

7

CREATING QUERY WITH QUERY WIZARD AND QUERY DESIGNER

7.1 INTRODUCTION

Query is the most powerful feature of any database. A Query is a set of instructions in a logical order, required to produce the output based on Table(s) in a particular fashion. In FoxPro, as everything is a menu driven, queries can be designed just by clicking some options. Visual FoxPro also provides this feature to the users. It provides several query type depending upon whether you intend to just view data or update it as well. Query can be created based on complex conditions. In visual FoxPro, you can also define queries on local as well as remote data.

7.2 OBJECTIVES

After going through this lesson you would be able to

- create query with Query Wizard
 - create query using two Tables
 - create query with Query Designer
 - view query outputs
-

7.3 CREATING A QUERY WITH QUERY WIZARD

There are two ways of creating a Query using:

- (i) Query Wizard
- (ii) Query Designer

To create a query with Query Wizard, choose **New** option from **File** menu or click the **New** tool. The **New** dialog box appears as shown in figure 7.1. Choose **Query** radio button and then click **Wizard** push button.

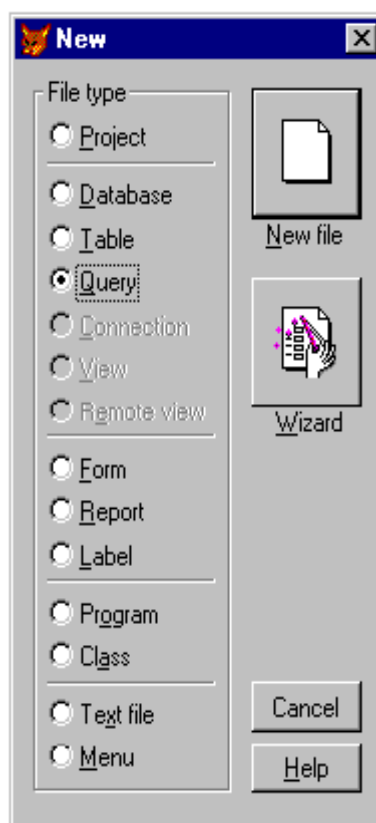


Fig. 7.1: New Dialog box

Visual FoxPro displays the **Wizard Selection** dialog box as shown in figure 7.2. The **Wizard Selection** dialog box provides options for creating several special purpose queries as well as ordinary visual FoxPro queries.

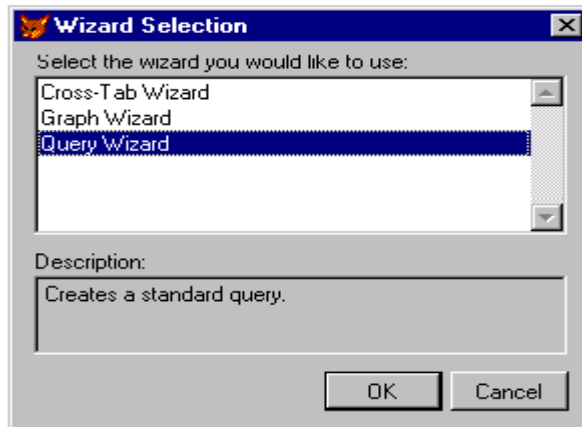


Fig. 7.2: Wizard Selection Dialog Box

The Cross-Tab wizard displays the data in Spreadsheet format. The Graph wizard displays a graph based on data from the FoxPro Tables. Select the **Query Wizard** in the **Wizard Selection** dialog box to display the “**Step-1 of the Query Wizard**” dialog box as shown in the figure 7.3.

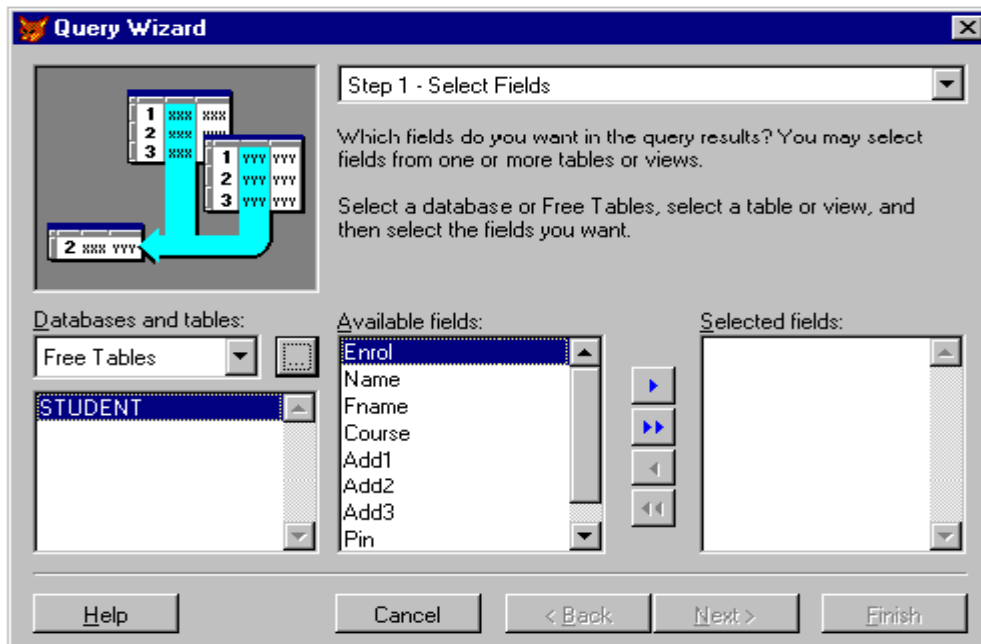




Fig. 7.3: Query Wizard Dialog Box

7.3.1 Selecting the Table

The first step in creating a Query is to select the database table and fields on which your Query is based. In fact, the first dialog box of Query Wizard allows you to select one or more tables and select the fields of that table to include in the Query result.

The **Database and tables** option available with the first step of **Query Wizard** dialog box displays the current database, if the database is open, otherwise, it displays the words **Free Tables** as shown in the figure 7.3. If a database is open, the names of the tables it contains appears in the scrollable list. If the database is not open, or if you want to use a Free Table, click the ellipsis button (...), which opens a dialog box that allows you to select the required table. The table name occurs alone in the table list, if you select a Free Table.

7.3.2 Selecting the Fields

After you select the **Table** from the table list you will notice that all the fields of the selected table are displayed in the **Available Fields** list. The Query Wizard dialog box includes a Field Picker buttons, which are found between the **Available fields** list and **Selected Fields** list. The arrow directions indicate the way they move fields. A single arrow  moves a single field. Double arrow  buttons move all the fields. To move a field from the available list, first select the field you want to move by clicking it or by using the arrow keys and then click the top buttons with right arrow. This moves the highlighted field to the selected fields list. Repeat this process to move more fields from **Available Fields** list to **Selected Fields** list as shown in figure 7.4.

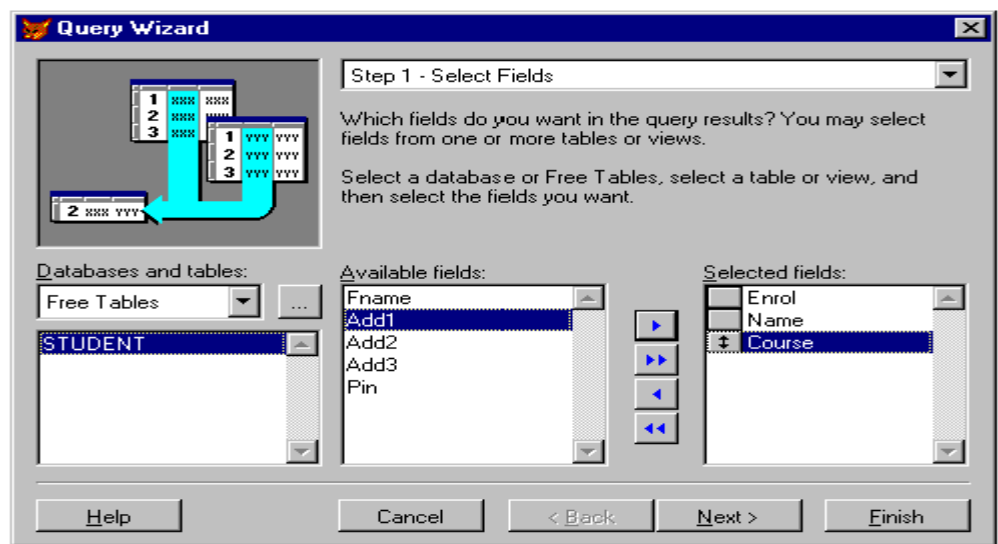


Fig. 7.4: Query Wizard with Select Fields

If you want to move all the fields from Available Fields list to Selected Fields list, click the double right arrow button. If you have selected the wrong fields or if you want to remove any field from the Selected Fields lists, then you can select the field from the Selected fields list and click the left arrow button. Similarly, you can choose the double left arrow key to move all the fields from the Selected Fields list to Available Fields list.

Remember that the order in which you select the fields for Query, the Query output will be shown in that order only. Choose **Next** push button to proceed to the next step of the Query Wizard.

7.3.3 Joining (Relating) the tables

If you want to extract data from more than one table, you can go back to the Database/Table column to select a different table, and then click additional fields to include in the query. Remember that in such a query, you must define a relation for each additional table used in the query.

The figure 7.4 shows the fields selected from the table “STUDENT”. If you specify fields from more than one table, then the Query Wizard move to step-2 of the Query Wizard. Here we have selected fields from one table, so step 2 is not required. The Wizard automatically skip the steps which are not required. In step 2 Relationship of Query Wizard dialog box allows you to define a relation between each table from which you selected fields. This step will be discussed in the next topic when we will discuss about creating query with two tables. Choose **Next** push button to move to the step 3 of the query wizard.

7.3.4 Filtering the data

The Step 3 filtering of query wizard allows you to define filters. Filters mean defining conditional query. It limits the records included in the query by creating selection criteria or records in the source tables. The fields used for this selection may or may not be included in the query fields depending upon the fields you have selected for your query during the step-1 of the query wizard. For example, you might want the list of students from Jaipur;

```
STUNDENT.ADD3 = “JAIPUR”
```

To define the above expression in the “Step 3 Filtering” of query wizard as shown in figure 7.5.

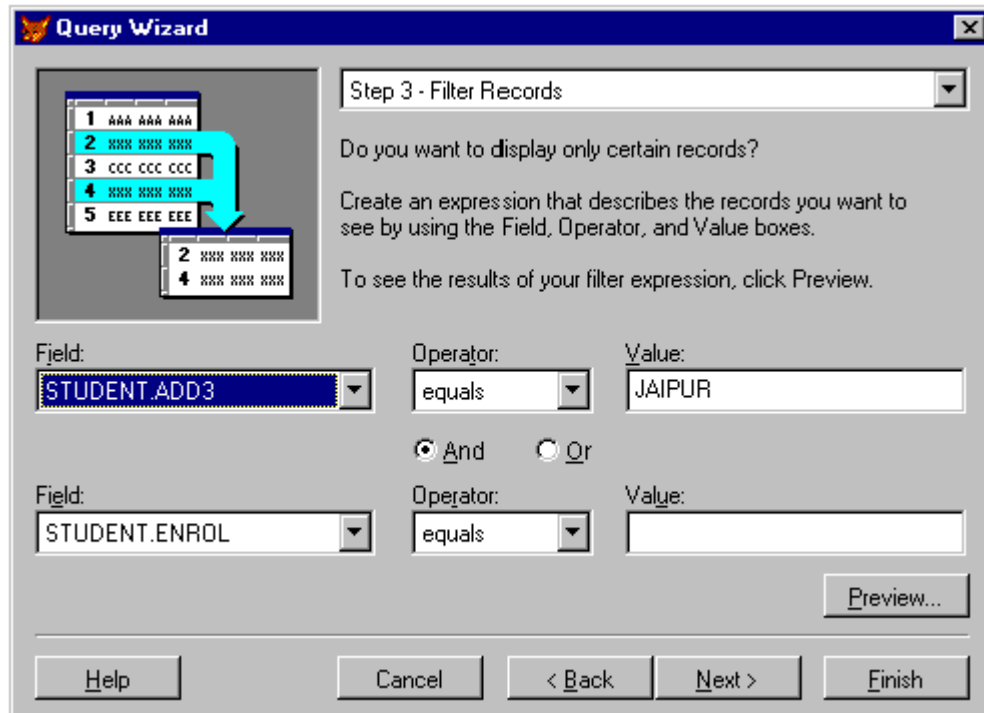


Fig. 7.5: Step-3 of Query Wizard with Filtering

Select STUDENT.ADD3 from the drop down list, select **equals** from the **Operator** list (default) and type JAIPUR in the **Value** text box.

The following operators are available with the filtering:

- Equals
- Not equals
- More than
- Is Blank
- Contains
- In
- Between

The quotes around the strings are optional. However, case is important, if the selected operator is not **Contains**. Contains performs a case-insensitive test. **Is Blank** requires no strings in the value text box. To use the operator **In**, separate the values in the list with commas, but do not add extra blank. For the operator **Between** type the first and last value separated with a comma, and not space.

You can also define second filter criteria to use complete logical expression. Remember, you need to join the second filter to the prior one with either an **AND** or **OR** connector. The Wizard, however, limits you to just two filter conditions. To add more than two filter conditions you need to save the query and immediately modify it in the query Designer.

7.3.5 Specifying Sort Order

The Step 4 **Sort Order** of query wizard allows you to create a sort order for the query result output. You can select any field from the available fields list. You can select more than one field for specifying the sorting order. Remember that the order in which you select these fields determines their sort priorities. You can also change the sort priorities by moving the selected field using the double-headed buttons to the left of the field names. Just click a double-headed button and drag it up or down to a new position. You can also send the data in ascending or descending order as per your selection of the Ascending or Descending radio buttons in the Step-4 of the Query Wizard dialog box.

Figure 7.6 shows the field selected i.e. **Enrol** and **Name** for the sort order. Choose **Next** push button to move further to the step-4 of the query wizard.

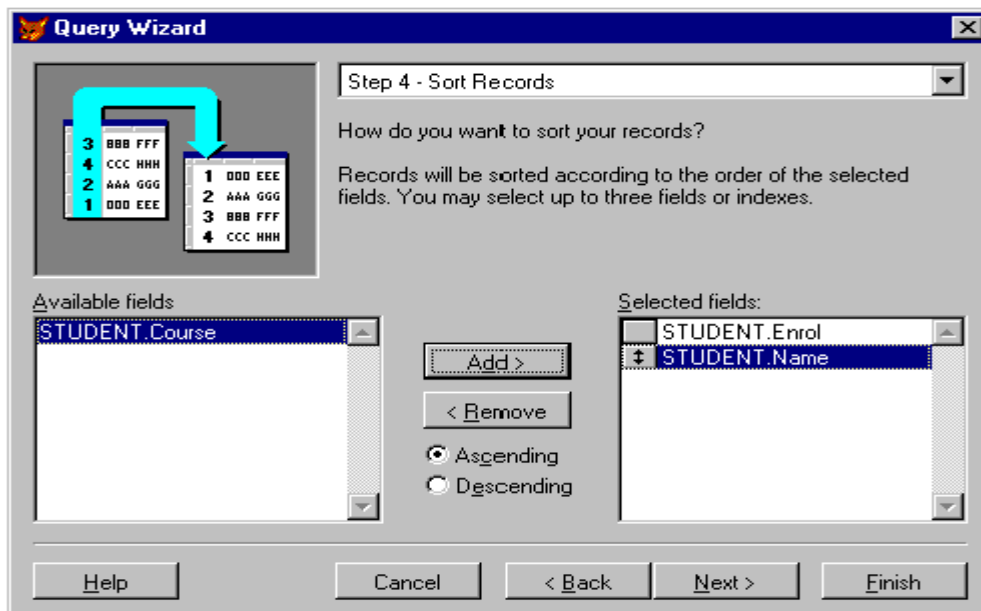
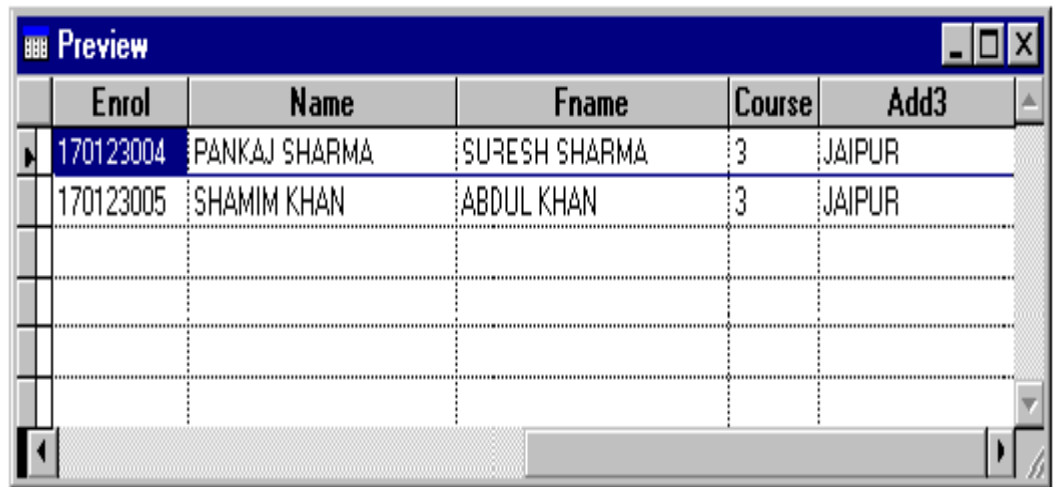


Fig. 7.6: Step 4 of Query Wizard with Sort Order

7.3.6 Previewing the Query Result

You can also click the **Preview...** push button from the step 3, to run the Filtering of query wizard while still in the Wizard and view the results. The Browse window displays the records that match the expression as shown the figure 7.7



Enrol	Name	Fname	Course	Add3
170123004	PANKAJ SHARMA	SURESH SHARMA	3	JAIPUR
170123005	SHAMIM KHAN	ABDUL KHAN	3	JAIPUR

Fig. 7.7: Previewing the Query Result

You can scroll through the window to make sure the conditional expression is finding the records that you actually want. If you do not get the expected result records, you can use the back button to return to any prior step and change the query definition. You can move between the Preview and any wizard step as many times as you like. Choose **Next** push button to proceed further in the query wizard after closing the Browse window of the Query Results.

7.3.7 Saving a query

The last step of Query Wizard **Step 5 Finish** dialog box appears when you click **Next** push button from the **Sort Field** step-4 of **Query Wizard** as shown in figure 7.8. This last query wizard dialog box allows you to save the query with any one of the following three options:

- Save query
- Save query and run it
- Save query and modify it in the Query Designer.

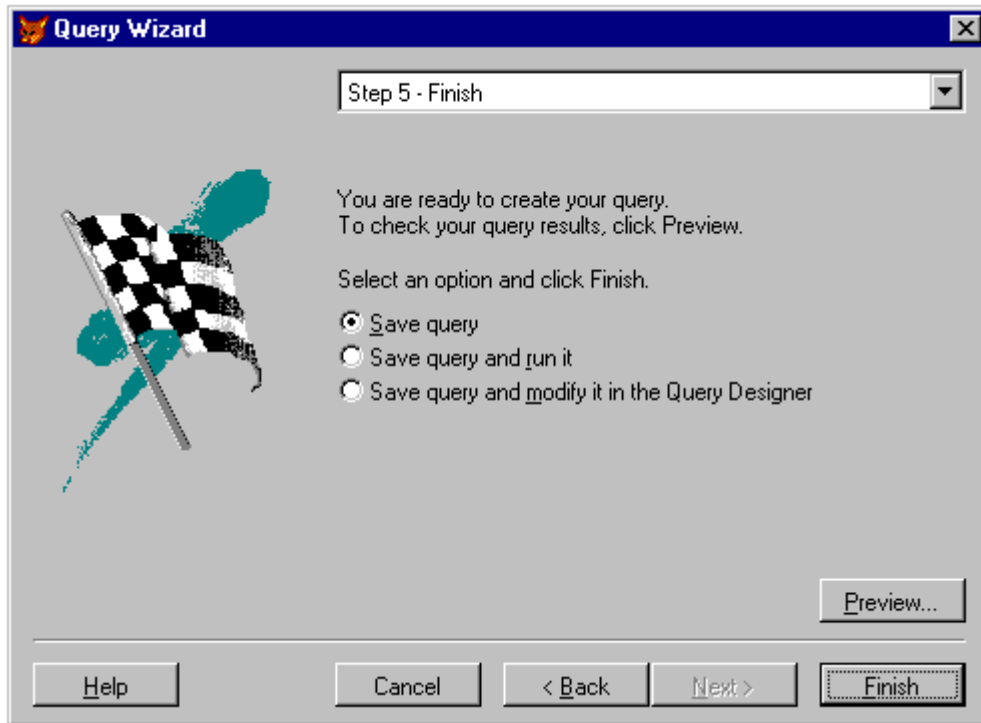


Fig. 7.8: Saving a Query

When you click **Finish** push button, Visual FoxPro Displays the **Save As** dialog box to type a name for the query. If you type the name as QRY-1 of your query then Visual FoxPro saves the query with this name and with extension name QPR, which stands for Query Program. Once you save the query, you can only modify it further by using Query Designer.

INTEXT QUESTIONS

1. Write True or False for the following statements
 - (a) Query can only be viewing data and not updating data.
 - (b) The first step in creating a Query is to select the database table and fields.
 - (c) Query can be created using two or more tables.
 - (d) You can not preview the query result.
 2. Fill in the blanks:
-

- (a) In selecting fields, the fields are moved from _____ field list to _____ field list.
 - (b) You must define a _____ for each additional table used in the query.
 - (c) Filters mean defining _____ query.
3. Write steps for finding Students from Jaipur and Delhi in Table Students.

7.4 CREATING A QUERY WITH TWO TABLES USING QUERY WIZARD

In the previous section you have learnt the queries using one table. Most databases contain several related tables.

To learn how to create a query with two tables, let us create one more table named "RESULT", with following structure and having one common field ENROL. To relate between two tables, both the data tables should have at least one common field.

Structure of table: RESULT.DBF

Field	Field Name	Type	Width
1.	ENROL	C	9
2.	SUBJECT	C	15
3.	MARKS	N	3

Now, add the following records to the table RESULT.DBF

Record	ENROL	SUBJECT	MARKS
1.	270813001	HINDI	70
2.	270813002	ENGLISH	65
3.	270813003	MATHS	72
4.	270813004	HINDI	64
5.	270813005	ENGLISH	62
6.	270813006	HINDI	34

Now, do the following steps to create a query with two tables **STUDENT.DBF** and **RESULT.DBF** using query wizard.

1. Choose **New...** option from the **File** menu, select the Query radio button and click the Wizards push button. The **Wizard**
-

Selection dialog box appears, click the Query Wizard button. This is similar to what we discussed in the previous section.

2. The Step-1 Field Selection of **Query Wizard** dialog box appear, when you click **Query Wizard** from the Wizard Selection dialog box. Click the right button of the Database/Tables control, to display the **Open** dialog box to add the “STUDENT” table to the list and then click this button again to add one more table “RESULT” which we have created.
3. Select the table “STUDENT” to display its fields in the **Available Fields** list. Now select the following fields from the Available Fields and move them to the **Selected Fields** list by double clicking them or by using the right arrow button.
 - ENROL
 - NAME

Then select the table “RESULT” from the Database/Tables list to display the fields of “RESULT” table in the Available Fields list. Select the fields SUBJECT and MARKS to add them in the selected fields list as shown in the figure 7.9

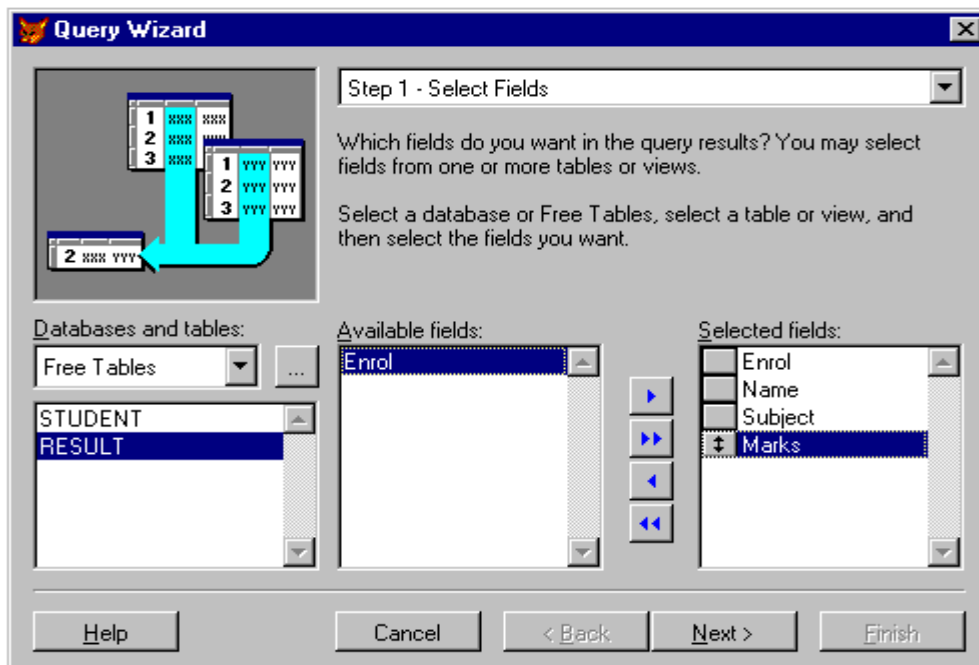


Fig. 7.9: Query Wizard with Two Tables

4. Click **Next** push button, Visual FoxPro displays the Step-2 Relationship dialog box of the Query Wizard. In this box you have to specify how the tables are related, as shown in figure 7.10.

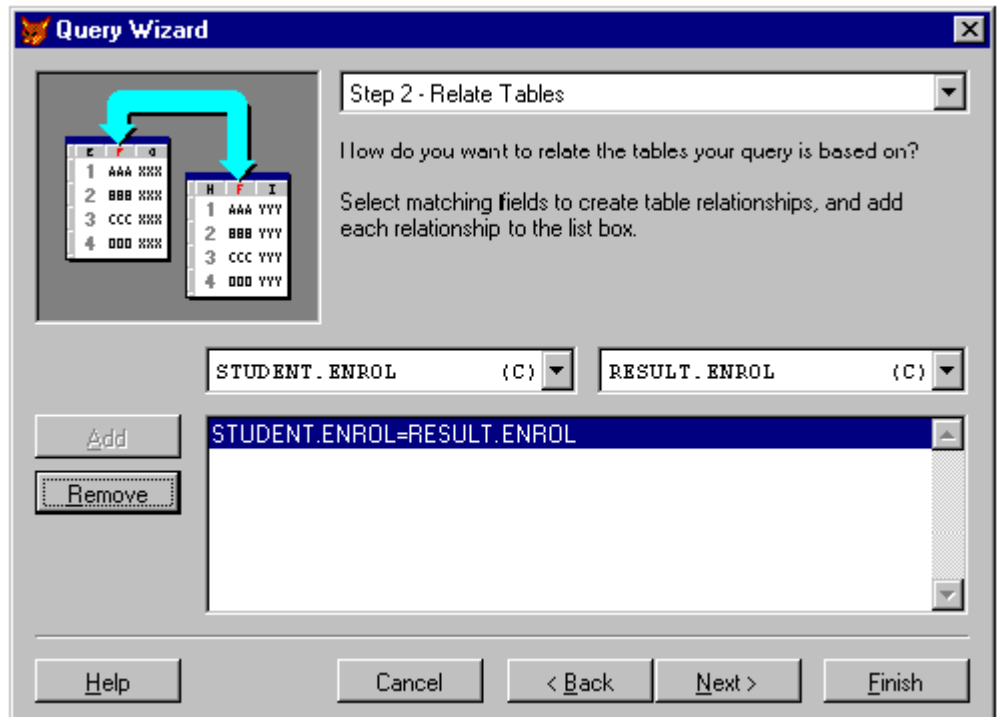


Fig. 7.10: Relate Table of the Query Wizard

It is suggested that the field STUDENT ENROL and RESULT ENROL has a common field ENROL in both the tables. Click the **Add...** push button to display the relationship as shown in the figure 7.10.

5. Click the **Next** push button and the **Step-2a Include Records** of the Query Wizard dialog box appears. This dialog box allows you to include the records from the following options as shown in the figure 7.11.
 - a. Only matching rows
 - b. All rows from the Table STUDENT
 - c. All rows from the Table RESULT
 - d. All rows from both tables

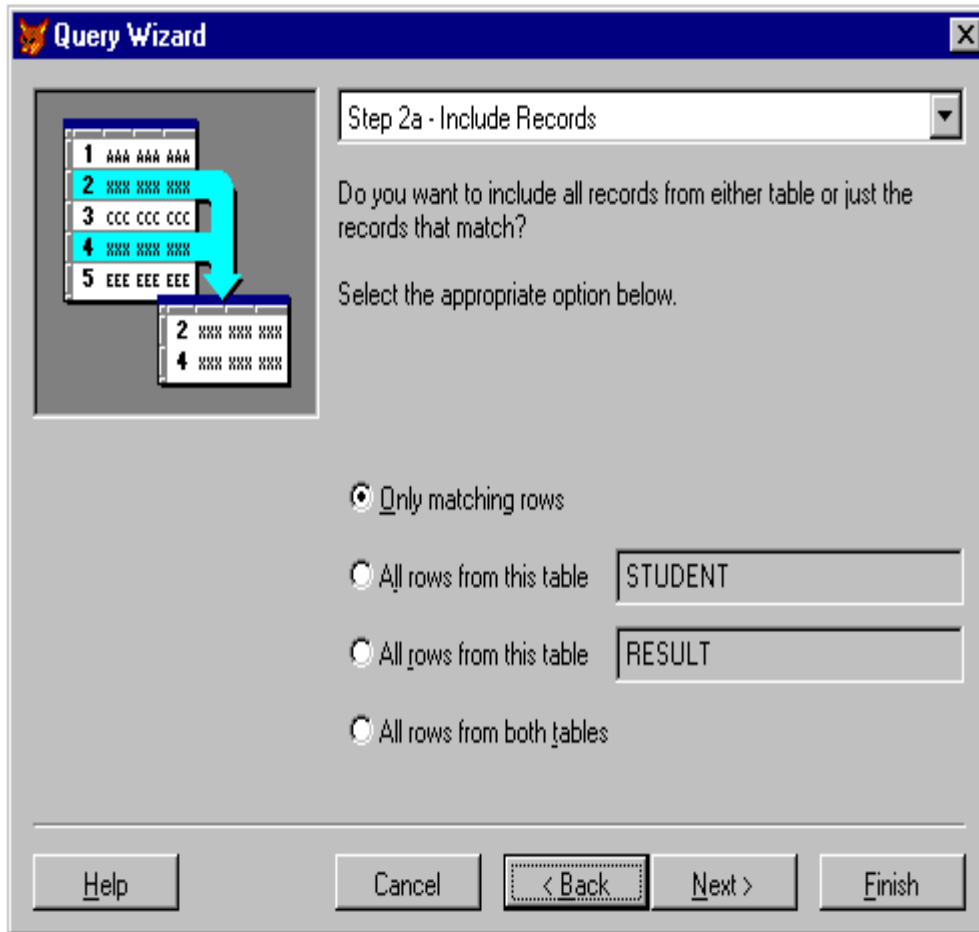


Fig. 7.11: Query Wizard Include Records

The default option is to include all records with matching records.

6. Click the **Next** push button and the Step-3 Filtering of the Query Wizard dialog box appears. If you want to filter the records of your query you can repeat the steps of Filtering as discussed in the previous section otherwise, you can skip this step by clicking **Next** push button again.

Click the **Next** push button and Visual FoxPro displays the Step-4 Sort Order dialog box of the Query Wizard. Double click the STUDENT ENROL field to add it in the Selected Fields list as shown in the figure 7.12.

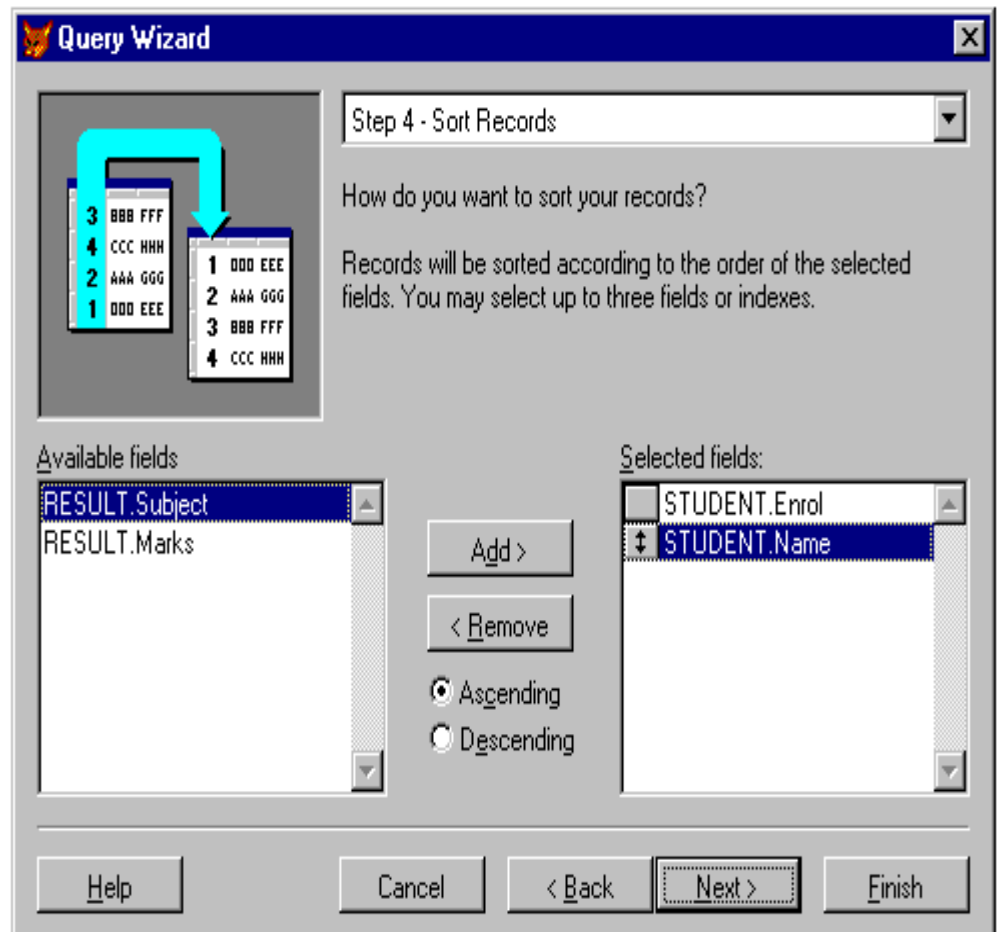


Fig. 7.12: Query Wizard with Sort Records

7. Click the **Preview** push button, to view the result of the Query, which includes the data form the two tables.

Now click **OK** push button to close the Preview window. Lastly click the **Finish** push button from the step Finish and have the Query as QRY-2 in the **Save As** dialog box. Click **Save** push button from the **Save As** dialog box to save the Query.

7.5 CREATING QUERY WITH QUERY DESIGNER

To create a query from scratch with Query Designer, choose **New** option from **File** menu. The **New** dialog box appears as shown in the figure 7.13. Choose the **Query** radio button from the **New** dialog box and click the **New File** push button.

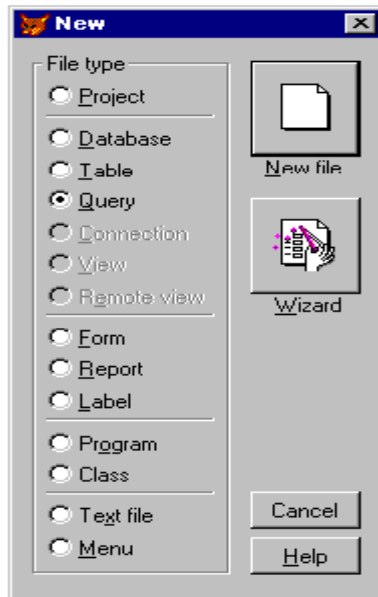


Fig. 7.13: New dialog box to create a Query

You can also use the query designer to modify a query, which you have created using **Query Wizard**. Choose **Open** option from the **File** menu and select the query file from the **Open** dialog box.

7.5.1 Adding a Table or View

A query is always created on a table. If no table is in use, Visual FoxPro displays the Add Table or View dialog box, which lists all the tables of the open database.

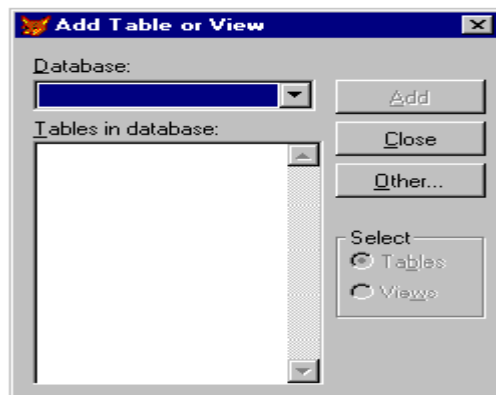


Fig. 7.14: Add Table or View

Figure 7.14 shows the **Add Table View dialog box**, where you can select a free table by choosing **Other...** push button, which display the Open dialog box. It allows you to select a table from any directory or drive, including network drive.

Figure 7.15 shows the table STUDENT.DBF that you have selected, is included in the panel at top of the Query Designer. The name of the table always appears in the window header.

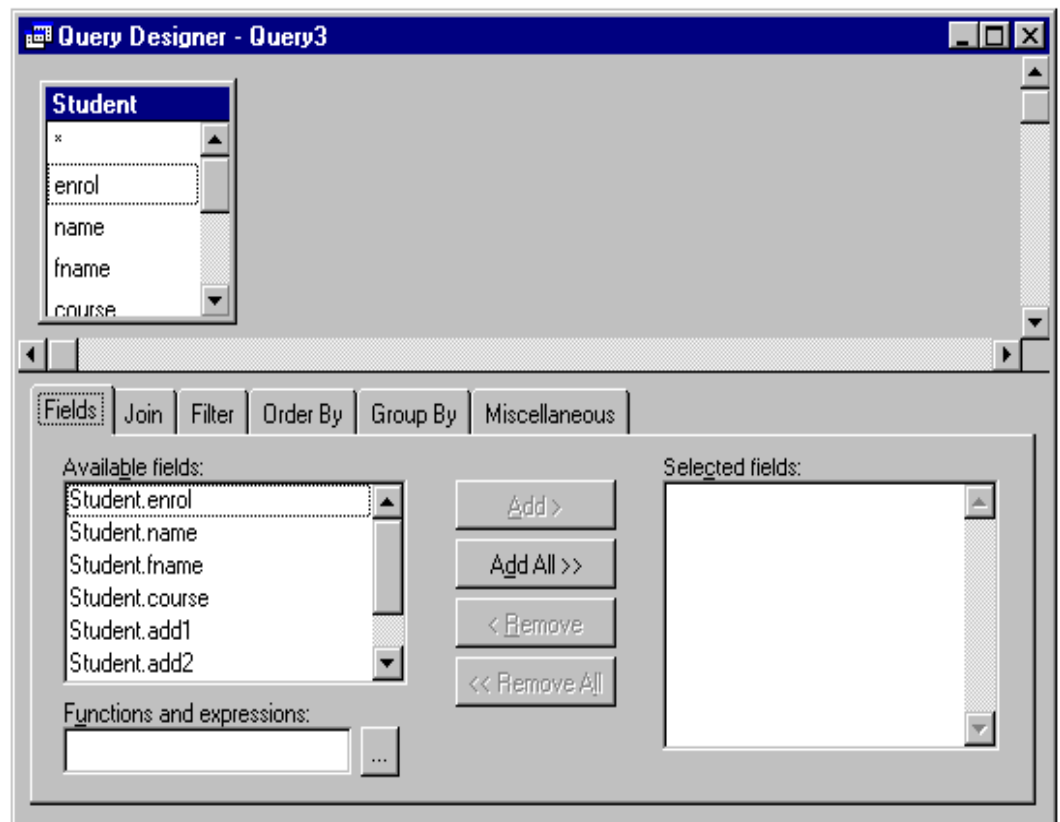


Fig. 7.15: Query Designer with One table

Remember that you can also add table at any time, by choosing **Add Table...** option from the **Query** menu or by clicking the **Add Table** tool from the **Query** toolbar to display the **Add Table or View** dialog box, which allows you to select a table. Similarly, you can also remove table at any time, by choosing **Remove Table** option from the **Query** menu or by clicking the **Remove Table** tool from the **Query** toolbar as shown in the figure 7.16.

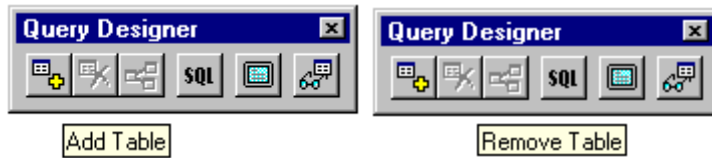


Fig. 7.16: Query Toolbar

7.5.2 Field Panel

After selecting the table STUDENT.DBF in the Query designer, you need to specify which fields you want to include in the query result. The **Field** panel of the Query Designer allows you to specify the fields you want to include in your query result. To specify fields in the **Field** panel, choose **Fields** tab from the Query Designer. The Fields Panel dialog box appears as shown in the figure 7.15.

To move the fields you want to include from the **Available Fields** list to the **Selected Fields** list, do one of the following:

- ❑ Select one or more fields in the **Available Fields** list that you want to use and choose **Add** > push button to copy them to the **Selected Fields** list.
- ❑ Double click on a field in the **Available Fields** list to copy it to the **Selected Fields** list.
- ❑ If you have to select all the fields, you can click **Add All** button. Similarly, if you have to remove any field, you can do by clicking **Remove** key or **Remove All** key.

For example, let us choose the following fields from the Available Fields list by double clicking them.

STUDENT.ENROL
 STUDENT.NAME
 STUDENT.FNAME
 STUDENT.COURSE
 STUDENT.ADD3

The selected fields are displayed in the Selected Fields list as shown in the figure 7.17. You can also include functions or expressions in the result, if you are creating a grouped query, by selecting them from the Functions/Expressions drop-down list and clicking **Add** push button.

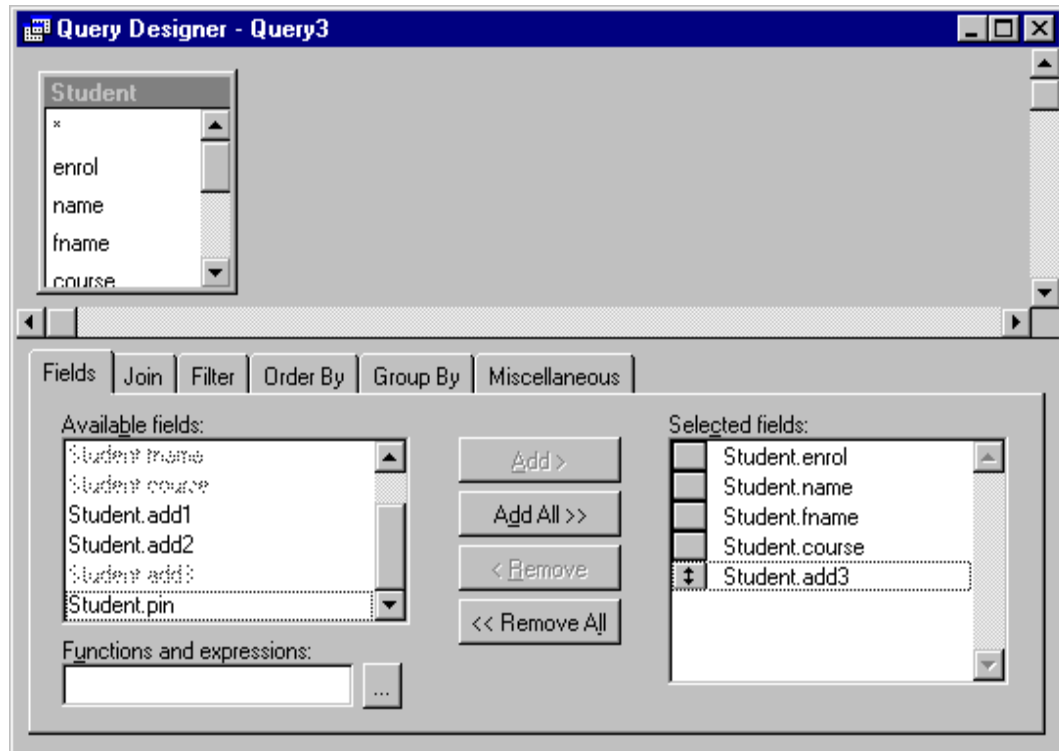


Fig. 7.17: Query Designer Fields selection

7.5.3 Join Panel

This option is required when you are creating a Query with two or more tables. This option will be explained when we will discuss “Creating Query with Query Designer using two Tables”.

7.5.4 Filter Panel

The Filter option in the Query Designer determines which records are extracted from the Table. If this option is empty, the query will extract all the records from the open table named “STUDENT.DBF”. To specify the Filter option to determine which records will be matched, select the **Field Name** drop down list to choose a field and **Criteria** list to choose the operator, and then enter the value you want to match the record in the data table as shown in the figure 5.18. Choose STUDENT.ADD3 field name from the **Field Name** drop-down list and enter the text JAIPUR in the **Example** text box, to find all the records having Address3 as JAIPUR.

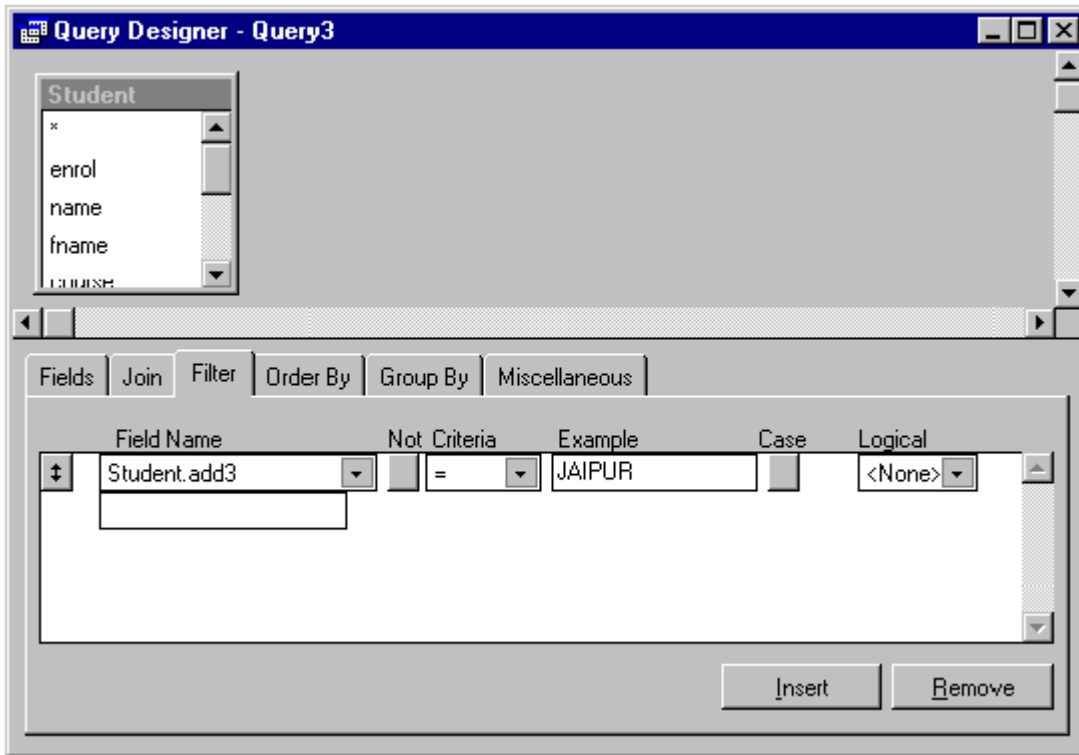


Fig. 7.18: Query Designer with Filter Option

Choose **Run Query** option from the **Query** menu, to run the query. The Browse window appears with all the records having Address3 equal to JAIPUR, as shown in the figure 7.19.

Enrol	Name	Fname	Course	Add3
170123004	PANKAJ SHARMA	SURESH SHARMA	3	JAIPUR
170123005	SHAMIM KHAN	ABDUL KHAN	3	JAIPUR

Fig. 7.19: Query Result of Filtering

7.5.5 Order By Panel

To specify the order in which records will appear in the query results, choose **Order By** panel from the Query Designer. The **Order By panel** occurs with all the fields in the **Selected Fields** list.

To specify fields that will determine the order of the query results, select a field from the **Selected Fields** list of **Order By** panel to determine the order of the query result as shown in the figure 4.20.

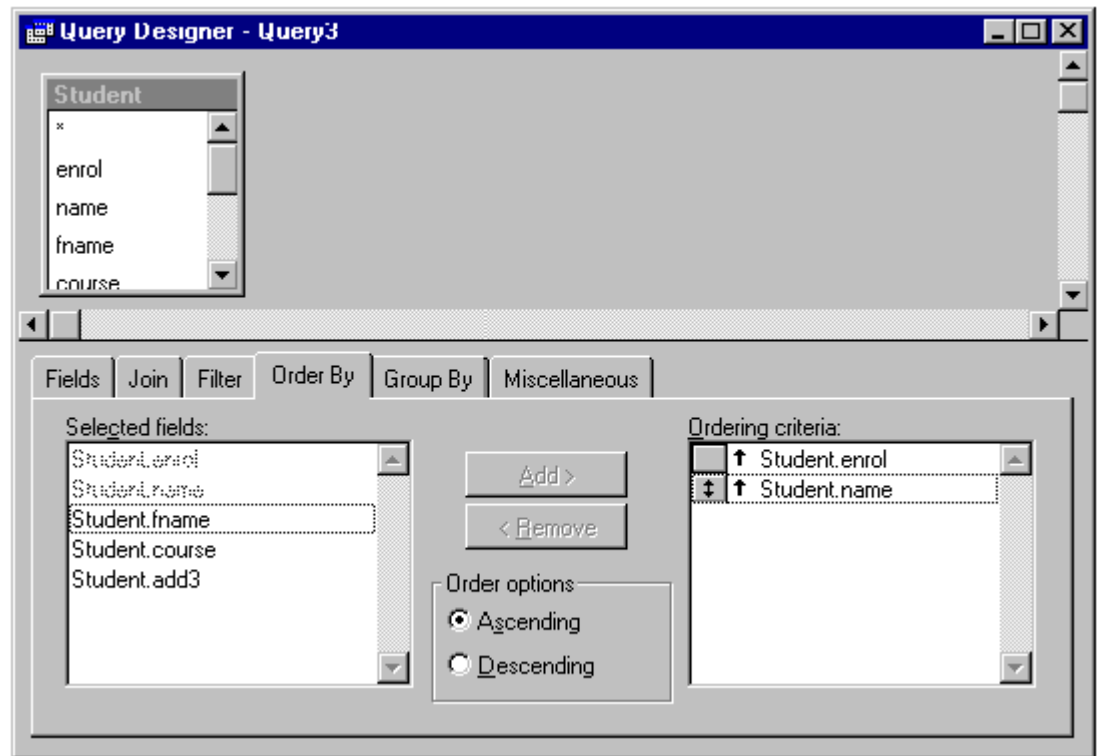


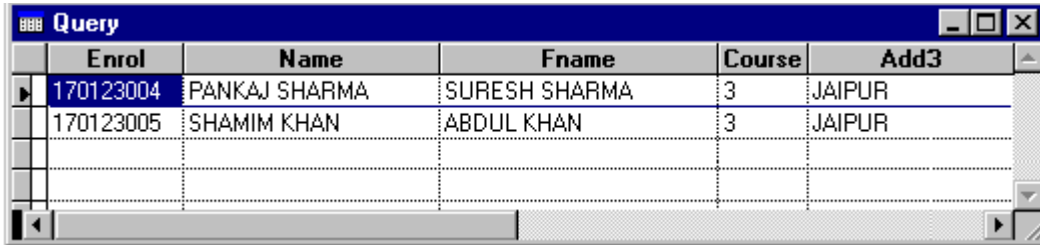
Fig. 7.20: Query Designer with Order By Panel

You can also select more than one field to determine the order of the query results. Choose the **Add** push button to copy it to the **Ordering Criteria** list. Once you add Selected fields to the Ordering Criteria list, you can determine the order by choosing **Ascending** or **Descending** radio button. You can also adopt a shortcut method by double-clicking on a field from **Selected Fields** list to move directly to the **Ordering Criteria** list.

To remove fields from the Ordering Criteria, select one or more fields from the **Ordering Criteria** list of **Order By** panel and choose the Remove push button, the selected fields no longer appear in the **Ordering Criteria** list or double-click on a field in the Ordering Criteria list to remove it directly from the **Ordering Criteria** list. The order in which fields appear in the Ordering Criteria list determines the order of priority of the query results.

For example, double-click on the fields **Student.Enrol**, then **Student.Name**. This moves both the fields to the **Ordering Criteria** list and will affect the output to be sorted by Enrolment, plus Name as shown in the figure 7.20.

Choose **Run Query** option from the **Query** menu, to do the query. The Browse window appears in the ascending order, as shown in the figure 7.21.



Enrol	Name	Fname	Course	Add3
170123004	PANKAJ SHARMA	SURESH SHARMA	3	JAIPUR
170123005	SHAMIM KHAN	ABDUL KHAN	3	JAIPUR

Fig. 7.21: Browse window with Order By

To save a query, choose **Save As** option from the File menu or click the Save tool. This opens the **Save As** dialog box to specify the name of the Query. Enter the name QRY3 in the text box and choose the **Save** push button as shown in the figure 7.22.

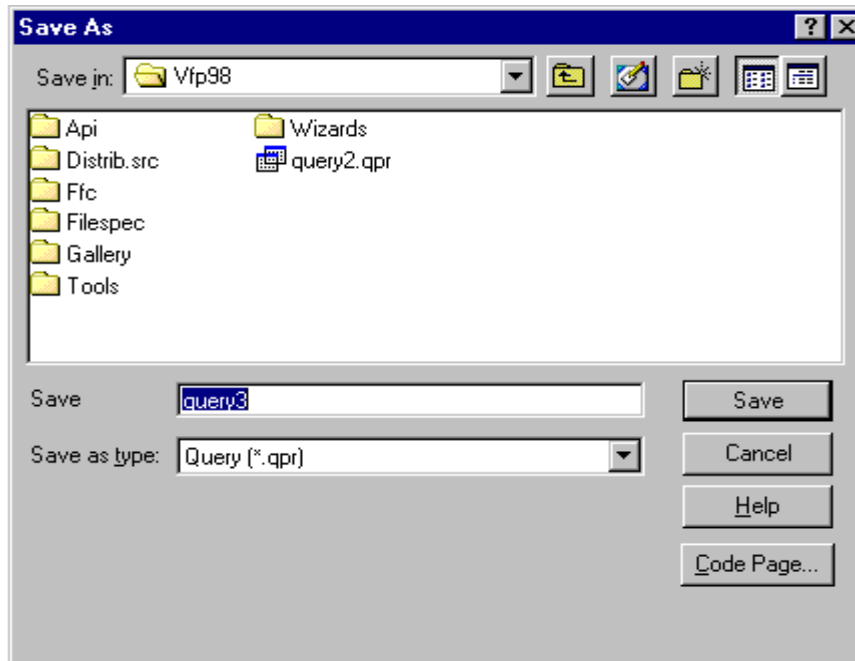


Fig. 7.22: The Save As dialog box

7.6 CREATING QUERY WITH QUERY DESIGNER USING TWO TABLES

To create a query with Query Designer using two tables, let us consider the two tables, which we have already created STUDENT.DBF and RESULT.DBF. Choose **New...** option from the **File** menu. Visual FoxPro displays the **New** dialog box. Choose **Query** radio button and then choose **New File** push button. Visual FoxPro displays the **Add Table or View** dialog box to select the table for query. From the **Open** dialog box select the table named "STUDENT.DBF". The **Query Designer** appears with the included table as shown in the figure 7.23

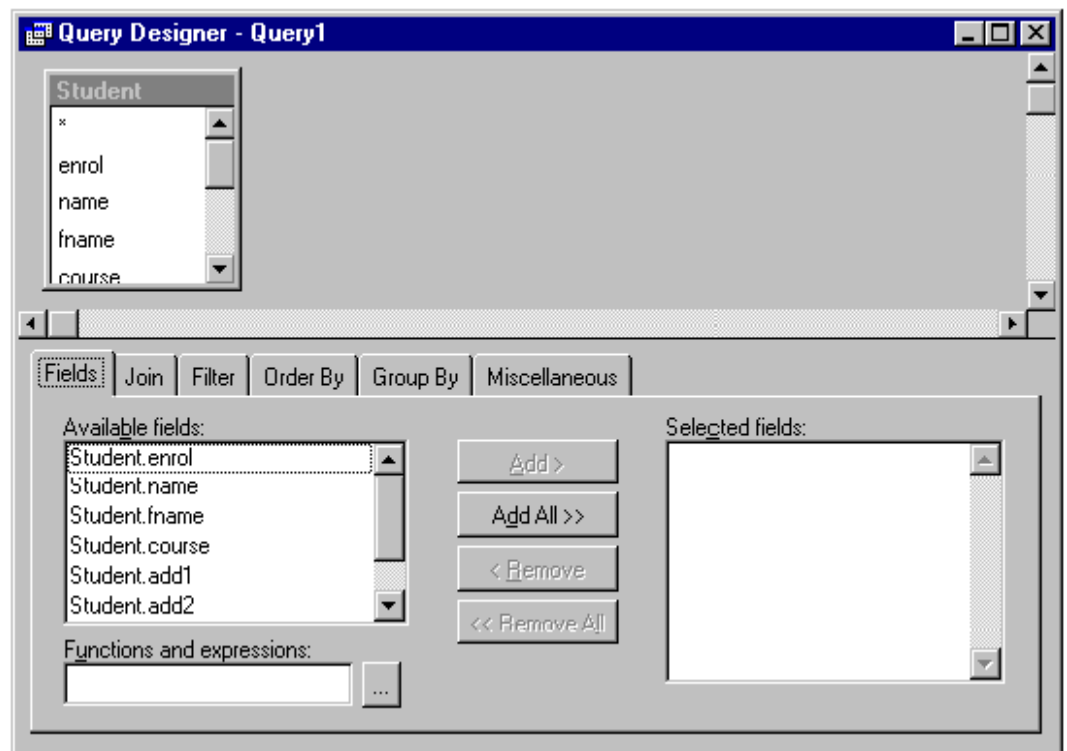


Fig. 7.23: Query Designer with Added Table at the top

Choose **Add Table...** option from the **Query** Menu. The **Add Table View** dialog box appears to select the second table. Choose **Other...** option to display the **Open** dialog box, and select the table named "RESULT.DBF" You can either double-click the file name after highlighting it or choose **OK**.

Visual FoxPro displays the **Join Condition** dialog box. By default,

the first field STUDENT.ENROL will be displayed on the left and the second table RESULT.ENROL will be displayed on the right with a joining line as shown in the figure 7.24. The **Join Condition** dialog box is displayed with the following option for **Type of Join** with its description given in the **Description** box:

- ❑ Inner Join Create a result set that includes only the Student records that match Result records.
- ❑ Left Join Create a result set that includes Student records and matching Result records.
- ❑ Right Join Create a result set that includes Result records and matching Student records.
- ❑ Full Join Create a result set that includes all Student records and all Result records.

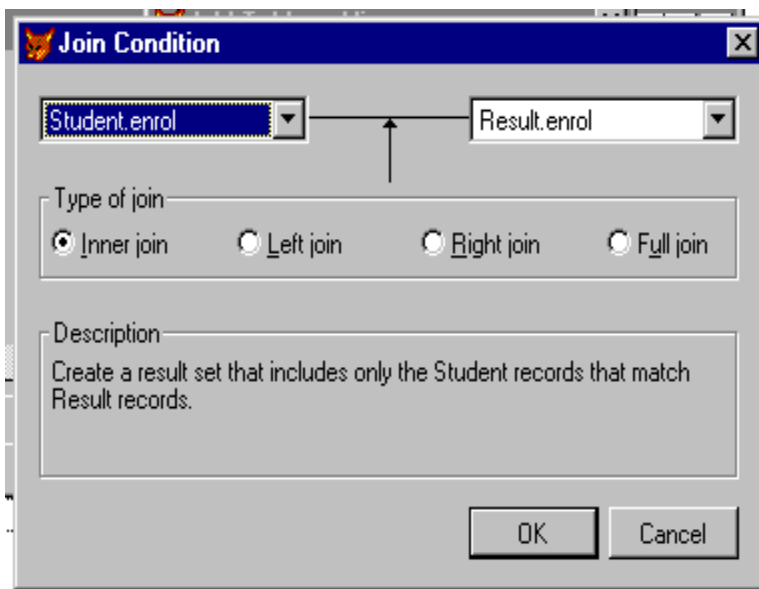


Fig. 7.24: Join Condition Dialog Box

Select the **Type of Join** as per the requirement of the query and choose **OK** push button and close the **Add Table or View** dialog box. Please note that the expression you have created with Join Condition is displayed in the Join Panel of the Query Designer, and the two tables are connected with the to indicate the join, as shown in figure 7.25.

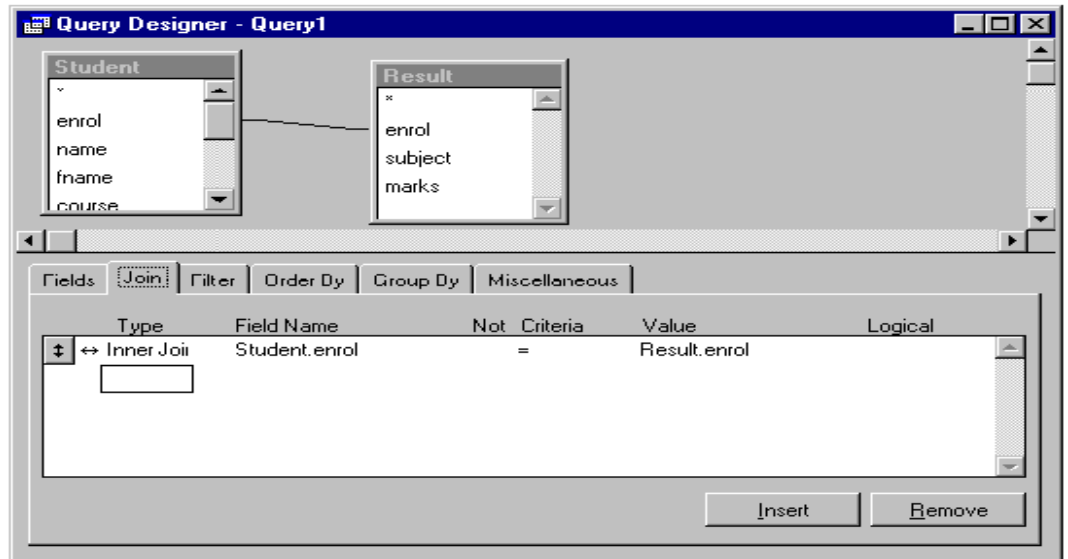


Fig. 7.25: Displaying the Join in the Query Designer

Choose **Fields** panel of the **Query Designer** to select the fields for the query results. Select the following fields from the Available Fields list and move them to the Selected Fields list as shown in the figure 7.26.

Student.enrol
 Student.name
 Student.course
 Result.subject
 Result.marks

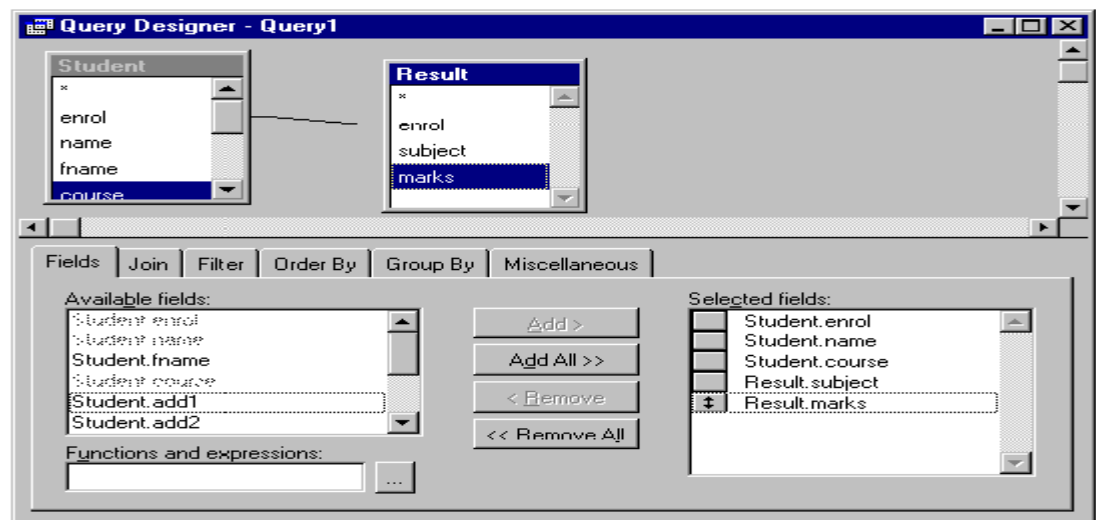
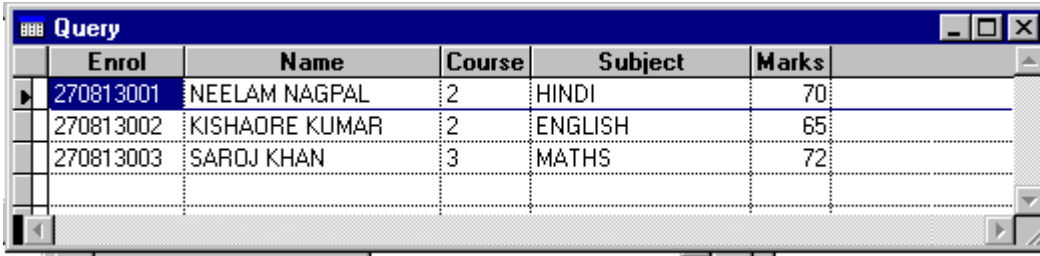


Fig. 7.26: Query Designer with two tables

Choose **Run Query** option from the Query menu to execute the query. The query result appears in the Browse window, as shown in the figure 7.27.



Enrol	Name	Course	Subject	Marks
270813001	NEELAM NAGPAL	2	HINDI	70
270813002	KISHADRE KUMAR	2	ENGLISH	65
270813003	SAROJ KHAN	3	MATHS	72

Fig. 7.27 Query Results using two tables

To save the query you have created using two tables, open the **File** menu and choose **Save** option. The **Save As** dialog box appears and give the query name as QUERY-4 and click the **Save** push button. Similarly, you can create a query using more than two tables.

7.7 INTEXT QUESTIONS

4. Write True or False for the following statements
 - (a) To relate between two tables both the data table would have at least one common field.
 - (b) Include Records of the query wizard allows you to include only matching rows.
 - (c) You can add or remove table through Query Toolbar.
 - (d) You can not select more than one field to determine the order of the query result.
5. Fill in the blanks:
 - (a) In order to create a query with query designer, choose _____ radio button and click _____ push button.
 - (b) The name of the table always appears in the _____.
 - (c) The extension name given to the query file is _____.
6. What are the four different types of Joins?

7.8 QUERY DESTINATION

So far you have seen the query results in a Browse or Edit windows

on-screen. However, you may want to keep some query results for a longer time, perhaps saving them for future use or using them in a report. For this Visual FoxPro provides you with a feature **Query Destination**. To change the query destination from on-screen Browse window to a file or printer, choose the **Query Destination** option from the **Query** menu or by choosing **Query Destination** from the **Query Designer** toolbar. The **Query Destination** Dialog box appears as shown in the figure 7.28.

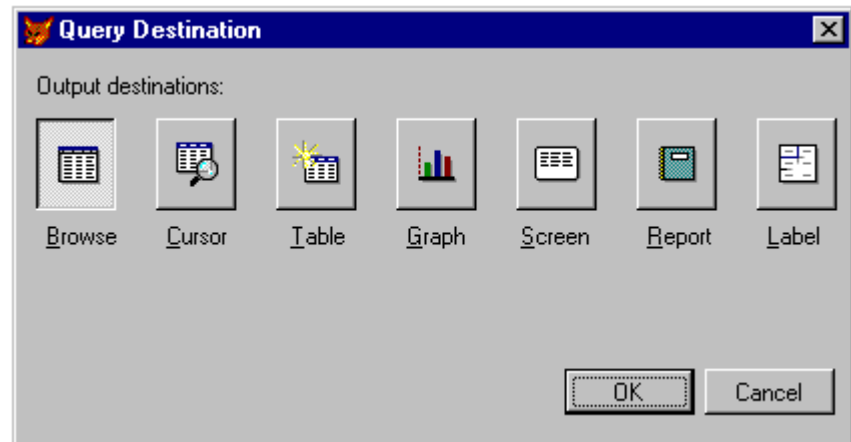


Fig. 7.28: Query Destination dialog box

Visual FoxPro displays the following options from the Query Destination dialog box:

- Browse
- Cursor
- Table
- Graph
- Screen
- Report
- Label

7.9 WHAT YOU HAVE LEARNT

In this lesson you have learned about creating a query with query wizard and query designer. You have also learned how to create a query using two or more tables and how to join two tables. The principles of creating relationship between two tables are discussed in this lesson. You have also learned about viewing the query results and saving the query results using query destination.

7.10 TERMINAL QUESTIONS

1. What is the different steps involved in creating a query using two tables?
2. Explain the principles of relationship between the two tables.
3. What do you understand by query destination?

7.11 KEY TO INTEXT QUESTIONS

1. (a) F, (b) T, (c) T, (d) F
 2. (a) available, selected, (b) relation, (c) conditional
 3. as done in section 4.3.4, student.add3='JAIPUR' and student.add3='DELHI'
 4. (a) Query, New File
(b) window header
(c) qpr
 5. (a) Query, New File
(b) Database
(c) qpr
 6. Inner, Left, Right and Full
-