



Unit 8

Report

Introduction

When you install visual studio 2008 or later version, crystal reports is automatically installed on your computer. You will find the crystal reports application under report sub menu, when you want to create a new project. Crystal Reports is a business intelligence application. It was marketed to small businesses by SAP SE. It is used to design and generate reports from a wide range of data sources. Crystal Reports has been part of Visual Studio since 1993. It is standard tool for reporting in Visual Studio 2008 and later version.

Lesson 8.1

Report

Upon completion of this unit you will be able to:



- *Understand* Crystal Reports for Visual Studio 2008.
- *Explain* Powerful Features of Crystal Reports

Outcomes

Fundamental Knowledge about Crystal Report

Crystal Reports is a widespread tool for designing and generating complex reports and for embedding reports within Windows applications of visual studio which is marketed by Microsoft Corporation. It is a popular Windows-based report writer as well as report generation program, which allows a programmer to create reports from a variety of data sources. Crystal Reports can access data from most widely-used databases. In the Database Expert, users can select and link tables from a wide variety of data sources, such as Microsoft Excel spreadsheets, Oracle databases, Microsoft SQL Server databases, Microsoft Access databases, Business Objects Enterprise business views, and local file system information. It can integrate data from multiple databases within one report using Open Database Connectivity (ODBC). The data can be grouped into bands, each of which can be split further and conditionally suppressed as needed. Crystal Reports also supports sub reports,



graphing, and a limited amount of GIS functionality. Crystal Reports uses an ActiveX control called Crystal Report to establish a connection with another program. A programmer can set properties of the Crystal Report control during design time or at run time.

Crystal Reports for Visual Studio 2008 brings the ability to create interactive, presentation-quality content to the Windows environment. With Crystal Reports for Visual Studio 2008, you can create complex and professional reports in a GUI (Graphical User Interface) based program. You can design your report in either a Web or Windows application in visual studio 2008 with one of the Crystal Reports for Visual Studio 2008 viewer controls. Crystal Reports is also accessible outside of the Microsoft market, for instance allowing Java developers to build applications with Crystal Reports components.

Crystal Reports for Visual Studio 2008

Crystal Reports for Visual Studio is the custom version of Crystal Reports that is available as part of the default installation in most versions of Microsoft Visual Studio like 2008, 2010, 2013 and later version. Crystal Reports for Visual Studio .NET 2002 or 2003 and Crystal Reports for Visual Studio 2008 include many of the features of Crystal Reports Developer. These include the ability to create reports, connect them to a CrystalReport Viewer control, and programmatically interact with these reports using the Crystal Reports SDK (Software Development Kit). You can create a report using crystal report application of visual studio 2008 easily.

In addition, your reports can be related to your Visual Studio 2008 project in many ways:

- Implant your reports directly into the project.
- Access them outside, from a file directory.
- Access them as a Report Web Service from a remote server.
- Connect to them as Crystal Services.
- With an upgrade to Crystal Reports Server you can access them through the RAS (Remote Access server) Server.
- You can access them through a legacy enterprise solution, such as Crystal Enterprise or an unmanaged RAS server.

Powerful features of Crystal Report in VS2008

Crystal Reports for Visual Studio 2008 comes with powerful features. Lists of features that are new to Crystal Reports for Visual Studio 2008 are described below:

- A common standard file format allows for feature-rich



reports that contain data retrieval criteria, grouping, summary, parameter, and drill down, and sub report linking information.

- An embedded Crystal Reports designer, assisted by wizards and experts, builds complex report files easily.
- Using the Database Expert to easily interact with a wide variety of database protocols, as well as proxy data in the form of ADO.NET Data Sets, ODBC, and OLEDB etc.
- Report viewers display Crystal reports on forms, in both Web and Windows applications.
- A Crystal Reports SDK interacts with and modifies reports programmatically.
- A programmer can set properties of the CrystalReport control during design time or at run time.
- An exporting feature exports data from the CrystalReportViewer control to Word, **Excel**, PDF, and HTML, and Crystal Reports formats.
- The ability to print from the CrystalReportViewer control enables page-based report printing from any Web or Windows application.
- Prompts for missing parameters and database logons from the CrystalReportViewer control allow reports, which have missing parameters or database information, to be easily corrected and displayed.
- Crystal Services allows programmatic access to your reports through a web service.
- Merge module deployment ensures the correct Crystal Reports' components and assemblies are added to a Web or Windows application that is created in Crystal Reports for Visual Studio 2008 and later version.
- Scalability is offered through optimizations that are available within Crystal Reports for Visual Studio 2008, or by upgrading to another solution in the Crystal product family.
- Scalability migration is possible from previous versions of Crystal Reports for Visual Studio 2008.



Lesson 8.2 – 8.3

Working with Crystal Report

Introduction

When you install visual studio 2008 or later version, crystal reports is automatically installed on your computer. So developers can write applications that have reports seamlessly integrated into them. You will find the crystal reports application under report sub menu, when you want to create a new project. Crystal Report is standard tool for reporting in Visual Studio 2008 and later version. Visual Studio .NET is the first Windows development environment that gives developers a fully integrated and robust reporting solution

Upon completion of this unit you will be able to:



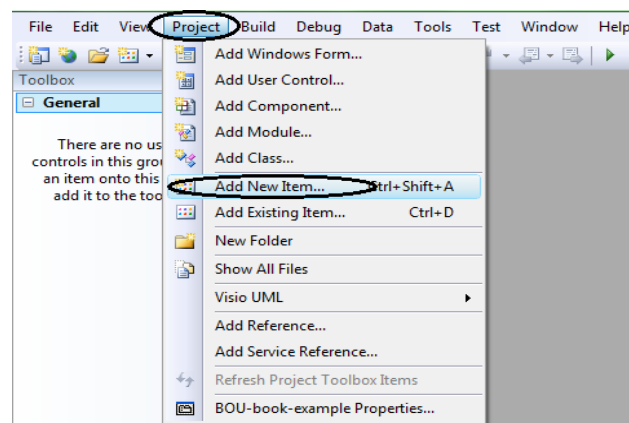
- *Open* Crystal Report from Visual studio 2008 editor.
- *Create* a new Crystal Report document.

Outcomes

How to open Crystal Report

To open a new crystal report follows the following steps:

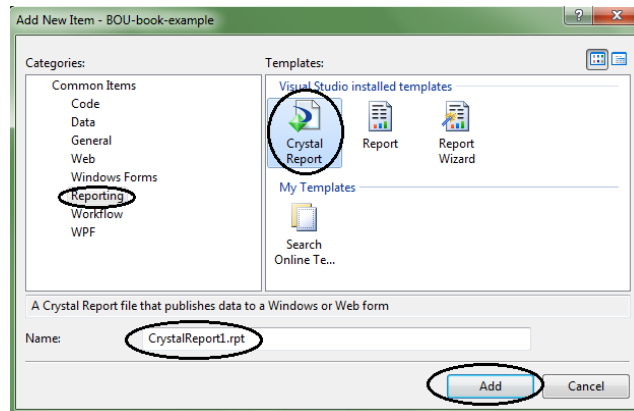
- 1.Start your visual studio 2008 by clicking on desktop shortcut or windows start button.
- 2.Now from menu bar click project tab and then click Add New Item, which will look like the following:



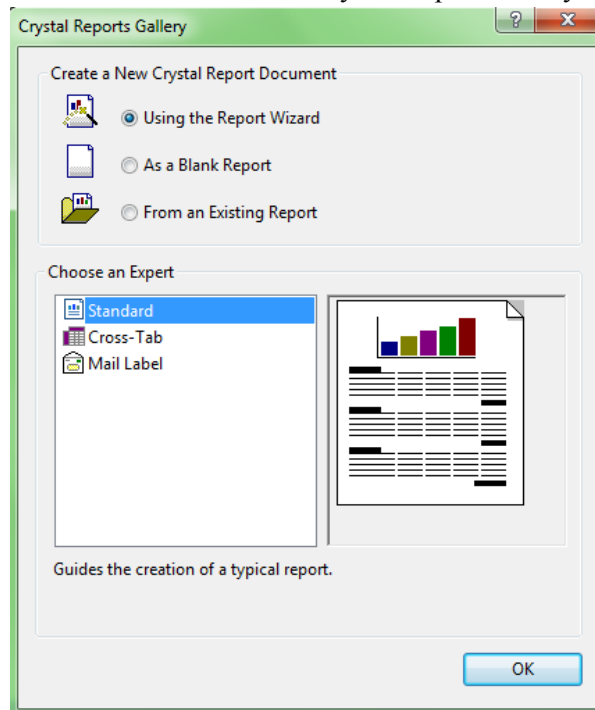
- 3.Add New Item dialog box appear, then from the left side categories



items, select reporting menu, then select crystal report from right side templates, which will look like the following:



4. Now give crystal report's name as you want. By default crystal report name will be CrystalReport1 and its extension will be .rpt and then click Add button. Now Crystal Report Gallery's window will appear:



Procedure to Create New Crystal Report Document

Crystal Report Gallery window consist of two section such as

- i. Create a New Crystal Report Document
- ii. Choose an Expert

Create a New Crystal Report Document part consist of three options such as

- i. Using the Report Wizard



- ii. As a Blank Report
- iii. From an Existing Report

Choose an Expert part consist of three types of report like

- i. Standard
- ii. Cross-Tab
- iii. Mail Label

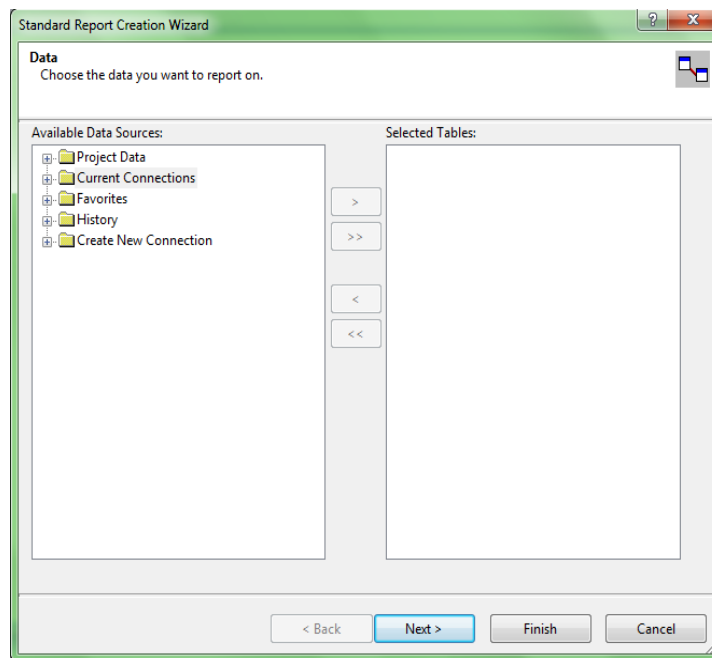
In this book we will explain how to create standard types of report, this types of report is standard for all software development.

Creating New Crystal Report Document using the Report wizard method

To create a New Crystal Report Document using the report wizard method follows the following steps:

From crystal report gallery window select using the Report Wizard radio button and also select standard option from choose expert part and then click ok button.

Standard report creation wizard dialog will appear, which look like the following:



1.The Standard Report Creation Wizard actually has the following screens:

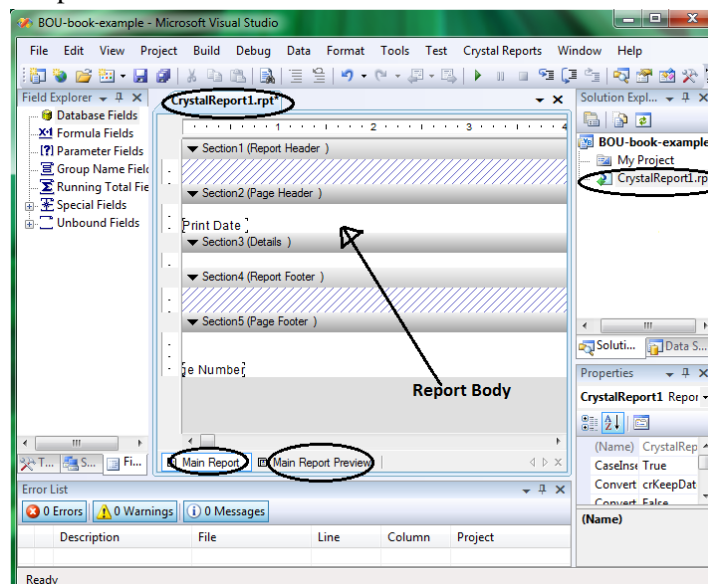
- Data Screen
- Link Screen
- Fields Screen
- Grouping Screen



- Summaries Screen
- Group Sorting Screen
- Chart Screen
- Record Selection Screen
- Report Style Screen

These screens descriptions discussed in later lesson due to use of database. In the above screen only shows the data screen which consist of available data source option and selected tables options. This option is required database to shows data on report, so in this section we omit these options.

2. Now click on finish button and then you will look like the following report window:



3. Here you will see the field explorer window, solution explorer window, properties window and report body.

4. Report body contains five section such as :

- Section 1(Report Header):** Any data like text, image and so on inserted in this section will be displayed in the report for one time in the top of the first page only.
- Section 2(Page Header):** Any data like text, image and so on inserted in this section will be displayed in the header of each page in the report.
- Section 3(Details):** This section displays the data from the data source (which is described latter lesson) containing multiple rows of returned results like data base tables.
- Section 4(Report Footer):** Any data like text, image and so on inserted in this section will be displayed in the report for one time in the end of the last page only.
- Section 5(Page Footer):** Any data like text, image and so on inserted in this section will be displayed in the footer of each page in the report.



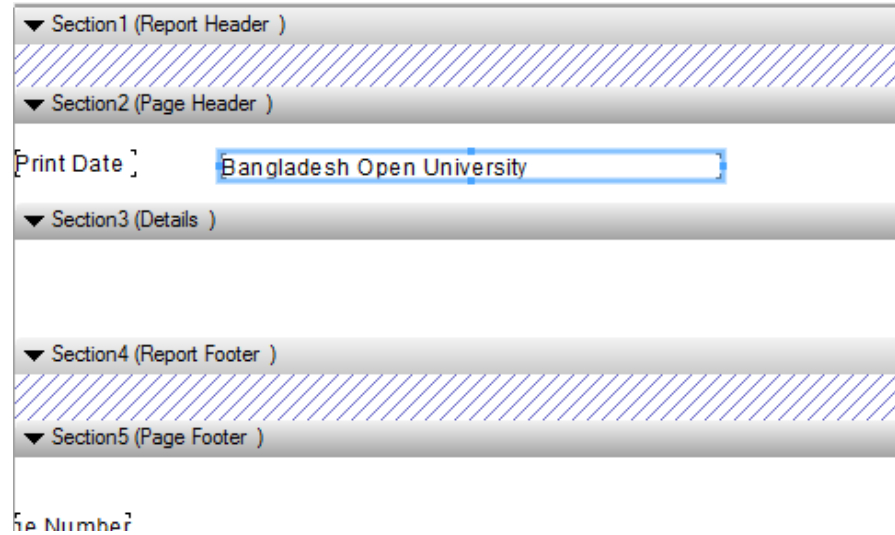
5. Now click on Main Report Preview option from the bottom of report body you will see only your computer current date and page number, because we did not load database information's.
6. Here, Field explorer window contains some fields such as
 - i. Database fields
 - ii. Formulae fields
 - iii. Parameter fields
 - iv. Group name fields
 - v. Running total fields
 - vi. Special fields
 - vii. Unbound fields
7. Now again click on Main Report option from bottom of report body, so you will go back report edit option.
8. If you want to see the special fields, just click on + sign of special fields or double click on special fields. here you will see the following special fields:
 - i. Print date
 - ii. Print time
 - iii. Modification date
 - iv. Modification time
 - v. Data date
 - vi. Data time
 - vii. Record number
 - viii. Page number
 - ix. Group number
 - x. Total page count
 - xi. Report title
 - xii. Report comments
 - xiii. Report selection formulae
 - xiv. Group selection formulae
 - xv. File path and name
 - xvi. File author
 - xvii. File creation date
 - xviii. Page N of M
9. If you want to see the unbound fields, just click on + sign of unbound fields or double click on unbound fields. Here you will see the following fields:
 - i. Boolean
 - ii. Currency
 - iii. Date
 - iv. Date time
 - v. Number
 - vi. String



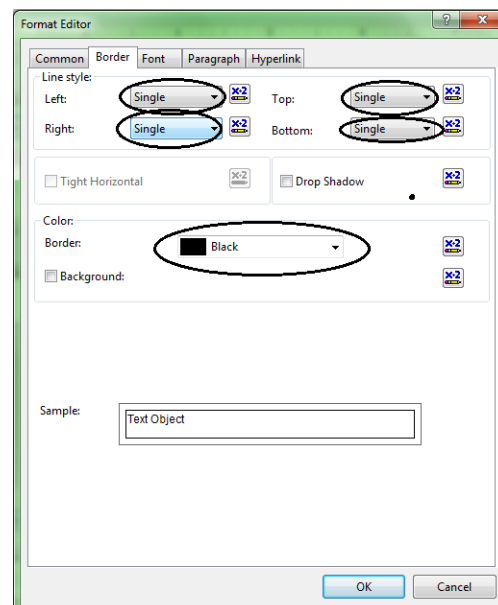
vii. Time

10. Now right click on section 2(Page header), and then select insert and then select Text Object. Now you will see a rectangle box on mouse pointer. Just click on anywhere of Section 2.

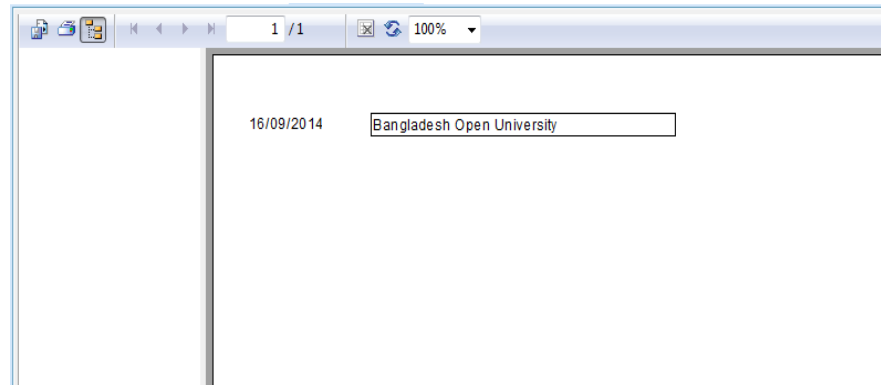
11. Now type text like “Bangladesh Open University” in the rectangle box. If the text is greater than rectangle box, just increase it using mouse pointer. Now you will look like the following:



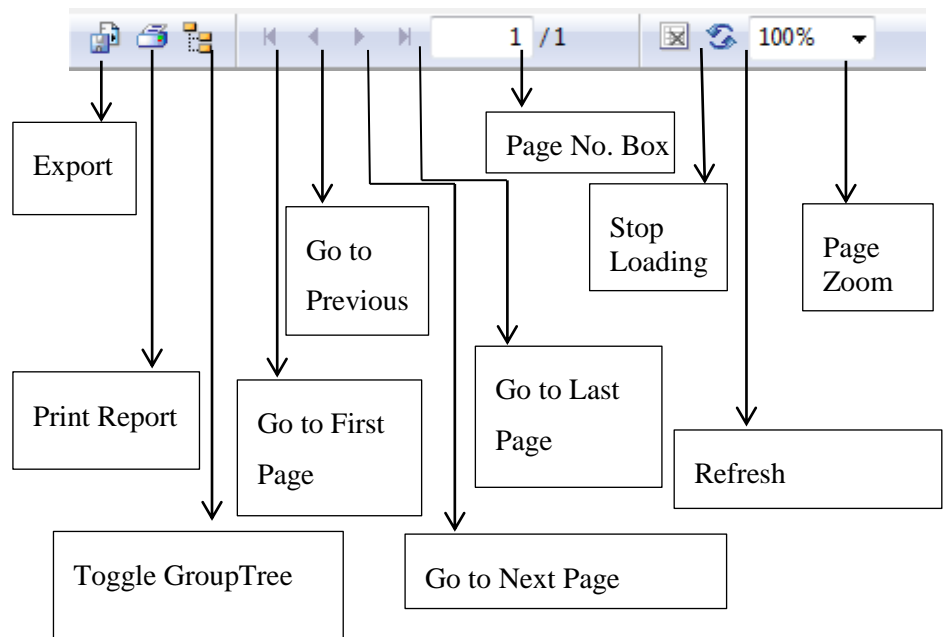
12. Now right click on the rectangle object and then select Format object, Format Editor will be appeared. Now from the Format Editor window select border tab and set the line style and color as following window, and click ok button.



13. Now click on Main report preview option from the bottom of the report , a border will be appeared around the text object like the following:



14. A report Preview contains a menu bar to do various operations. Menu bar of a report and it's various menu 's operations is shown below:



Click on Toggle Group tree menu if you want to full page preview.

If you want to reload or refresh the report just click on refresh menu and if you want to cancel or stop loading the report, just click on stop loading menu.

If you want to edit report, just click on Main Report option from the bottom of report body. In this option, you can edit text, text object, shapes, lines etc. If you want insert line, text object, box object, picture, special field etc. just click right button on report body then select insert option and then go to various option as you want. According to this procedure you can design your report as your choices.



Lesson 8.3 – 8.4

Working with Microsoft (MS) access Database

Introduction

Microsoft Office Access also known as MS access is a Database Management System (DBMS). It is developed by Microsoft Corporation. It is found in Microsoft office software that is, when you install Microsoft office software on your computer MS access is installed by default. It combines the relational Microsoft with a graphical user interface and software-development tools. Microsoft Access stores data in its own format based on the Access Jet Database Engine. It can also import or link directly to data stored in other applications and databases. Computer programmer as well as Software developers and data architects can use Microsoft Access to develop application software.

Upon completion of this unit you will be able to:



- Create a database.
- Create tables in database

Outcomes

MS Access Database

Database is a collection of data contains information's in a relevant enterprise. Microsoft Access (MS access) is also a database creation program that allows for anyone to easily maintain and edit a database. It is suitable for anything from small projects to large businesses, and is a very visual program. Microsoft Access has the look and feel of other Microsoft Office products, including its layout and navigational aspects. First of all, Microsoft released Access version 1.0 on 13 November 1992, and then an Access 1.1 release in May 1993 to improve compatibility with supplementary Microsoft products and to include the Access Basic programming language. In Office 95, Microsoft Access 7.0 became a part of the Microsoft Office Professional Suite (MOPS), joining Microsoft Excel, Microsoft Word, and Microsoft PowerPoint and transitioning from Access Basic to Visual Basic for Applications (VBA). After then, Microsoft has released new versions of Microsoft Access with each release of Microsoft Office software. This includes Access 97 (version 8.0), Access 2000 (version 9.0), Access 2002 (version 10.0), Access 2003 (version 11.5), Access 2007 (version 12.0), and Access 2010 (version 14.0).

Microsoft Access is used as the 'front-end' of a program while other products act as the 'back-end' tables, such as Microsoft SQL Server and



non-Microsoft products such as Oracle and Sybase etc. Multiple backend sources can be used by a Microsoft Access Jet Database (accdb and mdb formats). Similarly, some applications such as Visual Basic, ASP.NET, or Visual Studio .NET will use the Microsoft Access database format for its tables and queries. Microsoft Access may also be part of a more complex solution, where it may be integrated with other technologies such as Microsoft Excel, Microsoft Outlook, Microsoft Word, Microsoft PowerPoint.

Features of Microsoft Access Database

Lists of features of Microsoft Access database are as follows:

1. Users can create tables, queries, forms and reports, and connect them together with macros.
2. Advanced users can use Visual basic application as well as visual studio write rich code to make solutions with advanced data manipulation and user control.
3. Access also has report creation features that can work with any data source.
4. Possible to import and export of data to many formats like Excel, Outlook, ASCII, dBase, Paradox, FoxPro, SQL Server, Oracle, ODBC, etc.
5. It also has the ability to link to data in its existing location and use it for viewing, querying, editing, and reporting.
6. It can perform heterogeneous joins between data sets stored across different platforms.
7. There is also the Jet Database format (MDB or ACCDB in Access 2007) which can contain the application and data in one file.
8. Microsoft Access offers parameterized queries. These queries and Access tables can be referenced from other programs like VB6, .NET and VS(Visual studio) through DAO,ADO and OLE DB.
9. It is a file server-based database. Unlike client–server relational database management systems (RDBMS), Microsoft Access does not implement database triggers, stored procedures, or transaction logging and views.

Components of Microsoft Access

Microsoft Access is powerful database software. It is made up of 7 major components:

- i. Tables
- ii. Relationships
- iii. Queries



- iv. Forms
- v. Reports
- vi. Macros
- vii. Modules

The above components are described below:

Tables

The tables of MS access database are the backbone and the storage container of the data entered into the database. If the tables are not set up correctly, with the correct relationships, then the database may be slow, give you the wrong results or not react the way you expect. Queries, forms, reports etc. are usually based on a table. A table contains columns and rows. Each of the columns will have a field name at the top and each of the rows will represent a record.

Relationships

Relationships are the bonds you build between the tables. They join tables that have associated elements. To do this there is a field in each table, which is linked to each other, and have the same values.

Queries

Query means of manipulating the data to display in a form or a report. Queries can sort, group, filter, join tables, update data, delete data, sum, average, count etc. Their power is immense. The MS access database query language is SQL (Structured Query Language).

Forms

A form is a database object that you can use to create a user interface for a database application. The user who enters the data will interact with forms regularly. The programmer can set the forms to show only the data required. A form is one that is directly connected to a data source such as a table or query, and can be used to enter, edit, or display data from that data source. By using queries, properties, macros and VBA as well as visual studio applications the ability to add, edit and delete data can also be set.

Reports

Reports are an enormous way to organize and present data from your Microsoft Access database. Reports enable you to format your data in an attractive and informative layout for printing or viewing on screen. Reports are the results of the manipulation of the data you have entered into the database. You can print report using the printer.

Macros

A macro is a tool that allows you to automate tasks and add functionality to your forms, reports, and controls. Macro is an automatic way for Access to carry out a series of actions for the database. Access gives you a selection of actions that are carried out in the order you enter. In Access, it is helpful to think of macros as a simplified programming language that you write by building a list of actions to perform. When you build a macro, you select each action from a drop-down list and then fill in the required information for each action



Modules

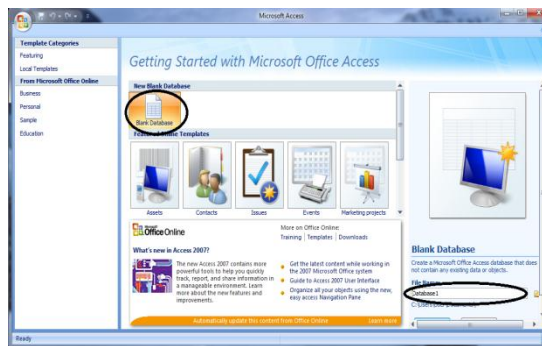
Modules are the basis of the programming language that supports Microsoft Access. The module window is where you can write and store Visual Basic for Applications (VBA) as well as visual studio applications. Advanced users of Microsoft Access tend to use VBA or visual studio applications instead of Macros.

Creating database in access 2007

First of all setup Microsoft office software 2007 or later version on your computer. For creating MS access database, we discussed here about the MS access 2007 version. When you installed MS office 2007 software on your computer, MS access 2007 is installed by default.

Now follow the following Steps:

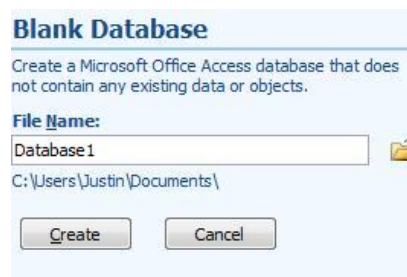
1. Launch MS access by clicking on Start→All programs→Microsoft office→Microsoft office Access 2007
Then Microsoft Access will be launched which is like as following window:




2. Now Select Blank Database Template from top of the window

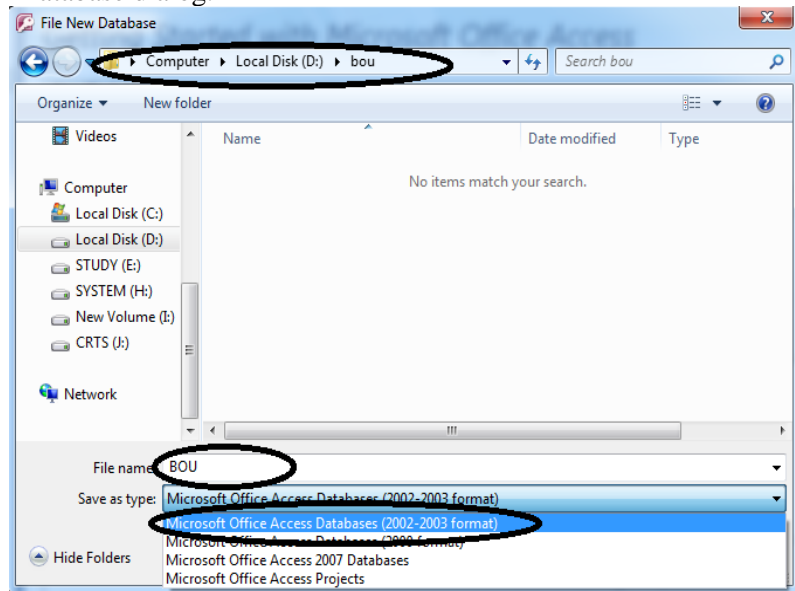


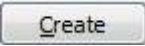
3. After you click on Blank Database Template, you will see the following option on the right bottom side of the above window:





4. Now click on  option then, you will see the following File New Database dialog:



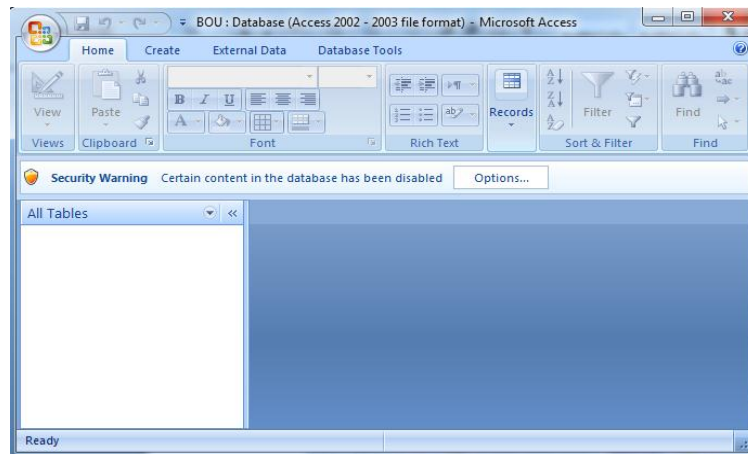
5. Now select your directory from your computer, where you want save your file, and then type your database name on the File name text box. Here BOU is the database name, and then select Microsoft office access database (2002-2003 format) from the save as type drop down box, and then click ok button.
6. After completion the step 5, then click create button , and your database file saves to the location that you specified, and opens for you to work on.

Create tables in database

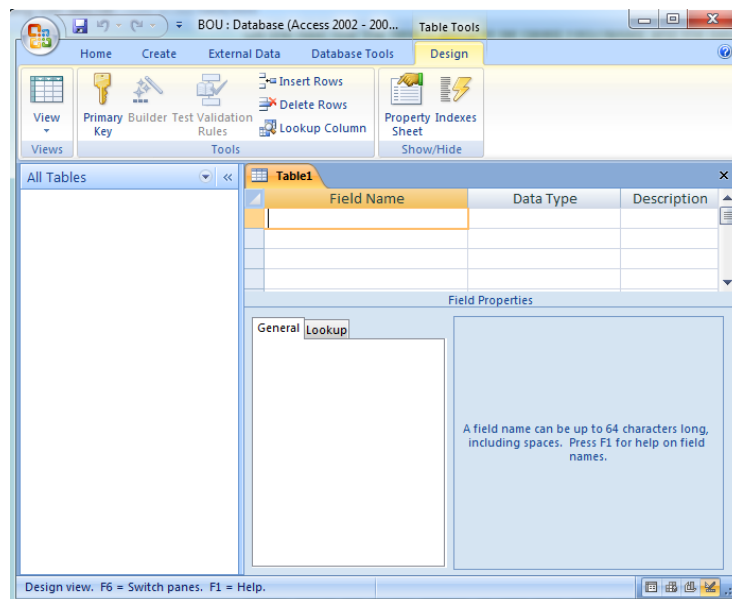
Like all other databases, Access 2007 stores data in tables. They look a lot like the cells of a spreadsheet with columns and rows. Each horizontal column represents a table record, and each vertical column represents a table field. When planning a database table, most database designers will decide which column headings or fields they are going to use. This is the basis of the table structure.

To create tables on previously created database “BOU”, follow the following steps:

1. Open your database “BOU” from your computer directory. When you open your database file “BOU” you will look like the following:



2. Now Select the CREATE tab on the Access ribbon. Next select the TABLE DESIGN icon from the TABLES group. This creates a new table, which will look like the following:

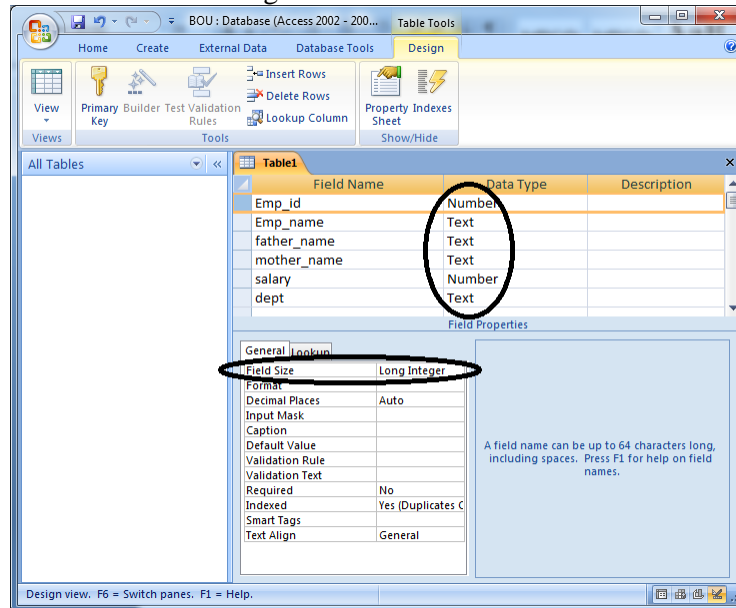



3. Now we create table column as table field as follows:

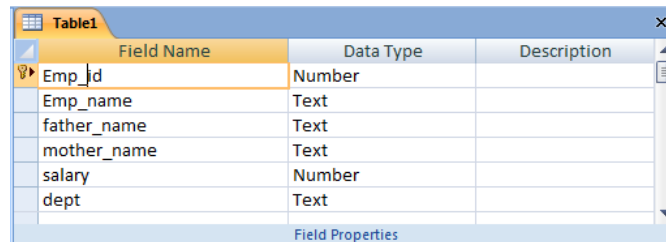
Field Name	Data type	Set field Size
Emp_id	Number	Long integer
Emp_name	Text	25
father_name	Text	25
mother_name	Text	25
salary	Number	Long integer
Dept	Text	25




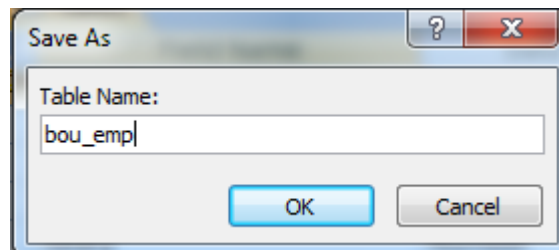
According to above information's create table field on your access database, you can set field size from bottom under general tab. When you select data type the field size will be shown under general tab, which will look like the following:



4. Now click on Emp_id row and then click primary key icon  to set this row as primary key. The table design grid should now look like this:



5. Now click on save icon  then save as dialog box appeared. Now put the table name in table name text box, then click ok button. Here we put the table name is bou_emp.

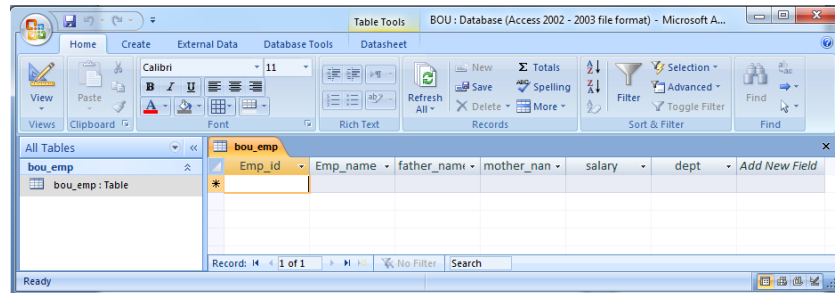




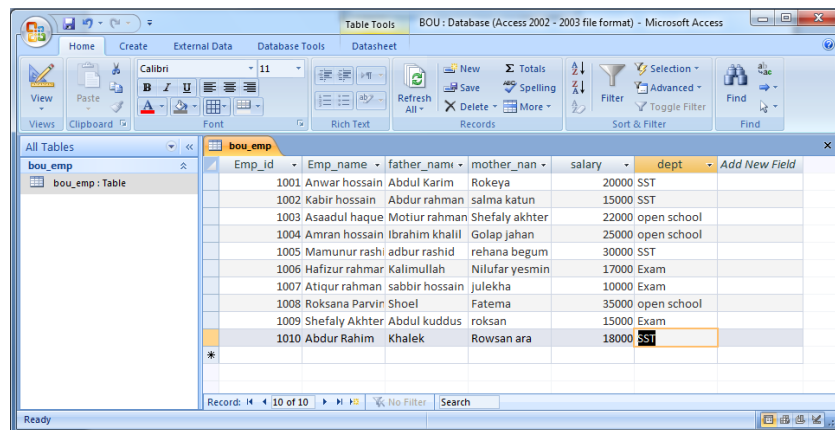
6. Now we insert the all information's in bou_emp table. So click on



icon from the left corner of the access ribbon, then you will look like the following :



7. Now you enter the all fields' information as follows, and then click on save icon.



8. If you want to delete any record, just click on delete option from the ribbon and if you want to enter new record, just click on right button and then click new record. If you want to edit a record, just click on particular filed as well as particular record and then edit as you want. After completion edit, delete, insert a new record, must click on save icon.



Lesson 8.5 – 8.6

Connecting Crystal Report with MS Access Database

Introduction

Already you have learned about introductory concept of crystal reports and Microsoft access database from the previous lessons. You have an idea that how to create a report using crystal report or how to design the report and how to create MS access database as well as how to create tables under access database.

Upon completion of this unit you will be able to



- *Connect* crystal report with MS access database.

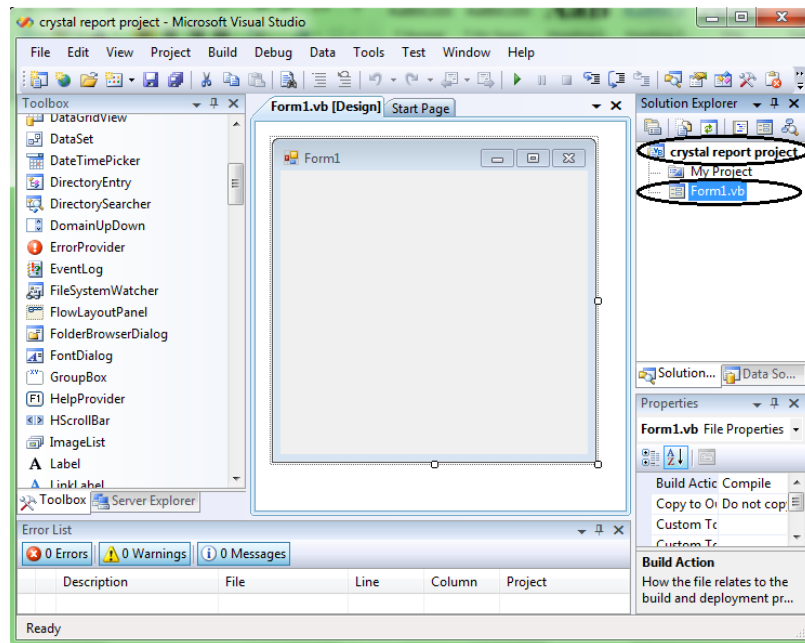
Outcomes

Connecting crystal report with MS Access Database

We think, you have already learned how to create a project, windows forms, and crystal reports from the previous lessons. So in this section we used the BOU database, which is created in the previous lesson.

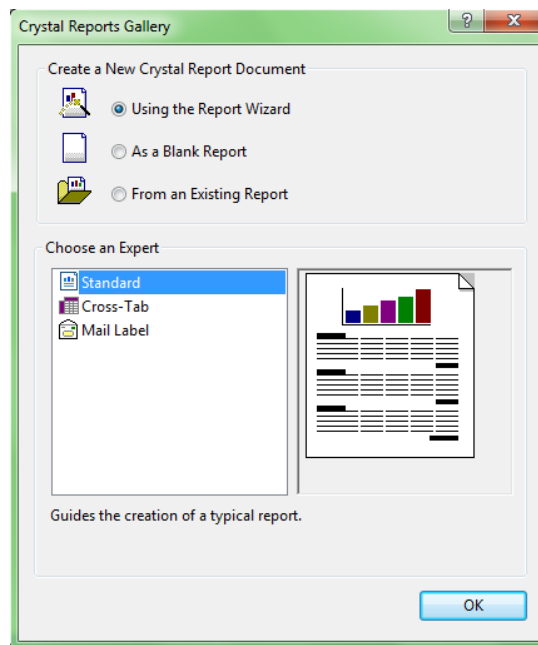
Connection procedure of crystal report with MS access database described as follows:

First of all create a project with the name is as “crystal report project”. In this project a windows form (Form1.vb) is created by default which will look like the following:



1. Now add a crystal report from menu bar as follows:
Project → Add New item → Reporting → Crystal report1.rpt

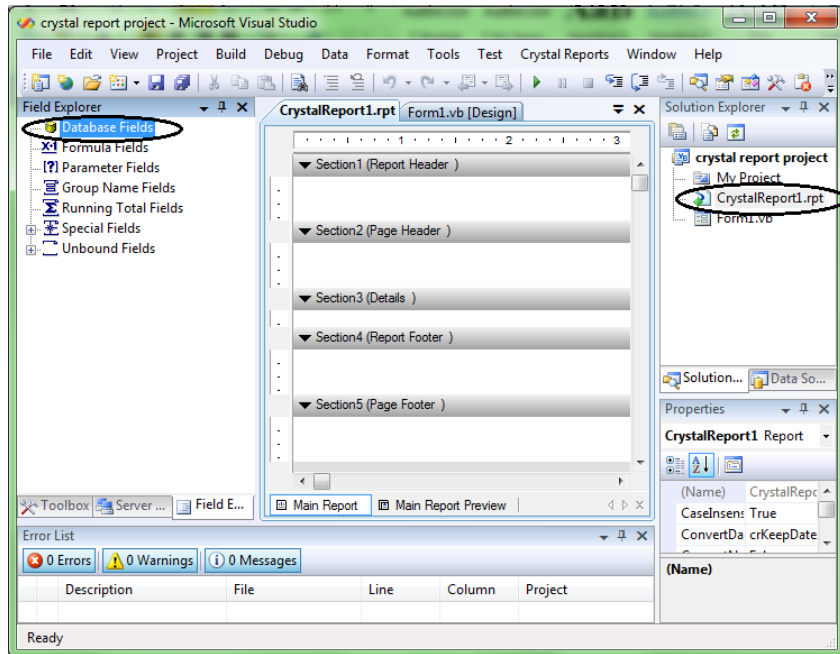
After then Crystal Report Gallery window is appeared which will look like the following:



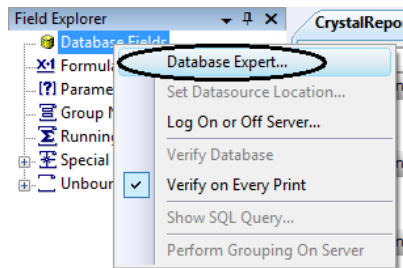
2. Now select As a Blank Report radio button, then click ok button. Now create a report on your project which name is CrystalReport1.rpt. Actually you can change this name when you add a report or solution



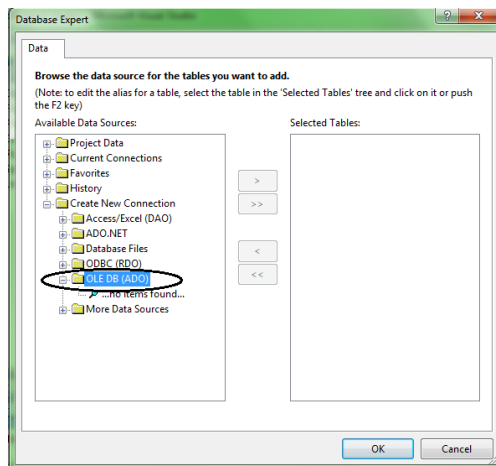
explorer. So you will look like the following:



3. Now from left side Field Explorer window, click right button of mouse on Database Fields then select Database Expert option, which will look like the following:

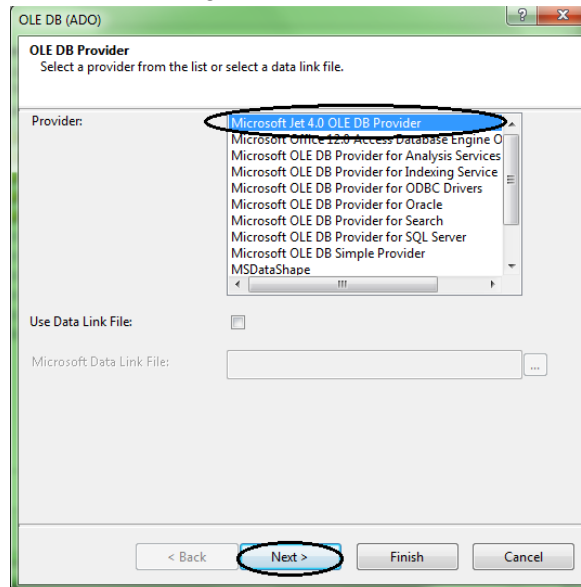


4. After select Database Expert option, Database Expert window will appear, which will look like the following:

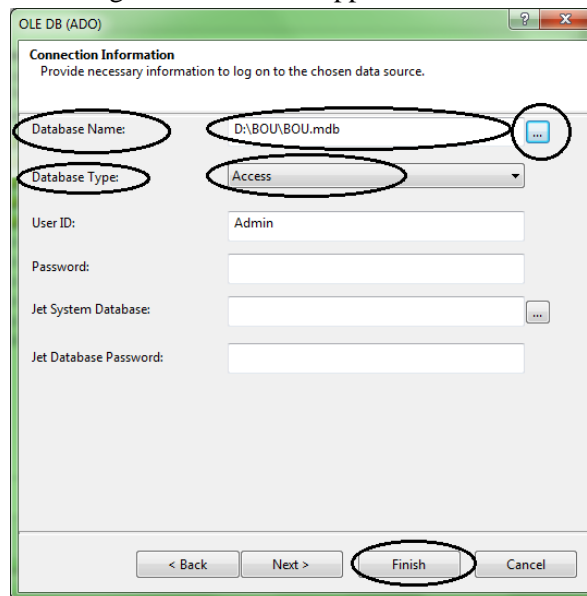





5. Now click on + sign of Create New Connection option of Available Data Sources from the left side. After then double click on OLE DB(ADO) option, OLE DB window will be appeared, which will look like the following:



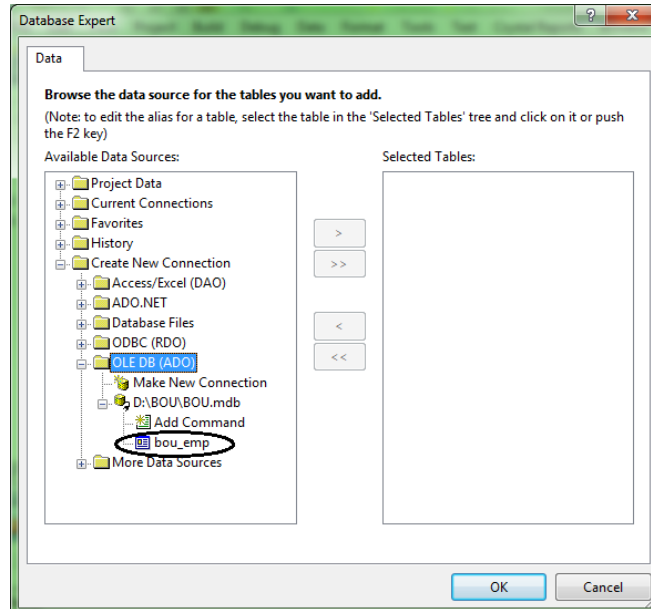
6. Now select the OLE DB provider from the list box, that is select Microsoft Jet 4.0 OLE DB Provider, and then click Next button, the following window will be appeared:





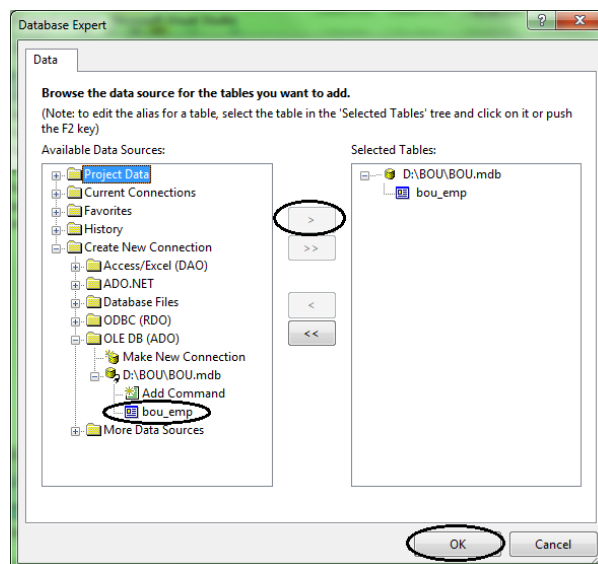
7. Now in the above window, give the connection information. So put the Database Name location or browse your database from your computer director in the Database Name text filed. For this work you can click 



button and select your database file or file location. Here we used “BOU.mdb” database, which is created previous lesson. On the other hand Database Type is selected as Access. After completion all information’s just click on finish button. After clicking finish button the database tables is shown in under OLE DB (ADO) option. Here bou_emp table is shown, which will look like the following:

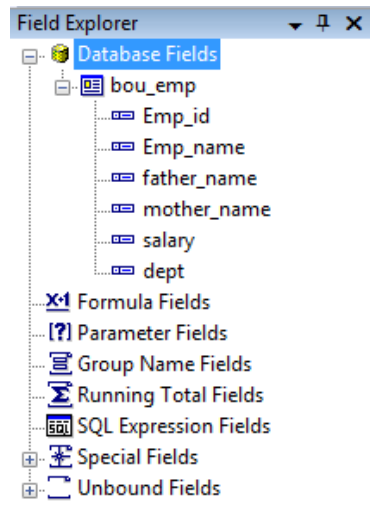


8. Now double click on bou_emp table or select bou_emp table then click on  button. The bou_emp table will appear to the Selected Tables area. Here if you want to deselect the table, from the Selected Tables area, just click on particular table and then click on  button. Now you will look like the following window

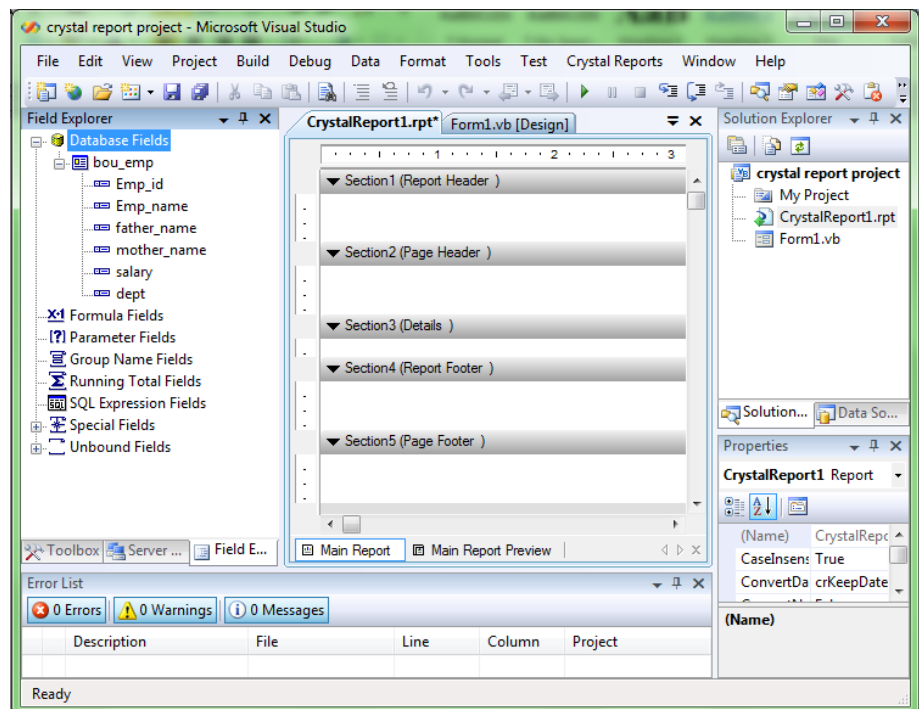




9. Now click on ok button.
10. Now from the Field Explorer window, click on + sign of Database Fields, then you will look the bou_emp table. After then click on + sign of bou_emp table, you will look all the fields of bou_emp table, which will look like the following:



11. So now, we can say that crystal report is connected with the MS access database. In the next lesson, we have discussed that how the report is designed with this fields of bou_emp table. Finally your project window will look like the following:





Lesson 8.7 – 8.8

Design Crystal Report Using Database Table's fields

Introduction

In the previous lesson, you have learned about the connection procedure of crystal report with the MS access database, and also you have learned that how to retrieve the table fields on crystal report. So now in this lesson you will learn how to design a report using the table fields.

Upon completion of this unit you will be able to

- *Design* crystal report using database table's fields.



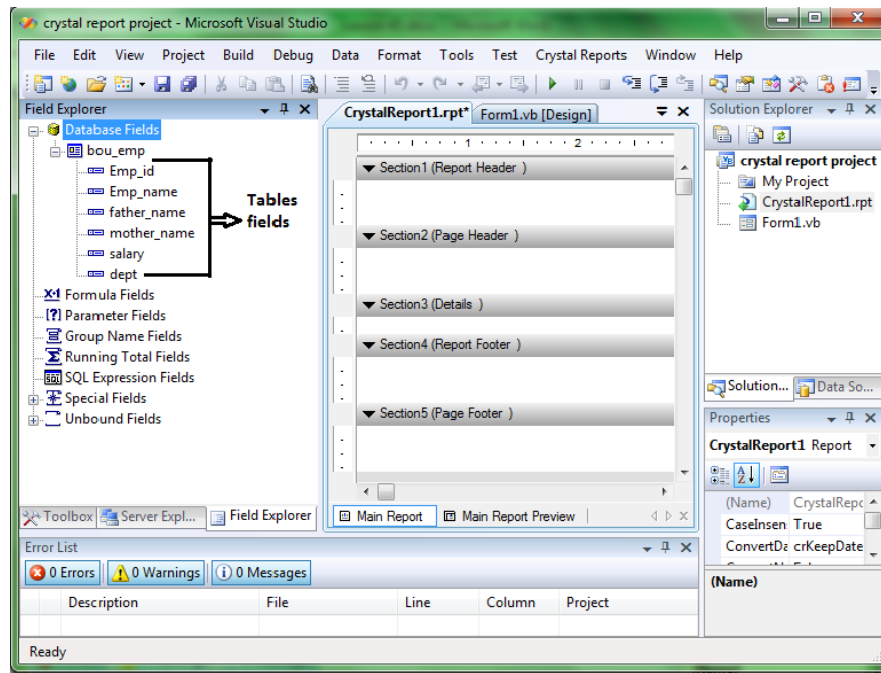
Outcomes

Designing Crystal Report Using Database

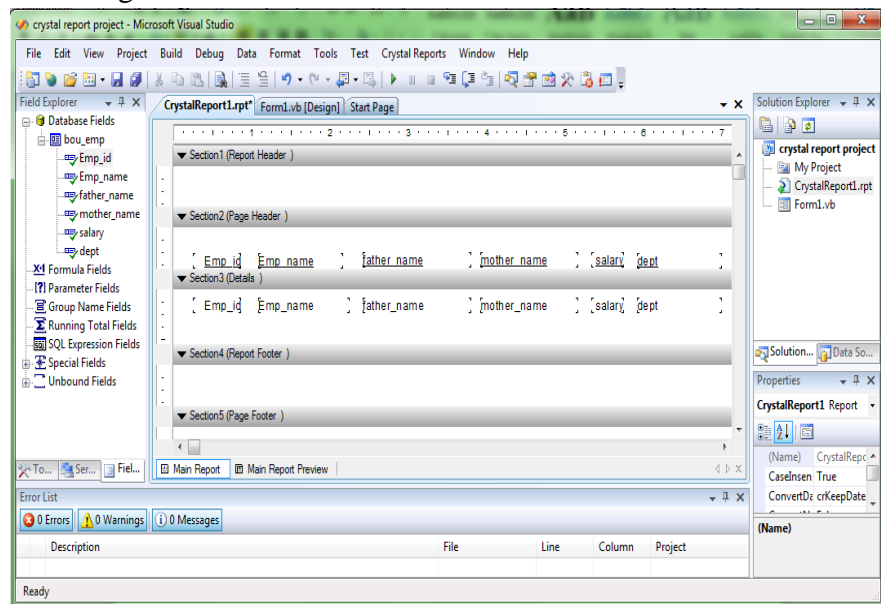
To design a crystal report using database table's fields, follow the following steps:

1. Connect your crystal report with the MS Access database according to lesson 44 steps.

In this section we also consider the “BOU.mdb” database and its table which is created in the previous lesson. After completion of connection, your project window will look like the following:



2. Now from the Field Explorer window, drag Emp_id field and drop it on under Section 3 (Details), drag Emp_name field and drop it on under section3 (Details) of report body and the remaining fields are also drag and drop them on under Section3 (Details) respectively. So your project window should look like the following:



3. Now click on Main Report Preview option from the bottom of the report, then you will look like the following:

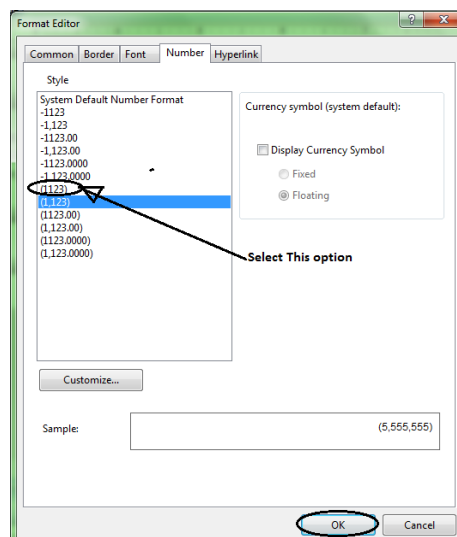


Emp_id	Emp_name	father_name	mother_name	salary	dept
1,001	Anwar hossain	Abdul Karim	Rokeya	20,000	SST
1,002	Kabir hossain	Abdur rahman	salma katum	15,000	SST
1,003	Asaadul haque	Motiur rahman	Shafaly akhter	22,000	open school
1,004	Amran hossain	Ibrahim khaliil	Golap jahan	25,000	open school
1,005	Mamunur rashid	adbur rashid	rehana begum	30,000	SST
1,006	Hafizur rahman	Kalimullah	NIkufar yesmin	17,000	Exam
1,007	Atiqur rahman	sabbir hossain	julekha	10,000	Exam

4. In the above report screen, all information's such as Employee id(Emp_id), Employee name(Emp_name), Employee father name(father_name), Employee mother name(mother_name), Employee salary(salary), Employee department name(dept) are shown.

5. Now click on save option for save the report. If you want to edit the report just click on Main Report option from the bottom of report.

6. In the above screen it is shown that, Emp_id values are displayed with a comma (,) like 1,001, 1,002, 1,003 and so on. Actually Emp_id field does not contains a comma (,). So if you want to omit the comma (,) from the Emp_id fields. Just right click on Emp_id field under Section3(Details), then select Format Object, Format Editor will be appeared, which will look like the following:




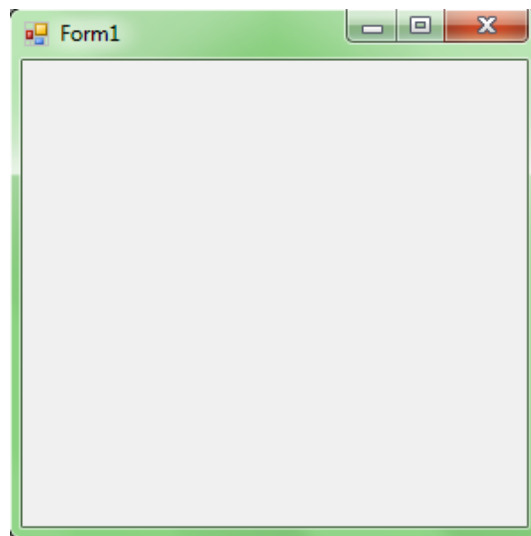
7. Now from the Format Editor, select (1123) option then click ok button. After completing this task, click on save option and then



Click on Main Report Preview, your report screen will look like the following:

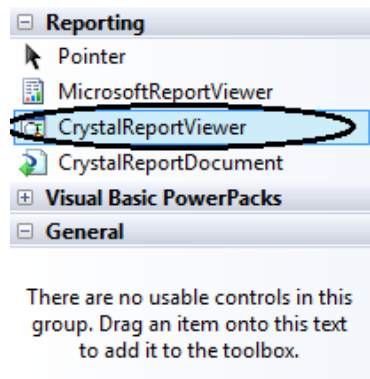
<u>Emp_id</u>	<u>Emp_name</u>	<u>father_name</u>	<u>mother_name</u>	<u>salary</u>	<u>dept</u>
1001	Anwar hossain	Abdul Karim	Rokeya	20,000	SST
1002	Kabir hossain	Abdur rahman	salma katun	15,000	SST
1003	Asaadul haque	Motiur rahman	Shefaly akhter	22,000	open school
1004	Amran hossain	Ibrahim khalil	Golap jahan	25,000	open school
1005	Mamunur rashid	adbur rashid	rehana begum	30,000	SST
1006	Hafizur rahman	Kalimullah	Nilufar yesmin	17,000	Exam
1007	Atiqur rahman	sabbir hossain	julekha	10,000	Exam

- 8. Here it is seen that, comma is omitted from the emp_id field.
- 9. Now you can edit the report as you want by clicking on Main Report.
- 10. Now if you want to run the report, from the run option, it is not possible to run the report separately. So for run the report, you must link the report with the windows form.
- 11. If you run the report by clicking on run icon  you will see blank windows form like this:

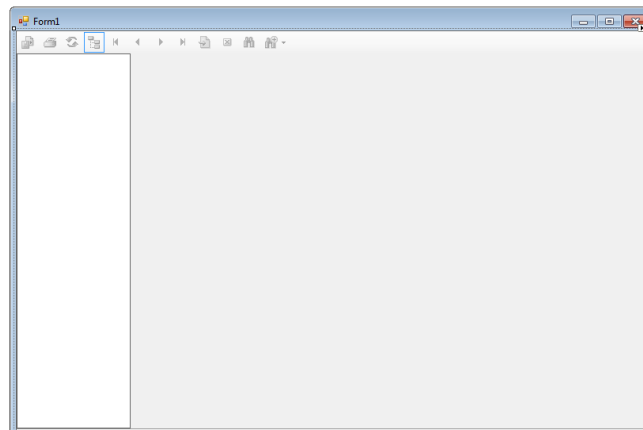



- 12. Now drag a CrystalReportViewer component from the Toolbox under Reporting Tab and drop it on the windows form (Form1.vb).

Here you can increase or decrease the form and CrystalReport Viewer component as you want.



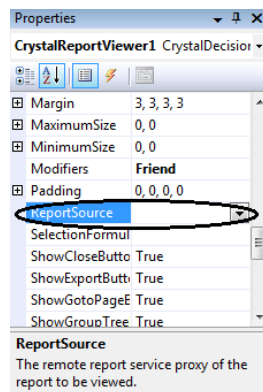
13. After completing the above task, the windows form will look like the following:



14. Now click on save all  Save All option from file menu and save this project on your computer directory. Here we saved this project as following location:

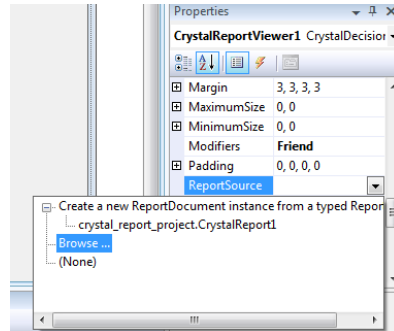
D:\BOU-book-example\report

15. Now single click on CrystalReportViewer from windows form and select report source as like as follows:






16. Now click on drop down menu of report source and click on browse option, and then select your report location. Actually CrystalReport1.rpt location is selected.

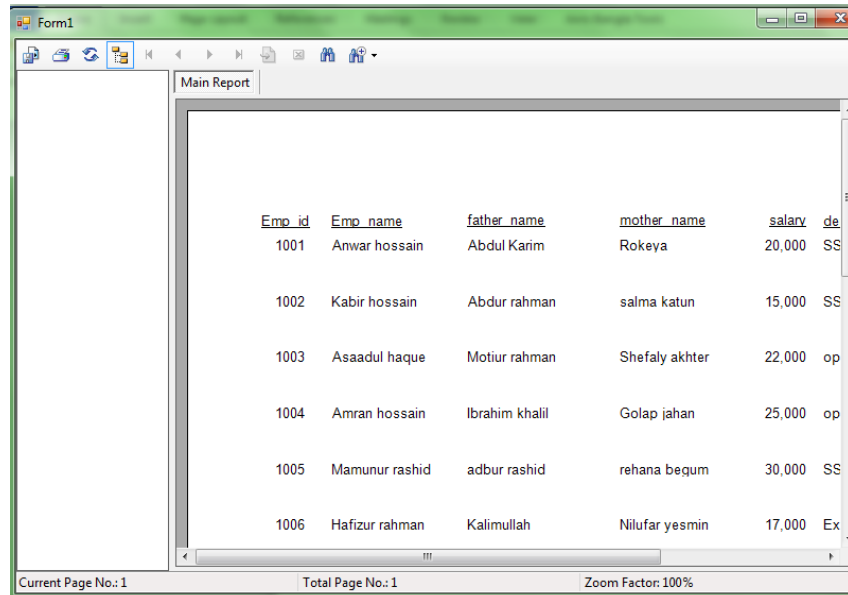



17. Here our report location is as follows:

D:\BOU-book-example\report\crystal report project\crystal report project\CrystalReport1.rpt

Here, you can just select your report location from your computer directory, where the project is saved.

18. Now save and then click on run icon  from tools bar, then the report will be run. So you will look like the following screen:



Now if you want to print this report click on  option from the report menu.



Lesson 8.9 – 8.10

Representing Group Data on Crystal Report

Introduction

In the previous lesson you have learned that, how to connect crystal report with MS access database and how to represent records of the table on crystal report and how to run the report and display information's from windows form. In this lesson you will learn, how to embed the data as group using standard report wizard as well as, how to represent this data on report.

Upon completion of this unit you will be able to:



- *Embed* the database records as group using standard report wizard.

Outcomes

Creating group using standard report wizard

We think, you have large knowledge about database, tables and records as well as reporting procedure of MS access and visual studio crystal report respectively. Sometimes a table field contains same value or information's or record more than one time. In this case we can group the repeating records and represent these records on crystal report for more convenient. In our BOU database consist of one table like bou_emp. This table's dept field contains same record more than one time such as SST is 4 times, Open school is 3 times and Exam is 3 times. So in this section we will learn, how can group these records using standard report creation wizard. Here we will consider the "BOU.mdb" database, which is created in the previous lesson.

The Standard Report Creation Wizard has the following screens:

- Data Screen:** The Data screen appears in the Report Creation Wizard when you select any of the wizards in the Crystal Reports Gallery dialog box when creating a new report. Use the Data screen to select the data source and tables for your new report.
- Link Screen:** Use the Link screen to link tables in your new report. The Link screen appears in the Report Creation Wizard when you have selected two or more tables on the Data Screen.



iii. **Field Screen:** Use the Fields screen to select the fields you want included in your report. It has following option:

a. Available Fields: This list displays all of the fields available for use in your report. The list is based on the tables you selected on the Data Screen.

b. Browse Data: Click this button to browse the data of the field that is selected in the Available Fields list.

c. Find Field: Click this button to enter the name of a field you'd like to locate in the Available Fields list.

d. Add or remove arrow buttons: Use the > arrow adjacent to the Fields to Display list to add fields from the Available Fields list. Use the < arrows to remove fields you've already added. Double arrows add or remove all fields.

e. Fields to Display: This list displays all of the report fields presently active in the report.

f. Up or down arrow buttons: Use the up and down arrows adjacent to the Fields to display list to change the order of fields you've added from the Available Fields list.

iv. **Grouping Screen:** Use the Group screen to specify how fields will be grouped on the report. Creating groups is an optional step in the wizard. It has following options:

a. Available Fields: This list displays all of the fields available for use in your report. The list is based on the fields you chose on the Fields screen (Report Creation Wizard) and the tables you selected on the Data screen (Report Creation Wizard).

b. Browse Data: Click this button to browse the data of the field that is selected in the Available Fields list.

c. Find Field: Click this button to enter the name of a field you'd like to locate in the Available Fields list.

d. Add or remove arrow buttons: Use the > arrow adjacent to the Group By list to add fields from the Available Fields list. Use the < arrows to remove fields you've already added. Double arrows add or remove all fields.

e. Group By: This list displays all of the fields you've selected for grouping. As you add fields, they are added in a hierarchy. This hierarchy establishes the order the groups will appear in the report. You can change the order of the hierarchy by using the up and down arrow buttons. You can also set the sorting order for each field you add to the Group by list. Select a sort order from the adjacent list:

- Click in ascending order to sort the values for the field selected in the Group by list in ascending (A to Z, 1 to 9) order.
- Click in descending order to sort the values for the field selected in the Group by list in descending (Z to A, 9 to 1) order.

f. Up or down arrow buttons: Use the up and down arrows adjacent to



the Group By list to change the order of fields you've added from the Available Fields list.

v. **Summary Screen:** Use the Summaries screen to choose fields to be subtotals, counted, and so on. This screen appears only if you've specified a group on the Grouping Screen. Creating a summary field is an optional step in the wizard. It has following options:

a. **Available Fields:** This list displays the report fields available for totaling in the report.

b. **Browse Data:** Click this button to browse the data of the field that is selected in the Available Fields list.

c. **Find Field:** Click this button to enter the name of a field you'd like to locate in the Available Fields list.

d. **Summarized Fields:** This list displays the total fields currently in use in the report.

e. **Add or remove arrow buttons:** Use the > arrow adjacent to the Summarized Fields list to add fields from the Available Fields list. Use the < arrows to remove fields you've already added. Double arrows add or remove all fields.

f. **Summary options:** Click a summary option for the field selected in the Summarized list. You can choose options to total a field, or to count its entries, and so on.

vi. **Group Sorting Screen:** Use the Group Sorting screen to sort groups you created on the Grouping Screen. You can sort all groups, or you can choose the top or bottom 5 groups. When sorting by the top or bottom 5 groups, you can also choose the summarized field you want to base the sorting on. This screen appears only if you've specified a group on the Grouping Screen and a summary on the Summaries Screen. Creating a group sort is an optional step in the wizard. It has following options:

a. **Group that will be sorted:** Select the group to be sorted from a list of groups you created on the Grouping screen.

b. **Group ordering options:** Select a group sorting option. If you choose Top 5 or Bottom 5, your report displays data for only those groups; no other groups appear on your report.

c. **Comparing summary values:** If you've chosen Top 5 or Bottom 5 as your group ordering option, you must select a summarized field to base the sorting on. The choices that appear in this list are the summaries you created on the Summaries screen.

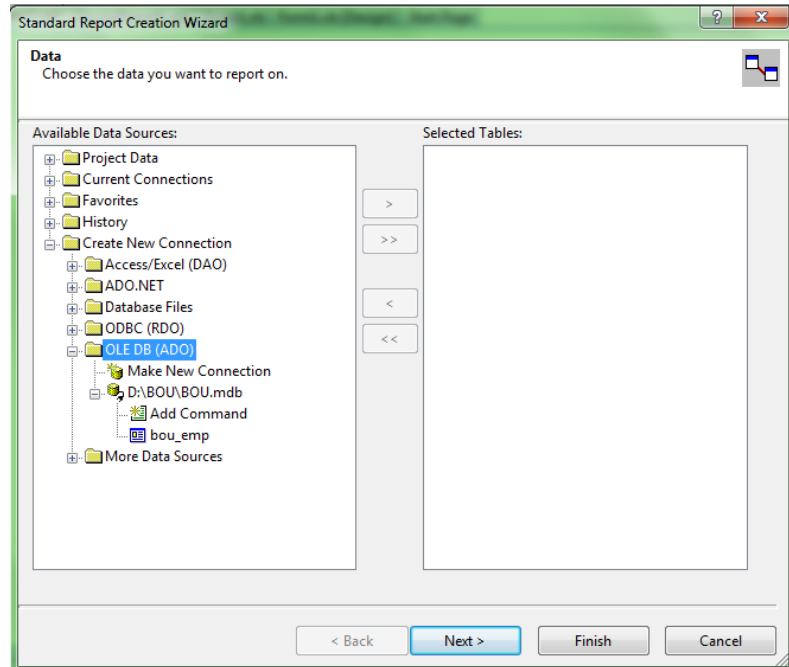
vii. **Chart Screen:** Use the Chart screen to insert a graph or chart into a report. This screen appears with slight variations in all Report Creation Wizards except the Mailing Labels wizard. In the Standard Report Creation Wizard, the Chart screen appears only if you've specified a group on the Grouping Screen and a summary on the Summaries Screen. It has following options:



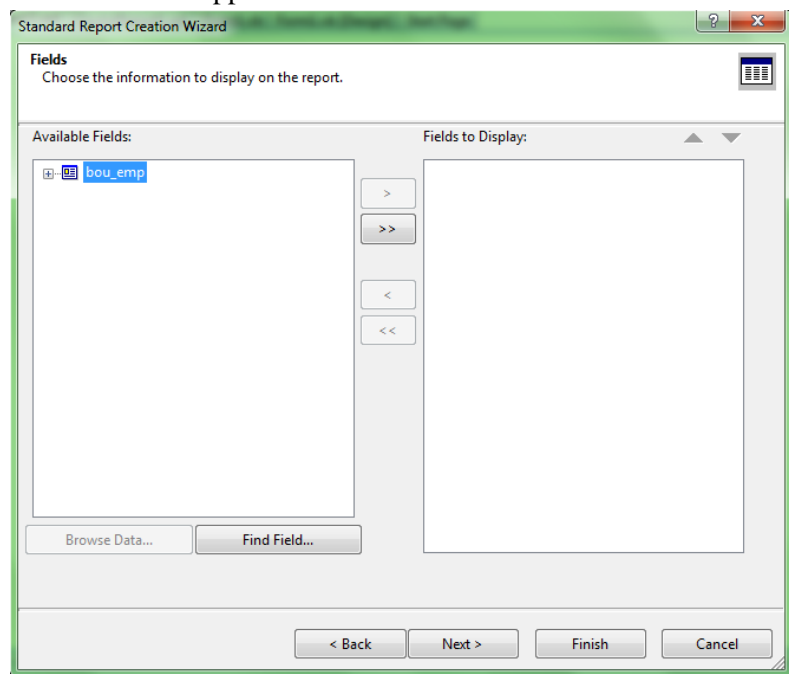
- a. **Chart types:** Click the type of chart you'd like to add to your report. There are three types of chart such as Bar Chart, Line Chart, and Pie Chart.
 - b. **Chart title:** Add a title for your chart.
 - c. **On change of:** Select the group field you want to use as a condition for plotting values in a graph or chart. Points will be plotted whenever the value in the field changes. You can choose from the groups you created on the Grouping Screen.
 - d. **Subdivided by:** Use this list to choose the secondary row or column to base your chart on. Clicking this list displays the row/columns fields in your report that you can choose from.
 - e. **Show summary:** Use this list to select the summary field whose values you want to display in your graph. You can choose from the groups you created on the Summaries Screen.
- viii. **Record Selection Screen:** Use the Record Selection screen to choose fields to select (or filter) records in a report. By selecting records in this manner, you can narrow the scope of your report and improve processing speed. Creating a record selection is an optional step in the wizard.
- ix. **Report Style Screen:** Use the Report Style screen to choose from predefined formatting templates for use in your report. Adding a style is an optional step in the wizard. It has following options:
- a. **Available Styles:** This area displays the styles available for use in your report. Select the desired style from the list.
 - b. **Preview:** This box displays a sample of the style selected in the Available Styles area.


To embed the database tables records as group using standard report wizard follow the following steps:

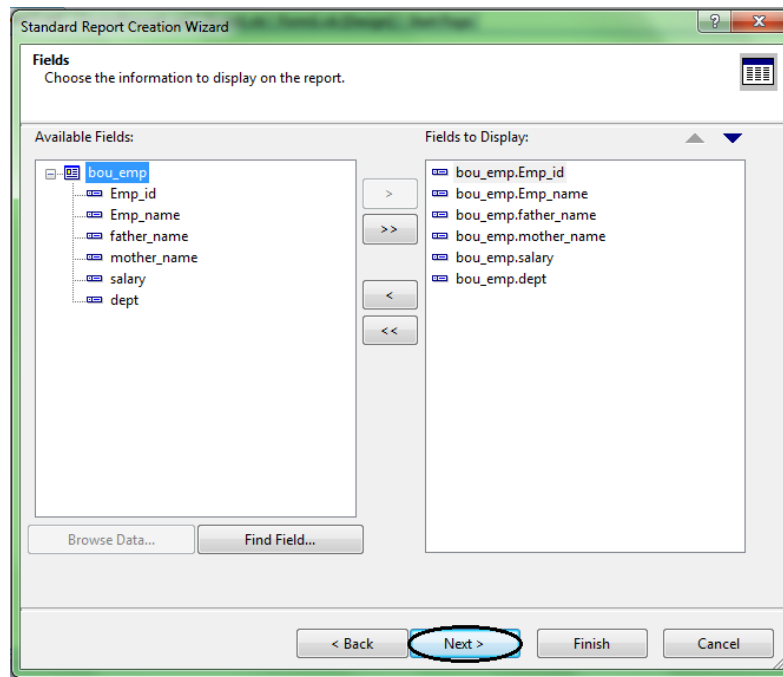
1. Start or open your crystal report project from the visual studio 2008, which is created previous lesson.
2. Now add a new crystal report with the name "CrystalReport2.rpt" in your project.
3. Now Crystal Reports Gallery window will be appeared. From this window select "Using the Report Wizard" radio button from the create a new crystal report document and select "standard" option from the Choose an expert option, and then click ok button.
4. Now Standard Report Creation Wizard will be appeared, and then create OLE DB(ADO) connection according to previous lesson(Lesson 44), then bou_emp table is shown under OLE DB(ADO), which will look like the following:



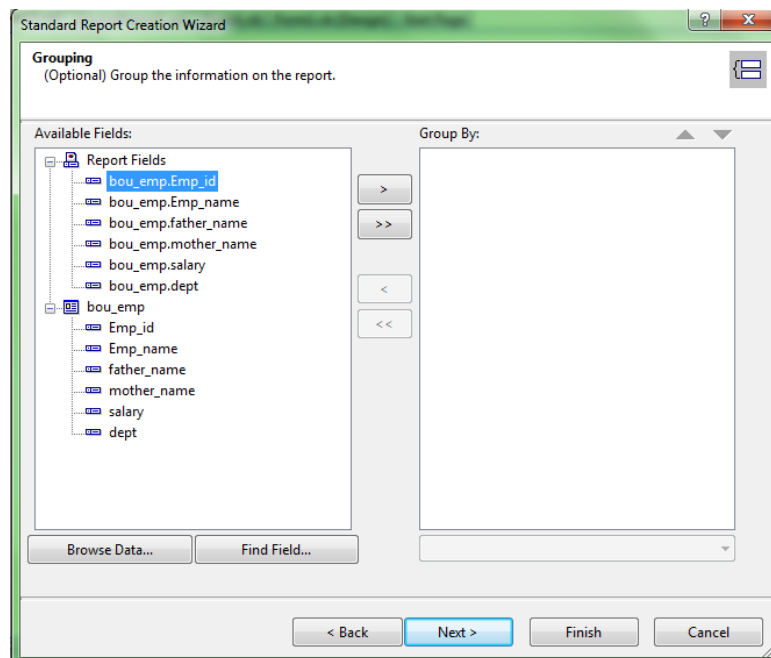
5. Now double click on bou_emp table then click next, the following window will be appeared:




6. Now Click on + sign of bou_emp table from left side Available Fields option, the all fields are shown in the list, and then click  button to display all fields on report, or individually double click on fields which you want to display on report from the left side available fields option, you will look like the following window:



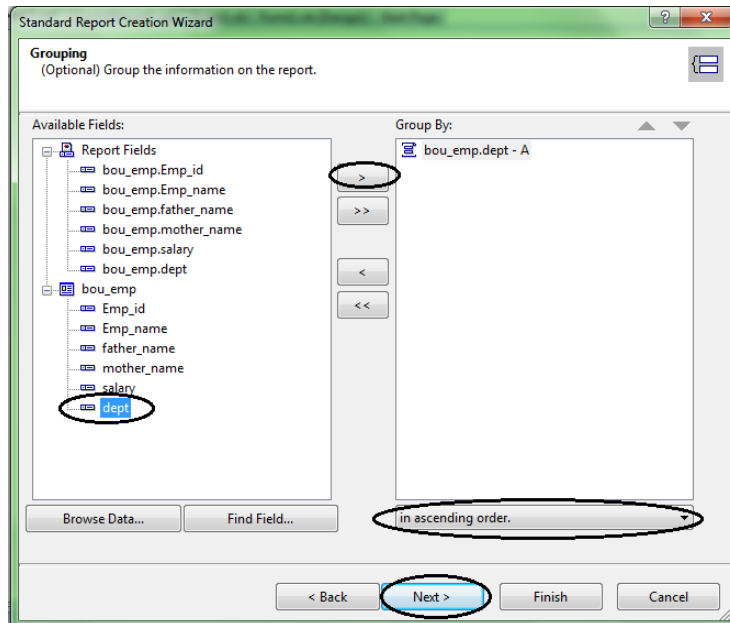
7. Now click Next button, the following window will be appeared:



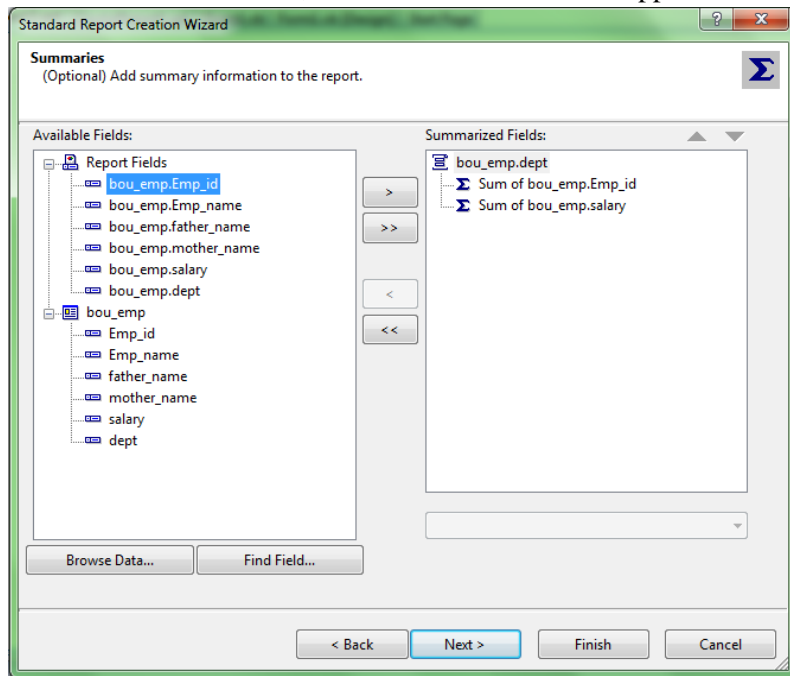
8. Here actually select that field, in which you want to create group. So here we used dept field to create group. Now select dept field from bou_emp table from left side Available Fields list, then click  button. Here by default the group values will be shown as ascending order. If you want to descending order, just select in descending order



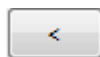
from drop down menu of bottom in this window, the window would be look like this:



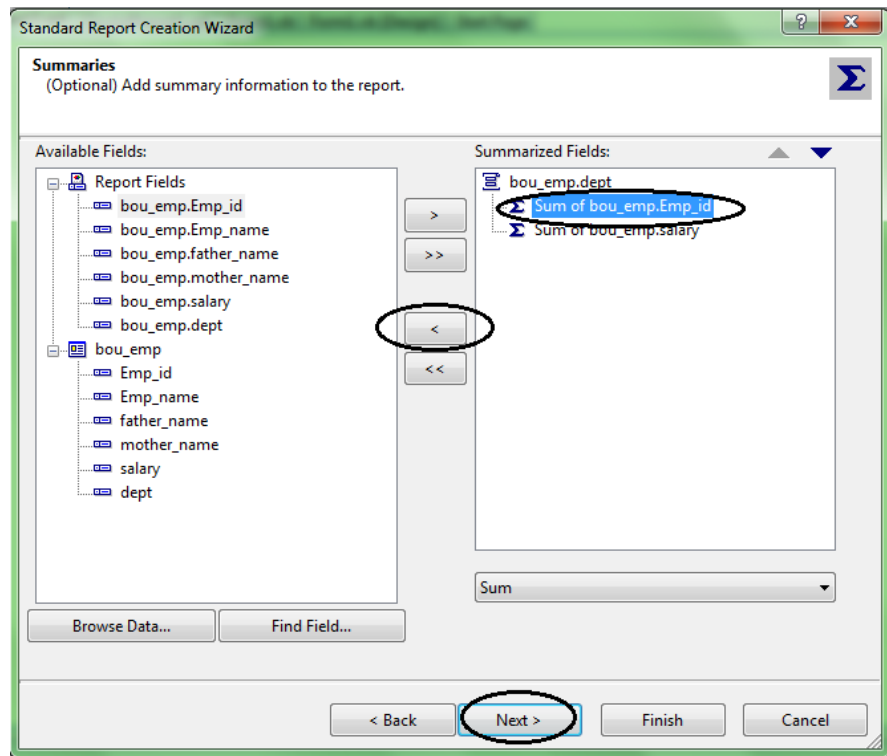
9. Now click next button, Summaries screen will be appeared as follows:



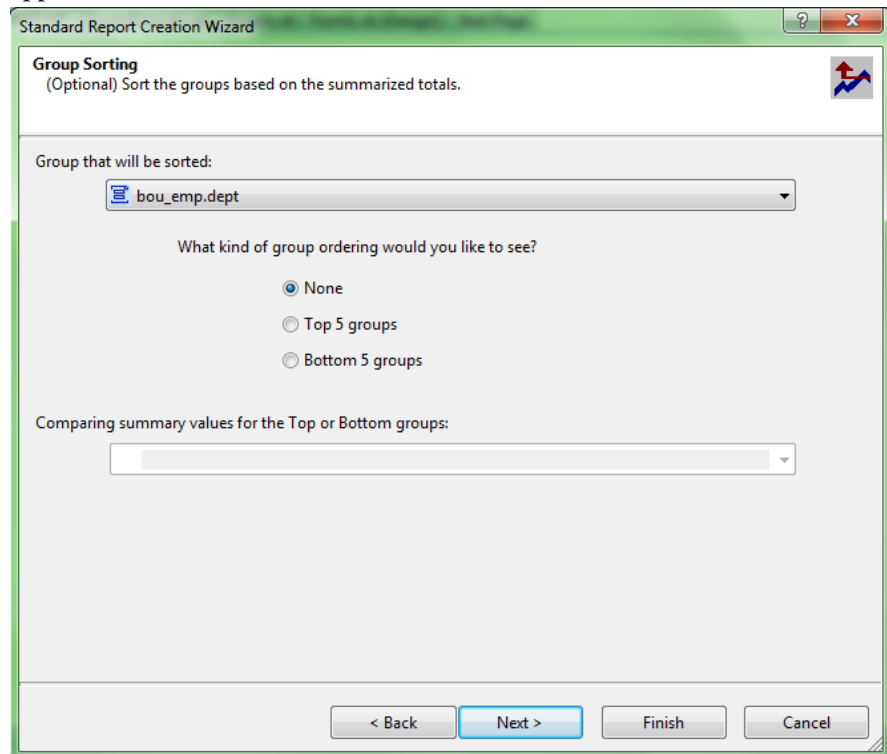
10. If a table contains number type of records, then summation of number fields option will be shown in summarize fields. In our table two fields such as Emp_id and salary are number type of fields, so here summarized fields is shown summation of two fields (sum of bou_emp.Emp_id, sum of bou_emp.salary). Here we delete sum of bou_emp.Emp_id field, so select sum of bou_emp.Emp_id option from summarized fields and click



button. This process is shown in following window:



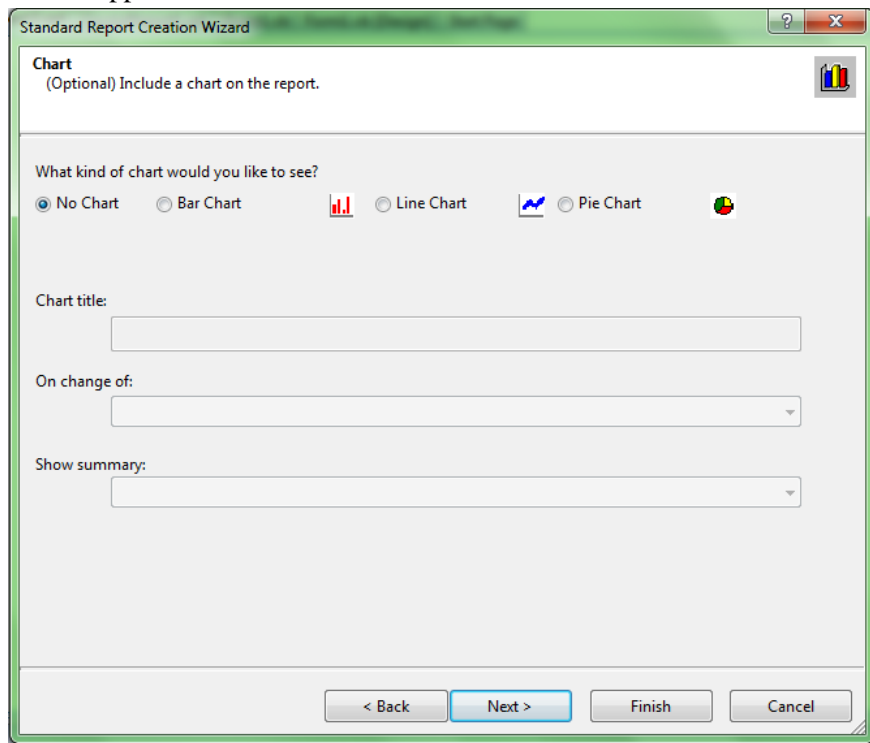
11. Now click Next button, the group sorting screen window will be appeared:



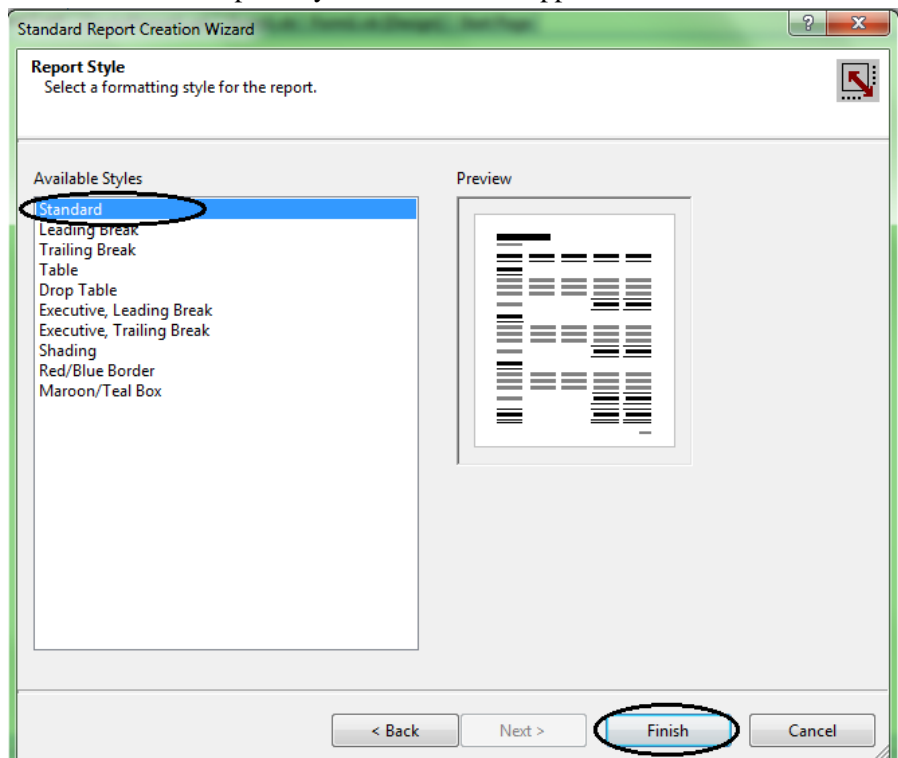
12. Now select None radio button and click next button, the chart screen



will be appeared:

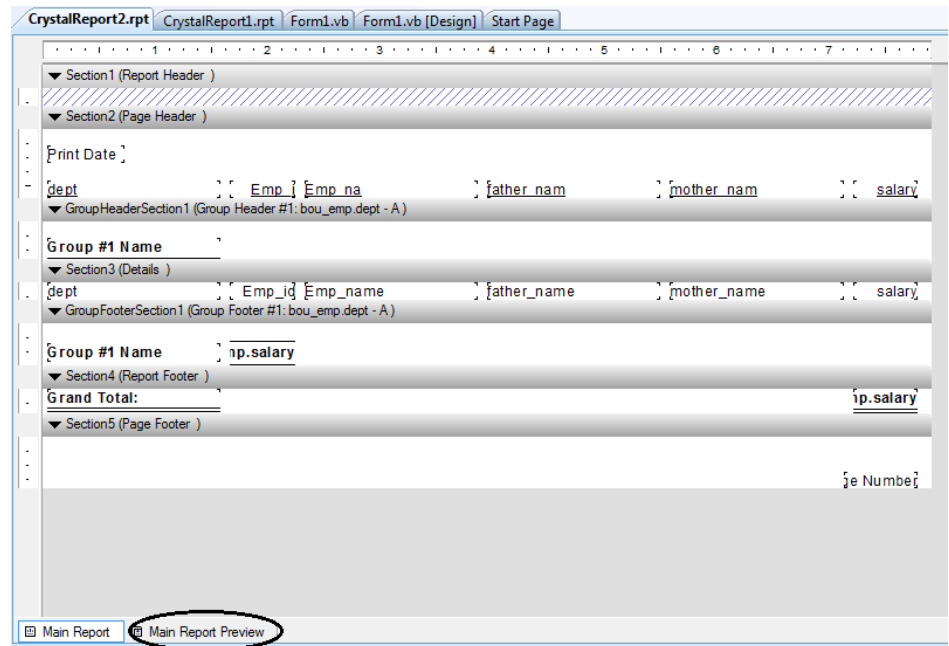


13. Here, you can select any one of the three types of chart like Bar chart, Line chart, Pie chart, if you want. Now select no Chart option and then click next button, then record selection screen will be appeared, and then click next. Now Report Style screen will be appeared:

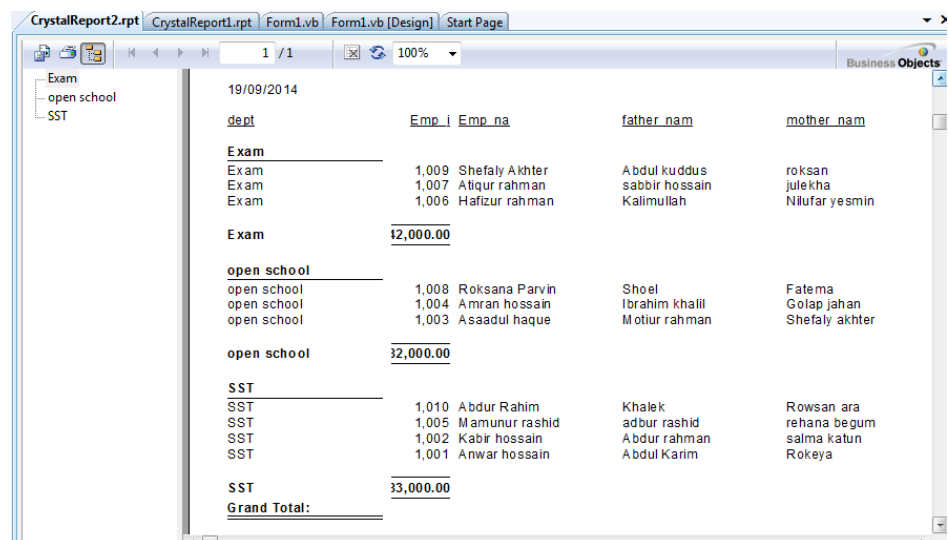




14. Now select Standard style from the Available Styles option list from the left side, and then click finish button. Now the following report screen will be appeared:



15. Now click on Main Report Preview option from the bottom of the report, then you will look like the following output or report:



16. From the report screen, it is shown that, some fields information did not display fully like Emp_id, Total salary etc. now just click on Main report option from the bottom of the report and edit (increase the object size) those fields which did not display fully. After edit the field object



the report screen would be like this:

19/09/2014					
dept	Emp_id	Emp_name	father_name	mother_name	salary
Exam					
Exam	1,009	Shefaly Akhter	Abdul kuddus	roksan	15,000
Exam	1,007	Atiqur rahman	sabbir hossain	julekha	10,000
Exam	1,006	Hafizur rahman	Kalimullah	Nilufar yesmin	17,000
Exam					42,000.00
open school					
open school	1,008	Roksana Parvin	Shoel	Fatema	35,000
open school	1,004	Amran hossain	Ibrahim khaliil	Golap jahan	25,000
open school	1,003	Asaadul haque	M otieur rahman	Shefaly akhter	22,000
open school					82,000.00

17. Here, the group values are shown in the Left side of the report screen such as Exam, open school and SST. When you click particular group option from the left side, the corresponding group values will be appeared on the report.

18. Finally save all the documents.



Lesson 8.11 - 8.12

Parameter in Crystal Report

Introduction

In the previous lessons you have learned, how to design a report using database information's as well as how to create group of records of the database table. Parameter is an important part of a report. Using the parameter you can design a dynamic report. In this lesson, you take a closer look at using parameters in your reports, as well as how parameter fields can be created and implemented. Like many of the Crystal Reports application features, working with report parameters is very logical but understanding the underlying mechanics facilitates the creation of effective reports. By using parameter fields that enable users to select from a list of one or more parameter field values (such as Emp_id, Emp_name, or dept), you can make reports more valuable for users while limiting the volume of data that the report retrieves.

Upon completion of this unit you will be able to:



Outcomes

- *State* benefits of using parameter in Crystal Report.
- *Create* and implement parameter field to design dynamic Crystal Report.

Benefits of using parameter in Crystal Report

A common goal of report design is providing a single report that can service very specific reporting requirements and also accommodate a large audience of business users. Parameter fields enable you to satisfy this requirement and provide following primary benefits:

1. An additional level of interactivity for business users when viewing reports
2. Ability to segment reports in many different ways to reduce the number of reports necessary to service the demands of the business users.
3. Greater control over the report query for administrators by filtering the report results to include only the selected parameter value(s).
4. This also includes the capability to constrain the report query to



- avoid including excess or sensitive data.
5. A greatest benefit of parameter fields for report designers is the opportunity to have a single report service a large audience while also empowering the users to personalize the information they are viewing within the report.
 6. Parameter fields can be used in coordination with record selections so that a single report can be segmented many different ways

The process of using parameter fields in reports includes two distinct steps:

- i. Creation of the parameter field.
- ii. Implementation of the parameter field into the report

Before you learn how to create and implement parameter fields, it is useful to understand a few common input options and properties associated with creating parameter fields. Each of the following input properties is presented within the Create/Edit Parameter Field dialog, shown in following figure:

Common input options of creating parameter fields are as follows:

1. **Name:** A logical name for the parameter field.
2. **Prompting Text:** A statement or question presented to the business user within the report prompt dialog for the parameter field.
3. **Value Type:** A list of available field types that correspond to how you want to use the parameter field within the report, including String (the default option), Boolean, Currency, Date, Date Time, Number, and Time.
4. **Allow Multiple Values:** Enables the user to enter more than a single value for the parameter field.
5. **Discrete Value(s):** Enables the user to enter only a single value for the parameter field.
6. **Range Value(s):** Enables the user to specify a range, using start and end values, for the parameter field.
7. **Discrete and Range Values:** Enables the user to specify both Discrete and range values, for the parameter field.

8. **Default Values:** An option that allows the report designer to set a default value for the static list of values. When you select or click on Default values button the following window will be appeared:

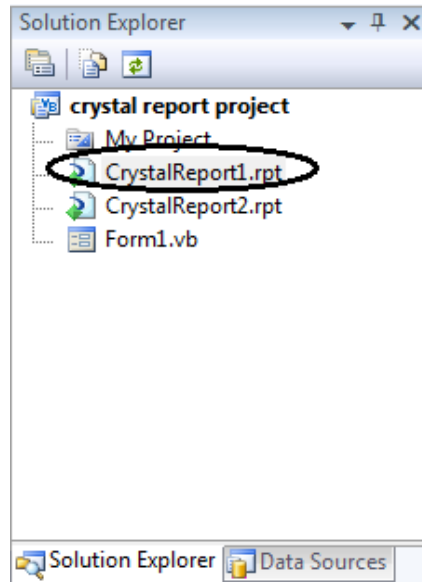
The screenshot shows the 'Set Default Values' dialog box. It features a 'Select from database' section with 'Browse table' set to 'bou_emp' and an empty 'Browse field' dropdown. Below this is a 'Select or enter value' section with two empty text boxes and navigation buttons (>, >>, <, <<). The main area contains a table with 'Default Values' and 'Description' columns. The 'Options' section includes a 'Length limit' checkbox, 'Min Length' and 'Max Length' fields (both set to 0), an 'Edit mask' field, and dropdowns for 'Display' (Value and description), 'Order' (No sort), and 'Order based on' (Value). 'Import...', 'Export...', and 'Set Description...' buttons are located below the table. 'OK' and 'Cancel' buttons are at the bottom right.

9. **Brows table and field:** Here you can select database table as well as corresponding fields as default values.
10. **Length limit:** You can set the minimum and maximum length limits for the parameter field.
11. **Edit Mask:** Used to enter an Edit Mask for string data types rather than specifying a range of values. The Edit Mask can be any of a set of masking characters (such as A, a, 0, 9, #, L, &, C, <or>, \ etc.) used to restrict the values you can enter as parameter values.
12. **Sort Order:** Enables specification of the sort order (such as Alphabetical ascending or descending, numerical ascending or descending, Date Time ascending or descending) and the sort field that the parameter values are sorted on.
13. **Import and Export:** You can import or export the default values.

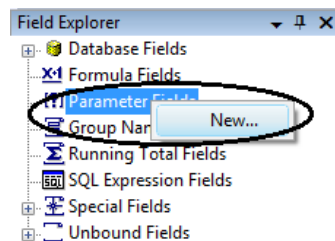
Creating Parameter field

To create a parameter field in crystal report, follow the following steps:

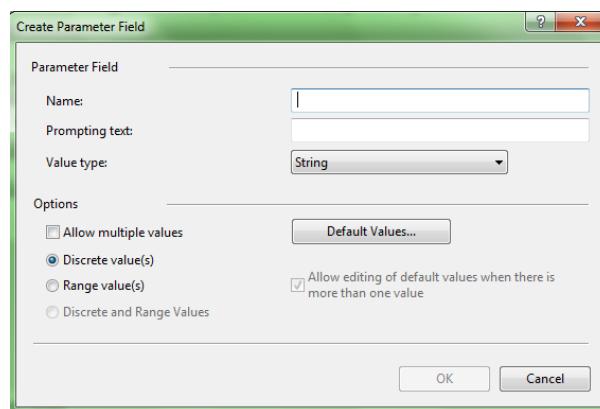
1. Open your crystal report project and open crystal report by clicking on CrystalReport1.rpt from right side Solution Explorer window.



- Now from left side Field Explorer window, select Parameter Field, and click right button on Parameter field, then click New option which will look like the following:



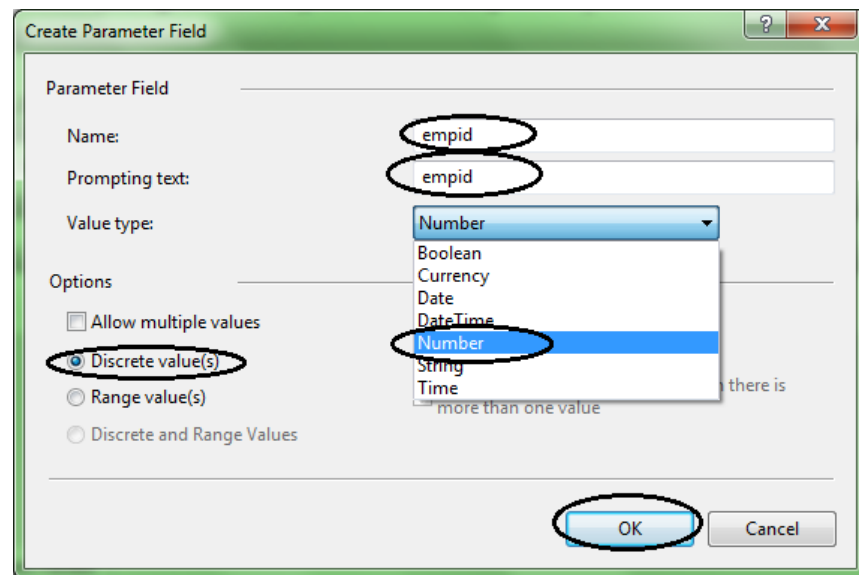
- After clicking New option, Create Parameter Field window will be appeared, which will look like the following:



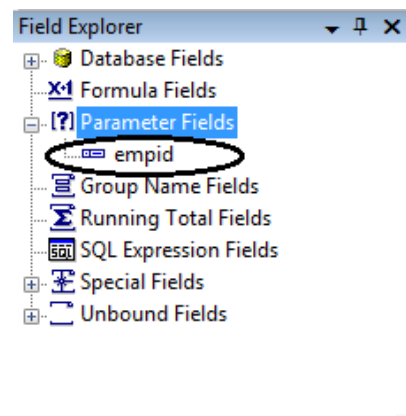
- Now put the Parameter Field Name in the Name text box, here we put the name is “empid”, then put the name of Prompting text field in the prompting text box, here we put the name is “empid”, then select the value type from Value type dropdown menu, here we selected number type value and select the Discrete values radio button from the options,




and then click ok. Here we selected number type, because our table bou_emp's field emp_id is number type value, you can also set the other types according to table's field. Now create parameter field window will look like the following:



5. After completion the above task a + sign is appeared in front of Parameter Fields option in the Field Explorer window, now Click on + sign, you will see that, empid parameter field is created, which is shown in following figure:



6. Now save all by clicking on  from the tools bar.

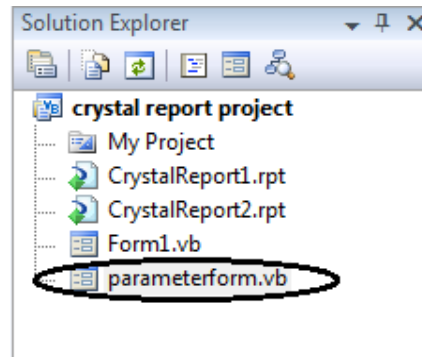
Running Parameter field

In this section we will describe, how to use or implement the parameter field in the crystal report, which is already created in above section (empid). Actually the parameter field passes the user input value to the report, which becomes from windows form.

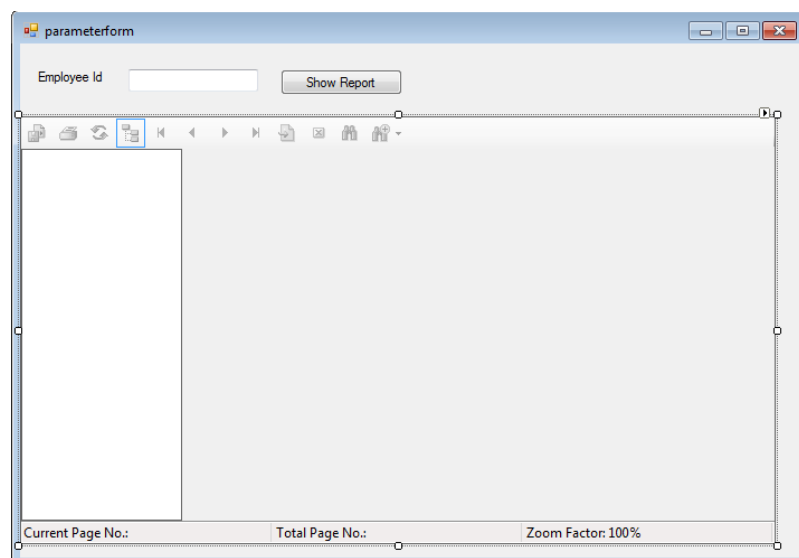


To implement created parameter field (empid) to design crystal report, follow the following steps:

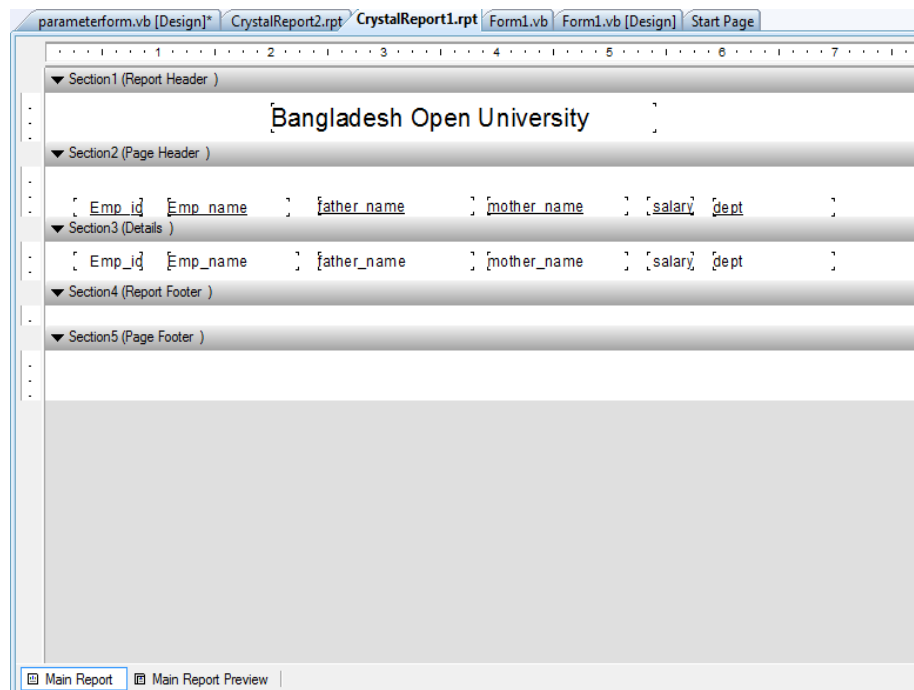
1. Open your crystal report project
2. Add or create a new windows form under crystal report project, and give the name of form is “parameterform”. The created form name is shown in solution explorer window like this:



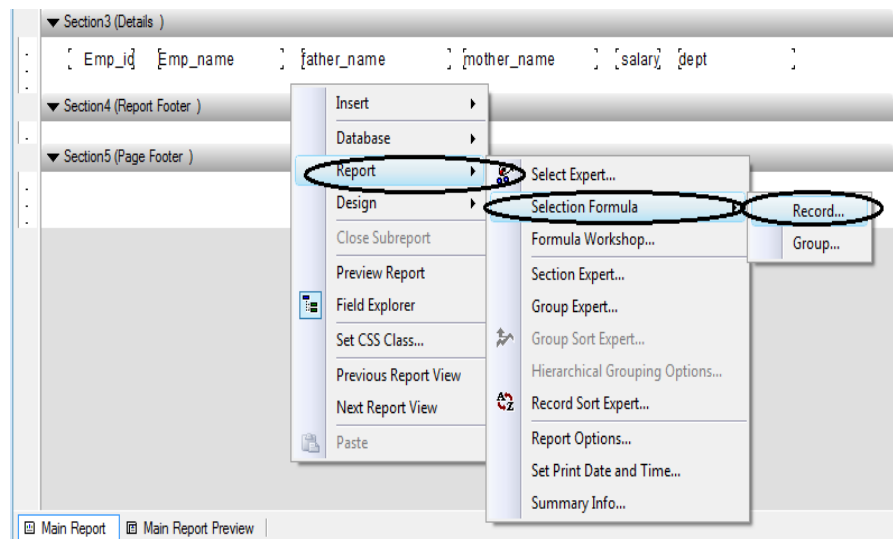
3. Now double click on parameterform.vb, the form will be opened.
4. Now add a Level, a TextBox, and a Button. Give the name of level text is “Employee Id” and button text name is “Show Report” respectively.
5. Now add a CrystalReport Viewer Control on the form and increase the form size as well as CrystalReport Viewer as your choice.
6. Now the created form will look like the following:



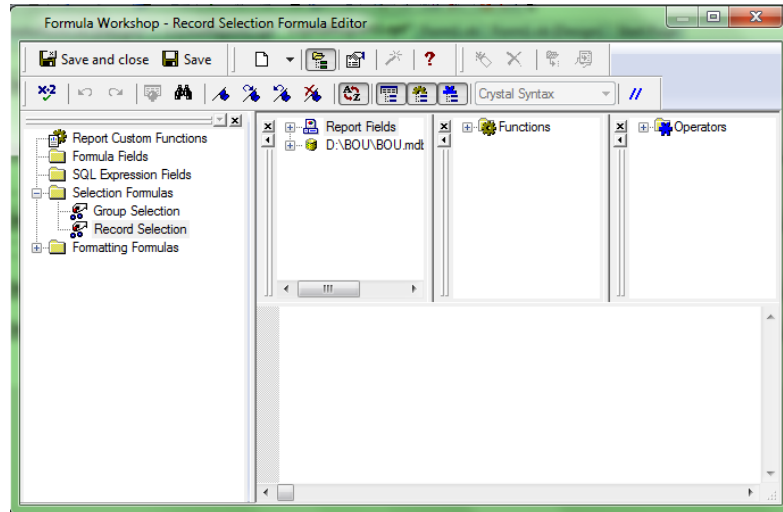
7. Now open CrystalReport1.rpt from solution explorer. And insert a Text objet in the section1(Report header), and edit with the name “Bangladesh Open University”, which will look like the following:



8. Now click right button on free space under Section3(details), then go to Report, then select Selection Formula, then select Record, which is shown in below:



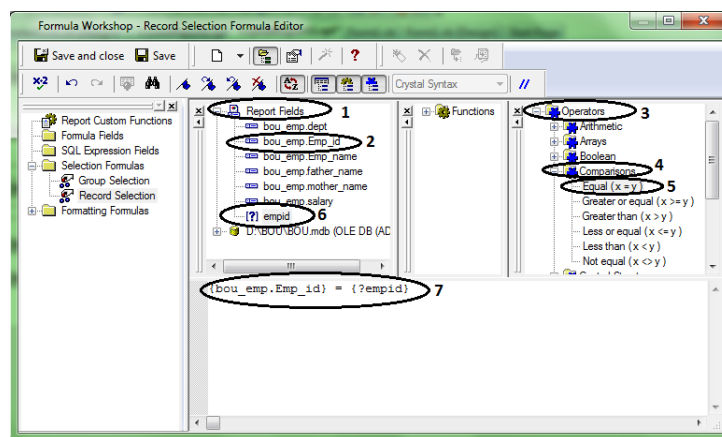
9. After selecting the record option following Formula Editor will be appeared:



10. Now from the above window, Expand the Report Fields option by clicking on + sign, and then double click on “ bou_emp.Emp_id ” option and then expand the operators option by clicking on + sign, and then expand the Comparisons option, and then double click on “ Equal(x=y)” option, from the right side list box, and finally double click on [?]empid option from the report fields. The sequence of this process is shown by using number (1,2,3,4,5,6,7) respectively. So the following formula will be created on the text editor:

{bou_emp.Emp_id} = {?empid}

The pictorial process is shown in below:



11. Now click on Save and close option from the menu bar.
12. Save the entire Project.
13. Now click on “parameterform.vb” from solution explorer, and then double click on “Show Report” button of the form.
14. Now type the following code at top of the page:

```
Imports CrystalDecisions.CrystalReports.Engine
Imports CrystalDecisions.Shared
```



15. Now type the following code under the button:

```
Private Sub Button1_Click(ByVal sender As
System.Object, ByVal e As
System.EventArgs) Handles Button1.Click

Dim cryRpt As New ReportDocument

    cryRpt.Load("D:\BOU-book-example\report\crystal
report project\crystal report
project\CrystalReport1.rpt")

Dim crParameterFieldDefinitions As
ParameterFieldDefinitions

Dim crParameterFieldDefinition As
ParameterFieldDefinition

Dim crParameterValues As New ParameterValues

Dim crParameterDiscreteValue As New
ParameterDiscreteValue

    crParameterDiscreteValue.Value =
Val(TextBox1.Text)

    crParameterFieldDefinitions =
cryRpt.DataDefinition.ParameterFields()

    crParameterFieldDefinition
=crParameterFieldDefinitions.Item("empid")

    crParameterValues =
crParameterFieldDefinition.CurrentValues

    crParameterValues.Clear()

    rParameterValues.Add(crParameterDiscreteValue)

crParameterFieldDefinition.ApplyCurrentValues(crParame
terValues)

    CrystalReportViewer1.ReportSource = cryRpt

    CrystalReportViewer1.Refresh()
End Sub
```

16. Here you put your report path between “ ”, from your computer directory, where you saved your project as well as your reports. Here we use our report location as follows as an example:

```
    cryRpt.Load("D:\BOU-book-
example\report\crystal report
project\crystal report
project\CrystalReport1.rpt")
```



17. The full code is shown in bellow:

```
Imports CrystalDecisions.CrystalReports.Engine
Imports CrystalDecisions.Shared

Public Class parameterform

    Private Sub Button1_Click(ByVal sender As System.Object, ByVal e As System.EventArgs) Handles Butto
        Dim cryRpt As New ReportDocument
        cryRpt.Load("D:\BOU-book-example\report\crystal report project\crystal report project\CrystalRe
        Dim crParameterFieldDefinitions As ParameterFieldDefinitions
        Dim crParameterFieldDefinition As ParameterFieldDefinition
        Dim crParameterValues As New ParameterValues
        Dim crParameterDiscreteValue As New ParameterDiscreteValue

        crParameterDiscreteValue.Value = Val(TextBox1.Text)
        crParameterFieldDefinitions = cryRpt.DataDefinition.ParameterFields()
        crParameterFieldDefinition = crParameterFieldDefinitions.Item("empid")
        crParameterValues = crParameterFieldDefinition.CurrentValues

        crParameterValues.Clear()
        crParameterValues.Add(crParameterDiscreteValue)
        crParameterFieldDefinition.ApplyCurrentValues(crParameterValues)

        CrystalReportViewer1.ReportSource = cryRpt

        CrystalReportViewer1.Refresh()
    End Sub
End Class
```

18. If everything is fine, you will get correct output.

19. Now run the “parameterform.vb” form by clicking on run option.

20. Now put the Employee Id value in the text field, which is existed in your database table. After then click on Show Report button, then the corresponding id’s information’s will be displayed on the report.

21. Now ,If you enter the employee id “1001” in the text field,and then click Show Report button, then the informations of id 1001 will be displayed on the report, which is shown in bellow:

The screenshot shows a Windows application window titled "parameterform". At the top, there is a text box labeled "Employee Id" containing the value "1001" and a button labeled "Show Report". Below this is a report viewer displaying a report titled "Main Report" from "Bangladesh Open University". The report contains a table with the following data:

Emp id	Emp name	father name	mother name	salary	dept
1001	Anwar hossain	Abdul Karim	Rokeya	20,000	SST

At the bottom of the report viewer, it shows "Current Page No.: 1", "Total Page No.: 1", and "Zoom Factor: 100%".

22. If you enter the id 1005 in the text field , and then click Show Report, so the informations of id 1005 will be dispalyed on the report and so on.



Assessment



Assessment

Exercise

1. Write the benefits of using parameter.
2. Explain Connection procedure of crystal report with MS access database.