



Implementation to convert Data along with Entire Structure of a Discrete Table between SQL SERVER to MS-Excel

Chalorme Roy Mukhopadhyay¹, Prof. Dr Pranam Paul²

MCA, Narula Institute of Technology, Agarpara, Westbengal, India¹

HOD, Department of Computer Application, Narula Institute of Technology, Agarpara, Westbengal, India²

ABSTRACT: In this paper, the conversion of tables from SQL Server platform to MS Excel platform as an initial process of the process is discussed with maintaining structure of the table in intact format. That means it will assure the conversion of the structure of original database with its original data and as well as its primary key too (if there is any primary key present in table) after data conversion and migration process is over. This whole process is called as data conversion from databases to file in my paper. Finally, table of SQL Server are converted into a MS Excel file in individual separate sheet with mentioning all proper structural formats.

KEYWORDS: Databases, Convert, Migrate, Table, Goal, SQL Server, MS Excel, Sheets, Intact, Conversion.

I. INTRODUCTION

Here, I have worked and found out how data will be converted and migrated from SQL Server to MS Excel platform which will keep the entire structure of the database in an intact format.

As my work progressed, I found out how the details of the table along with the table structure can be fetched from SQL Server, which means SQL Server itself is allowing copying its table's structure with all details of the table. If I was unable to collect these details and data about the structure and the tables through SQL, then I had to think about how to break the security of the DBA part of the SQL Server in an ethical manner.

II. RELATED WORKS

•Discussion of Actual Work:

Here, I am discussing about my actual work to convert the database from SQL Server to MS Excel. Section [1] discusses the establishing the connection. While section [2] gives the idea about the data conversion from database to an excel file. And [3] is an entire example of the conversion process.

A. ESTABLISHING THE CONNECTION BETWEEN DATABASE AND EXCEL FILE:

- ❖ I have implemented my concept of migrating data from SQL Server to MS Excel in Visual Basic (6.0) to develop the software which will be able to convert the database from SQL Server to MS Excel.
- ❖ All necessary actions required for connecting the SQL Server database and MS Excel through Visual Basic was done.
- ❖ The SQL commands were written in VB properly so that they could be fired in proper database and the output were kept in record sets. Here, at first, SQL commands were fired through VB, the output were temporarily stored in record sets provided by VB. From the record set, each record were taken tuple wise and they were stored one by one in MS Excel keeping the format of each fields intact.

B. REQUIRED INFORMATION ABOUT SQL SERVER DATABASE AND IMPLEMENTATION IN MS EXCEL:

2.1 Creation of table structure in MS Excel as a Sheet:

To convert and migrate the table, at first I had to get the details about the structure of the table which was to be converted and migrated. If that table has multiple primary keys then also that table will be converted and migrated with

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

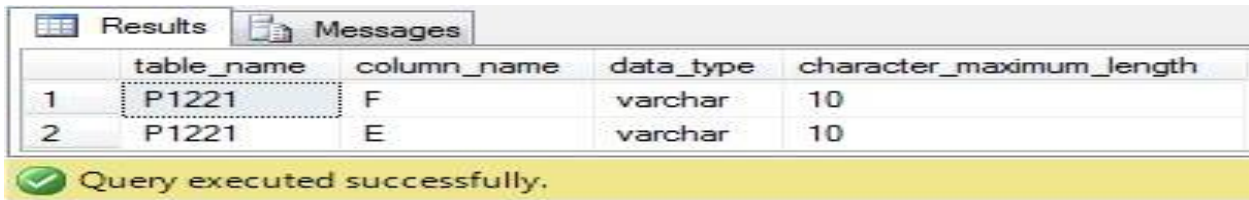
Vol. 4, Issue 9, September 2016

all the primary keys along with other constraints. This information about the table was used later to create the same table with similar primary keys and constraints in MS Excel.

To get the actual structure of a table in SQL Server I use “sp_help <object_name>” command. But as I was working with VB and using SQL so I had to find the equivalent command of “sp_help” in SQL. I can get the structure from the table in SQL Server named “INFORMATION_SCHEMA.COLUMNS”. All required fields were taken from “INFORMATION_SCHEMA.COLUMNS” using the proper SQL command.

Here, the table is created as individual sheet in MS-Excel with the same name and same data and other information along with the other constraints of the selected table for conversion and migration process have been also kept into the that particular sheet.

The required fields to be fetched from “INFORMATION_SCHEMA.COLUMNS” table were the table name, column name, data type, character_maximum_length,. This information was later used to define or create the main structure of the table in MS Excel.



	table_name	column_name	data_type	character_maximum_length
1	P1221	F	varchar	10
2	P1221	E	varchar	10

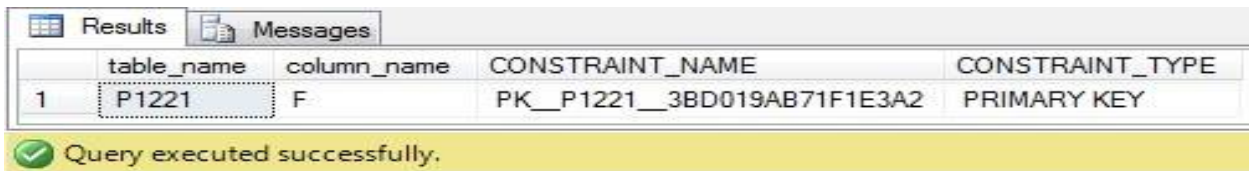
Query executed successfully.

Fig. 2.1

The output of “sp_help” equivalent SQL command for a particular table having 2 columns- F, E

2.2 Getting information from table INFORMATION_SCHEMA.COLUMNS, INFORMATION_SCHEMA.TABLE_CONSTRAINTS:

In the following fig 2.2 TABLE_NAME, COLUMN_NAME, CONSTRAINT_TYPE, and CONSTRAINT_NAME from INFORMATION_SCHEMA.COLUMNS, INFORMATION_SCHEMA.TABLE_CONSTRAINTS tables are shown:



	table_name	column_name	CONSTRAINT_NAME	CONSTRAINT_TYPE
1	P1221	F	PK_P1221_3BD019AB71F1E3A2	PRIMARY KEY

Query executed successfully.

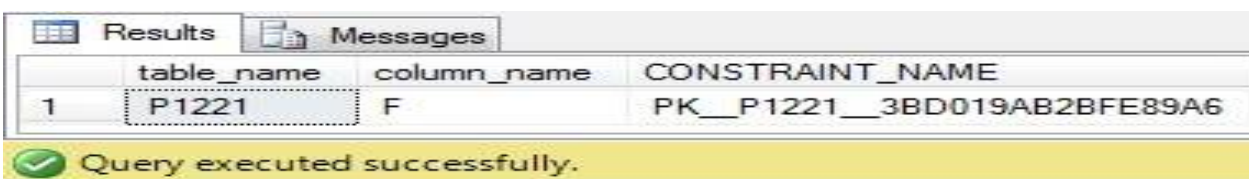
Fig. 2.2

Output of SQL command with constraint name and their type

2.3 Finding the primary key in the table:

Primary key is the important part of any table, as it can uniquely identify any tuple from other tuples. It cannot be null. It also has vital role at the time of inserting any data tuple wise in a table. So, to fetch the information about primary key of any table and store it in a variable is very important. This will be used during the creation of the sheet in MS Excel of a particular file. So, I had to use the SQL command to find the primary key in the table.

The following fig 2.3 shows the primary key present in a particular table. It provides the information about TABLE_NAME, COLUMN_NAME, and CONSTRAINT_NAME



	table_name	column_name	CONSTRAINT_NAME
1	P1221	F	PK_P1221_3BD019AB2BFE89A6

Query executed successfully.

Fig. 2.3

Information about Primary key

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 9, September 2016

In the above figure 2.3 TABLE_NAME, COLUMN_NAME, CONSTRAINT_NAME are the fields which gives the information about the primary key of a selected table and the CONSTRAINT_NAME specifies the name of the primary key.

This command is also capable of finding the composite key (when more than one field together uniquely identifies the tuple, it is called composite key).

As discussed in section 2.2, that information was used to get the primary key.

2.4 Selecting the table to be converted and migrated:

After login in with the user name and password in the database of SQL Server, I have to select the table which will be converted and migrated to the MS Excel. So, I have to show all the tables available under that user, so that the user can select the table. This list of tables is shown by the data grid in my software, user will select the table and the table will be converted and migrated to the MS Excel platform keeping its main structure, relation with other table and data types of every field intact.

Among all tables available under a particular user of SQL SERVER, a particular table “P1221” which has been chosen through a SQL query shown in below figure, fig.2.4 is to be converted to a MS EXCEL file. In the following Fig. 2.4 I can get the list of tables available for a particular user:

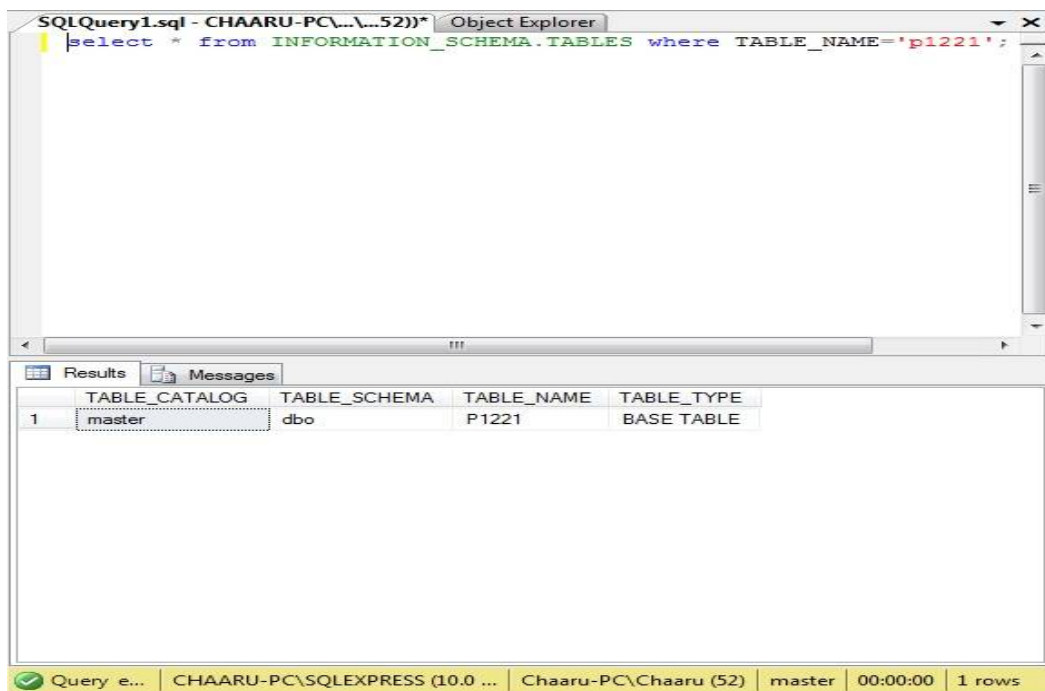


Fig. 2.4
Chosen Table is available under the particular user

2.5 Selecting the proper location to save the converted EXCEL file: After proceeding all of the above steps, user need to choose the location to save the Excel file (having extension “.xls”) in a particular folder or have to create a new folder in which user wants to copy the entire table with its information, data and structures and as well as its referenced tables too. After this, the conversion and migration process will be started and can view the current progress status of the conversion process that which table is migrating currently, and after the completion of the conversion process the completion message will be generated to inform that conversion and migration process is completed successfully or not.

International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 9, September 2016

III. SIMULATION RESULTS

To illustrate my work let me consider the following example given in fig. 3.

Here, a table named **P1221** has no parent table.

I want to migrate this P1221 table from SQL Server to MS Excel.

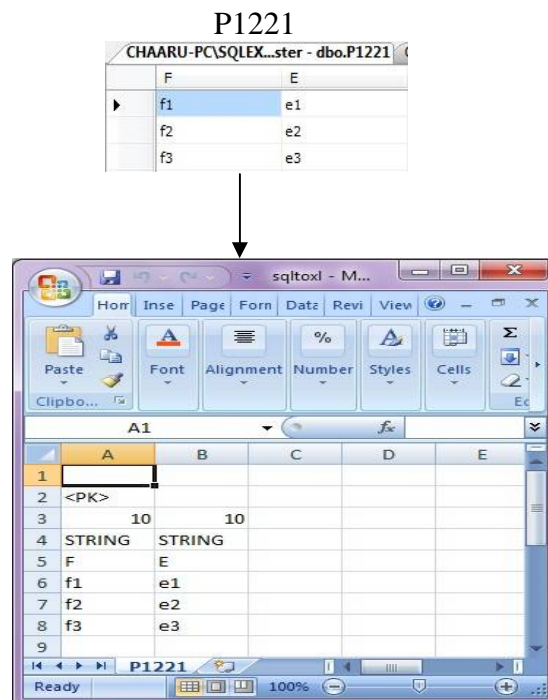


Fig. 3 - Structure of database in SQL SERVER to be converted and migrated in MS Excel

Above figures signifies that from SQL SERVER P1221 table is copied with its data and keeping the information about the structure in MS Excel.

Now, if **P1221** table is to be converted and migrated from SQL SERVER to MS Excel.

- 1st row of the excel sheet signifies whether there is any foreign key presented in the converted and migrated table or not. If there is no foreign key in that case that row will be in empty condition.

- 2nd row of the excel sheet signifies mixed information's about the table-

- 1) If there is any primary key presented in the migrated table in that case a "<PK>" [stands for Primary Key] will be placed in the top of the column name which is the primary key of that table, same procedure will be maintained if there are more than one primary key.

- 2) If there is any foreign key in that case in this row the foreign table which is connected with the converted table will be placed in this row according to the column name (which column of this table is connected with the table which is placed in this row) and this procedure will be maintained in case of more than one foreign keys also.

Here is the step by step explanation how these tables are converted and migrated from SQL Server to MS Excel.

A. CREATION OF STRUCTURE AND DATA INSERTION P1221 TABLE:

As P1221 have no foreign key so it starts to construct the structure of P1221 table. Then its primary keys are to be found and collecting the tuples one by one and insert it into the corresponding excel sheet in to the corresponding cell starting from 6th row of that excel sheet.



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 9, September 2016

IV. ANALYSIS

In this paper, I have to plan the process of conversion and migration in a special manner, as SQL Server is a database platform and MS EXCEL is a file system-which means both are different in nature, SQL Server can understand SQL queries but in case of MS EXCEL-SQL queries are not applicable for implementation, even there is no data type and primary key concept in MS EXCEL (all are considered as strings) but in SQL SERVER there is the data type concept, no primary key concept. But need to convert and migrate all data's from one platform to another and for that I had to implement such a process that will be equivalent for both platforms.

For these reasons, I have to plot the information's in MS EXCEL's sheet(which are individually acting as a table of SQL SERVER in MS EXCEL) after conversion and migration process from SQL SERVER in a structured format, such as-

■ 1st Row of MS EXCEL File:- If there is any foreign key in that table those will be plotted in this 1st row according to their position, that is dependent on their situated foreign table's position (discussing in next point) .

■ 2nd Row of MS EXCEL File:- This 2nd row is to hold mixed information's about the table.

If there is any primary key presented in the migrated table in that case a "<PK>" [stands for Primary Key] will be placed in the top of the column name which is the primary key of that table,same procedure will be maintained if there are more than one primary key. If there is no primary key in that case that position will be in empty position.

If there are any no. of Foreign tables connected with that table in that case those foreign table's names will be plotted in this row according to the column name (that, by which own column that table is connected with the foreign tables). If there is no Foreign Table in that case that position will be in empty position.

■ 3rd Row of MS EXCEL File:- This row is used to plot the data length of each column. Every column's data length will be represented by its upper level cell's value of 3rd Row.

■ 4th Row of MS EXCEL File:- This row is used to plot the data type of each column. Every column's data type will be represented by its upper level cell's value of 4th Row.

■ 5th Row of MS EXCEL File:- This row is used to plot the column names of each column of the table.

■ 6th Row onwards of MS EXCEL File:- From 6th row onwards the data's of the tables are being stored according to the column name.

V. CONCLUSION AND FUTURE WORK

As my initial goal was to converting and migrating table from one database to another different database the software developed by me is successful of converting and migrating table between SQL SERVER to MS Excel. Though it has some limitations but I look forward to work out and develop more accurate software.

Above said limitation of my paper can be rectified. I will work out about this limitation in future and hopefully will overcome this limitation.

Apart from this, as I am able to migrating tables from SQL Server to MS Excel, now I will concentrate on extending my paper so that it will be able to migrating the table in some other way, i.e. from some other database to some other database.

Not only that, I wish to carry forward my work and developing the software which will be able to migrating tables between all major databases which follow the CODD's rule (Oracle, SQL Server, MS-Access, My SQL).

REFERENCES

- [1] Kevin Loney and George Koch, Oracle 9i, The Complete Reference, sixteenth reprint, 2005, Oracle Press.
- [2] Silberschatz, Korth and Sudarshan, Database System Concepts, fourth edition, McGraw-Hill International Edition.
- [3] Ivan Bayross, SQL, PL/SQL: The Programming Language Of Oracle, 4th Revised Edition.
- [4] <https://www.google.co.in/>
- [5] <http://stackoverflow.com/>
- [6] <https://www.wikipedia.org/>
- [7] Yahoo.com
- [8] <https://community.oracle.com>
- [9] <https://oracle.com>
- [10] www.blocks.oracle.com
- [11] Kibria Dastagir Dafadar, Chalorme Roy Mukhopadhyay, Prof. Dr Pranam Paul; "Implementation of Data Migration between Two Different Databases for discrete table"; Paper ID: V40202104; Accepted and Published in "International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCCE)"; ISSN No: 2320-9801 (Online), 2320-9798 (Print); Vol. 4, Issue: 1; Feb 2016; pp 2144 – 2147.



International Journal of Innovative Research in Computer and Communication Engineering

(An ISO 3297: 2007 Certified Organization)

Vol. 4, Issue 9, September 2016

- [12] Chalorme Roy Mukhopadhyay, Kibria Dastagir Dafadar, Prof. Dr Pranam Paul; "Implementation of Data Migration between Two Different Databases for inter connected tables"; Paper ID: V40202106; Accepted for Publication in "International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)"; ISSN No: 2320-9801 (Online), 2320-9798 (Print); Vol. 4, Issue: 1; Feb 2016; pp 2148 – 2154.
- [13] Chalorme Roy Mukhopadhyay, Prof. Dr Pranam Paul; "Conversion of Entire Structure of Database from SQL SERVER to MS Access"; Paper ID: V40505138; Accepted for Publication in "International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)"; ISSN No: 2320-9801 (Online), 2320-9798 (Print); Vol 4, Issue: 5; May 2016; pp 9179 - 9185
- [14] Chalorme Roy Mukhopadhyay, Prof. Dr Pranam Paul; "Data Migrating with Foreign Key Concept from ORACLE to SQL SERVER"; Paper ID: V40505138A; Accepted for Publication in "International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)"; ISSN No: 2320-9801 (Online), 2320-9798 (Print); Vol 4, Issue: 5; May 2016; pp 9179 - 9185
- [15] Chalorme Roy Mukhopadhyay, Prof. Dr Pranam Paul; "Implementation of Data Migration between SQL Server to ORACLE"; Paper ID: V40505138B; Accepted for Publication in "International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)"; ISSN No: 2320-9801 (Online), 2320-9798 (Print); Vol 4, Issue: 5; May 2016; pp 9186 - 9192
- [16] Chalorme Roy Mukhopadhyay, Prof. Dr Pranam Paul; "Conversion of Data along with Entire Structure of Referential Tables between ORACLE to MS Excel"; Paper ID: V40707212; Accepted and Published in "International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)"; Impact Factor: 6.577; ISSN No: 2320-9801 (Online), 2320-9798 (Print); Vol 4, Issue: 7; July 2016; pp 13681-13688 ;
- [17] Chalorme Roy Mukhopadhyay, Prof. Dr Pranam Paul; "Implementation to convert Data along with Entire Structure of a Discrete Table between ORACLE to MS Excel"; Paper ID: V40707213; Accepted and Published in "International Journal of Innovative Research in Computer and Communication Engineering (IJIRCCE)"; Impact Factor: 6.577; ISSN No: 2320-9801 (Online), 2320-9798 (Print); Vol 4, Issue: 7; July 2016; pp 13686-13691 ;

BIOGRAPHY



Chalorme Roy Mukhopadhyay, Passout Student of MCA from Narula Institute of Technology, Agarpara, Westbengal, India. She completed her BCA degree from George College (Kolkata), under the West Bengal University of Technology.

Achievements:

1. Got 431st Rank on NEST (Nationwide Education And Scholarship Test) Aptitude Test 2013,
2. Scored among the top 24 % (76 percentile) on NIIT 8th National IT Aptitude Test 2012.
3. Seven papers accepted and published in an International Journal.



Prof. Dr Pranam Paul, Assistant Professor and Departmental Head, CA Department, Narula Institute of Technology (NIT), Agarpara had completed MCA in 2005. Then my carrier had been started as an academican from MCKV Institute of Technology, Liluah. Parallely, at the same time, I continued my research work. At October, 2006, National Institute of Technology (NIT), Durgapur had agreed to enroll my name as a registered Ph.D. scholar. Then I had joined Bengal College of Engineering and Technology, Durgapur. After that Dr. B. C. Roy Engineering College hired me in the MCA department at 2007. At the age of 30, I had got Ph.D. from National Institute of Technology, Durgapur, WestBengal. I had submitted my Ph.D. thesis only within 2 Years and 5 Months. After completing the Ph.D., I had joined

Narula Institute of Technology in Computer Application Department. Parallely I continue my research work. For that, I have 39 International Journal Publications among 54 accepted papers in different areas. I am also reviewer of International Journal of Network Security (IJNS), Taiwan and International Journal of Computer Science Issue (IJCSI); Republic of Mauritius.

Achievement:

1. Accepted my name for publication in "Who's Who Science and Engineering, 2011 – 2012" published by "Marquis Who's Who", USA on 31st Dec 2010
2. Selected my name as "Top 100 Engineers' 2011", by "International Biographical Centre", Cambridge, England
3. Selected my name as "Outstanding 2000 Intellectuals of the 21st Century, 2012", by "International Biographical Centre", Cambridge, England