



Warehouse Management System

Team 1:

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Background



Purpose?

To effectively manage inventory.

Why?

- Easier to track and control stock.
- Save on extra costs

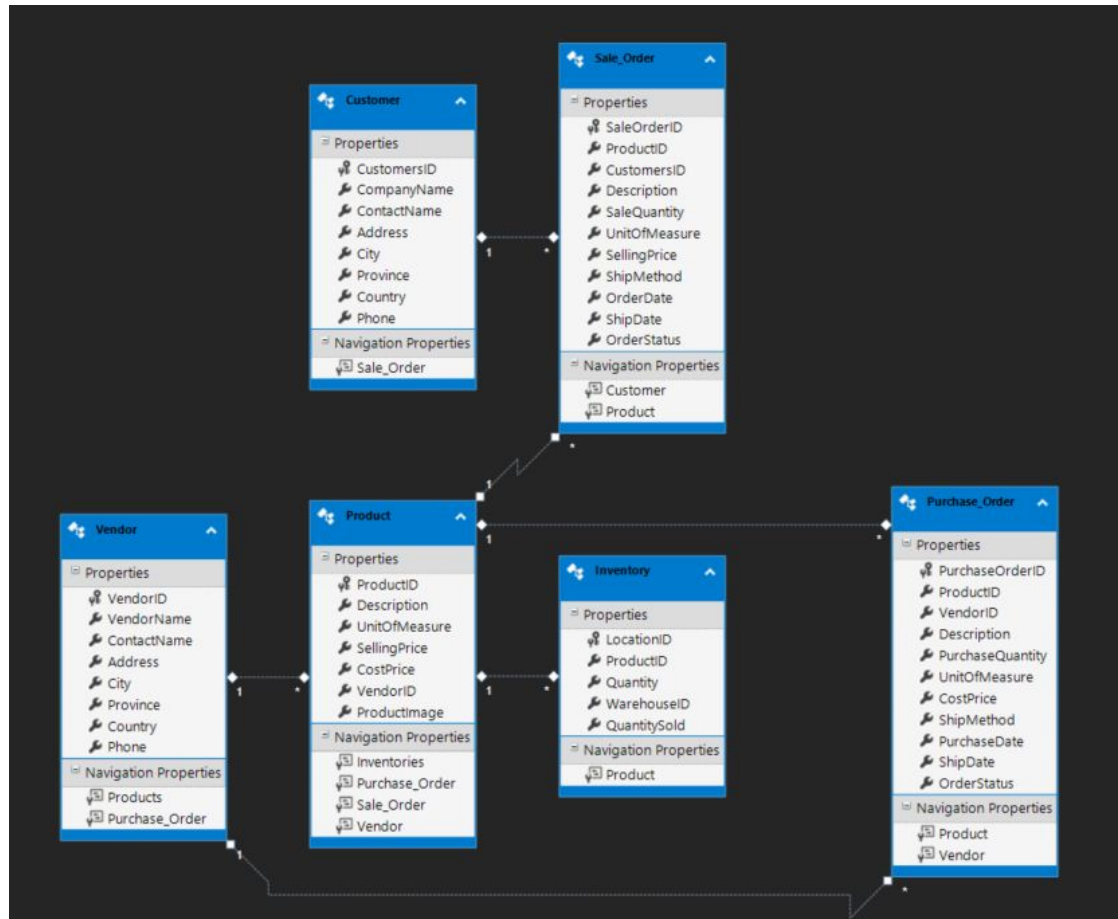
High Level View



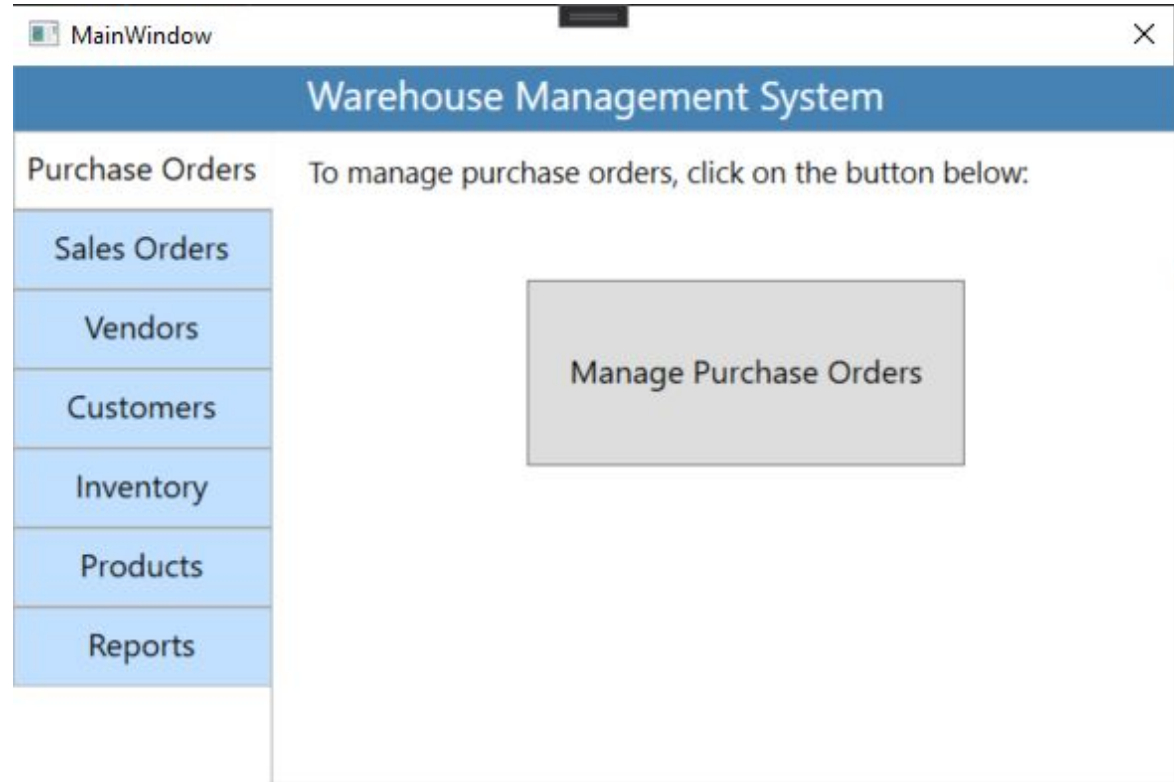
A warehouse management system must be able to effectively manage inventory. This requires the following tables:

- Products table
- Inventory table
- Customer table
- Vendor table
- Sales Orders table
- Purchase Orders table

Database



Solution Overview: Main Window



Challenges and solutions

LINQ for filtering products by vendor

Select a vendor:							
Vendor Id	Vendor Name	Contact Name	Address	City	Province	Country	Phone
1	Air Canada	Maryse Dufresne	9545 Elliot	Dorval	QC	Canada	458-958-7777
2	Nike	James Madden	987 Morgan	Beaconsfield	QC	Canada	333-333-3333
4	Marriott	Mark Dufort	800 Leigh-Capriel	Montreal	QC	Canada	555-555-5555
9	Lukulemon	Alex Ouellet	13445 Harry	Saint-Laurent	QC	Canada	789-854-5696
10	Urban Stores	Mika Zibanda	78 3rd Avenue	LaSalle	QC	Canada	321-456-8745
11	Prada	Mario Bellucci	989 De La Montagne	Montreal	QC	Canada	963-852-1233
12	Corsair	Max Beaudoin	774 Gillis	Dorval	QC	Canada	777-888-9998
13	Samsung	Mike Myers	33 De La Cordaire	Laval	QC	Canada	555-666-6558
14	Acer	Joe Thornton	99 Braille	Saint-Laurent	QC	Canada	444-777-8744
15	SwissArmy	Oliver Haddid	321 Duluth	Saint-Laurent	QC	Canada	954-785-4444
16	SweetLife	Daniel Daou	456 Young	Beaconsfield	QC	Canada	777-888-4111
17	Flamingo	Martin Lesage	8787 Saint-Martin	Laval	QC	Canada	845-321-4566

Select a product:					
Product Id	Description	UoM	Selling Price	Cost Price	Vendor ID
3	Hammer	Kg	22.0000	33.0000	2
25	Shirt	Each	14.0000	12.9900	2
26	Dress	Each	19.0000	12.9900	2

106

```
lvProducts.ItemsSource = (from p in ctx.Products select p).Where(s => s.VendorID ==  
currSelVendor.VendorID).ToList<Product>();
```

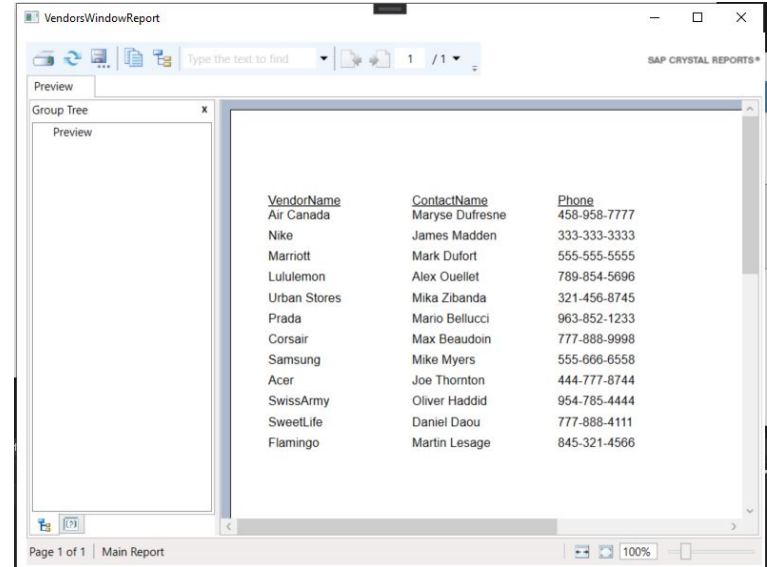
Solution Overview: Reports

ReportsWindow

Warehouse Management System

Report available:

- Vendors report ...
- Customers report ...



VendorsWindowReport

Preview

Group Tree

Preview

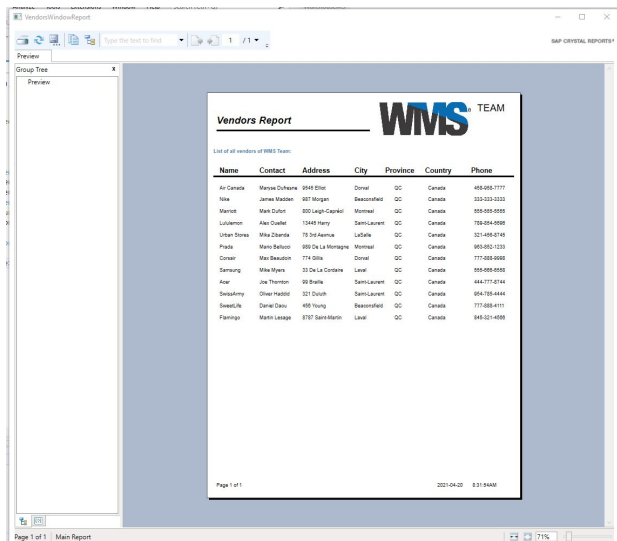
<u>VendorName</u>	<u>ContactName</u>	<u>Phone</u>
Air Canada	Maryse Dufresne	458-958-7777
Nike	James Madden	333-333-3333
Marriott	Mark Dufort	555-555-5555
Lululemon	Alex Ouellet	789-854-5696
Urban Stores	Mika Zibanda	321-456-8745
Prada	Mario Bellucci	963-852-1233
Corsair	Max Beaudoin	777-888-9998
Samsung	Mike Myers	555-666-6558
Acer	Joe Thornton	444-777-8744
SwissArmy	Oliver Haddid	954-785-4444
SweetLife	Daniel Daou	777-888-4111
Flamingo	Martin Lesage	845-321-4566

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SAP CRYSTAL REPORTS®

Challenges and solutions

Crystal Report connection to VS



Vendors Report **WMS TEAM**

List of all vendors of WMS Team

Name	Contact	Address	City	Province	Country	Phone
Air Canada	Wesley Chubb	9545 Elgin	Ottawa	QC	Canada	468-065-7177
Nike	James Watson	957 Morgan	Bassettfield	QC	Canada	333-333-3333
Marriott	Shawn Dufort	837 Legit-Capitol	Montréal	QC	Canada	955-855-8585
Lukemore	Shawn Dufort	15447 Terry	Saint-Laurent	QC	Canada	788-555-6666
Urban Stores	Wika Dufort	78 3rd Avenue	LaSalle	QC	Canada	321-456-8745
Prada	Wesley Chubb	955 De La Montagne	Montréal	QC	Canada	855-855-1233
Conair	Wesley Chubb	774 St-J	Ottawa	QC	Canada	777-888-9999
Samsung	Wesley Chubb	22 De La Concorde	LaSalle	QC	Canada	855-855-5555
Acer	Joe Thornton	955 St-J	Saint-Laurent	QC	Canada	444-777-5734
SwissArmy	Oliver Maddox	521 Dufort	Saint-Laurent	QC	Canada	954-788-4444
SwissLife	Daniel Davis	455 Terry	Bassettfield	QC	Canada	777-888-4111
PageOne	Wesley Chubb	8787 Saint-Henri	LaSalle	QC	Canada	845-555-1688


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```
1 reference
private void Window_Loaded(object sender, RoutedEventArgs e)
{
    try
    {
        DataSetsFolder.VendorsDataSet newSet = new DataSetsFolder.VendorsDataSet();
        DataSetsFolder.VendorsDataSetTableAdapters.VendorTableAdapter da = new DataSetsFolder.VendorsDataSetTableAdapters.VendorTableAdapter();
        da.Fill(newSet.Vendor);
        crystalReports.VendorReport report = new crystalReports.VendorReport();
        report.SetDataSource(newSet);
        crViewer.ViewerCore.ReportSource = report;
    }
    catch (SystemException ex)
    {
        MessageBox.Show(ex.Message, "Database operation failed: Could not generate vendor data", MessageBoxButton.OK,
            MessageBoxImage.Warning);
    }
}
```


Solution Overview: Inventories

Inventory

 Hot Reload

Location Id	Product Id	Quantity	Warehouse Id	Quantity Sold
4	1	5	2	1
7	4	12	5	67
8	4	18	1	9
11	27	100	1	25
12	28	1	1	0
13	12	5	1	9
14	12	5	2	0

Location Id:

...

Product Id:

12

Quantity:

5

Warehouse Id:

2

Quantity Sold:

0

Update

Delete

Cancel

Save Selected

Solution Overview: Products

Products

Product Id	Description	UoM	Selling Price	Cost Price	Vendor ID
1	Desk	Each	200.00	100.00	1
2	Computer	Each	1000.00	500.00	1
3	Hammer	Kg	22.00	33.00	2
4	Wallpaper	Litre	1.00	0.50	1
10	Carpet	Each	55.00	22.50	1
11	Bicycle1	Each	500.00	250.00	1
12	Bicycle	Each	500.00	250.00	1
13	Bicycle	Each	500.00	249.00	1
16	Regular bicycle	Each	800.00	400.00	4
17	sport bicycle	Each	2.00	1.00	1
20	Table	Each	17.99	14.99	1
25	Shirt	Each	14.00	12.99	2
26	Dress	Each	19.00	12.99	2
27	Towel	Each	200.00	100.00	1
28	Car	Each	40000.00	20000.00	1
29	Another car	Each	0.00	0.00	1
30	Bus	Each	10.00	7.00	1

Product Id: ...

Description:

Unit Of Mesure:

Selling Price:

Cost Price:

Vendor Id:

Image:

WizardWindow

Welcome to the product creation Wizard

This Wizard will walk you though how to create a new product.

WizardWindow

Page 1
This is the first page in the process.

Product Description:
Please enter a product Description between 2 and 100 characters.

Unit Of Mesure:
Please select the product's Unit of Measure.

WizardWindow

Page 2
This is the second page in the process

Cost Price:
Please enter the cost price as a decimal number.


Selling Price:
Please enter the selling price as a decimal number.

WizardWindow

Last Page
This is the last page in the process

Vendor ID:
Please enter a Vendor ID as a whole number.

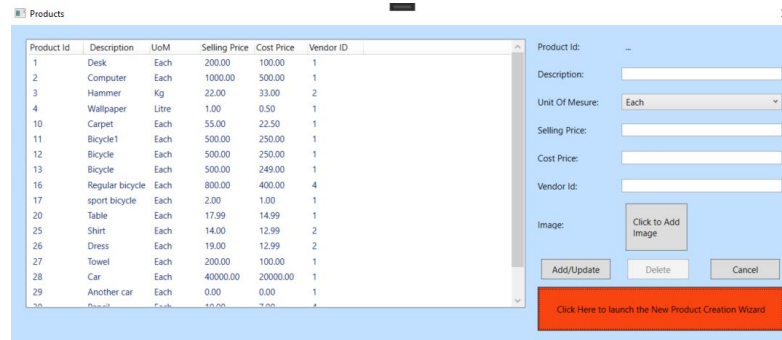
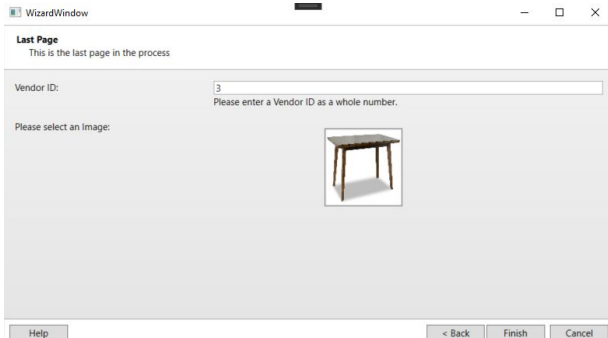
Please select an image:



Challenges and solutions

Wizard:

- Lack of visibility while designing the wizard pages.
- Lack of options for event handlers.
- Product list refresh.
- Last page: enabling finish button after text & image (BLOB) entered.





What we learned

Created a method to piggyback on an event handler:

```
public bool buttonImageWasClicked = false;
1 reference
private void btImage_Click(object sender, RoutedEventArgs e)
{
    buttonImageWasClicked = true;
}
```

Added functionality to add to the database, but not in the window where the data was captured!

```
1 reference
private void Wizard_Click(object sender, RoutedEventArgs e)
{
    var win = new WizardWindow();
    win.ShowDialog();
    if (win.LastPage.CanFinish == true)
    {
        lvProducts.ItemsSource = (from p in ctx.Products select p).ToList<Product>();
        lvProducts.Items.Refresh();
        MessageBox.Show("Success! Your product has been created.");
    }
}
```



What we learned

Make sure you handle
SystemExceptions like this,
or the program will crash!

```
try
{
    ctx.Inventories.Remove(currSelItem); // SystemException
    ctx.SaveChanges();
    lvInventory.ItemsSource = (from I in ctx.Inventories select I).ToList<Inventory>();
}
catch (SystemException ex)
{
    MessageBox.Show(ex.Message, "Item cannot be removed if it is on an order", MessageBoxButton.YesNo,
        MessageBoxImage.Warning);
}
```

Solution Overview: Customers



Customer

Customer Id	Company Name	Contact Name	Address	City	Province	Country	Phone
1	Richters	John Adams	120 Kings Ave	Montreal	QC	Canada	514-222-9011
2	UniqueCode	Thomas Andrew	190 St Ottawa	Montreal	QC	Canada	514-222-3344
4	Night Runners	John McLaurent	120 Kings Ave	Montreal	QC	Canada	514-222-9014
23	Anna	Johnathon Ivory	79 Ave Sea	Burlington	QC	Canada	712-999-1290

Customer Id: --

Company Name:

Contact Name:

Phone:

Address:

City:

Province/State:

Country:

Customer

Customer Id	Company Name	Contact Name	Address	City	Province	Country	Phone
1	Richters	John Adams	120 Kings Ave	Montreal	QC	Canada	514-222-9011
2	UniqueCode	Thomas Andrew	190 St Ottawa	Montreal	QC	Canada	514-222-3344
4	Night Runners	John McLaurent	120 Kings Ave	Montreal	QC	Canada	514-222-9014
23	Anna	Johnathon Ivory	79 Ave Sea	Burlington	QC	Canada	712-999-1290

Customer Id: 4

Company Name:

Contact Name:

Phone:


Address:

City:

Province/State:

Country:

Validation error

 Company name must be between 1 and 45 characters
Contact name must be between 1 and 45 characters
Phone format error. ie 555-555-5555

Solution Overview: Sale Orders

Sales Order

Order Id	Order Date	Product Id	UOM	Quantity	Total Selling Price	Shipping Date	Shipping Method	Customer Id
51	4/17/2021	10	Each	6	330.0000	4/17/2021	Express	4
52	4/18/2021	4	Litre	15	15.0000	4/30/2021	Express	2
53	4/18/2021	13	Each	17	8500.0000	4/29/2021	Express	2
54	4/19/2021	25	Each	5	70.0000	4/27/2021	Express	2

Add Order

Delete Order

Cancel

Save Selected

Add/Edit Sale Orders

Select Customer:

Company Name	Contact Name	Address	City	Province	Country	Phone
Richters	John Adams	120 Kings Ave	Montreal	QC	Canada	514-222-9011
UniqueCode	Thomas Andrew	190 St Ottawa	Montreal	QC	Canada	514-222-3344
Night Runners	John McLaurent	120 Kings Ave	Montreal	QC	Canada	514-222-9014
Anna	Johnathon Ivory	79 Ave Sea	Burlington	QC	Canada	712-999-1290

Select Product:

Product Id	Description	UoM	Unit Selling Price	Vendor ID
3	Hammer	Kg	22.0000	2
4	Wallpaper	Litre	1.0000	1
10	Carpet	Each	55.0000	1
11	Bicycle1	Each	500.0000	1
12	Bicycle	Each	500.0000	1
13	Bicycle	Each	500.0000	1
16	Regular bicycle	Each	800.0000	4
17	sport bicycle	Each	2.0000	1
20	Table	Each	17.9900	1
25	Shirt	Each	14.0000	2
26	Dress	Each	19.0000	2
27	Towel	Each	200.0000	1
28	Car	Each	40000.0000	1
29	Another car	Each	0.0000	1
30	Pencil	Each	10.0000	4
31	Car	Each	10.0000	4

Order date:

4/19/2021

Shipping Date:

5/12/2021

Order Id

--

Shipping Method:

Standard

Quantity of Product:

12

Each

Order Status:

Pending

Total Price:

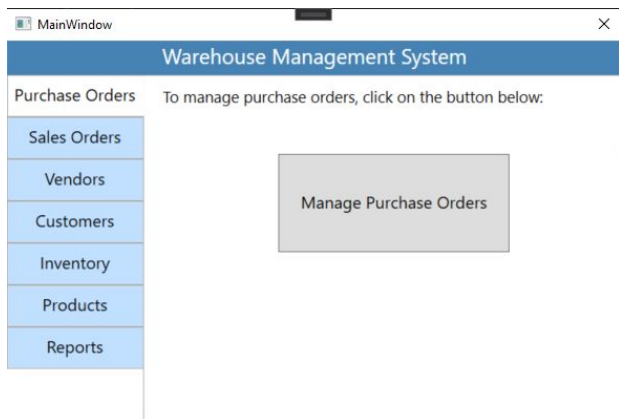
9600.0000

Place Order

Cancel

Challenges and solutions

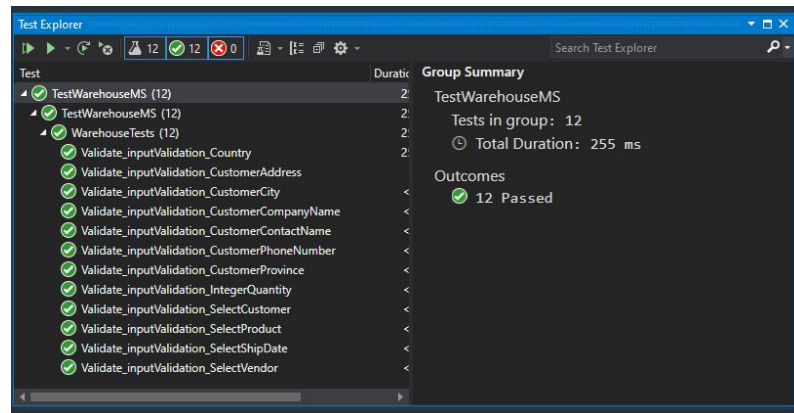
Tab Control



```
24 <Grid Grid.Row="1">
25     <TabControl TabStripPlacement="Left" >
26         <TabItem Header="Purchase Orders" FontSize="16" Margin="-2,-2,0.2,2" Height="40"
27             Background="#C1E0FF">
28             <Label Margin="6,0,0,-0.2" >
29                 <Label.Content>
30                     <StackPanel Height="223" Width="450">
31                         <Label Content="To manage purchase orders, click on the button below:"
32                             FontSize="15"/>
33                         <Label Height="39"></Label>
34                         <Button Content="Manage Purchase Orders" Click="Purchases_Click"
35                             VerticalAlignment="Center" HorizontalAlignment="Center" Padding="10, 30"
36                             Width="220" Height="94"/>
37                     </StackPanel>
38                 </Label.Content>
39             </Label>
40         </TabItem>
41         <TabItem Header="Sales Orders" FontSize="16" Margin="-2,-2,0.2,2" Height="40"
42             Background="#C1E0FF">
43             <Label Margin="4,0,0,-0.2" >
44                 <Label.Content>
45                     <StackPanel Height="223" Width="450">
46                         <Label Content="To manage sales orders, click on the button below:"
47                             FontSize="15"/>
```


Challenges and solutions

Unit Testing



```
127 public bool IsProductSelected(Product product)
128 {
129     if (product != null)
130     {
131         return true;
132     }
133     else
134     {
135         return false;
136     }
137 }
```

```
117 [TestMethod]
118 public void Validate_inputValidation_SelectProduct()
119 {
120     // Arrange
121     var saleOrder = new AllValidations();
122     Product product = null;
123     // Act
124     saleOrder.IsProductSelected(product);
125     // Assert
126     Assert.IsFalse(saleOrder.IsProductSelected(product));
127 }
```

Challenges and solutions

Unit Testing

```
7 namespace WarehouseMS
8 {
9     15 references
10     class Globals
11     {
12         public static AllValidations Validator = new AllValidations();
13     }
14 }
```

```
71 if (!Globals.Validator.IsProductSelected(currSelProduct))
72 {
73     errorsList.Add("Product must be selected");
74 }
```

What we learned

Order date:

Setting order date to the current day and disabling

Order date:

4/19/2021

15

6

```
xmlns:sys="clr-namespace:System;assembly=mscorlib"
```

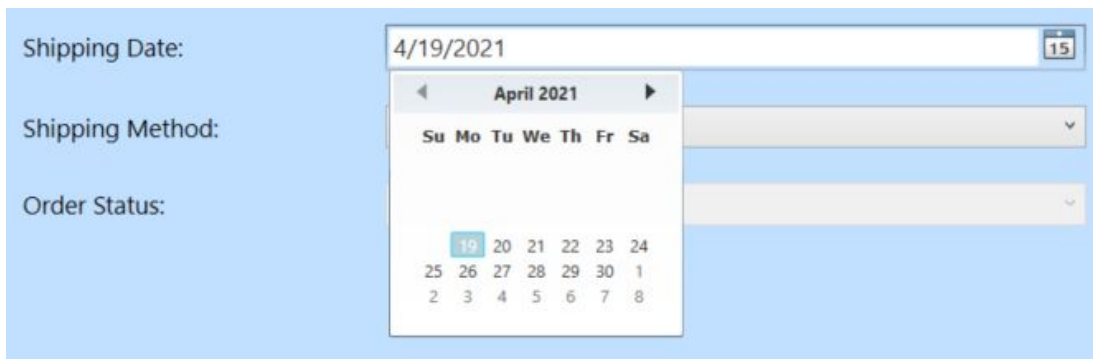
55

```
<DatePicker Name="dpOrderDateSales" SelectedDate="{x:Static sys:DateTime.Now}" IsEnabled="False"  
Grid.Column="1" Grid.Row="0" VerticalAlignment="Center" Margin="0,7.6,19.8,7" ></DatePicker>
```

What we learned

Shipping date:

- Disabling past days for shipping date
- Setting default to today



The screenshot shows a light blue form with three labels: "Shipping Date:", "Shipping Method:", and "Order Status:". The "Shipping Date:" field is a text box containing "4/19/2021" with a calendar icon on the right. A calendar popup is open, showing "April 2021". The calendar has a header with navigation arrows and the month/year. The days of the week are listed as "Su Mo Tu We Th Fr Sa". The dates are arranged in a grid. The date "19" is highlighted in blue. The "Shipping Method:" and "Order Status:" fields are dropdown menus, both showing a downward arrow.

6

```
xmlns:sys="clr-namespace:System;assembly=mscorlib"
```

65

```
<DatePicker Name="dpShipDateSales" DisplayDateStart="{x:Static sys:DateTime.Now}" Grid.Column="3"
Grid.Row="0" VerticalAlignment="Center" Margin="0,7.6,19.8,7" SelectedDate="{x:Static
sys:DateTime.Now}"></DatePicker>
```

Libraries

For wizard:



Extended.Wpf.Toolkit by Xceed

v4.0.2

Extended WPF Toolkit is the number one collection of WPF controls for creating next-gen Windows apps. v4.0.2 provides 22 bug fixes and improvements.

For Crystal report:



SAP Crystal Reports, developer version for Microsof...

Create CR Basic reports within the familiarity of your Visual Studio development environment – for free

MS VS Installer

Manage Extensions

The screenshot displays the 'Manage Extensions' window in Visual Studio. The interface is divided into three main sections:

- Left Panel (Installed Extensions):** A list of installed extensions including 'All', 'Controls', 'Templates', 'SDKs', 'Tools', 'Online', 'Updates (4)', and 'Roaming Extension Manager'.
- Center Panel (Available Extensions):** A list of available extensions with their icons and descriptions. The extensions shown are:
 - Microsoft Visual Studio Installer Projects:** This official Microsoft extension provides support for Visual Studio Installer Projects in Visual Studio. (Buttons: Enable, Uninstall)
 - ML.NET Model Builder (Preview):** Simple UI tool to build custom machine learning models.
 - Visual Studio IntelliCode:** AI-assisted developer productivity.
 - Live Share:** Real-time collaborative development from the comfort of your favorite tools.
 - Cloud Explorer for VS 2019 Preview:** View your cloud resources, inspect their properties, and perform key developer actions from within Visual Studio.
 - Web Live Preview (Preview):** For ASP.NET Framework projects you can view the source code that generated the selected HTML element. After the source is modified, t...
 - Microsoft Library Manager:** Install client-side libraries easily to any web project.
 - NuGetRecommender [Preview]:** NuGetRecommender VSIX. NuGet Package Manager UI in Visual Studio can offer more relevant...
- Right Panel (Details for Microsoft Visual Studio Installer Projects):** A detailed view of the selected extension, showing:
 - Created By:** Microsoft
 - Date Installed:** 4/18/2021
 - Version:** 0.9.9
 - Automatically update this extension:** ☒
 - Restart Microsoft Visual Studio as administrator to change this setting.** (Information icon)
 - Scheduled For Install:** None
 - Scheduled For Update:** None
 - Scheduled For Uninstall:** None

At the bottom of the window, there is a link: [Change your settings for Extensions](#). A 'Close' button is located in the bottom right corner.

Future Work



Charts for the list views (e.g. orders, products)

Lazy loading

User Control (Username and password to login)

Validation on each page in Wizard.

Summary



Creating database in Azure and connecting to VS & using DB-first method

Programming in c# Entity Framework & creating WPF with event handlers

MS Unit Testing, BLOB, Tab control, StackPanel, Save to CSV

Using Wizard from Extended WPF Toolkit library

Using Crystal Report library to generate reports

Creating MS VS Installer