 'Monday, October 16, 2017' at '4:32:09 PM'. The left sidebar has icons for 'MyWorksDay', 'AddressBook', 'Opportunities', and 'Reports'. The main area has a 'Make New Appointment' and 'Edit' button, a table of appointments, and a calendar for October 2017.

|                          | Customer Name                                   | Date       | Start Time | End Time |
|--------------------------|---|------------|------------|----------|
| <input type="checkbox"/> | winMiddle oto                                   | 2017/10/14 | 12:00 AM   | 3:00 AM  |
| <input type="checkbox"/> | Active Green & Ross Complete Tire & Auto Centre | 2017/10/26 | 3:00 AM    | 4:00 AM  |
| <input type="checkbox"/> | Active Green & Ross Complete Tire & Auto Centre | 2017/10/18 | 3:00 AM    | 4:00 AM  |
| <input type="checkbox"/> | winoto  | 2017/10/16 | 1:00 AM    | 3:00 AM  |
| <input type="checkbox"/> | Active Green & Ross Complete Tire & Auto Centre | 2017/10/30 | 3:00 PM    | 4:00 PM  |
| <input type="checkbox"/> | hepworth  | 2017/10/17 | 3:21 PM    | 5:21 PM  |

Calendar for October 2017:

| Su | Mo | Tu | We | Th | Fr | Sa |
|----|----|----|----|----|----|----|
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 1  | 2  | 3  | 4  | 5  | 6  | 7  |
| 8  | 9  | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | 1  | 2  | 3  | 4  |

# Address Book

- is using to show all Customers and their information

The image shows two screenshots of the Address Book application. The top screenshot is the main window, titled 'MainWindow', showing the user 'Winoto Janputra' and the date 'Monday, October 16, 2017' at '4:34:19 PM'. The left sidebar has icons for 'MyWorksDay', 'AddressBook', 'Opportunities', and 'Reports'. The main area has a table of customers and a 'Details' tab.

| Customer Name  | Cust No | Status | Created c        |
|----------------|---------|--------|------------------|
| Calcutta       | 2926    | True   | 3/31/2015 12:00  |
| Champions      | 2969    | True   | 10/20/1999 12:00 |
| Equities       | 3006    | True   | 12/11/2015 12:00 |
| Associates     | 3014    | True   | 7/18/2016 12:00  |
| winMiddle oto  | 3048    | True   | 7/18/2016 12:00  |
| wiSenior noto  | 3050    | True   | 7/18/2014 12:00  |
| Test after add | 3459    | True   | 10/16/2017 12:00 |

The bottom screenshot is the 'AddCustomer' dialog, titled 'AddCustomer', showing the user 'Winoto Janputra' and the date 'Monday, October 16, 2017' at '4:34:19 PM'. It has tabs for 'Basic Info', 'Phone Number', and 'Email Address and WebSite'. The 'Basic Info' tab is active, showing fields for 'Company Name', 'First Name', 'Last Name', 'Type' (Customer or Prospect), 'Address' (Street, City, Postal Code), and 'Email Address' (Email, WebSite). The 'Phone Number' tab shows fields for 'Main', 'Fax', and 'Mobile'. The 'Email Address and WebSite' tab shows fields for 'Email' and 'WebSite'. The 'Details' tab is also visible, showing fields for 'First Name', 'Last Name', 'Company Name', 'Address', 'Phone Number', and 'Email Address'.

# Report

- Number of Sales per Customer to excel and PDF
- Sales Per Sales Rep YTD

MainWindow

Winoto Janputra

Monday, October 16, 2017 4:38:55 PM

MyWorksDay

AddressBook

Opportunities

Reports

Number of Sales per customer

Sales per Rep

Report3

Report1

Export Excel Print To PDF

| Customer Name                           | Number of buy |
|---|---------------|
| 2 Leos Food Inc.                        | 1             |
| 3 A Graphics Corp.                      | 9             |
| A & P Convenience                       | 1             |
| A & T Human Resources                   | 1             |
| A B A A Beauty Supply                   | 22            |
| A C V Central Vacuum Corp.              | 1             |
| A D M Milling Co.                       | 8             |
| A E C O M Canada Ltd.                   | 1             |
| A N & Associates                        | 19            |
| Ability Concepts Inc                    | 1             |
| Absolute Furnished Apartments by Mirage | 1             |
| Addison on Erin Mills                   | 1             |
| Adult Education, Mississauga Campus     | 1             |
| Advance Travel                          | 1             |
| AJ Foods                                | 1             |
| Akhara of Champions                     | 1             |
| Alecca Auto Repair Shop                 | 1             |
| All Time Car Rental                     | 1             |
| Allan A. Martin Senior Public School    | 1             |
| Alpha Express                           | 1             |

Winoto Janputra

October 16, 2017 7:40:14 PM

MyWorksDay

AddressBook

Opportunities

Reports

| Name  | Phone Number | Created on             |
|---|--------------|------------------------|
| Active Green & Ross Complete Tire & Auto Centre | 905-858-1820 | 9/3/2015 12:00:00 AM   |
| One World Auto Service Inc.                     | 905-949-6885 | 10/31/2015 12:00:00 AM |
| hepworth  | 514-514-5144 | 2/2/2010 12:00:00 AM   |

Address Book 7Record(s)

SearchCompany

Company Name

First Name

Last Name

Type

Phone

Fax

Street

City

Postal Code

Province

Country

Sales Rep

Last Purchase date before

Search Cancel

Edit Save This Account belong to:

# Opportunities

- See potential customers list with its contact information, conversation
- Add new and Search prospect

# Challenges And Solutions

- Use Frame in Main Window
- Keep user id from login screen to be used in other pages
- Prevent user to close login screen without enter the information
- Send Email and Create Calendar using Outlook (Using Interop.Outlook)

```
Outlook._Application _app;  
  
try  
{  
    _app = (Outlook.Application)Marshal.GetActiveObject("Outlook.Application");  
}  
catch(Exception)  
{  
    _app = new Outlook.Application();  
}  
try  
{  
    Outlook.MailItem mail = (Outlook.MailItem)_app.CreateItem(Outlook.OlItemType.olMailItem);  
    mail.To = _Recipient;  
    mail.Subject = tbSubject.Text;  
    mail.Body = tbBody.Text;  
    mail.Importance = Outlook.OlImportance.olImportanceNormal;  
    ((Outlook._MailItem)mail).Send();  
    db.RecordMessage(tbSubject.Text, tbBody.Text, "Email", _CompanyId, int.Parse(_Sender));  
    tbSubject.Text = string.Empty;  
    tbBody.Text = string.Empty;  
    this.Close();  
}
```

SendEmail

From:

To: winotojan@gmail.com

Subject:

Send Cancel

514-514-5144 winotojan@gmail.com

- Changed the background of the calendar's day

## App.xaml

```
<Style TargetType="CalendarDayButton"
x:Key="CalendarDayButtonStyle">
    <Setter Property="MinWidth" Value="5" />
    <Setter Property="MinHeight" Value="5" />
    <Setter Property="FontSize" Value="10" />
    <Setter Property="HorizontalContentAlignment" Value="Center" />
    <Setter Property="VerticalContentAlignment" Value="Center" />
    <Setter Property="Template">
        <Setter.Value>
            <ControlTemplate TargetType="CalendarDayButton">
                <Grid>
                    <VisualStateManager.VisualStateGroups>
                        <VisualStateGroup Name="CommonStates">
                            <VisualStateGroup.Transitions>
                                <VisualTransition GeneratedDuration="0:0:0.1" />
                            </VisualStateGroup.Transitions>
                            <VisualState Name="Normal" />
                            <VisualState Name="MouseOver" />
                            <VisualState Name="Pressed" />
                            <VisualState Name="Disabled" />
                        </VisualStateGroup>
                        <VisualStateGroup Name="SelectionStates">
                            <VisualStateGroup.Transitions>
                                <VisualTransition
                                    <Storyboard>
                                        <DoubleAnimation
                                            Storyboard.TargetProperty="Background"
                                            To=".75"
                                            Duration="0" />
                                    </Storyboard>
                                </VisualTransition>
                            </VisualStateGroup.Transitions>
                        </VisualStateGroup>
                    </VisualStateManager.VisualStateGroups>
                </Grid>
            </ControlTemplate>
        </Setter.Value>
    </Setter>
</Style>
```

```
public class AppointmentDayConverter : IValueConverter
{
    static Dictionary<DateTime, string> dict = new Dictionary<DateTime, string>();

    public static Dictionary<DateTime, string> Dict
    {
        get { return dict; }
    }

    public static void LoadAppointments(List<DateTime> date)
    {
        foreach (DateTime d in date)
        {
            var key = new DateTime(d.Year, d.Month, d.Day);
            if (!dict.ContainsKey(key))
            {
                dict.Add(key, "New Appointment");
            }
        }
    }

    public object Convert(object value, Type targetType, object parameter, CultureInfo culture)
    {
        string text;
        if (!dict.TryGetValue((DateTime)value, out text))
            text = null;
        return text;
    }

    public object ConvertBack(object value, Type targetType, object parameter, CultureInfo culture)
    {
        return value;
    }
}
```

Make New Appointment

Edit

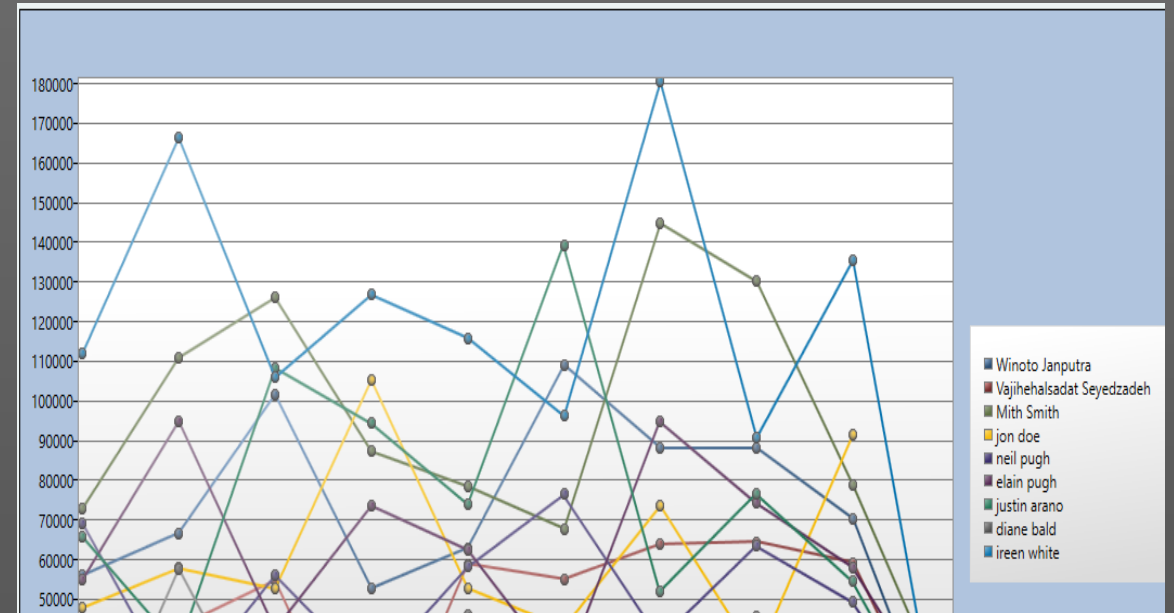
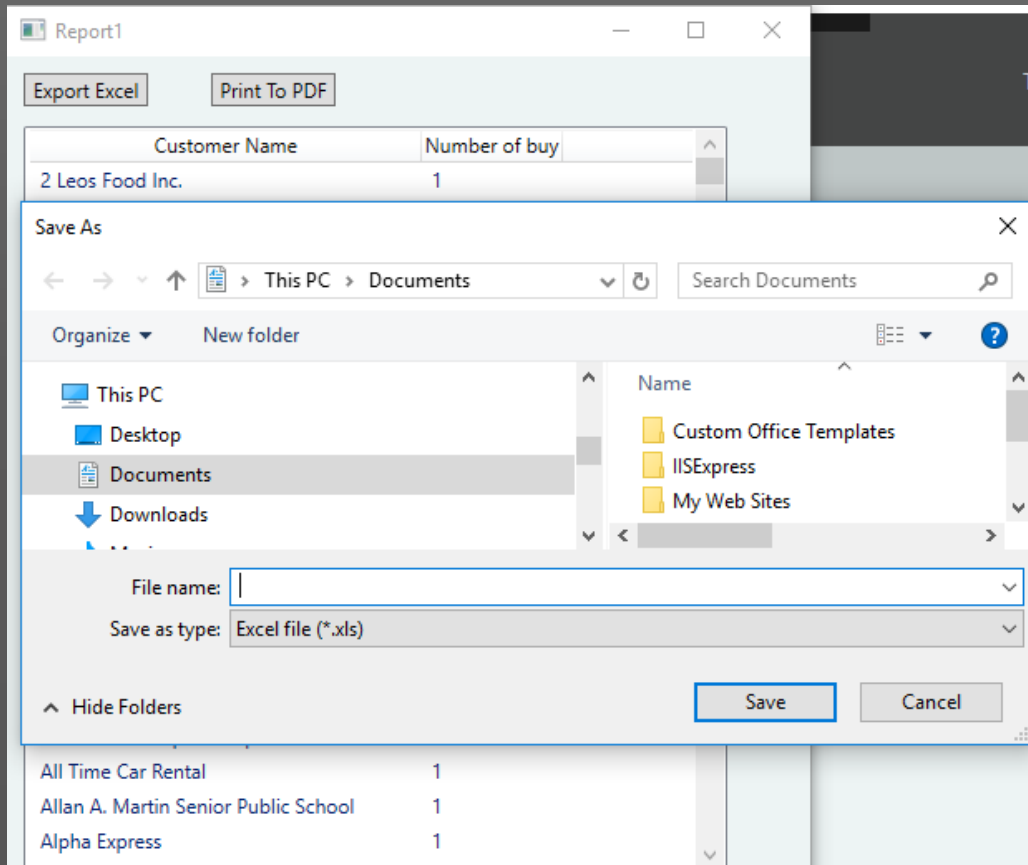
|                          | Customer Name                                   | Date       | Start Time | End Time |
|--------------------------|---|------------|------------|----------|
| <input type="checkbox"/> | winMiddle oto                                   | 2017/10/14 | 12:00 AM   | 3:00 AM  |
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| <input type="checkbox"/> | winoto  | 2017/10/16 | 1:00 AM    | 3:00 AM  |
| <input type="checkbox"/> | Active Green & Ross Complete Tire & Auto Centre | 2017/10/30 | 3:00 PM    | 4:00 PM  |
| <input type="checkbox"/> | hepworth  | 2017/10/17 | 3:21 PM    | 5:21 PM  |
| <input type="checkbox"/> | hepworth  | 2017/10/16 | 9:40 PM    | 10:10 PM |
| <input type="checkbox"/> | Active Green & Ross Complete Tire & Auto Centre | 2017/10/18 | 11:42 PM   | 12:12 AM |
| <input type="checkbox"/> | winoto  | 2017/10/31 | 11:43 PM   | 12:13 AM |

October 2017

| Su | Mo | Tu | We | Th | Fr | Sa |
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Appointment Day Converter.cs

- Export to Excel and Print to PDF (Using DocumentFormatOpenXml and ITextSharp)
- Create Graphic with multiline



```
private void LoadLineChartData()
{
    List<SalesPerRep> list = db.GetSalesYTD();
    list.Sort((a, b) => string.Compare(a.RepId.ToString(), b.RepId.ToString()));
    string FullName = "";
    int id = 0;
    int count = 0;

    foreach (SalesPerRep s in list)
    {
        if (id != s.RepId)
        {
            id = s.RepId;
            List<SalesPerRep> result = (from l in list where l.RepId == id select l).ToList();
            Dictionary<int, decimal> salesrep = new Dictionary<int, decimal>();

            foreach (SalesPerRep r in result)
            {
                salesrep.Add(r.Mth, r.Total);
            }

            ((LineSeries)mcChart.Series[count]).ItemsSource = salesrep;
        }
    }
}
```

- Client side validation
- Sorting without MVVM

```

if (columnName == "ContactLastName")
{
    if (string.IsNullOrEmpty(ContactLastName) || ContactLastName.Length < 2)
        result = "Please enter a Name (2-50 Chars)";
}
if (columnName == "Email")
{
    Regex regex = new Regex(@"^[a-zA-Z0-9!#$%&'*\+\/=?\^_`{|}~]+(\.[a-zA-Z0-9!#$%&'*\+\/=?\^_`{|}~]+)*$");
    if (string.IsNullOrEmpty(Email))
        result = "Please enter an Email";
    else if (!regex.Match(Email).Success)
    {
        result = "Please enter a valid Email";
    }
}

```

#### Search Result: 312 Record(s)

| Customer Name                           | Cust No | Status | Created on             | Last Purch Date        | La |
|---|---------|--------|------------------------|------------------------|----|
| A B A A Beauty Supply                   | 3187    | True   | 10/31/2016 12:00:00 AM | 2017-08-31 12:00:00 AM |    |
| A E C O M Canada Ltd.                   | 2898    | True   | 7/21/2014 12:00:00 AM  | 2017-09-14 12:00:00 AM |    |
| A N & Associates                        | 2976    | True   | 10/31/2015 12:00:00 AM | 2017-06-12 12:00:00 AM |    |
| Absolute Furnished Apartments by Mirage | 3180    | True   | 10/31/2016 12:00:00 AM | 2017-06-17 12:00:00 AM |    |
| Adult Education, Mississauga Campus     | 3028    | True   | 7/18/2016 12:00:00 AM  | 2017-07-17 12:00:00 AM |    |
| Adventist Health                        | 3104    | True   | 8/8/2016 12:00:00 AM   | 2017-01-09 12:00:00 AM |    |

```

void GridViewColumnHeaderClickedHandler(object sender, RoutedEventArgs e)
{
    string header = ((GridViewColumnHeader)e.OriginalSource).Column.Header.ToString();
    List<Customer> list = db.GetAllCustomers();
    if (lastHeaderAddress == header)
    {
        switch (header)
        {
            case "Customer Name":
                list.Sort((x, y) => -1 * x.CompanyName.CompareTo(y.CompanyName));
                break;
            .....
        }
        lastHeaderAddress = string.Empty;
    }
    else
    {
        .....
        switch (header)
        {
            case "Last Purch Amount":
                list.Sort((x, y) => x.Amount.CompareTo(y.Amount));
                break;
            default:
                return;
        }
        lastHeaderAddress = header;
    }
    lvAddress.Items.Clear();
    foreach (Customer c in list)
    {
        lvAddress.Items.Add(c);
    }
}

```



# Future Works

- Localization(Localization is the translation of application resources into localized versions for the specific cultures that the application supports.)
- Installation
- Change the view of the Calendar (show the List of appointment like schedule )

| Day            | Week   | Month  |         |           |                           |                  |          |
|----------------|--------|--------|---------|-----------|---------------------------|------------------|----------|
| ← January 2009 |        |        |         |           |                           |                  |          |
|                | Sunday | Monday | Tuesday | Wednesday | Thursday                  | Friday           | Saturday |
| 28             | 29     | 30     | 31      | Jan 1     | 2                         | 3                |          |
| Dec 28 - Jan 3 |        |        |         |           |                           |                  |          |
| 4              | 5      | 6      | 7       | 8         | 9                         | 10               |          |
| Jan 4 - 10     |        |        |         |           | Multiple Days Appointment |                  |          |
|                |        |        |         |           | All Day Event...          |                  |          |
|                |        |        |         |           | 9:00 AM Recur...          |                  |          |
|                |        |        |         |           | 1:29 PM Create...         |                  |          |
| 11             | 12     | 13     | 14      | 15        | 16                        | 17               |          |
| Jan 11 - 17    |        |        |         |           |                           |                  |          |
| 18             | 19     | 20     | 21      | 22        | 23                        | 24               |          |
| Jan 18 - 24    |        |        |         |           |                           |                  |          |
| 25             | 26     | 27     | 28      | 29        | 30                        | 31               |          |
| Jan 25 - 31    |        |        |         |           |                           | 9:00 AM Recur... |          |
| Feb 1          | 2      | 3      | 4       | 5         | 6                         | 7                |          |
| Feb 1 - 7      |        |        |         |           |                           |                  |          |

## What we learned:

- Concept of Object Oriented Programming
- Using MVVM few part of the project (Separation of logic and presentation)
- Use different type of controls in WPF:
  - Data Display: DataGrid, ListView
  - Date Display and Selection: Calendar, DatePicker and TimePicker
  - Layout: DockPanel, StackPanel
  - Navigation: Frame, TabControl, Page, Window
- Make different Template and style for control

Thank you for your time!