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Generate a Report using Crystal Reports in Visual Studio 2010

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Since a long time, Visual Basic and Visual Studio have Crystal report with it. People are saying that since 1993. But in VS2010, they excluded Crystal reports. Yes, what you just heard is right, Crystal Report has been dropped from Visual Studio 2010. But don't worry, it is available as a separate download from the SAP web site. These are the things that I found from the internet.

> '*It turns out that Crystal Reports for Visual Studio 2010 will be released separately, instead of included with the product and Most importantly, Crystal Reports for Visual Studio 2010 will continue to be free, with no registration required.*'

Download Crystal report from this link, or just directly paste the link below to your address bar and it will ask to save an EXE file.

http://downloads.businessobjects.com/akdlm/cr4vs2010/CRforVS_13_0.exe

Introduction

I was searching the internet for Crystal reports in 2010 and I found in 2005, but was not able to find any particular tutorials for 2010. So I thought, let me take a chance to write it for some beginners like me who have not worked on Crystal Reports earlier.

In this article, I will show you simple report creation process with screenshots. A picture is worth more than a thousand words, so I always believe in an article with screenshots.

Let's start by creating a new website in VS2010. See the following screen:

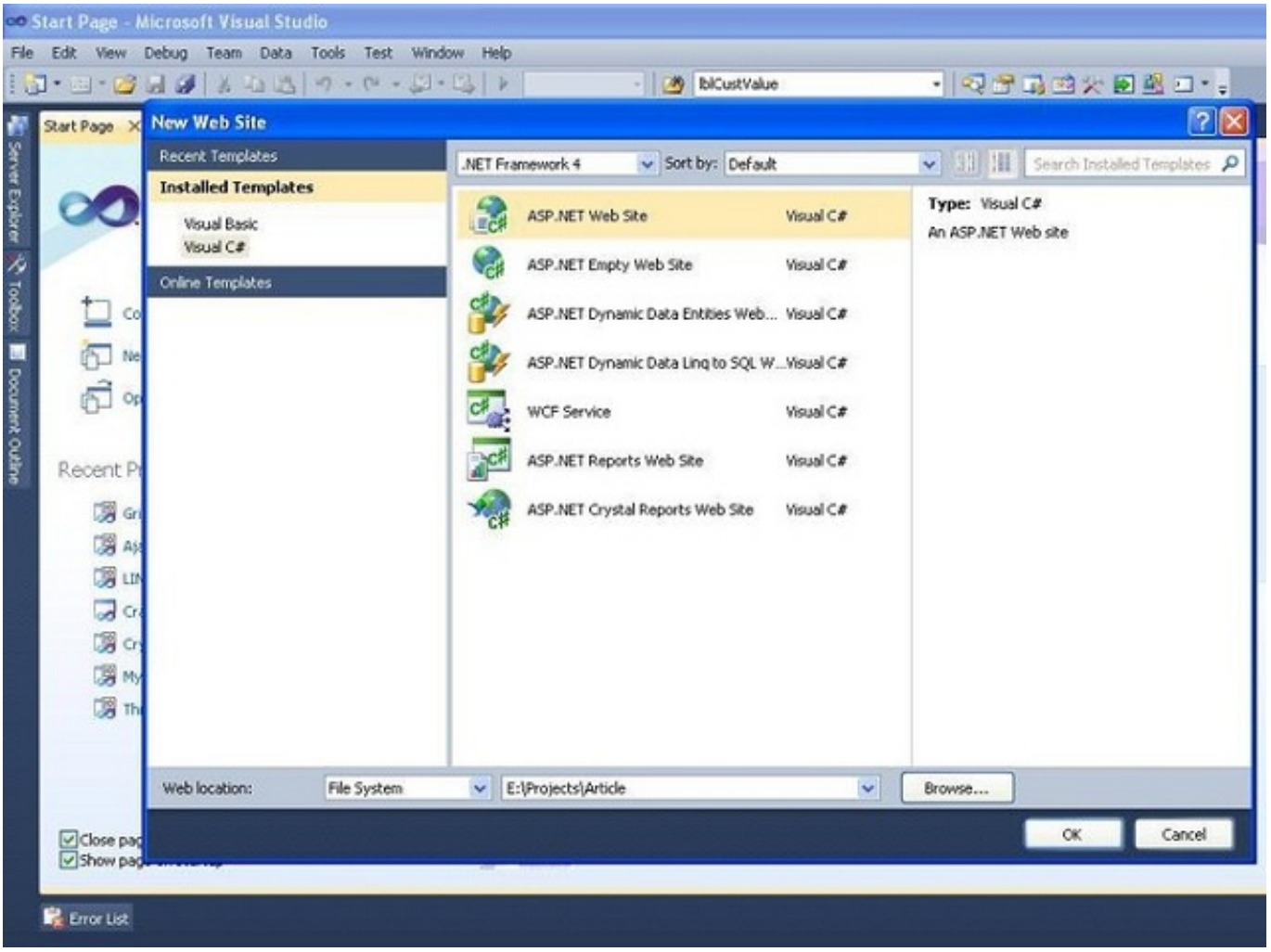
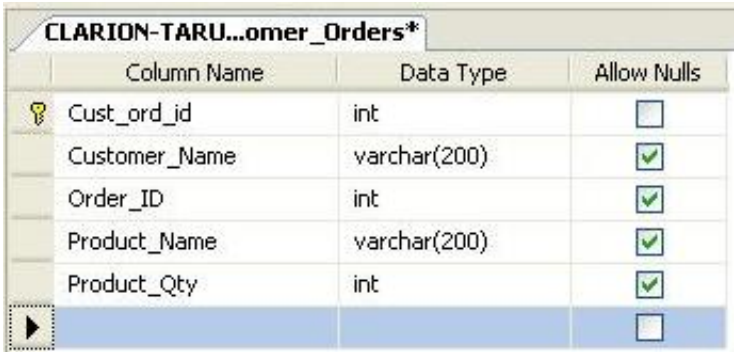


Figure 1

As per figure 1, create a new website in VS2010 and name it as per your choice. Now let me show you the database table structure.



CLARION-TARU...omer_Orders*

Column Name	Data Type	Allow Nulls
Cust_ord_id	int	☐
Customer_Name	varchar(200)	☑
Order_ID	int	☑
Product_Name	varchar(200)	☑
Product_Qty	int	☑
		☐

Figure 2

The above figure shows the db table structure. And the below figure (**Figure 3)** will show you some sample data in the table:

CLARION-TARU...stomer_Orders | CLARION-TARU...omer_Orders*

Cust_ord_id	Customer_Name	Order_ID	Product_Name	Product_Qty
1	Customer 1	1	Product 1	4
2	Customer 1	1	Product 2	5
3	Customer 1	2	Product 3	5
4	Customer 1	2	Product 4	3
5	Customer 1	2	Product 5	6
6	Customer 2	3	Product 1	2
7	Customer 2	3	Product 2	3
8	Customer 2	3	Product 3	5
9	Customer 2	4	Product 4	3
10	Customer 2	4	Product 5	8
11	Customer 3	5	Product 1	9
12	Customer 3	5	Product 2	4
13	Customer 3	6	Product 3	7

Figure 3

If you want to run this sample project directly, then you can download the database script from the link at the top.

Now we have to create an xsd file as a blank data source as we are going to use strong data type. Here I will divide this tutorial in 5 sub sections as mentioned below:

- *Simple report using Crystal Reporting Tool*
- *Group report*
- *Chart report*
- *Sub report*
- *Cross tab report*

Simple Report using Crystal Report

The below figure shows you the process to create an XSD file.

For adding an XSD file, click on Solution Explorer -> Right Click on Project -> click on Add new Item and then it will show you the below screen.

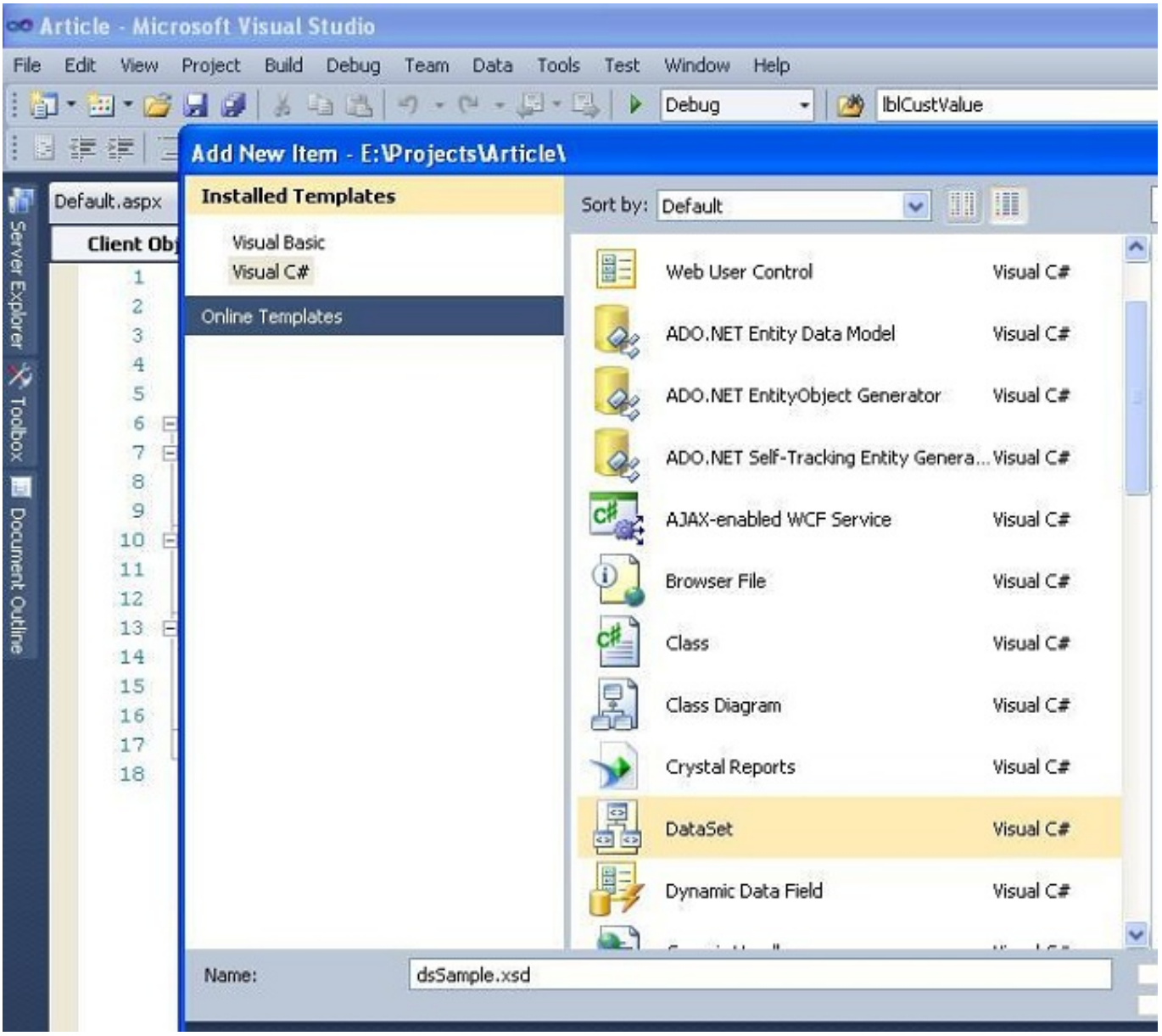


Figure 4

Click on the ok button, so it will ask for confirmation to put that file in *App_Code* folder. Just click ok and that file will open in the screen as a blank screen.

Now we will add one blank datatable to that XSDfile. Just right click on the file and select **Add -> Datatable**. It will add one `DataTable1` to the screen. Figure 5 shows how to add datatable to XSD file.

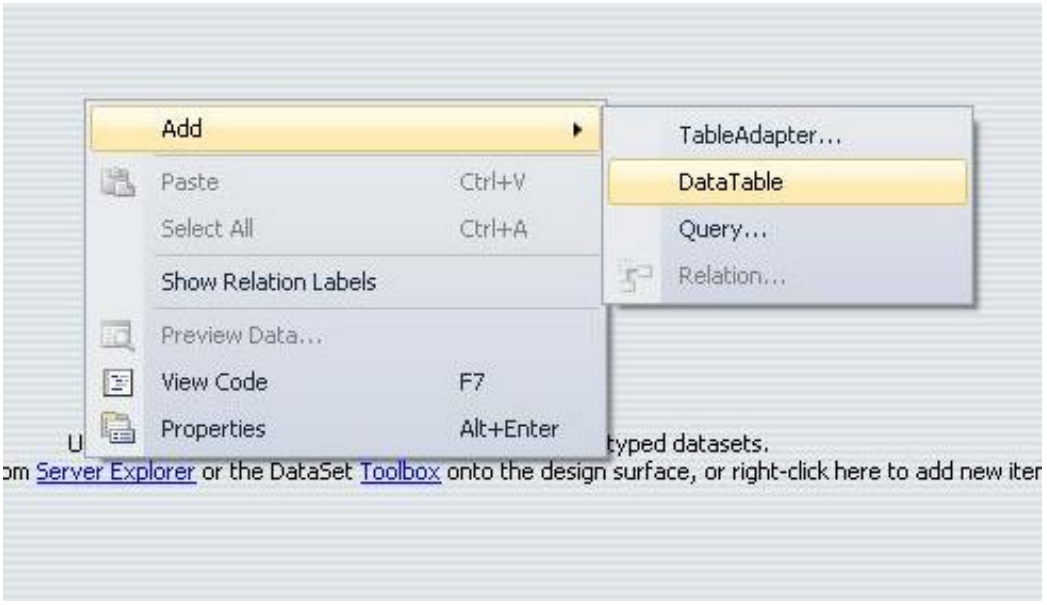


Figure 5

Now `datatable1` is added to XSD file. Now we will add data column to the `datatable1` as per figure 6. Remember whatever fields (columns) we add here, it will be available to show on the report. So add column which you want to display in your reports one by one here.

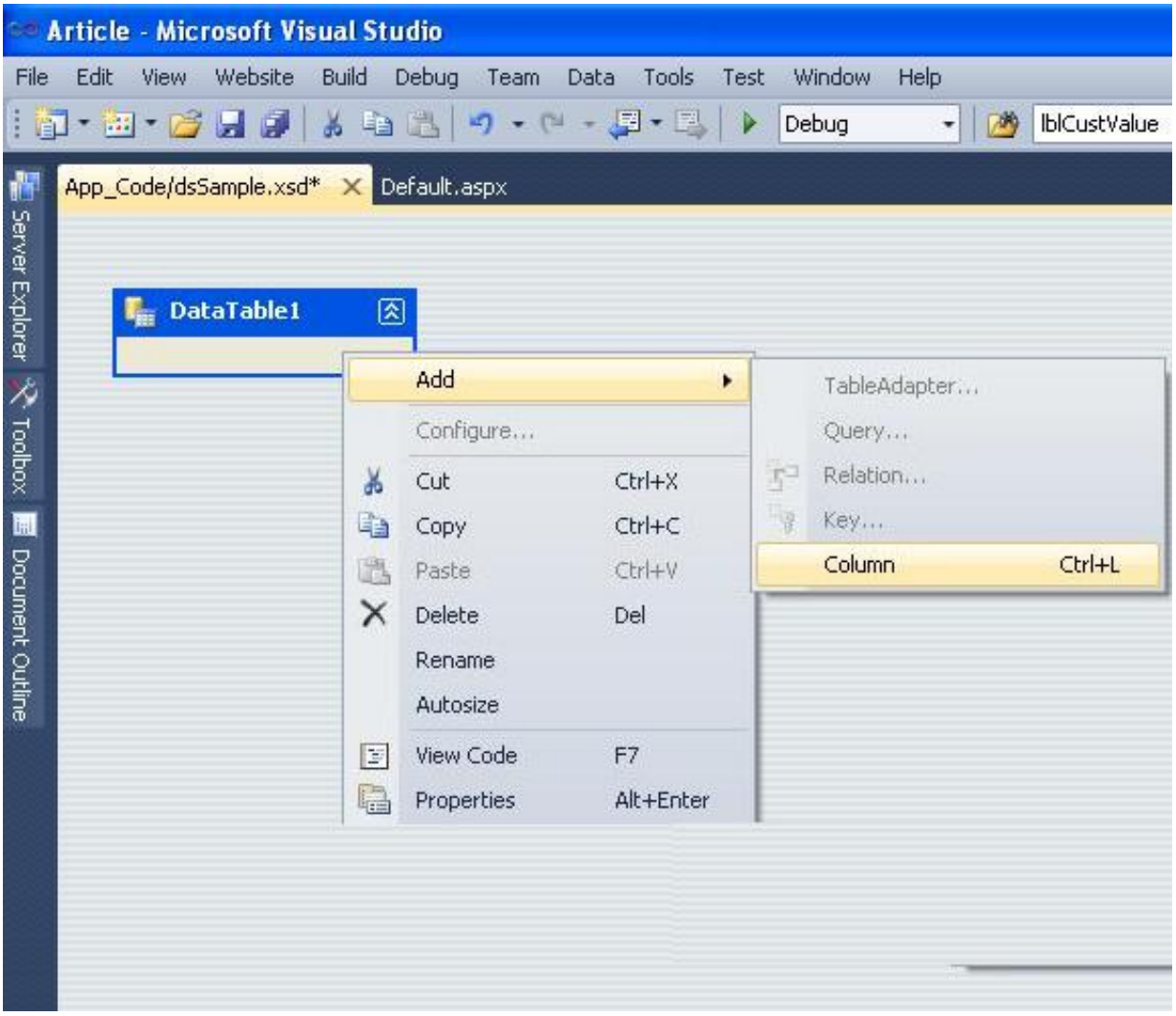


Figure 6

Remember to give the exact same name for data column as in database and also select data type which is the same as database, otherwise you will get an error for field and data type mismatch.

Once we add all the required columns in datatable, then set property for the `datacolumn` as it has in database. The below figure will show you how to set property for data columns. Default datatype for all the columns is `string` here so if `datatype` is other than `string` then only change it manually.

Just right click on the `datacolumn` in `datatable` and select property and from property window, select appropriate `datatype` from `DataType Dropdown` for that `datacolumn`.

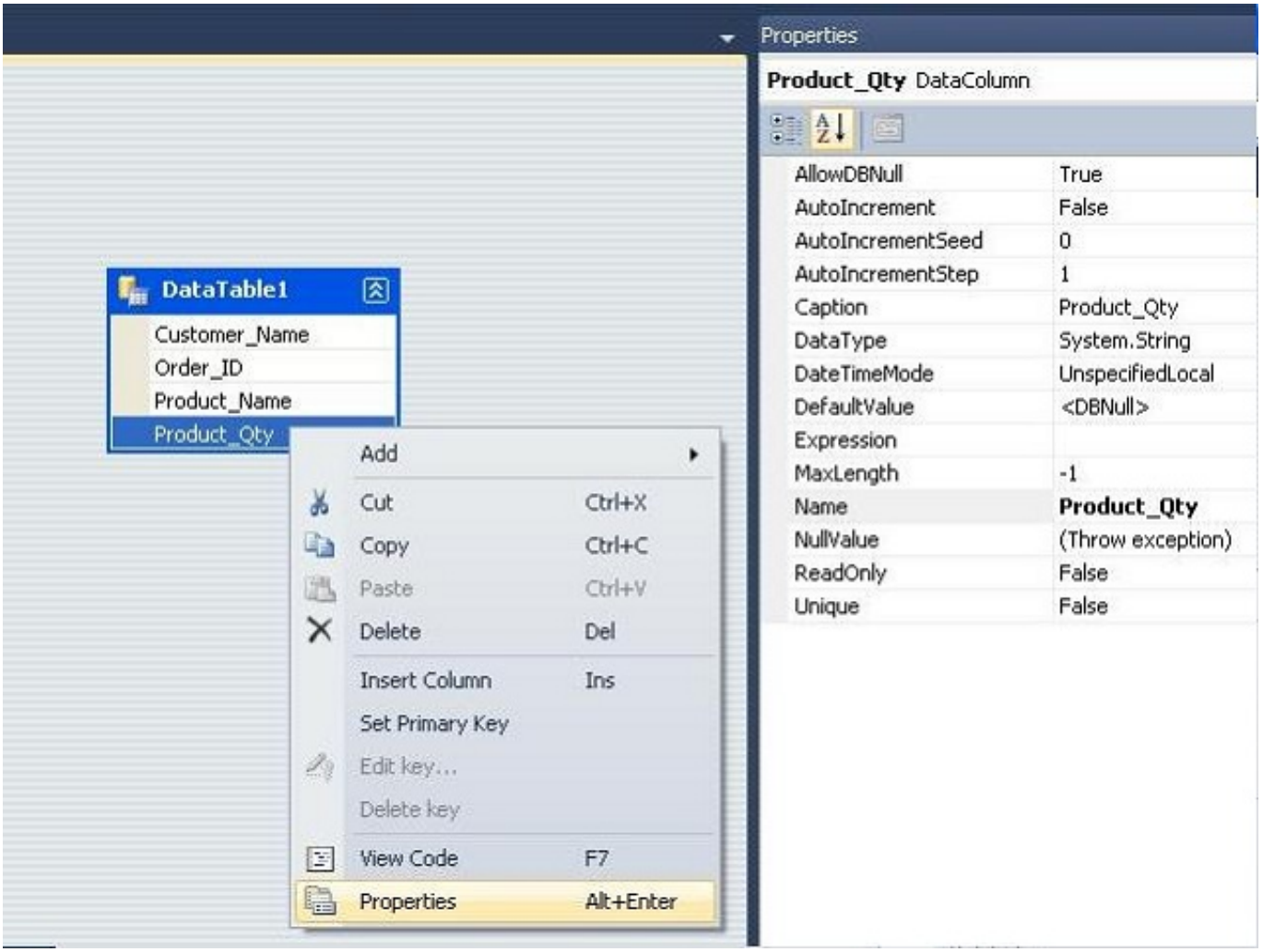


Figure 7

That's it. XSD file creation has been done. Now we will move to create Crystal report design.

Just click on the Solution Explorer -> Right click on the project name and select crystal reports. Name it as per your choice and hit the add button.

Figure 8 will show you the creation process of Crystal reports.

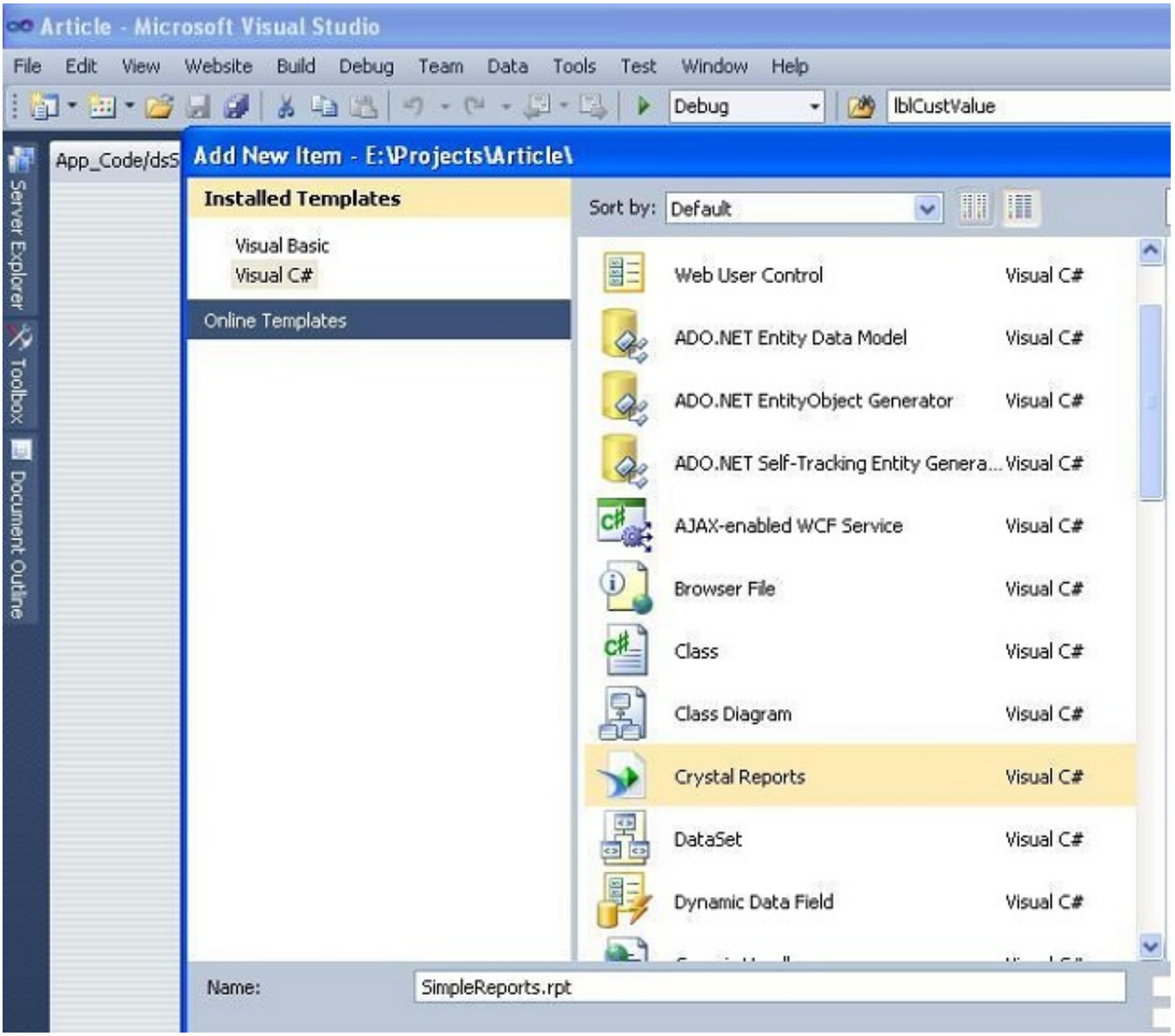


Figure 8

Click on the add button and one *.rpt* file will be added to the solution. And also, it will ask for the report creation type of how you want to create the report. Figure 9 will show you a screenshot.

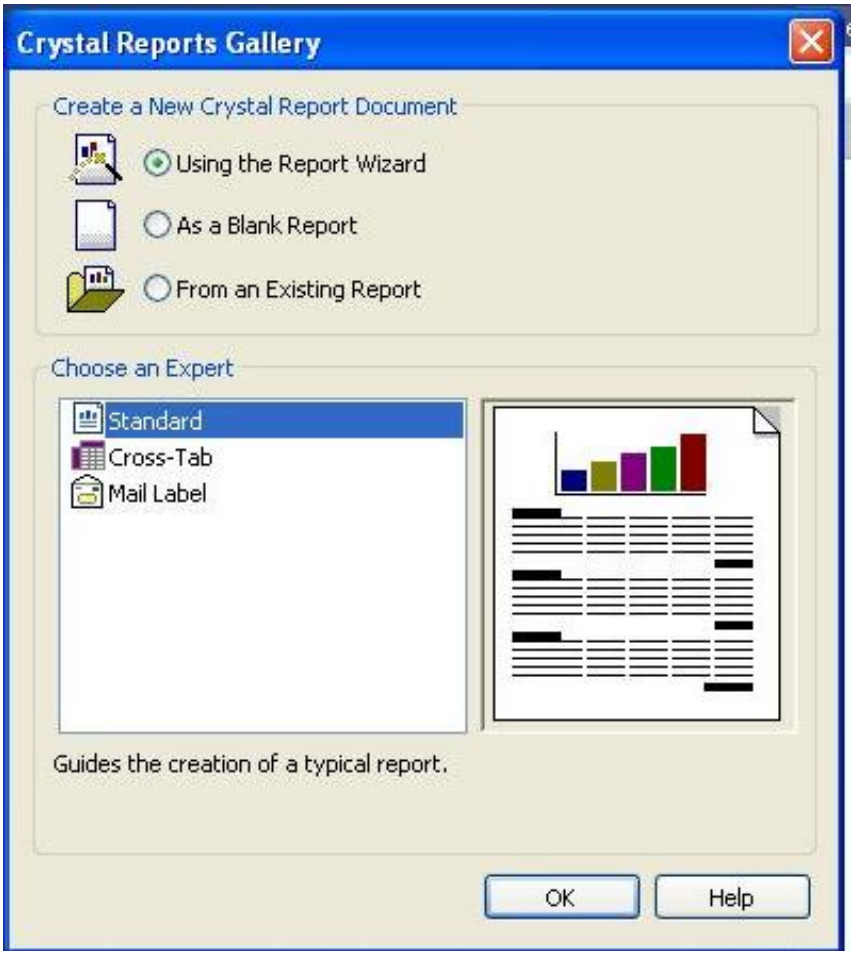


Figure 9

Just click ok button to proceed. It will lead you to figure 10:

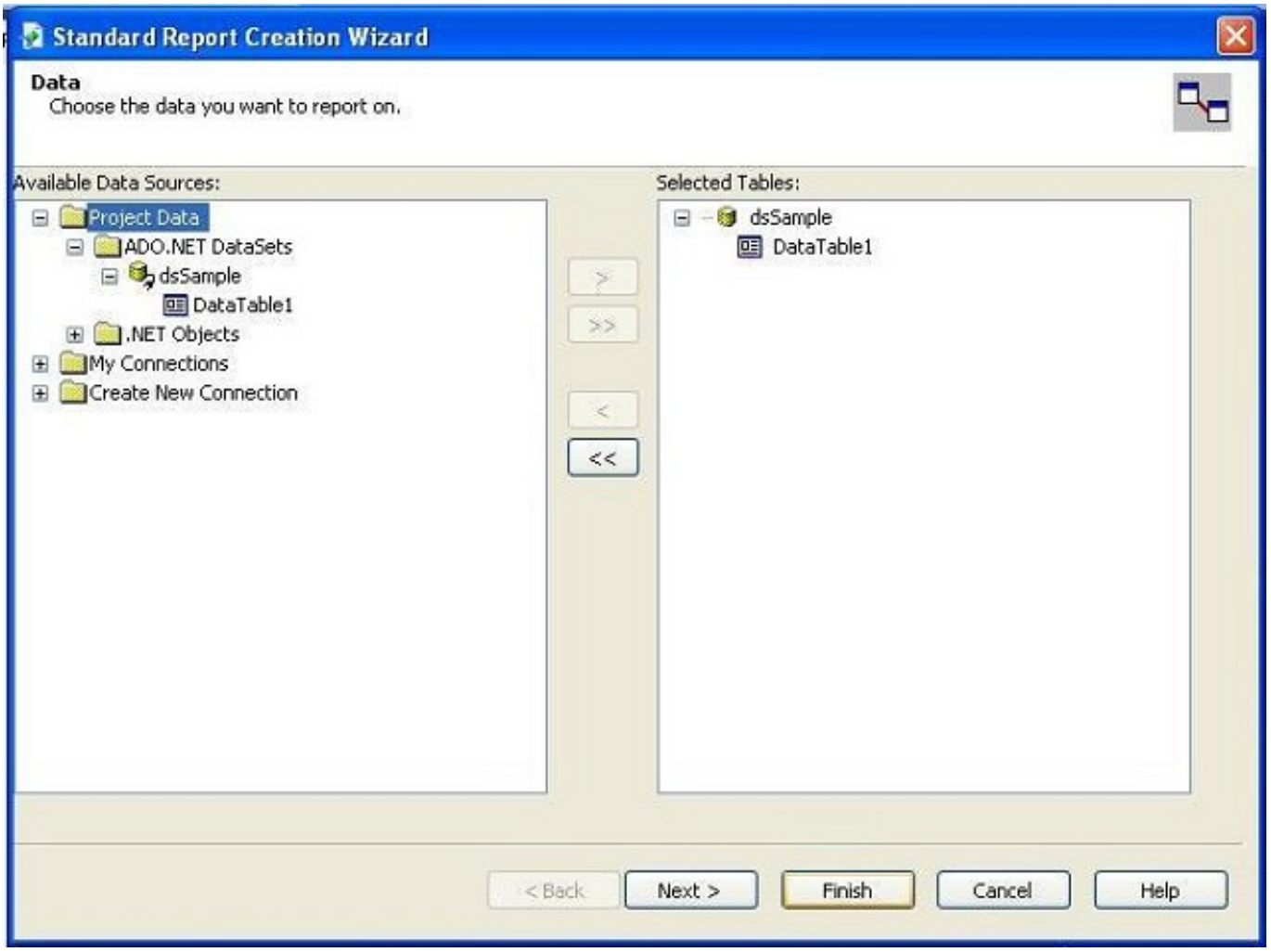


Figure 10

Under project data, expand **ADO.NET Datasets** and select `DataTable1` and add to the selected table portion located at the right side of the windows using **>** button.

Now click on the Finish button and it will show the next screen (Figure 11):

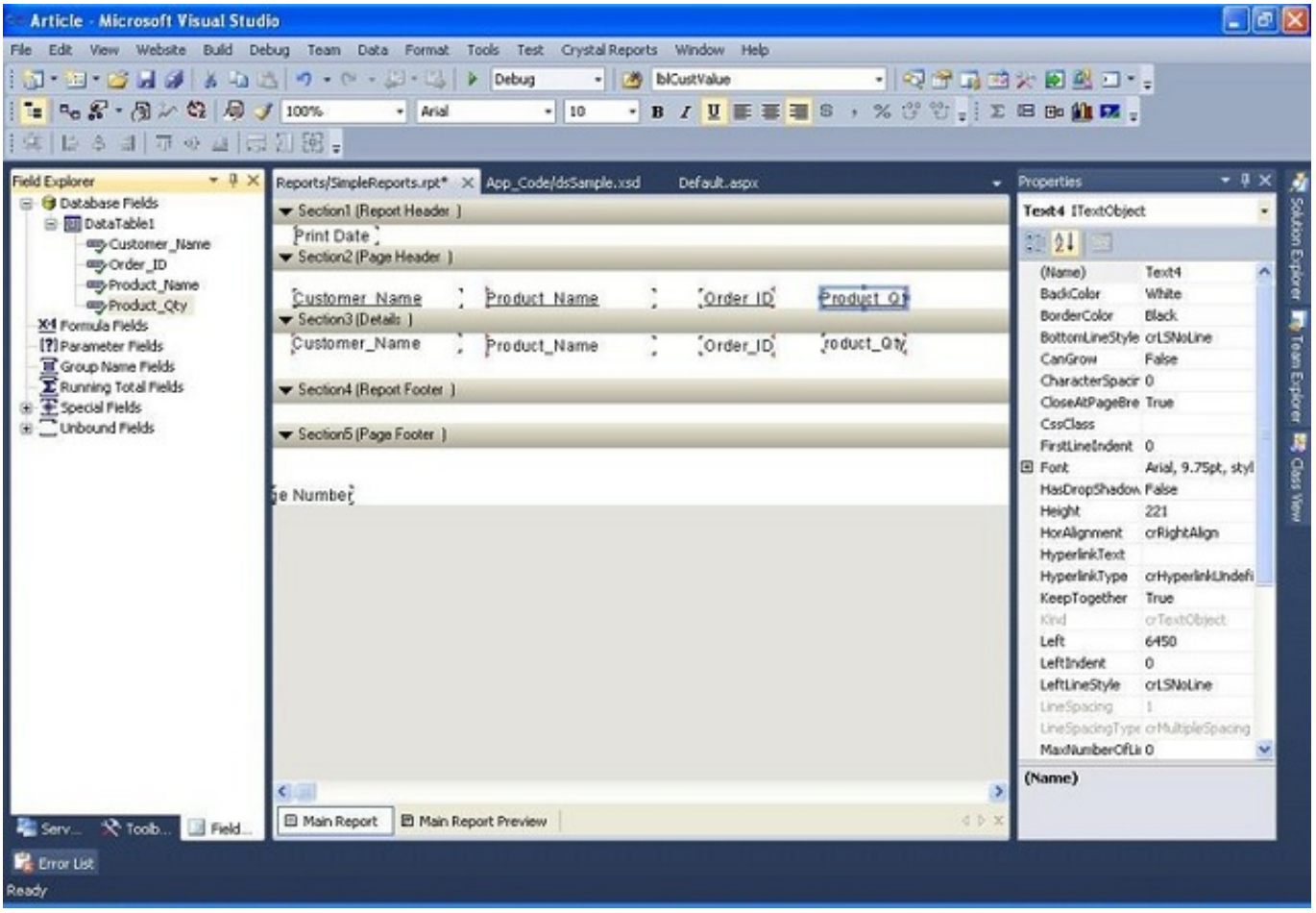


Figure 11

Once report file is added, you can see **Field Explorer** on the left side near server explorer.

Expand **Database Fields**, under that you will be able to find Datatable that we have created earlier. Just expand it and drag one by one filed from Field Explorer to the rpt file under **detail section.**

Now the report design part is over. Now we have to fetch the data from database and bind it to dataset and then bind that dataset to the report viewer.

Let's go step by step.

First Drag a `CrystalReportViewer` control on aspx page from tool box as per below screen:

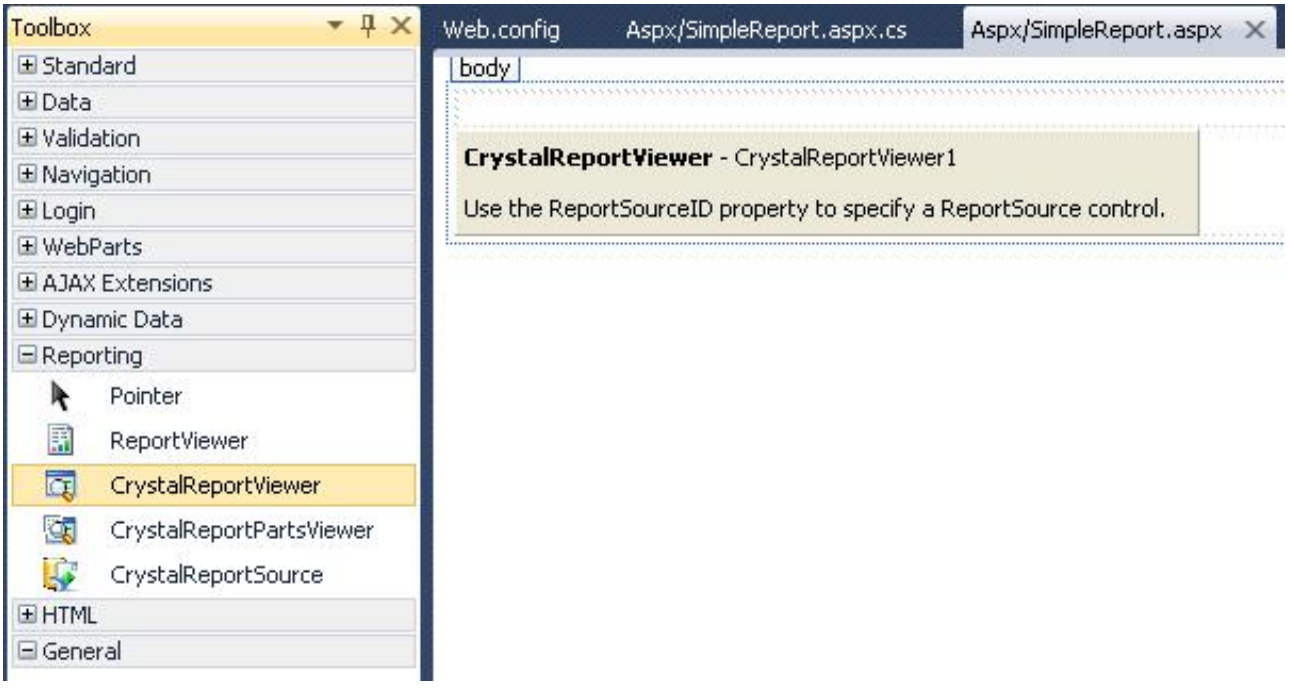


Figure 12

Now we will fetch the data, pass data to the dataset and then add that dataset to the Crystal Report. Below is the C# code which will do the job:

Hide Copy Code

```
using CrystalDecisions.CrystalReports.Engine;
using CrystalDecisions.Shared;
using System.Data;
using System.Data.SqlClient;
using System.Configuration;
```

Below is the final code for reports:

Hide Shrink ▲ Copy Code

```
protected void Page_Load(object sender, EventArgs e)
{
    ReportDocument rptDoc = new ReportDocument();
    dsSample ds = new dsSample(); // .xsd file name
    DataTable dt = new DataTable();

    // Just set the name of data table
    dt.TableName = "Crystal Report Example";
    dt = getAllOrders(); //This function is located below this function
    ds.Tables[0].Merge(dt);

    // Your .rpt file path will be below
    rptDoc.Load(Server.MapPath("../Reports/SimpleReports.rpt"));

    //set dataset to the report viewer.
    rptDoc.SetDataSource(ds);
    CrystalReportViewer1.ReportSource = rptDoc;
}

public DataTable getAllOrders()
{
    //Connection string replace 'databaseservername' with your db server name
    string     sqlCon = "User ID=sa;PWD=sa; server=databaseservername;INITIAL CATALOG=SampleDB;"
+
                        "PERSISTSECURITY INFO=FALSE;Connect Timeout=0";
    SqlConnection Con = new SqlConnection(sqlCon);
    SqlCommand    cmd = new SqlCommand();
    DataSet ds = null;
    SqlDataAdapter adapter;
    try
    {
        Con.Open();
        //Stored procedure calling. It is already in sample db.
        cmd.CommandText = "getAllOrders";
        cmd.CommandType = CommandType.StoredProcedure;
        cmd.Connection = Con;
        ds = new DataSet();
        adapter = new SqlDataAdapter(cmd);
        adapter.Fill(ds, "Users");
    }
    catch (Exception ex)
    {
        throw new Exception(ex.Message);
    }
    finally
    {
        cmd.Dispose();
        if (Con.State != ConnectionState.Closed)
            Con.Close();
    }
    return ds.Tables[0];
}
```

Now just save everything and run report. It will look like the below figure:

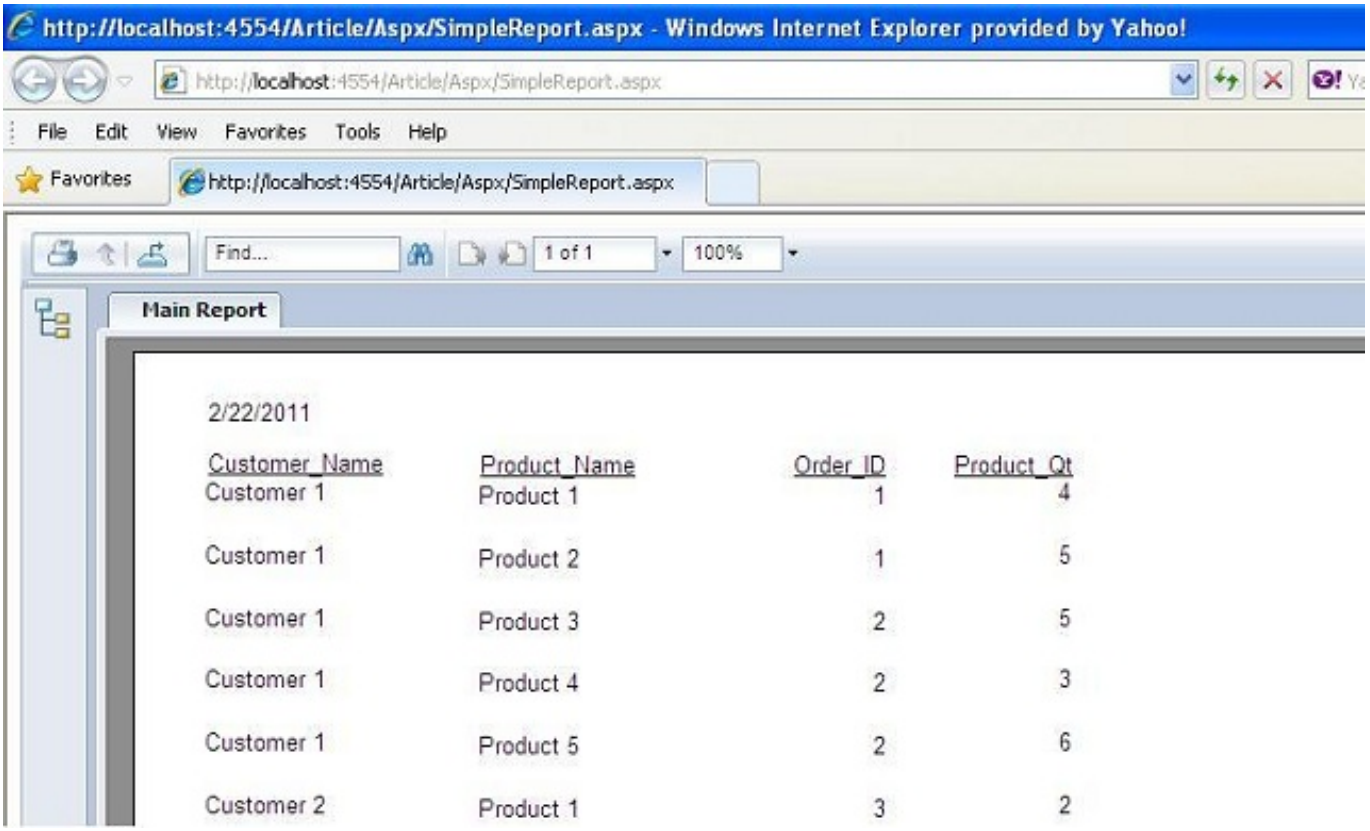


Figure 13

Grouping in Crystal Report

Here we will see only report design and rest of the things, you can refer from **Section 1**. Here we will group `Customer`, `Product`, `Order` and `Quantity`. For details, just go through Figure 14.

Just add a report (*.rpt*) file to the solution. Select the appropriate `dataset` from popup window. Once it's done, then select grouping option like figure 14.

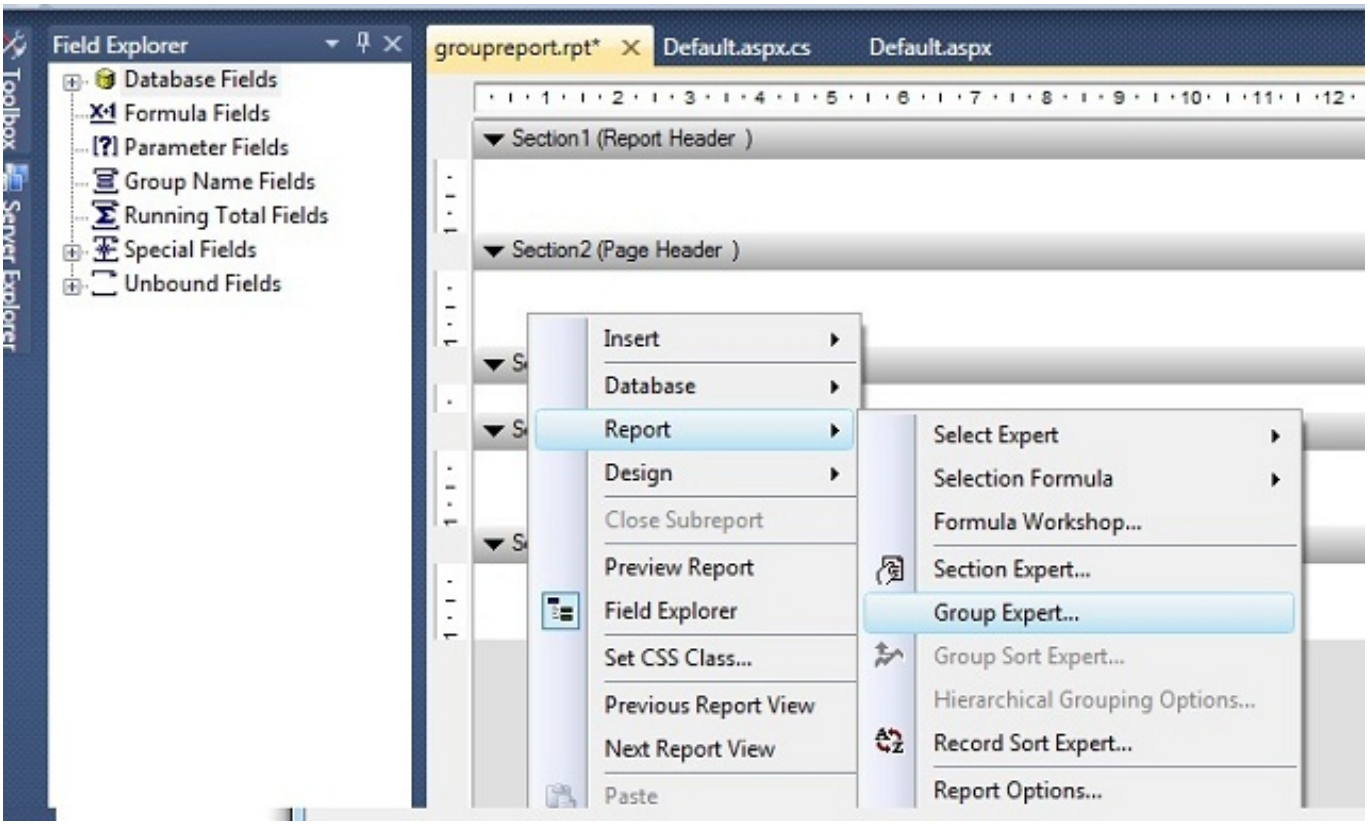


Figure 14

Now, right click on the report, select **Report -> Group Experts** and the resulting window will look like figure 15:

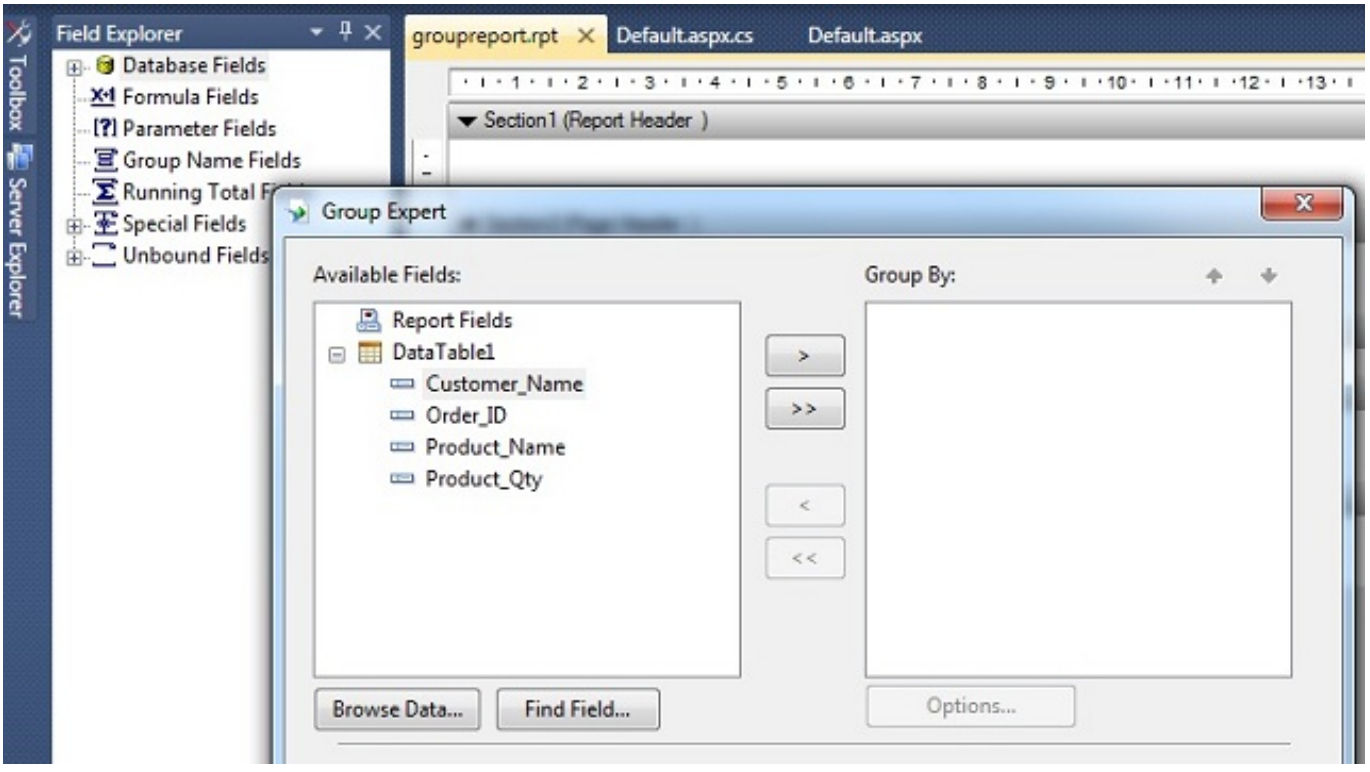


Figure 15

Now we want to group like **Customer Name** and **Product name** so first add `Customer` to the right Panel. Then move product name to the right panel like figure 16:

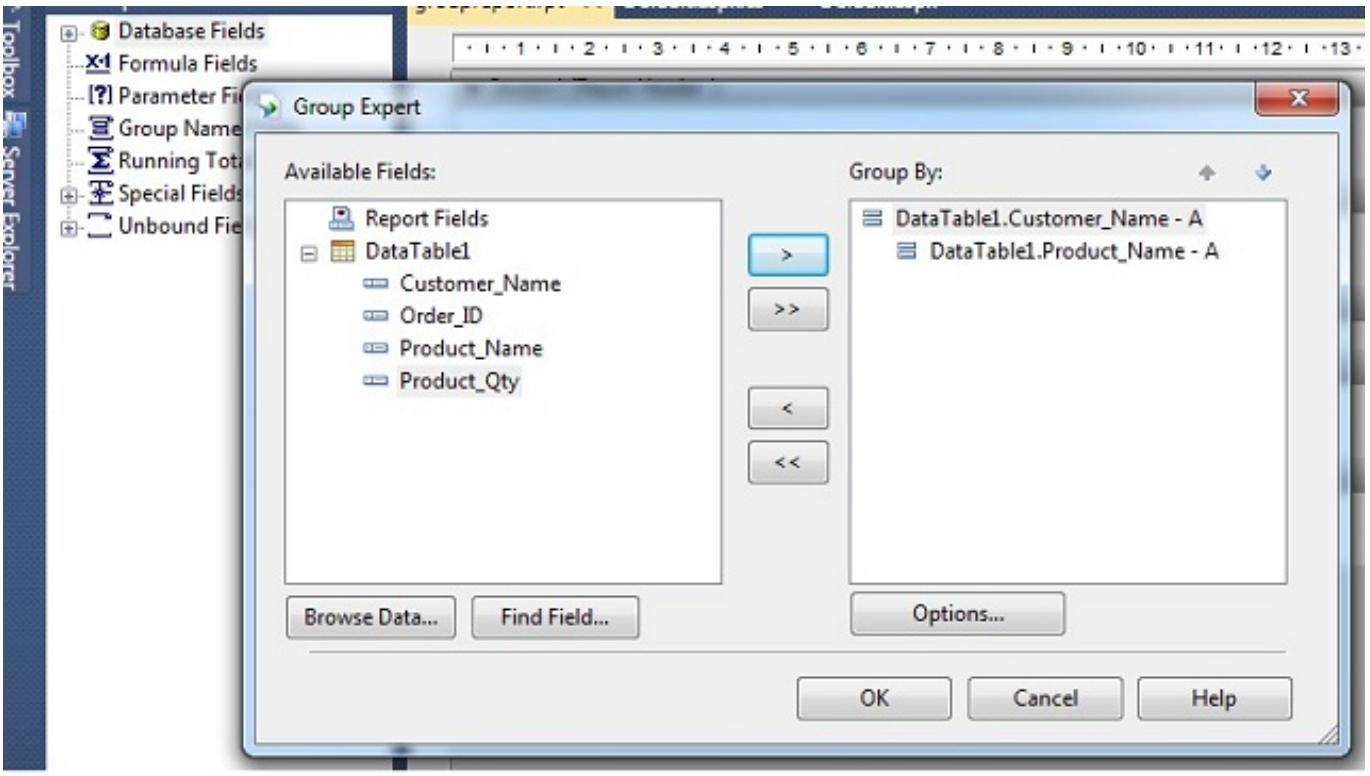


Figure 16

This time Crystal report design will be different than the previous time. See figure 17.

`GroupHeaderSection1` and `GroupHeaderSection2` are added to the report designer. Here Group #1 Name refers to Customer Name and Group #2 Name refers to Product Name.

And also `GroupFooterSection1` and `GroupFooterSection2` are added below if you want to add something to group footer.

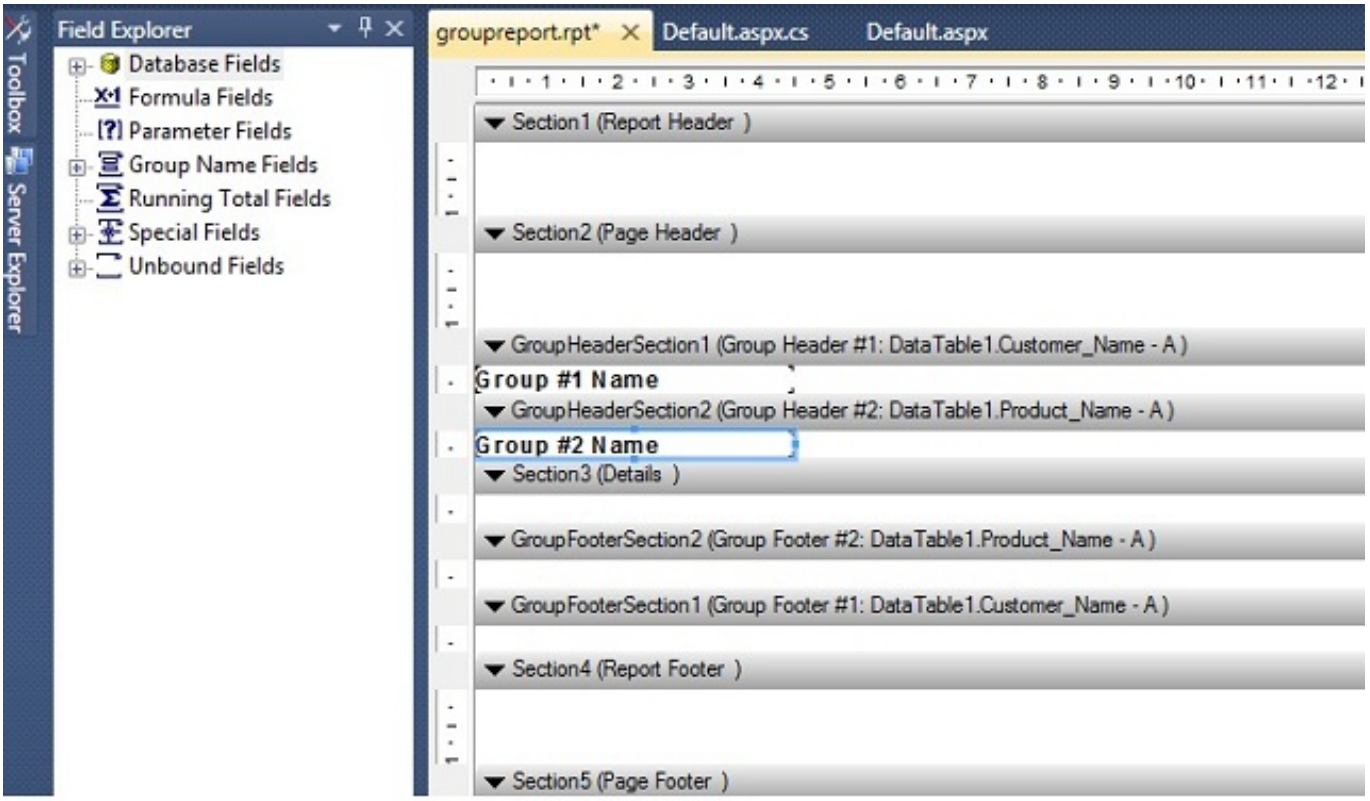


Figure 17

Now under every group, we want to show the number of orders per customer and productwise, so for that, we have to add summary to the `GroupFooterSection2`. Refer to Figure 18.

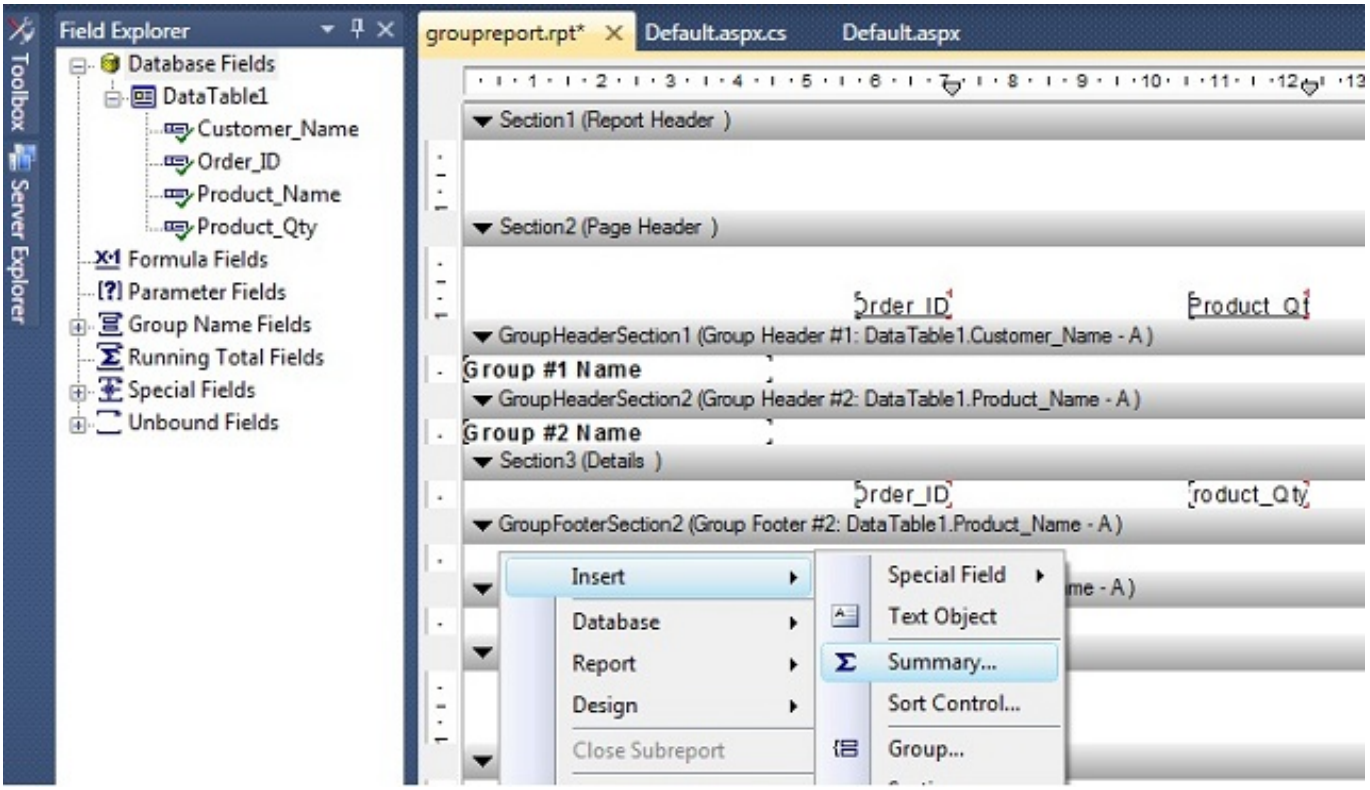


Figure 18

Right Click on the `GroupFooterSection` select **Insert -> Summary.** It will show you the next screen (Figure 19). And I have also added **`Order_ID`** and **`Product_Qty`** field to the detail (section 3) part.

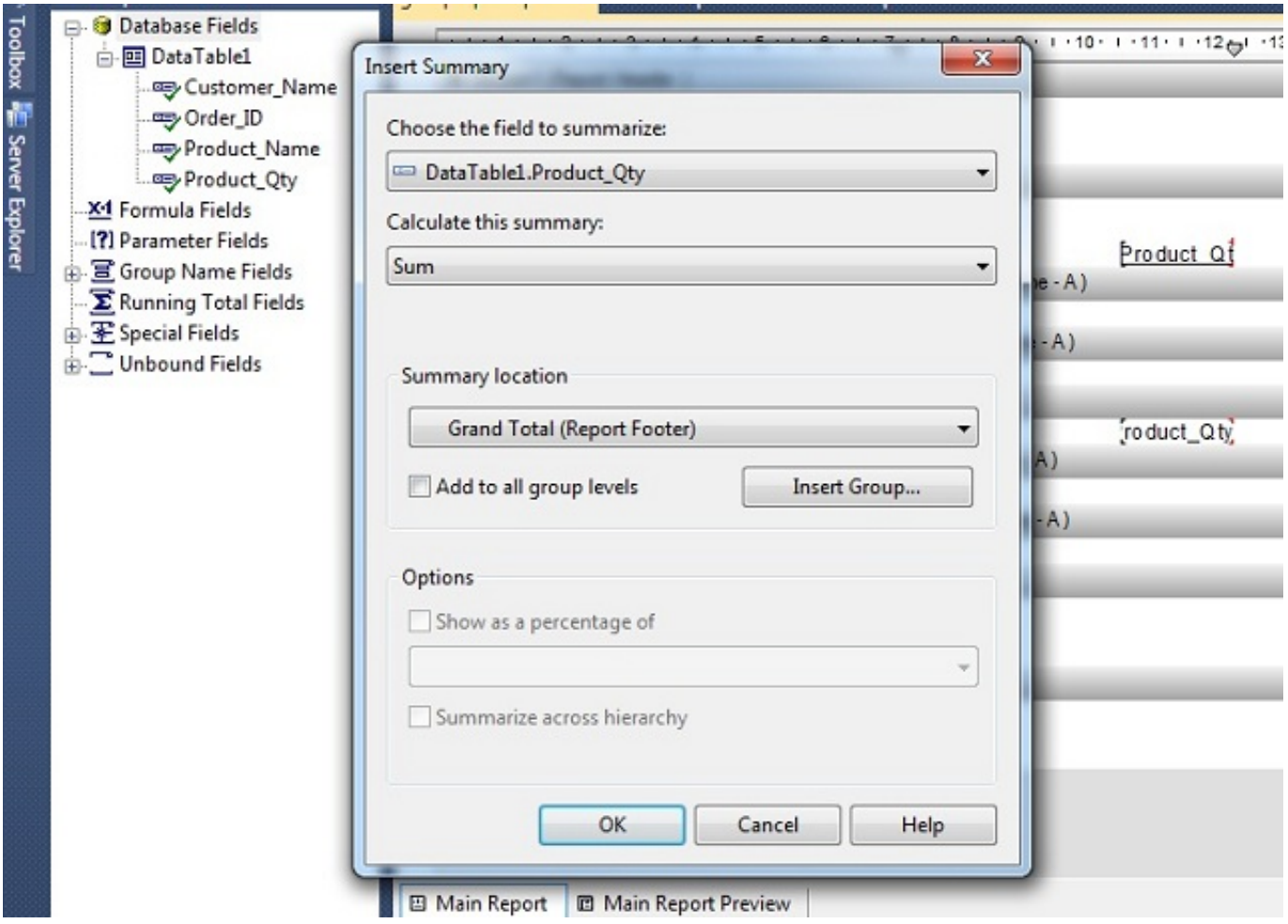


Figure 19

In summary window, select the column which you want to summarize in the first dropdown.

Select Sum (First option) from the calculate drop down.

Summary Location is already set to the report footer. So just click ok to place that summary field to the report.

By default, Summary field is added to the Report Footer section so move it to the `groupFooterSection2` if you want to group product wise, move it to the `GroupFooterSection1` if you want to group Customer wise or keep it at original place if you want to sum all ordered products. I have moved to the `FooterSection1` so it will show Customer Wise Total Quantity. Refer to Figure 20.

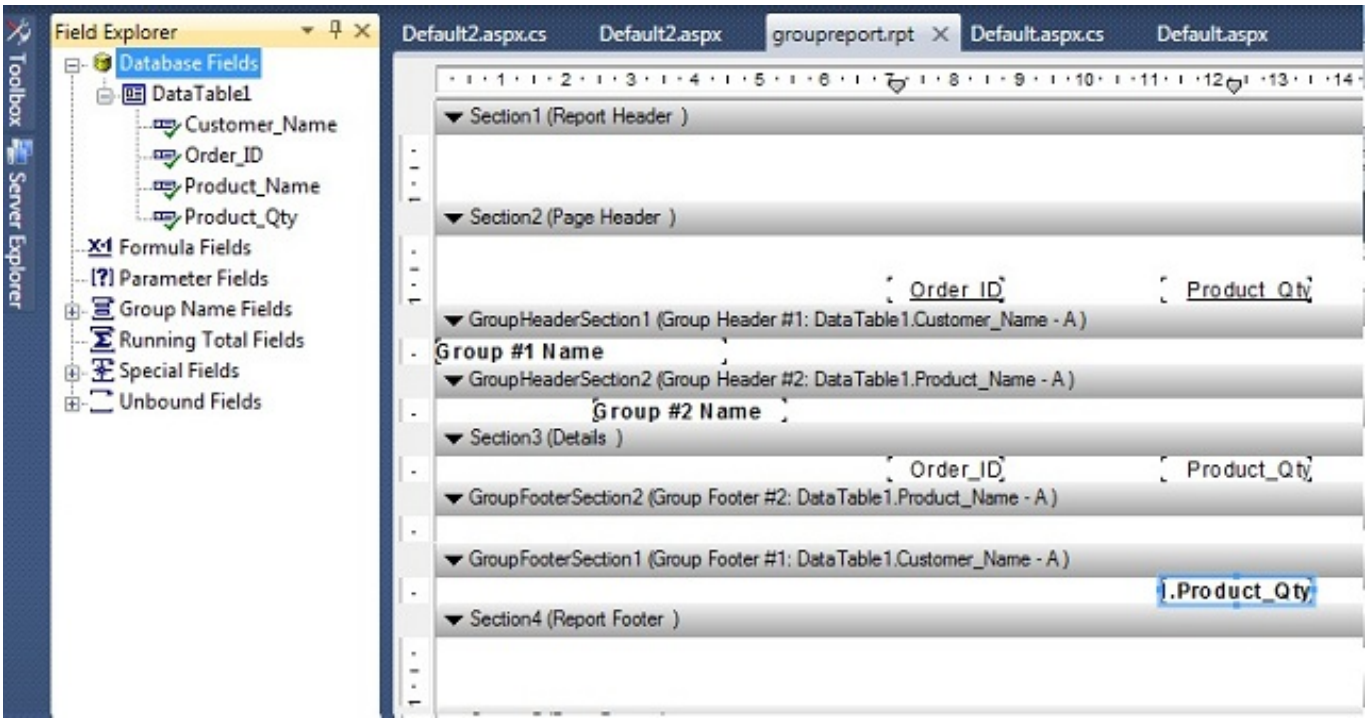


Figure 20

Now save the report and run it finally. It looks like figure 21.

		Order_ID	Product_Qty
Customer 1			
	Product 1	1	4
	Product 2	1	5
	Product 3	2	5
	Product 4	2	3
	Product 5	2	6
			23.00
Customer 2			
	Product 1	3	2
	Product 2	3	3
	Product 3	3	5

Figure 21

Chart in Crystal Report

Chart is the most important and visible part of the reporting tool. Crystal has very powerful feature to add chart in report. Let's see how to add chart in CR. Here also, we will see only designing of the chart for other thing. Please refer to **Section 1**.

Here we will show customer wise product ordered quantity in chart. X portion will display `Customer` name and Y portion will display `customer`s total ordered quantity.

First add charts to the report design.

Right click on the *.rpt* file and select **Insert->Chart**. Refer to figure 22.

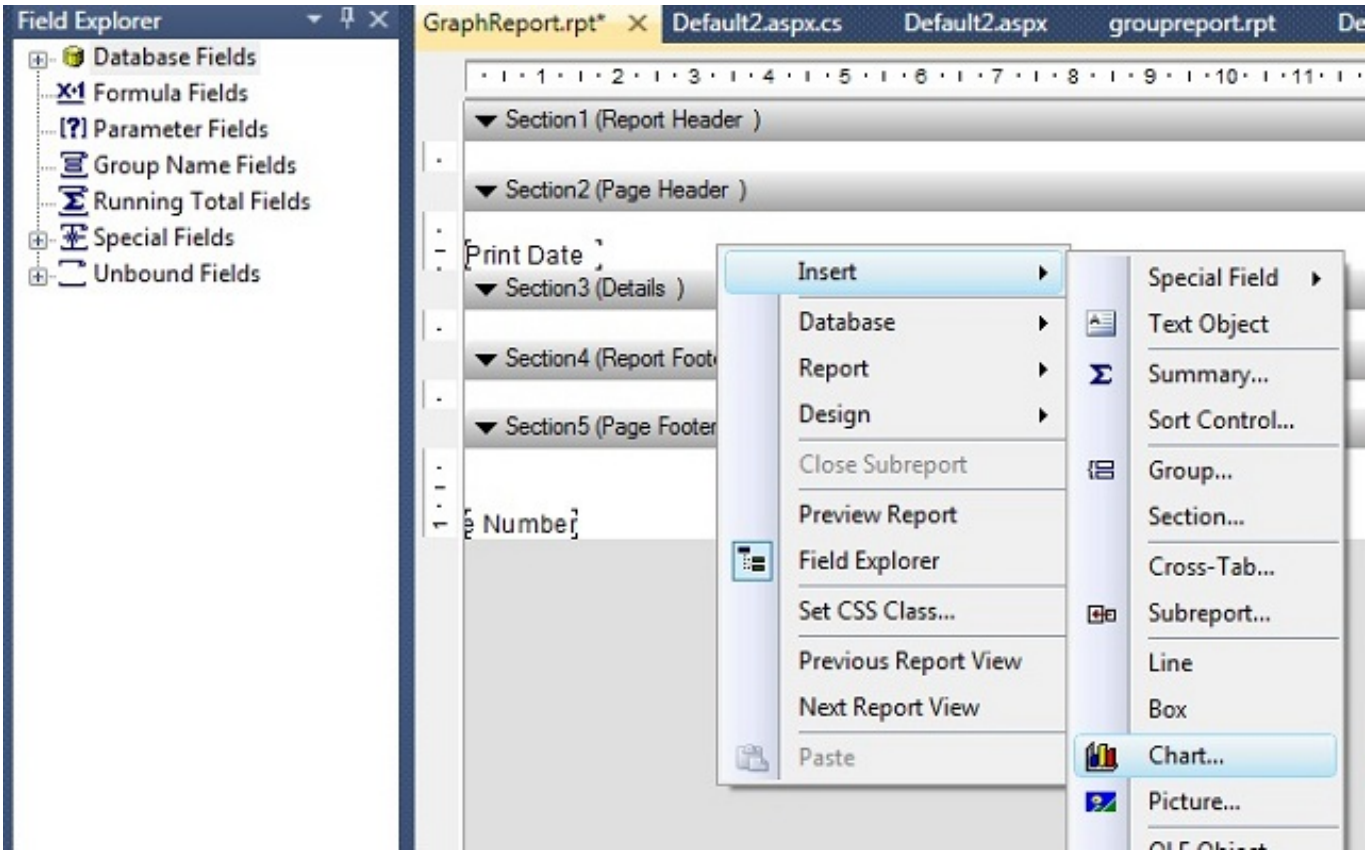


Figure 22

Once you add chart to the report, it will not show chart on the report file but with mouse pointer you can see one blank rectangle is moving. So just click on the Report header. It will open popup for chart style and other options. Refer to figure 23.

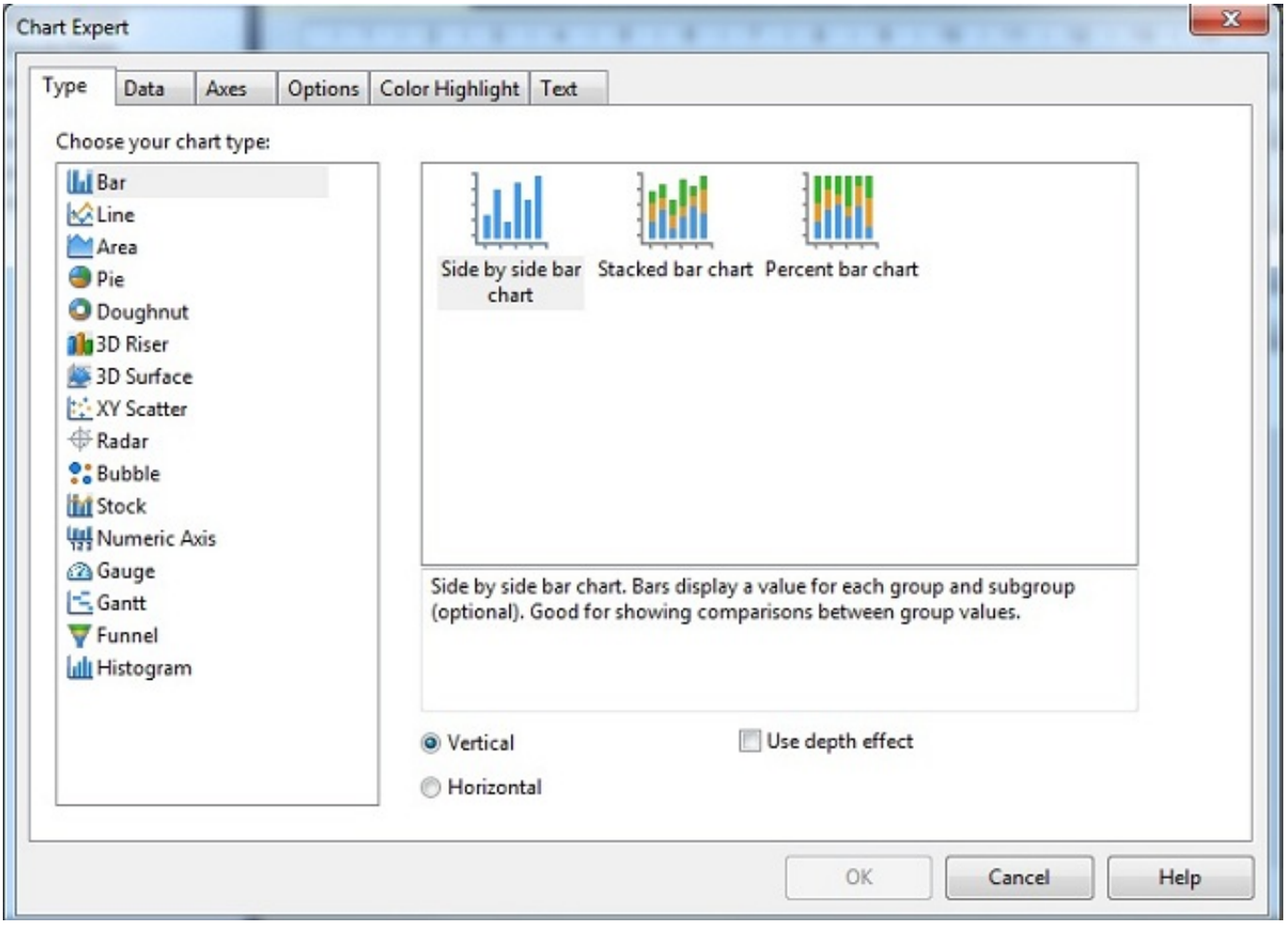


Figure 23

Now from type tab, select type of the charts like bar chart, line chart, pie chart, etc. form the left side. Select sub type from the right pane like **side by side chart**, **percentage bar chart**, etc. I am not going into the detail of it. I am leaving it for you to practice work.

And also select vertical or horizontal radio button from the below section if you want to change the chart style vertically or horizontally. Check **Use depth effect** check box if you need shadow effect on the graph. Refer to figure 23.

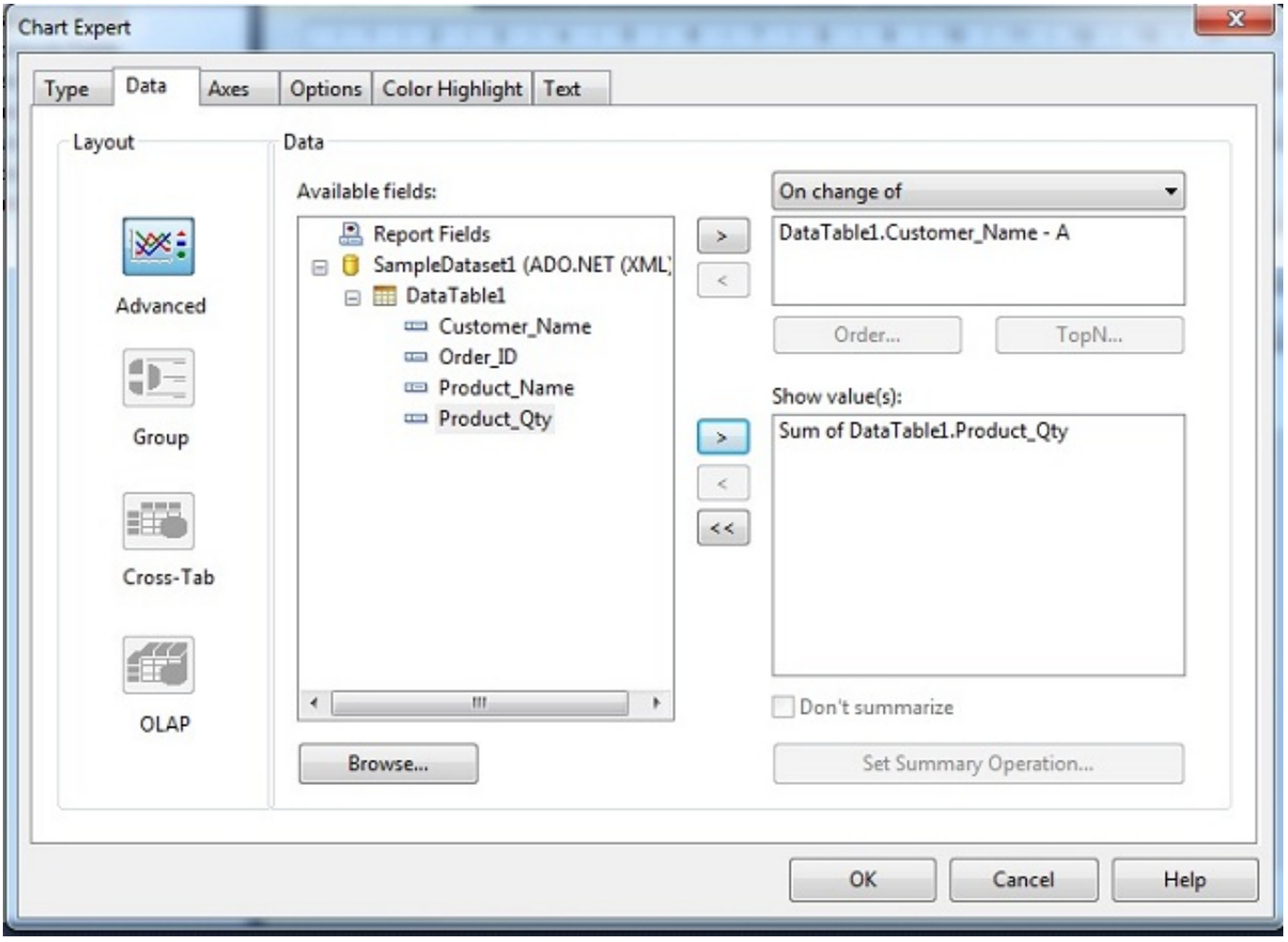


Figure 24

As per figure 24, move to the next tab data. There are three boxes, available fields, on change of and show values. So move Customer Name from available fields to on changes of box, and move Product Quantity filed to the show value box and click ok.

Now you can see chart is added to the report header section as per figure 25.

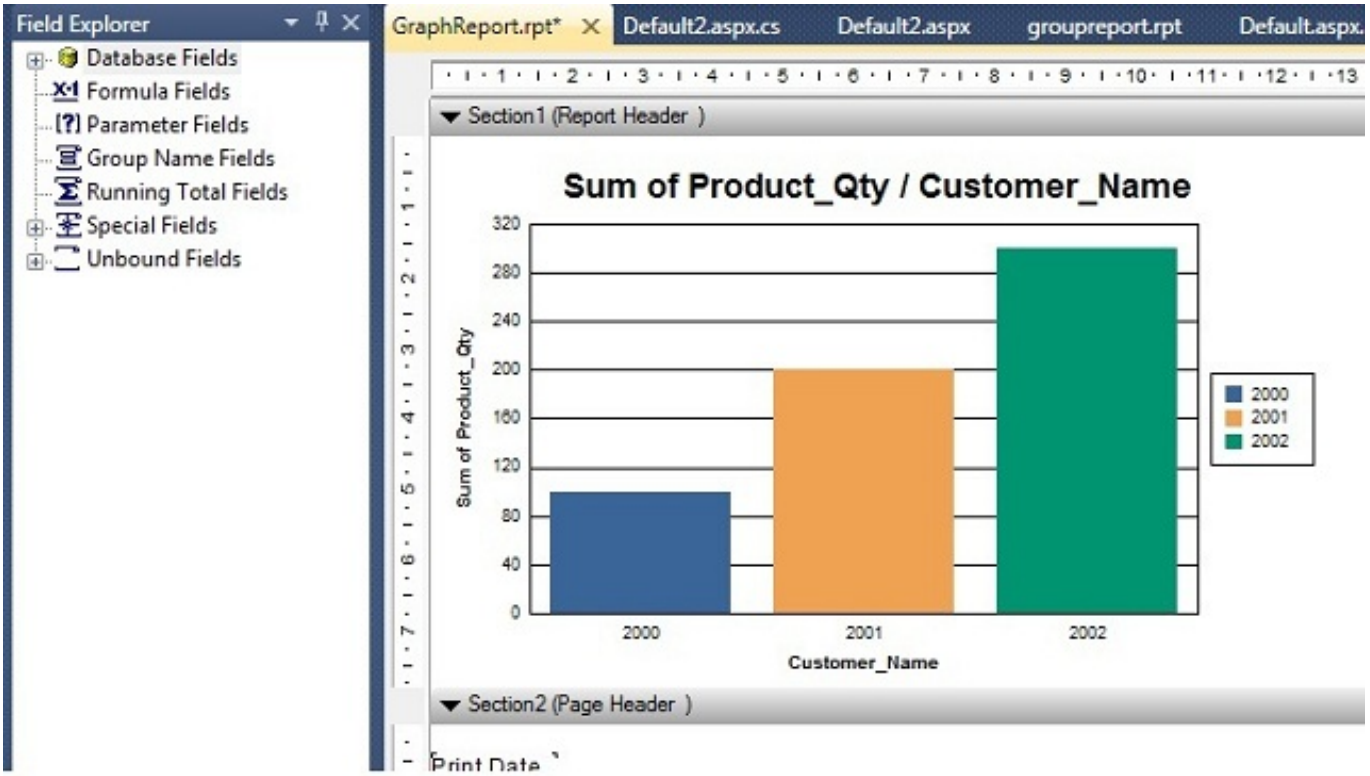


Figure 25

Now, just save the report and run it. You can see a Report as a chart on the screen.

Report Inside Report (Sub Report)

Crystal reports provide reports inside report feature which are normally known as a subreport feature.

Let me explain it in detail. Here also, we will design only sub report design. For rest of the things, refer to **Section 1**.

Add new report to the solution. Then add **Report->Group** and select only `Customer` name because we want to design report for each `customer` and sub report product wise. So there will be only one group header inside the `Customergroup` header as per figure 26.

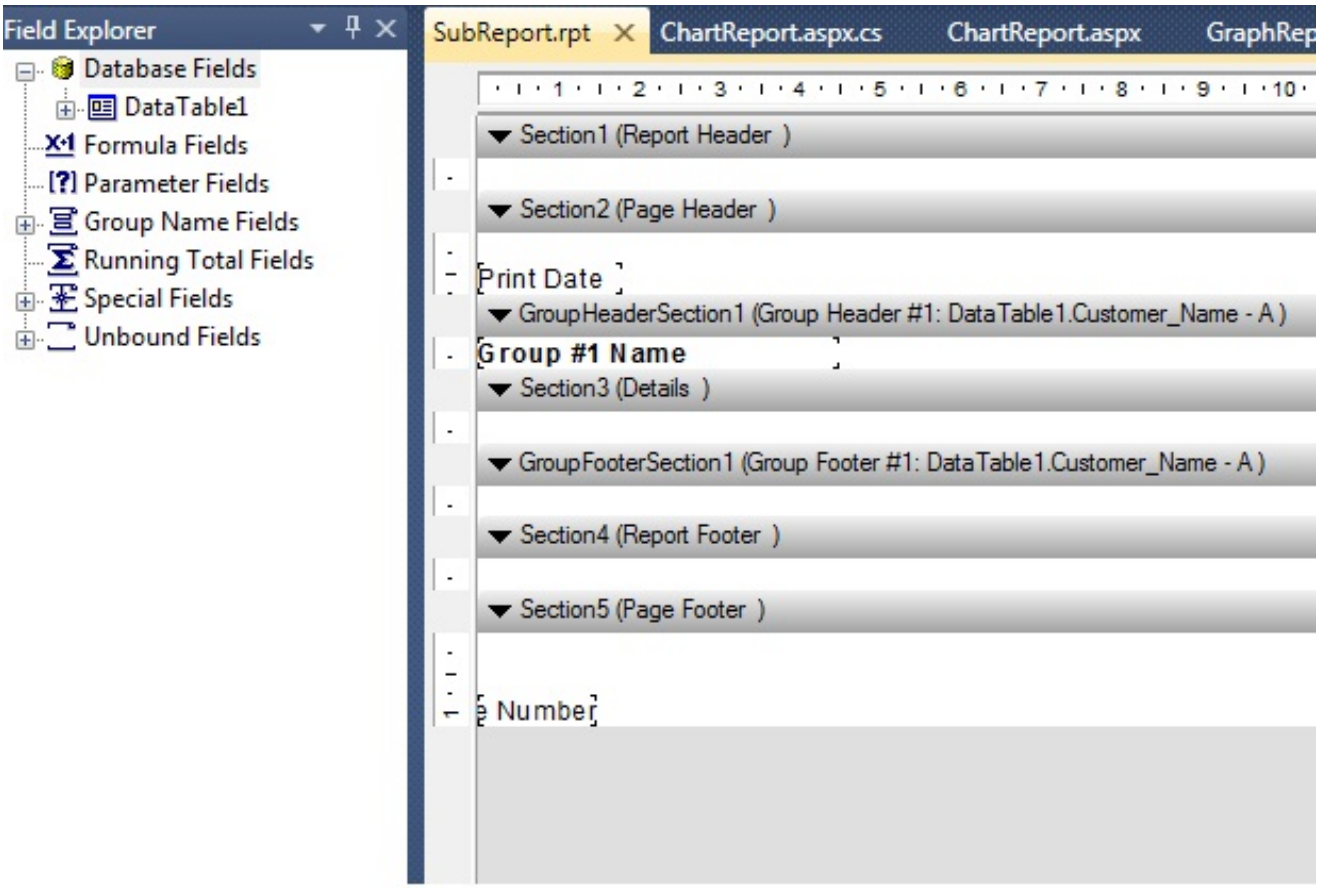


Figure 26

Now right click on Detail section and select **Insert->Subreport.** Refer to figure 27.

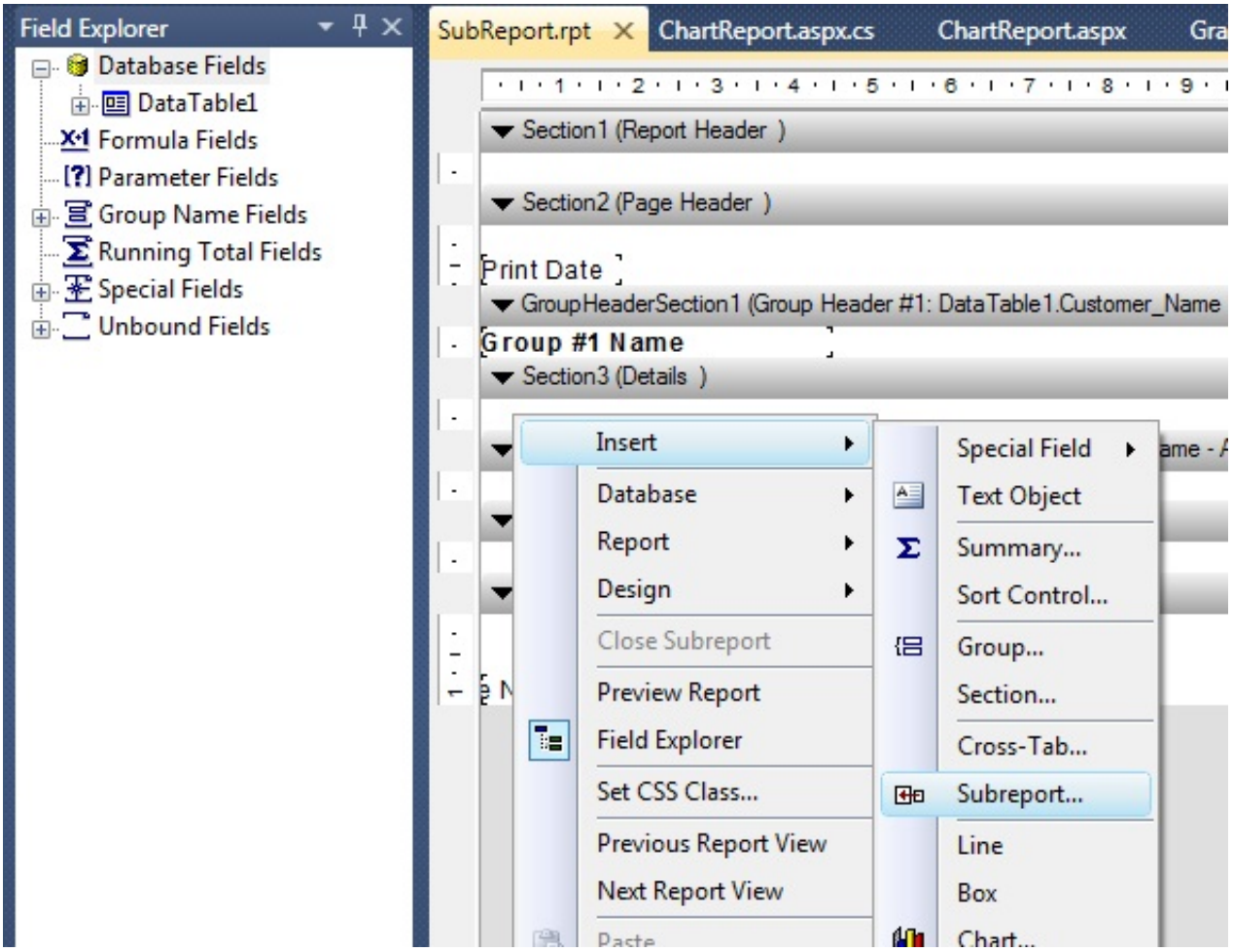


Figure 27

Once we add subreport, it will show screen like figure 28.

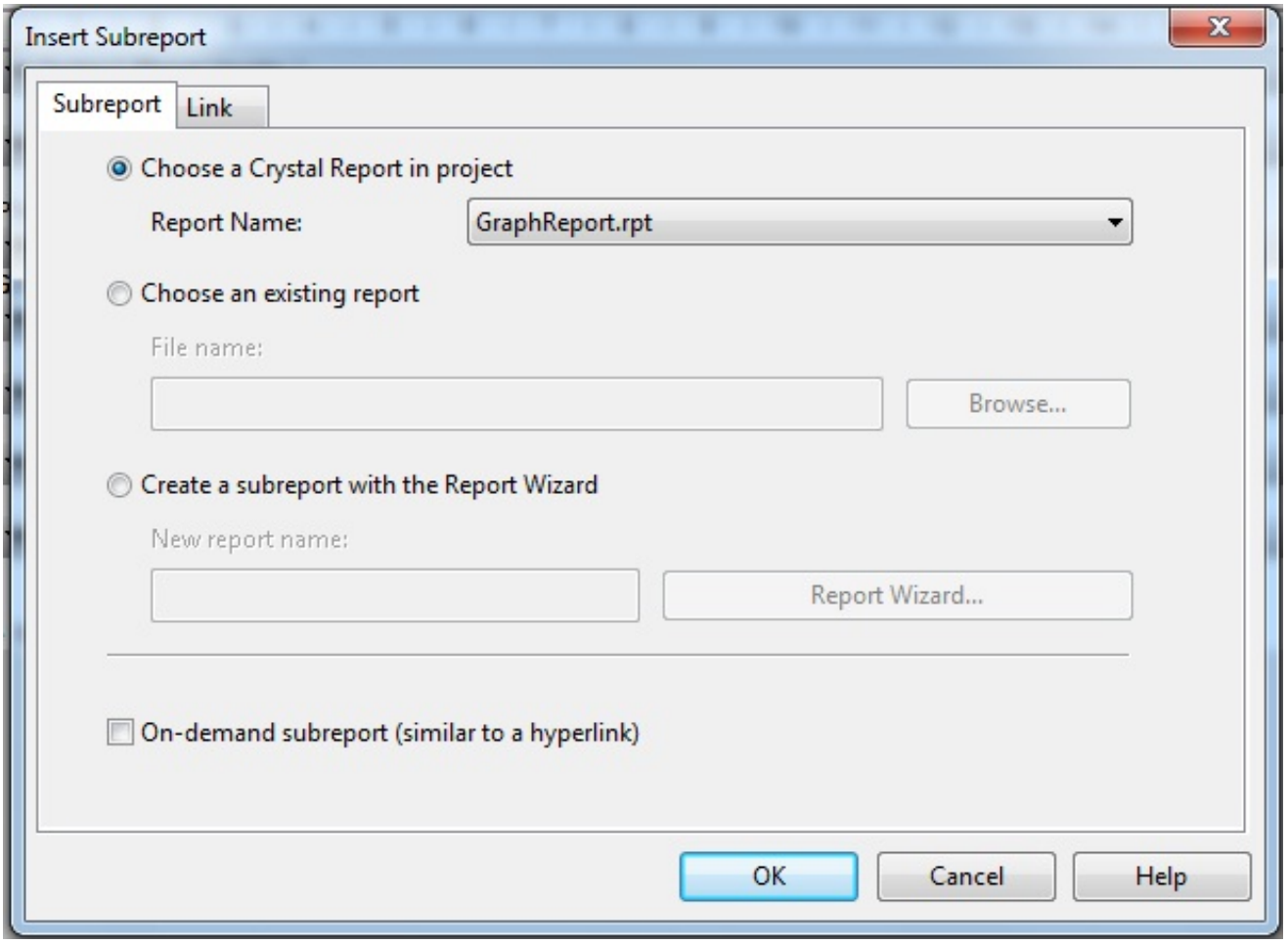


Figure 28

As per figure 28, by default, ***choose a Crystal Report in project*** is selected if you want to add report from the project, then otherwise select ***create a subreport with the report wizard.*** Once we select create a subreport with Report Wizard (3rd radio button), we have to click on the Report Wizard button to select report type and data source just do as **Part - 1** first. Then click on ok button so like chart report it will show a moving rectangle around mouse, click on the detail section where you want to show subreport.

Now to edit the sub report, refer to figure 29.

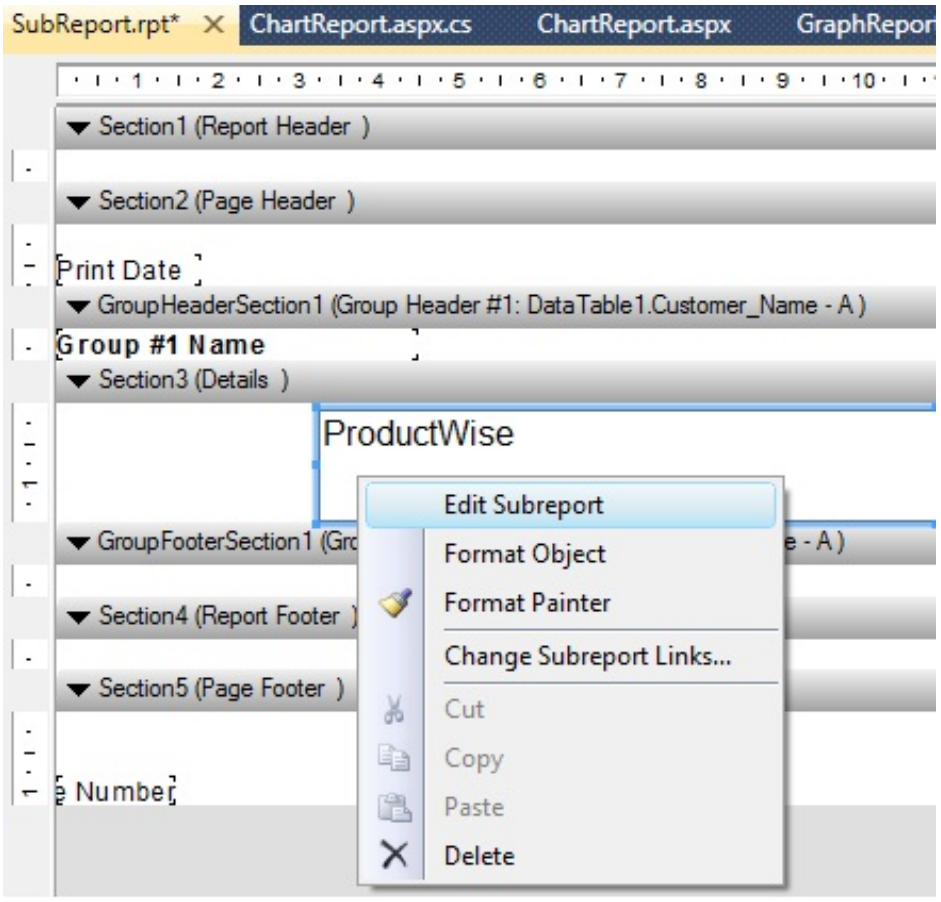


Figure 29

Click on the edit subreport option and format the report as per your need. Here I will suggest add product name and product quantity or you can add chart also for sub report. When you click on the subreport button, it will open subreport designer, actually CR will create a separate *.rpt* file but it will remain hidden inside the main *.rpt* file so we can't see it..

Now run the report and you can see the result, report inside report like figure 30.

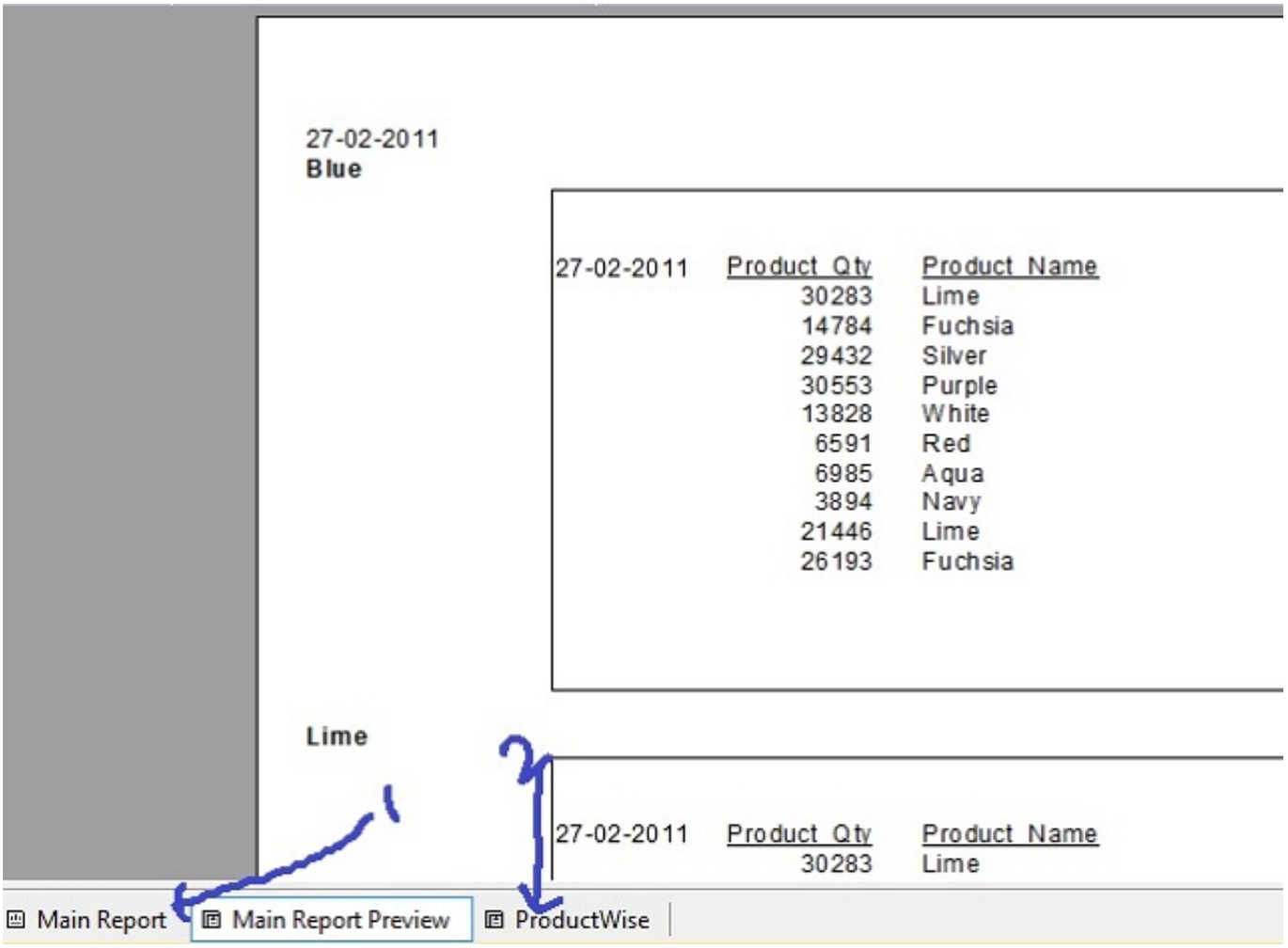
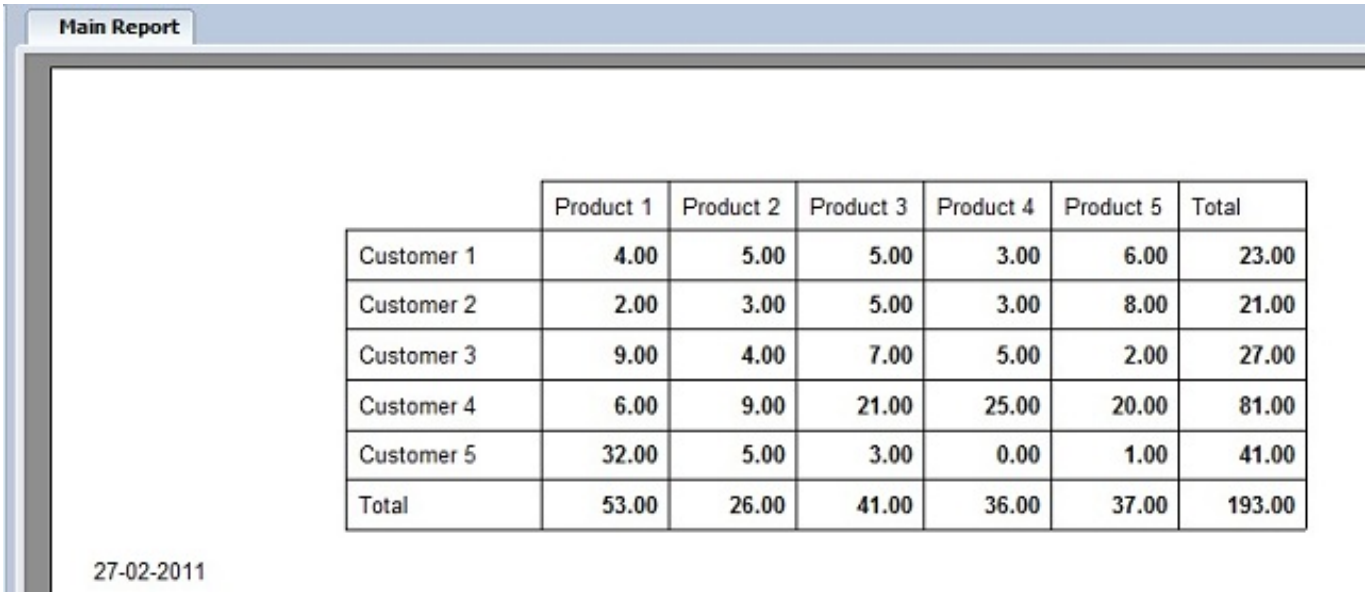


Figure 30

Here number 1 is the main report and number 2 is the subreport it's showing title as Product wise.

Cross Tab Report in Crystal Report

First, let me make it clear as to what is a Cross tab report. Normally, we generate report row wise like first we show customer name, then product wise, etc. But suppose we want to see report as column wise like product name should be displayed as column in report, then cross tab report comes into the picture. See result of Cross Tab report in figure 31.



	Product 1	Product 2	Product 3	Product 4	Product 5	Total
Customer 1	4.00	5.00	5.00	3.00	6.00	23.00
Customer 2	2.00	3.00	5.00	3.00	8.00	21.00
Customer 3	9.00	4.00	7.00	5.00	2.00	27.00
Customer 4	6.00	9.00	21.00	25.00	20.00	81.00
Customer 5	32.00	5.00	3.00	0.00	1.00	41.00
Total	53.00	26.00	41.00	36.00	37.00	193.00

Figure 31

Here also, I will show how to design cross tab report only, for rest of the things, refer to **Section 1**.

First add *.rpt* file to the solution. Then add cross report to the Report Header section as per the below figure (Refer to figure 32).

Remember we can add cross tab report only in Report header or report footer section.

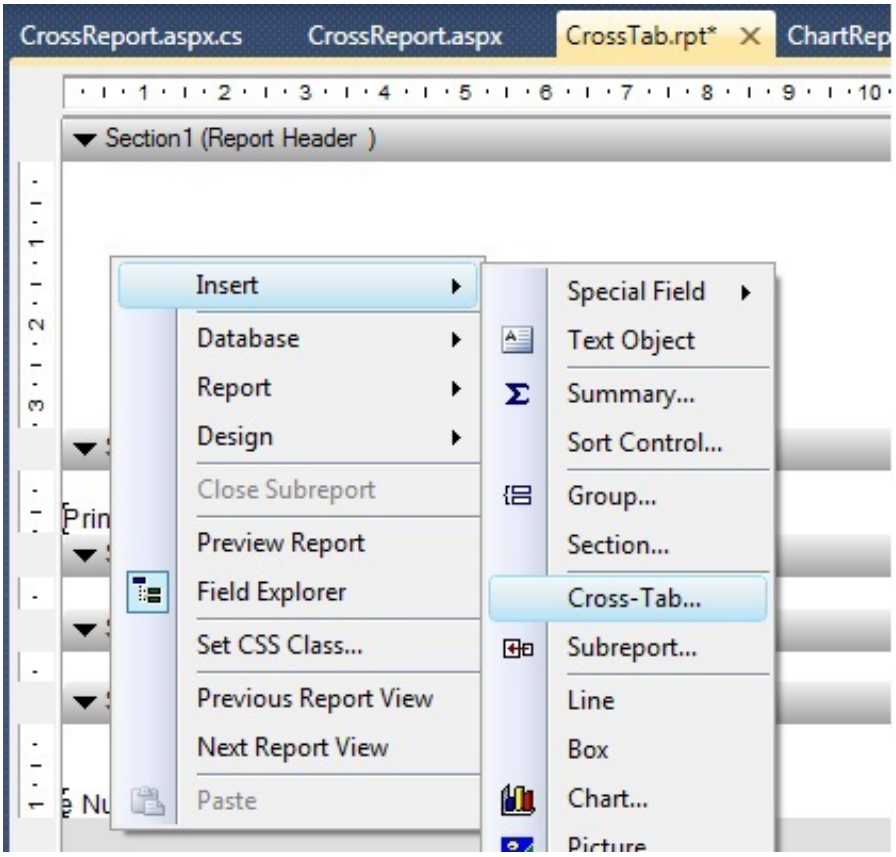


Figure 32

Once we click on cross tab report options, it will show moving rectangle around mouse pointer just place it to the report header section.

As we click on header section, it will lead to the figure 33.

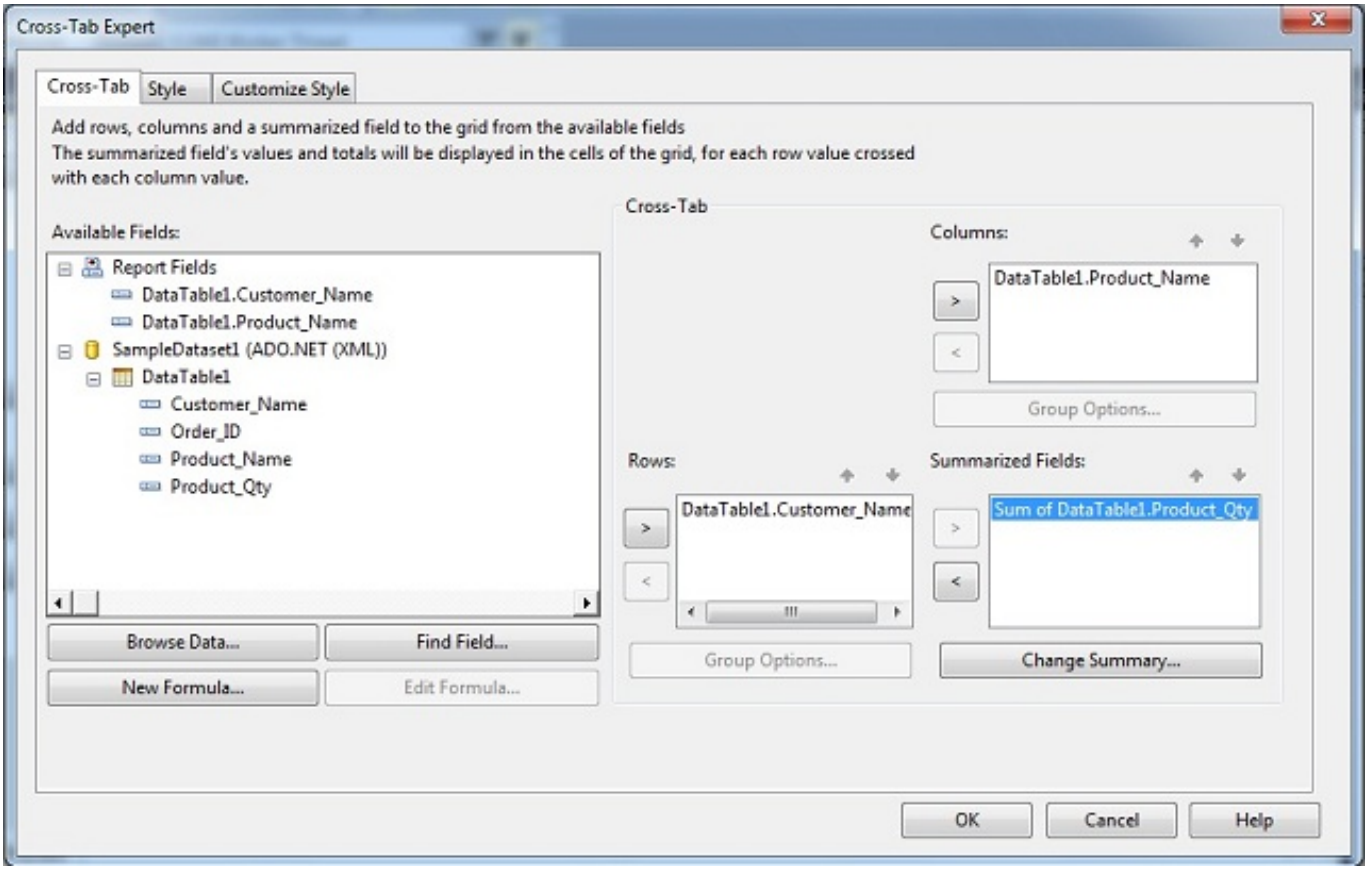


Figure 33

As per the figure, move `Customer` name field to the Rows section, `Product` name we want to show as a Column so move it to the Columns fields, and we want to show `product` total so move it to the summarized fields. That's it. Just run the report and you can see the output as shown in figure 31.

It's as simple as that. If you have any queries regarding any type of the above mentioned reports, please let me know by way of comments. I will try my level best to fulfill your request.

Let's enjoy reporting!

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I am working as a Software Engineer in Ahmedabad, Gujrat, India.

I have 7+ Years of Experience in Microsoft Technology Like Asp.Net 2.0,Asp.Net 3.0,Asp.Net 4.0, C#,MVC, Javascript, Crystal Reports, JQuery etc.

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