



# TRINITY SCHOOL DATABASE MANAGEMENT SYSTEM

RIHAM AHAMED ABDUL RAHEEM  
HND COMPUTING IDM

## Contents

<b>INTRODUCTION.....</b>	<b>2</b>
<b>STRUCTURED QUERY LANGUAGE (SQL) .....</b>	<b>2</b>
<b>SQL SERVER MANAGEMENT STUDIO .....</b>	<b>3</b>
<b>PROCESS OF THE CREATION OF TRINITY MUSIC SCHOOL DATABASE SYSTEM.....</b>	<b>5</b>
Create database & Accessing database .....	5
Create table, insert data and Interface design .....	6
<b>Student</b> .....	6
<b>Teacher</b> .....	8
<b>Class</b> .....	10
<b>Supplier</b> .....	12
<b>Instrument</b> .....	14
<b>QUERY DEMONSTRATION .....</b>	<b>16</b>
Task1: Student details with No of student registration for given month .....	16
Task2: Total Income received for a given month form the student .....	17
Task3: Student details with their playing instruments .....	18
Task4: Filter the student's records based on the registration date .....	18
Task5: Show only the Part time classes .....	19
References .....	20
<b>List of Figure</b>	
Figure 1: Microsoft SQL server management studio .....	4
Figure 2: Create TMS Database.....	5
Figure 3: Student table create query .....	6
Figure 4: Student table insert query .....	6
Figure 5: Student form design and code.....	7
Figure 6: Teacher table create query .....	8
Figure 7: Teacher table insert data query.....	8
Figure 8: Teacher form design and code .....	9
Figure 9: Class table create query .....	10
Figure 10: Class table insert data query.....	10
Figure 11: Class interface design and code.....	11
Figure 12: Supplier table create query.....	12
Figure 13: Supplier table insert data query .....	12
Figure 14: Supplier interface design and code.....	13
Figure 15: Instrument table insert data query.....	14
Figure 16: Instrument table create query.....	14
Figure 17: Instrument interface design and code.....	15

Figure 18: Task 1 Query .....	16
Figure 19: Task 2 Query .....	17
Figure 20: Task 3 Query .....	18
Figure 21: Task 4 Query .....	18
Figure 22: Task 5 Query .....	19

## INTRODUCTION

The Colombo-based Trinity Music School is currently erratic and outdated, requiring XYZ software solutions to create a corresponding database system for the school to transform their entire school with data processing methods to meet the school's demands for development and flexibility. Based registration management system.

This report will attempt to display and explain certain SQL queries, provide evidence user interfaces, outputs and data validations.

## STRUCTURED QUERY LANGUAGE (SQL)

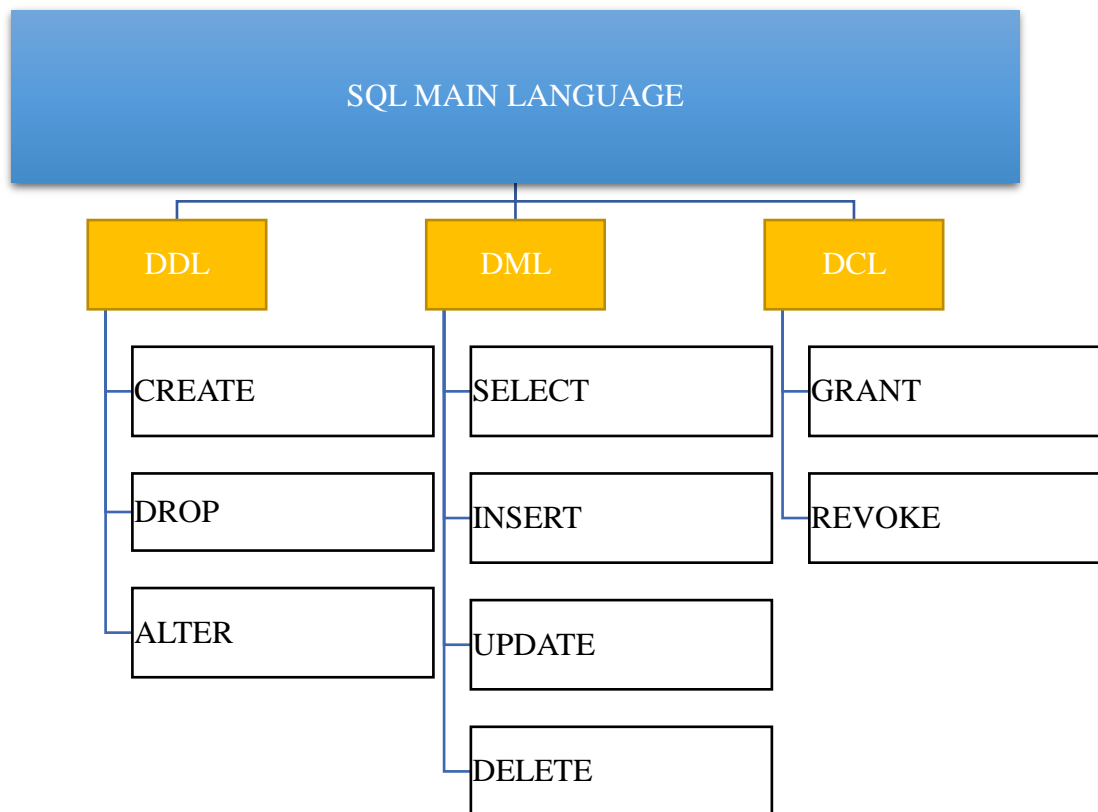
The pronounced sequence "es-kue-el", is the language in which machines interact with databases. According to the American National Standards Institute (ANSI), SQL is the standard for interaction with relevant database management systems. One of the most basic and powerful features of SQL is that it allows developers to create, read, update, and delete (CRUD) operations on a database.

When it comes to database management systems, there are 4 main languages that allow queries stored in a database and proper expression of configuration data.

They are:

1. **Data Definition Language:** Defines the structure of data and ensures that data is stored in ways that identify patterns. DDL reports implement the definition of metadata of a database. Creating plans, tables, codes, and controls within a database is all about DDL.
2. **Data Manipulation language:** Allows access and manipulation of data within a database. Whenever a machine needs to access something stored in a database, it can use the enabled DML.
3. **Data Control Language:** This language has a lot in common with DML, but the main difference is that DCL allows to control permissions to a database, ensures access queues and also provides the functionality of DML. Execution of DCL reports is highly transferable and includes rollback parameters.

The Structured query language implements all 4 languages used in database management systems. It is therefore very important in the process of using databases for storage purposes. The following figure shows how each of these 4 languages is imagined using commands in SQL. (tutorialspoint, 2021)



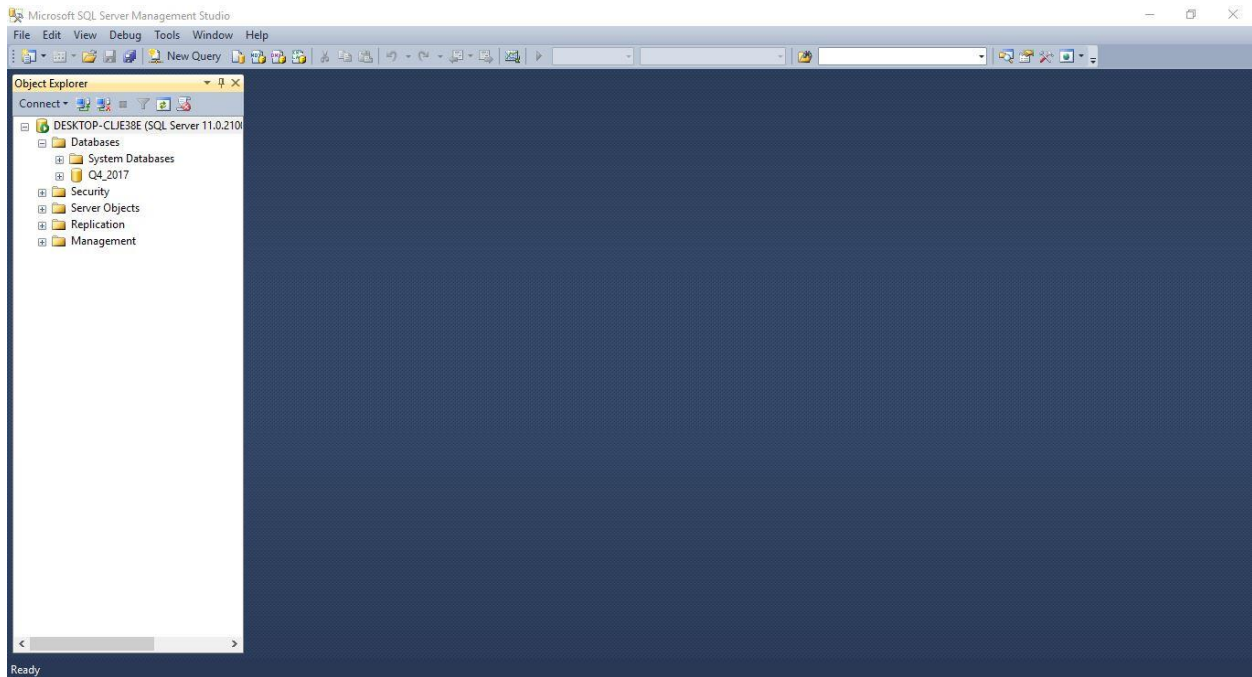
## SQL SERVER MANAGEMENT STUDIO

Microsoft SQL Server is a related database management system used to implement the Trinity Database System (TMS). SQL Server supports a wide range of transaction processing, business intelligence and analytics interfaces for the IT industry. It is one of the most widely used and marketed database technologies out there.

The standard language used to query databases As mentioned earlier, the SQL Server is built on top of one layer of SQL. SQL Server configured SQL processing is also known as Transact-SQL (T-SQL) and Microsoft-implemented implementation, which adds additional extensions to the standard configured query language.

SQL Server Management Studio was heavily used to create the Trinity database.

The following is a picture of what the SQL Server Management Studio main interface looks like when connected to a server. (Erkec, 2020)



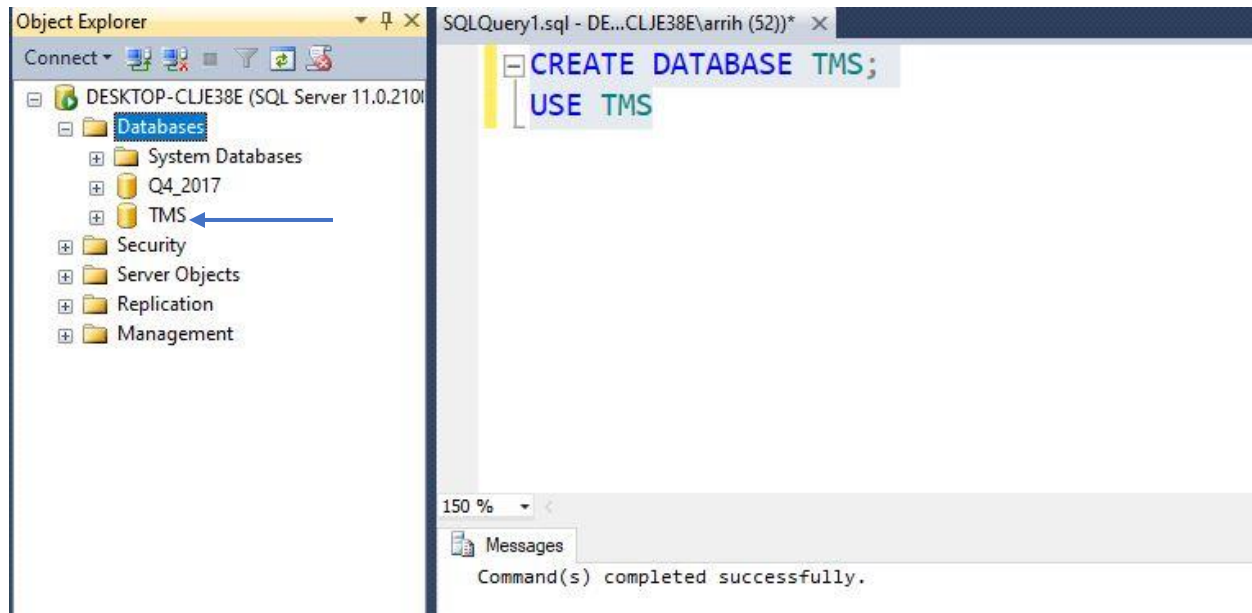
*Figure 1: Microsoft SQL server management studio*

It has a very user friendly and organized look and is very strong in dealing with even the biggest challenges faced in the development of related databases.

## PROCESS OF THE CREATION OF TRINITY MUSIC SCHOOL DATABASE SYSTEM.

The following attempt is the following steps from database creation to creating tables and then inserting data, along with justification and data verification.

### Create database & Accessing database

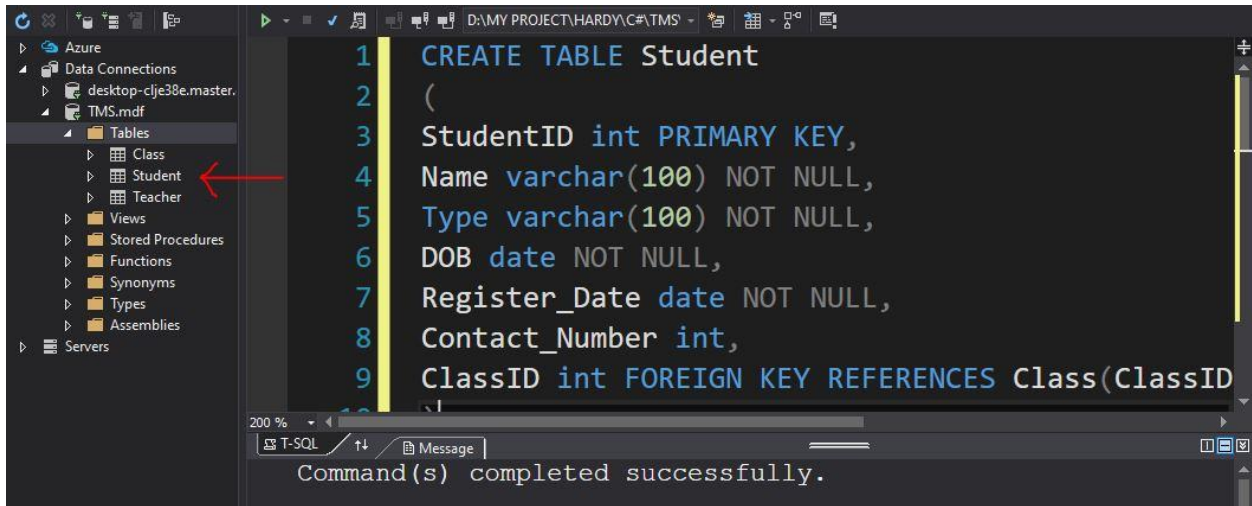


*Figure 2: Create TMS Database*

By executing these 2 queries, a database called "TMS" is created one after the other, prompting the database management system to use "TMS" as the current active database. So all the following queries will be done in the "TMS" database.

## Create table, insert data and Interface design

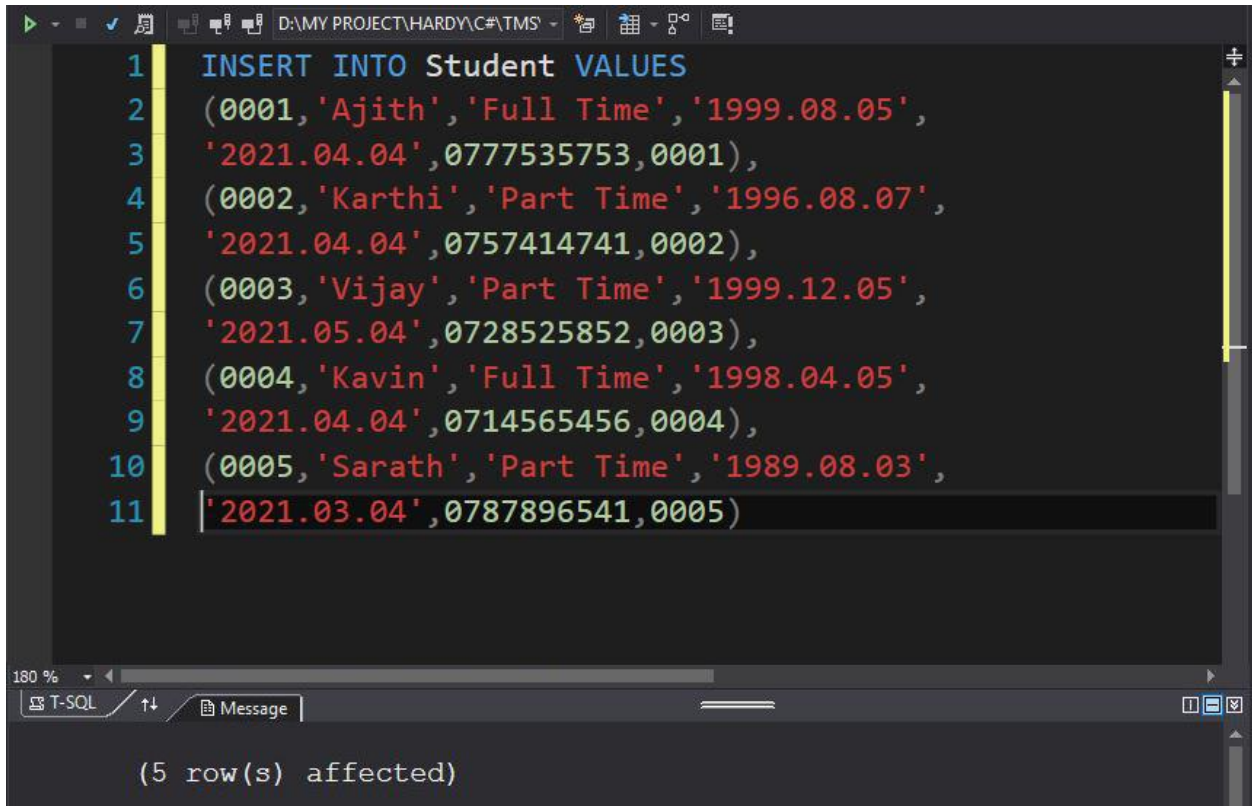
### Student



```
1 CREATE TABLE Student
2 (
3   StudentID int PRIMARY KEY,
4   Name varchar(100) NOT NULL,
5   Type varchar(100) NOT NULL,
6   DOB date NOT NULL,
7   Register_Date date NOT NULL,
8   Contact_Number int,
9   ClassID int FOREIGN KEY REFERENCES Class(ClassID
```

Command(s) completed successfully.

Figure 3: Student table create query



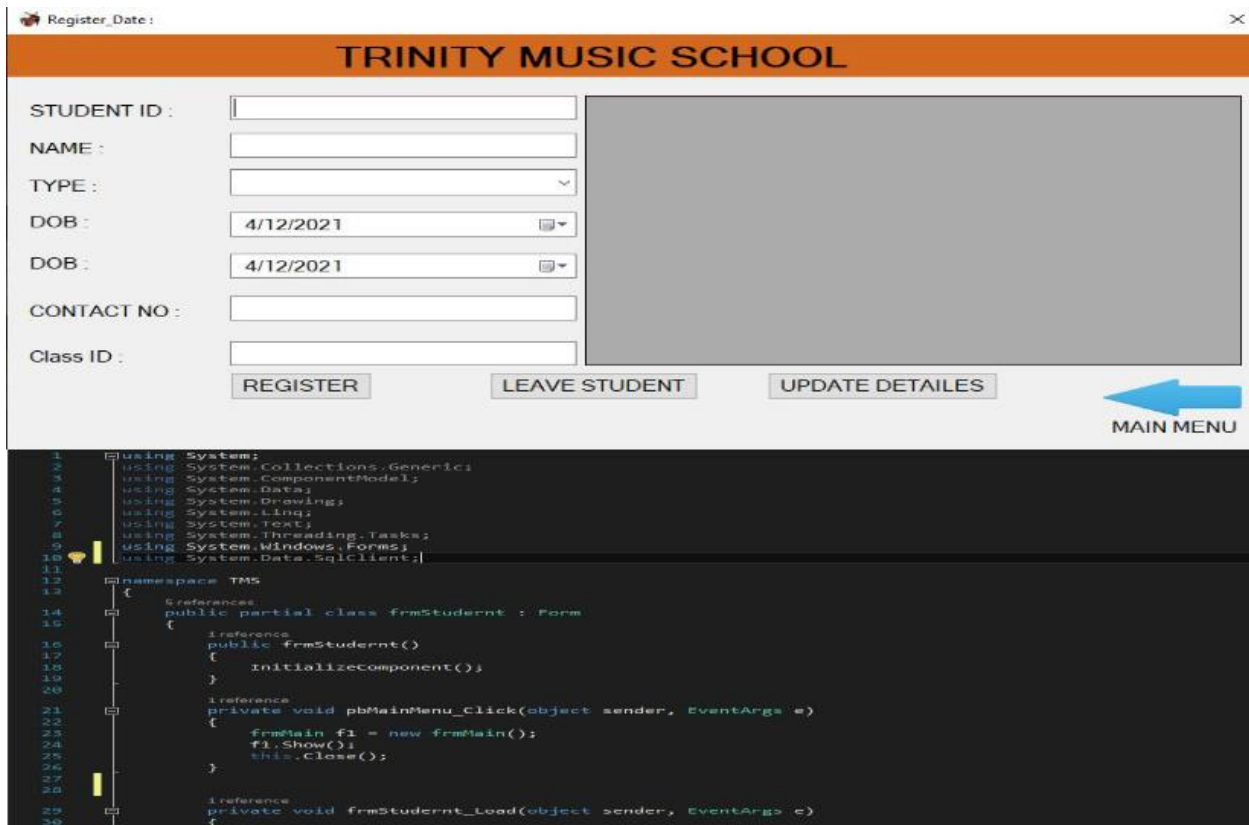
```
1 INSERT INTO Student VALUES
2 (0001,'Ajith','Full Time','1999.08.05',
3  '2021.04.04',0777535753,0001),
4 (0002,'Karthi','Part Time','1996.08.07',
5  '2021.04.04',0757414741,0002),
6 (0003,'Vijay','Part Time','1999.12.05',
7  '2021.05.04',0728525852,0003),
8 (0004,'Kavin','Full Time','1998.04.05',
9  '2021.04.04',0714565456,0004),
10 (0005,'Sarath','Part Time','1989.08.03',
11  '2021.03.04',0787896541,0005)
```

(5 row(s) affected)

Figure 4: Student table insert query



Now a table called student is created, with 7 columns of data types of StudentID, Name, Type, DOB, Register\_Date, Contact\_Number and ClassID respectively, integer, varchar, varchar, date, date, integer and integer. The primary key is StudentID, so it is naturally unique and NULL. The foreign key is ClassID references class table. The insert query contains only the data types that are subject to the table's scheme, so the data is valid and the data entered.



The image shows a Windows application window titled "Register\_Date :". The window has an orange header bar with the text "TRINITY MUSIC SCHOOL". Below the header, there are several input fields and buttons. The input fields are labeled: "STUDENT ID :", "NAME :", "TYPE :", "DOB :", "DOB :", "CONTACT NO :", and "Class ID :". The "TYPE" field is a dropdown menu. The "DOB" fields have date pickers. Below the input fields are three buttons: "REGISTER", "LEAVE STUDENT", and "UPDATE DETAILS". To the right of these buttons is a large grey rectangular area. At the bottom right of the window is a blue arrow pointing left with the text "MAIN MENU".

Below the window, the C# code for the form is shown. The code is as follows:

```

1  using System;
2  using System.Collections.Generic;
3  using System.ComponentModel;
4  using System.Data;
5  using System.Drawing;
6  using System.Linq;
7  using System.Text;
8  using System.Threading.Tasks;
9  using System.Windows.Forms;
10 using System.Data.SqlClient;
11
12 namespace TMS
13 {
14     References
15     {
16         public partial class frmStudent : Form
17         {
18             InitializeComponent();
19         }
20
21         private void pbMainMenu_Click(object sender, EventArgs e)
22         {
23             frmMain f1 = new frmMain();
24             f1.Show();
25             this.Close();
26         }
27
28         private void frmStudent_Load(object sender, EventArgs e)
29         {
30

```

Figure 5: Student form design and code

## Teacher

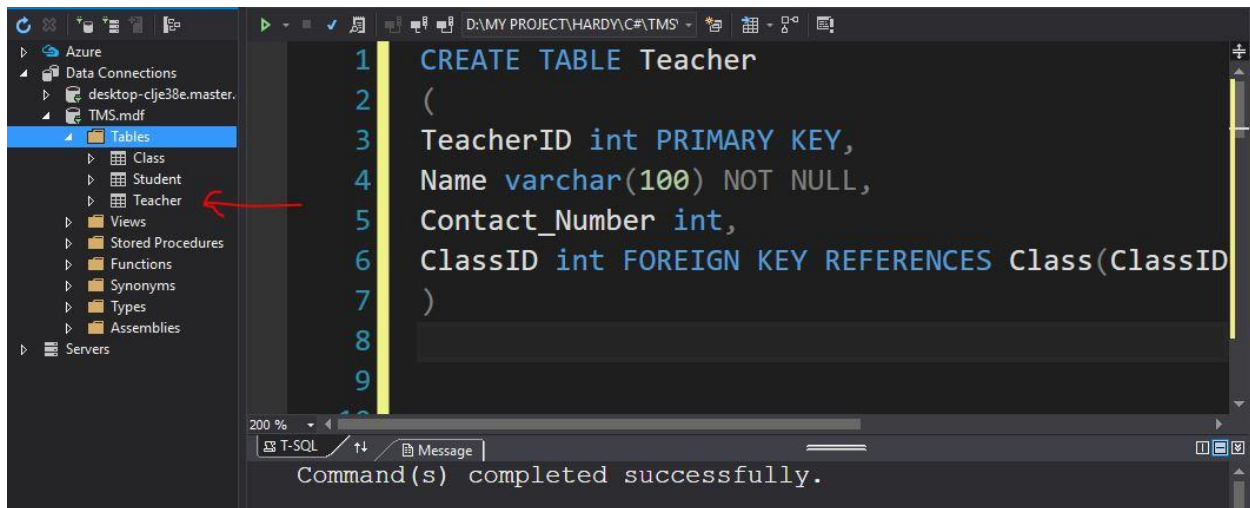


Figure 6: Teacher table create query

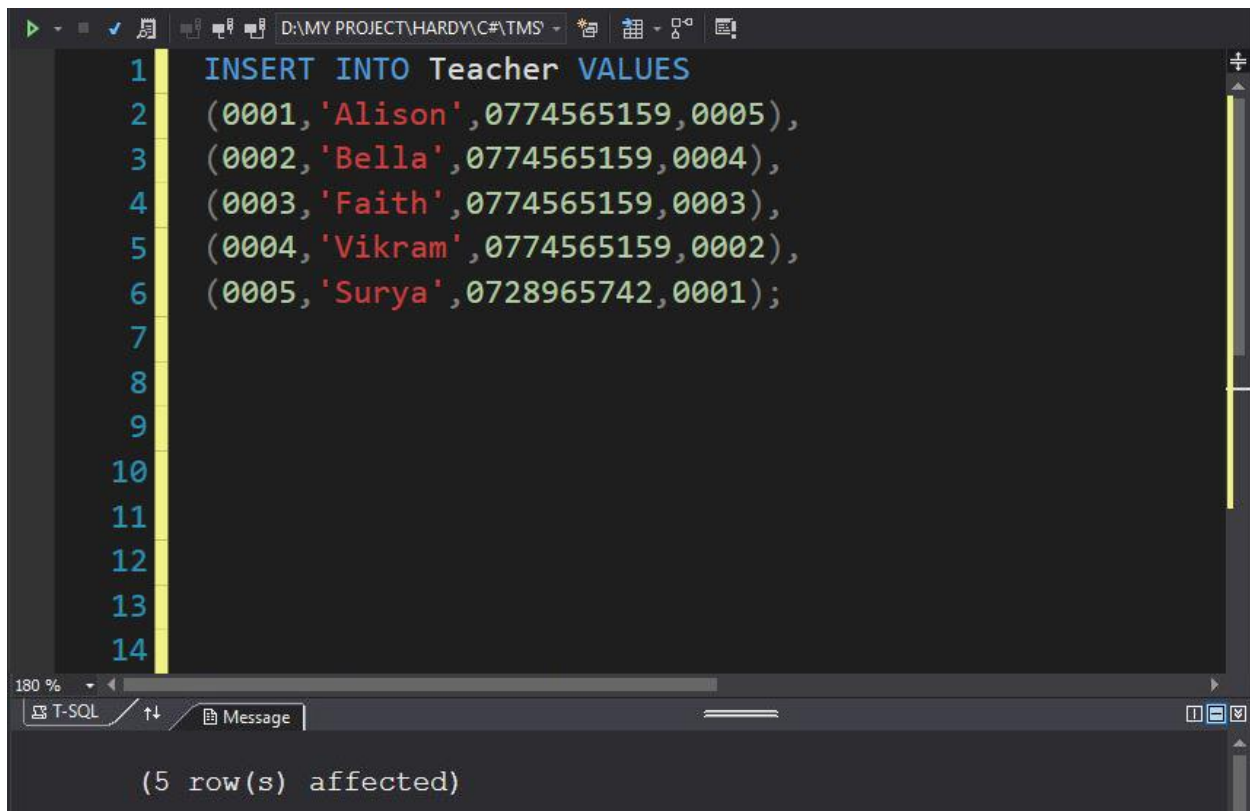
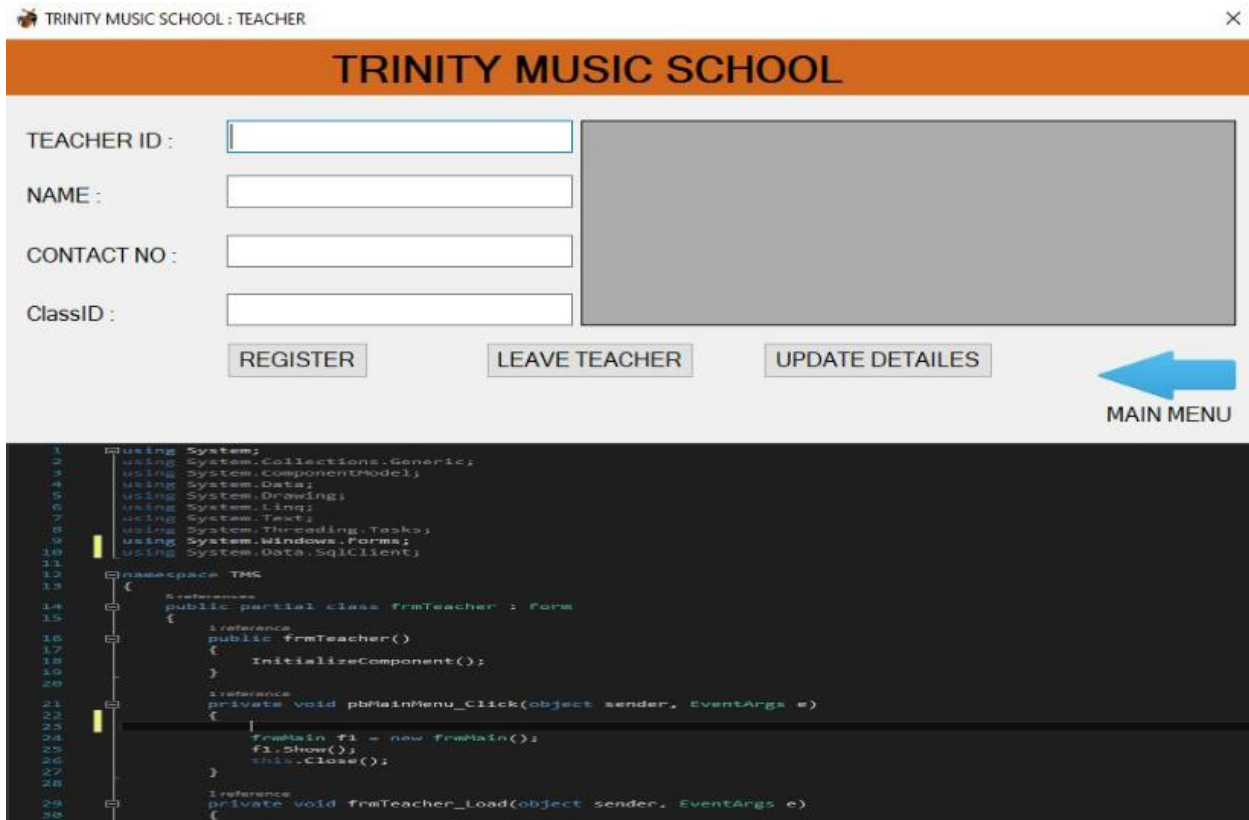


Figure 7: Teacher table insert data query

Now a table called Teacher is created, with 4 columns of data types of TeacherID, Name, Contact\_Number and ClassID respectively, integer, varchar, integer and integer . The primary key is TeacherID so it is naturally unique and NULL. The foreign key is ClassID references class table. The insert query contains only the data types that are subject to the table's scheme, so the data is valid and the data entered.



TRINITY MUSIC SCHOOL : TEACHER


## TRINITY MUSIC SCHOOL

TEACHER ID :

NAME :

CONTACT NO :

ClassID :

  
**MAIN MENU**

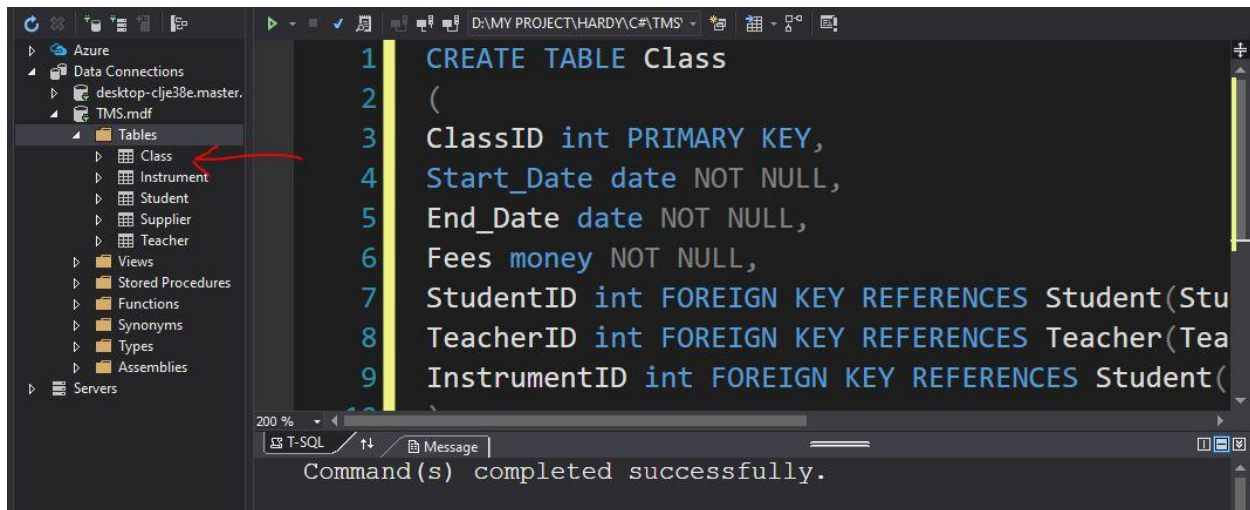
```

1  using System;
2  using System.Collections.Generic;
3  using System.ComponentModel;
4  using System.Data;
5  using System.Drawing;
6  using System.Linq;
7  using System.Text;
8  using System.Threading.Tasks;
9  using System.Windows.Forms;
10 using System.Data.SqlClient;
11
12 namespace TMS
13 {
14     [reference]
15     public partial class frmTeacher : Form
16     {
17         public frmTeacher()
18         {
19             InitializeComponent();
20         }
21         [reference]
22         private void pbMainMenu_Click(object sender, EventArgs e)
23         {
24             frmMain f1 = new frmMain();
25             f1.Show();
26             this.Close();
27         }
28         [reference]
29         private void frmTeacher_Load(object sender, EventArgs e)
30     {

```

Figure 8: Teacher form design and code

## Class



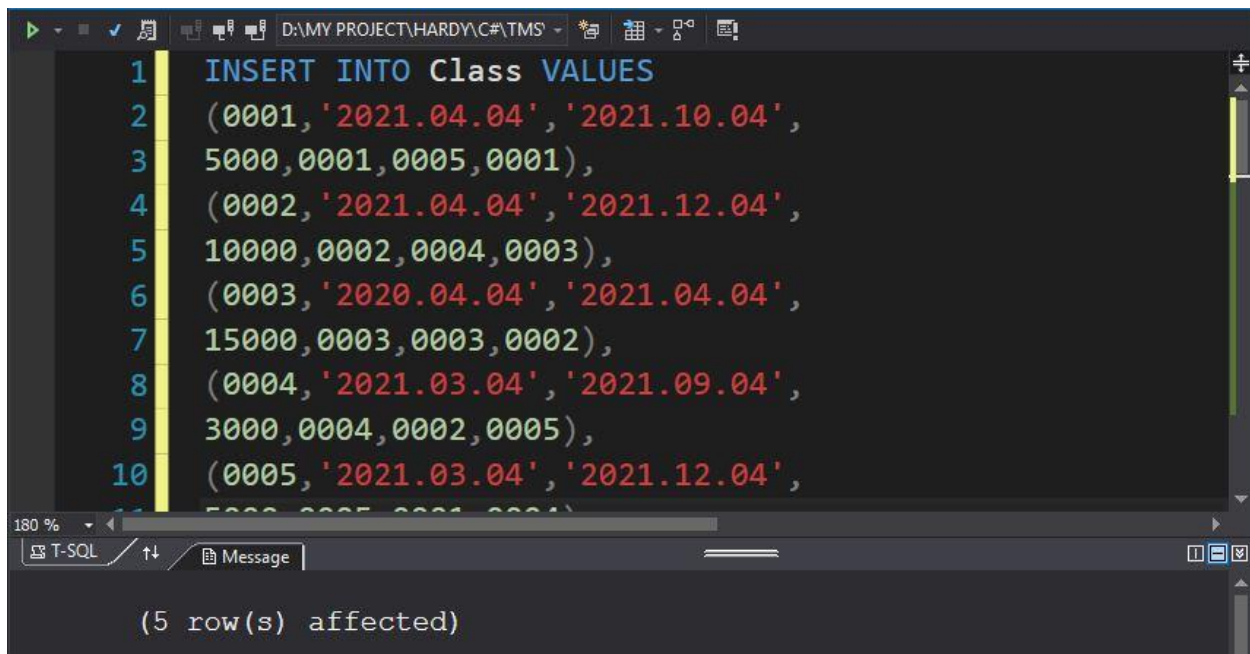
```

1 CREATE TABLE Class
2 (
3   ClassID int PRIMARY KEY,
4   Start_Date date NOT NULL,
5   End_Date date NOT NULL,
6   Fees money NOT NULL,
7   StudentID int FOREIGN KEY REFERENCES Student(Stu
8   TeacherID int FOREIGN KEY REFERENCES Teacher(Tea
9   InstrumentID int FOREIGN KEY REFERENCES Student(

```

Command(s) completed successfully.

Figure 9: Class table create query



```

1 INSERT INTO Class VALUES
2 (0001, '2021.04.04', '2021.10.04',
3 5000,0001,0005,0001),
4 (0002, '2021.04.04', '2021.12.04',
5 10000,0002,0004,0003),
6 (0003, '2020.04.04', '2021.04.04',
7 15000,0003,0003,0002),
8 (0004, '2021.03.04', '2021.09.04',
9 3000,0004,0002,0005),
10 (0005, '2021.03.04', '2021.12.04',

```

(5 row(s) affected)

Figure 10: Class table insert data query

Now a table called Class is created, with 7 columns of data types of ClassID, Start\_Date, End\_Date, Fees, StudentID, TeacherID and InstrumentID respectively, integer, date, date, money, integer, integer and integer. The primary key is ClassID, so it is naturally unique and NULL. The foreign key is StudentID, TeacherID and InstrumentID references Student table, Teacher table and Instrument table. The insert query contains only the data types that are subject to the table's scheme, so the data is valid and the data entered.

The screenshot displays the 'TRINITY MUSIC SCHOOL : CLASS' interface. The top section is a header bar with the school's name. Below it, a form allows users to manage classes. The form includes input fields for Class ID, Start Date, End Date, Class Fees, StudentID, InstrumentID, and TeacherID. To the right of these fields is a large grey rectangular area. Below the form are three buttons: 'ADD CLASS', 'DELETE CLASS', and 'UPDATE CLASS'. A blue arrow points to a 'MAIN MENU' button. The bottom section of the interface shows a code editor with C# code for the 'frmClass' form.

```

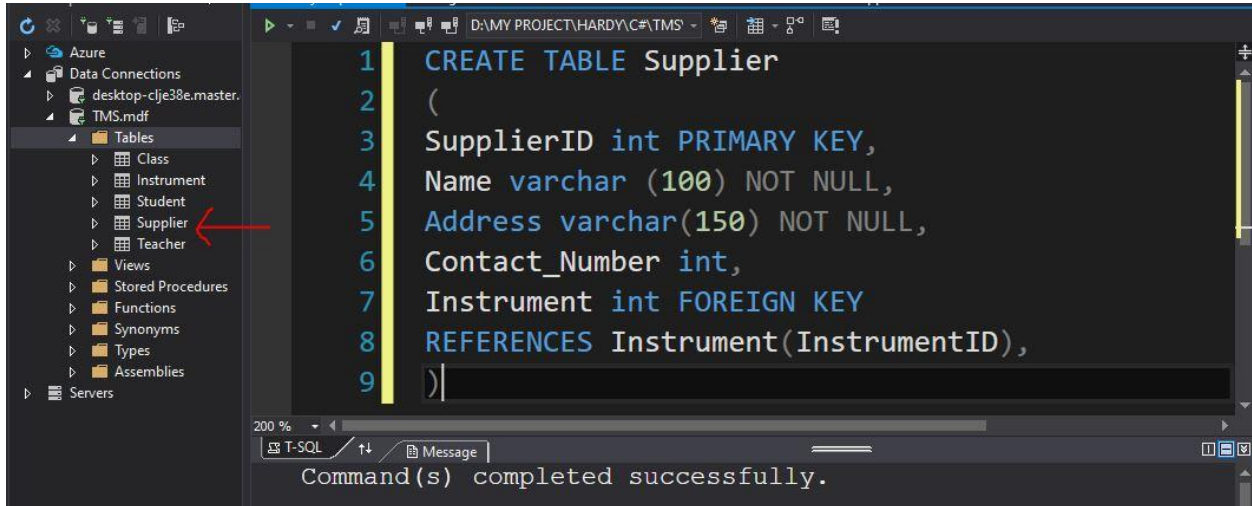
1  using System;
2  using System.Collections.Generic;
3  using System.ComponentModel;
4  using System.Data;
5  using System.Drawing;
6  using System.Linq;
7  using System.Text;
8  using System.Threading.Tasks;
9  using System.Windows.Forms;
10
11 namespace TMS
12 {
13     References
14     public partial class frmClass : Form
15     {
16         public frmClass()
17         {
18             InitializeComponent();
19         }
20
21         private void pbMainMenu_Click(object sender, EventArgs e)
22         {
23             frmMain f1 = new frmMain();
24             f1.Show();
25             this.Close();
26         }
27
28         private void frmClass_Load(object sender, EventArgs e)
29         {
30         }
31     }
32 }

```

Figure 11: Class interface design and code



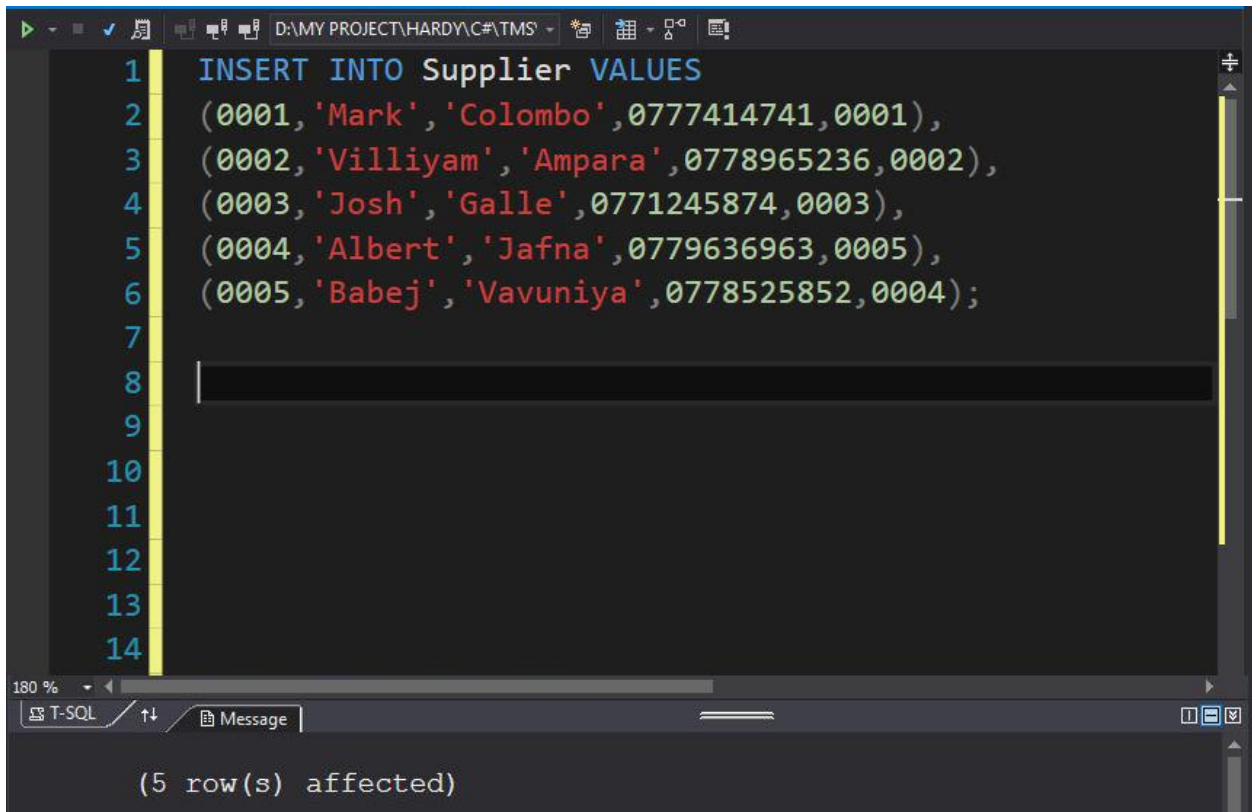
## Supplier



```
1 CREATE TABLE Supplier
2 (
3     SupplierID int PRIMARY KEY,
4     Name varchar (100) NOT NULL,
5     Address varchar(150) NOT NULL,
6     Contact_Number int,
7     Instrument int FOREIGN KEY
8     REFERENCES Instrument(InstrumentID),
9 )
```

Command(s) completed successfully.

Figure 12: Supplier table create query

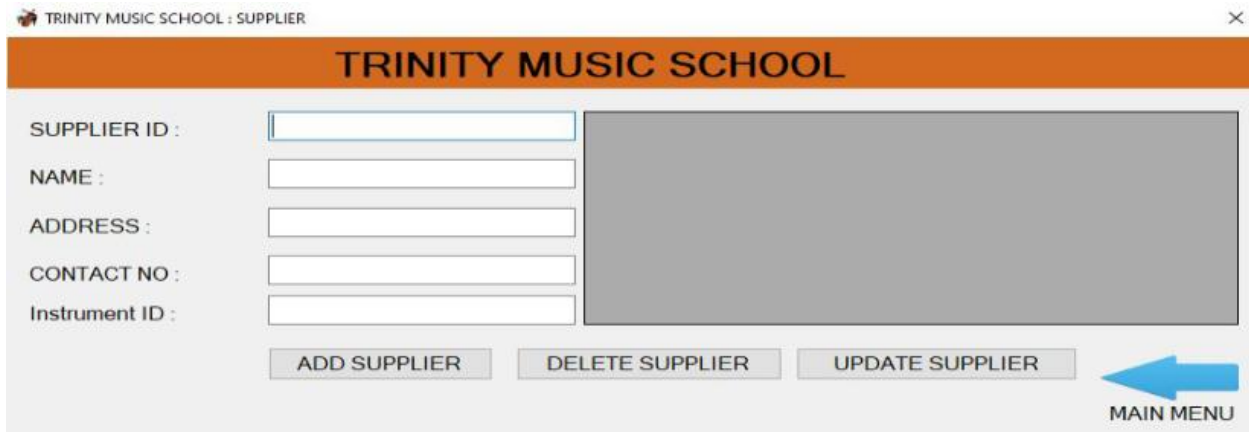


```
1 INSERT INTO Supplier VALUES
2 (0001, 'Mark', 'Colombo', 0777414741, 0001),
3 (0002, 'Villiyam', 'Ampara', 0778965236, 0002),
4 (0003, 'Josh', 'Galle', 0771245874, 0003),
5 (0004, 'Albert', 'Jafna', 0779636963, 0005),
6 (0005, 'Babej', 'Vavuniya', 0778525852, 0004);
7
8
9
10
11
12
13
14
```

(5 row(s) affected)

Figure 13: Supplier table insert data query

Now a table called Supplier is created, with 5 columns of data types of SupplierID, Name, Address, Contact\_Number and InstrumentID respectively, integer, varchar, varchar, integer and integer. The primary key is SupplierID, so it is naturally unique and NULL. The foreign key is InstrumentID references Instrument table. The insert query contains only the data types that are subject to the table's scheme, so the data is valid and the data entered.



TRINITY MUSIC SCHOOL : SUPPLIER

## TRINITY MUSIC SCHOOL

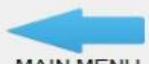
SUPPLIER ID :

NAME :

ADDRESS :

CONTACT NO :

Instrument ID :

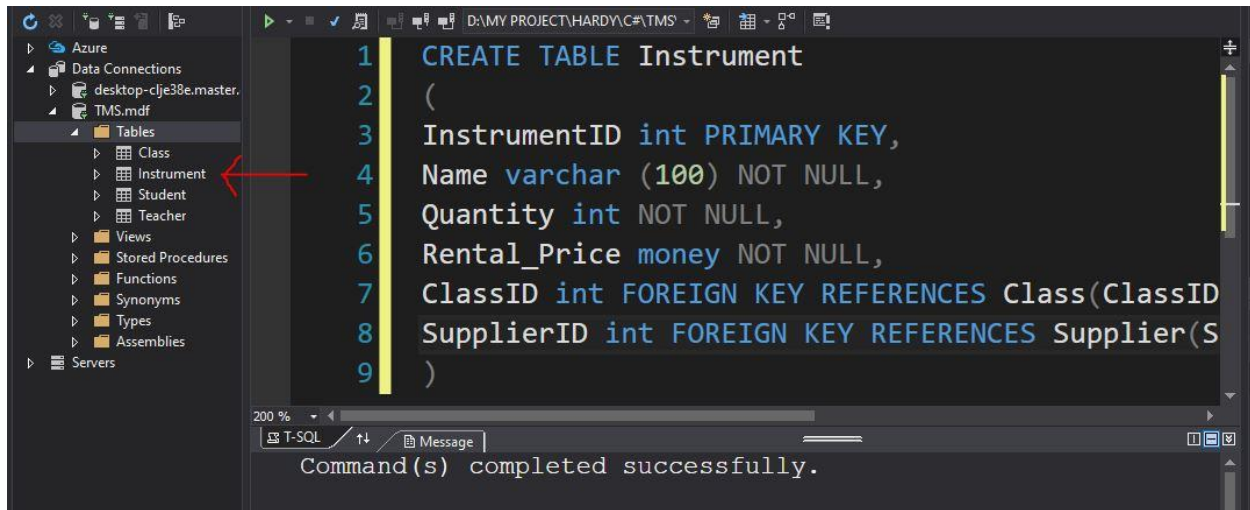

  
MAIN MENU

```

4  using System.Data;
5  using System.Drawing;
6  using System.Linq;
7  using System.Text;
8  using System.Threading.Tasks;
9  using System.Windows.Forms;
10 using System.Data.SqlClient;
11
12 namespace TMS
13 {
14     References
15     {
16         public frmSupplier : Form
17         {
18             InitializeComponent();
19         }
20
21         private void pbMainMenu_Click(object sender, EventArgs e)
22         {
23             frmMain f1 = new frmMain();
24             f1.Show();
25             this.Close();
26         }
27
28         private void label1_Click(object sender, EventArgs e)
29         {
30         }
31     }
32 }
  
```

Figure 14: Supplier interface design and code

## Instrument



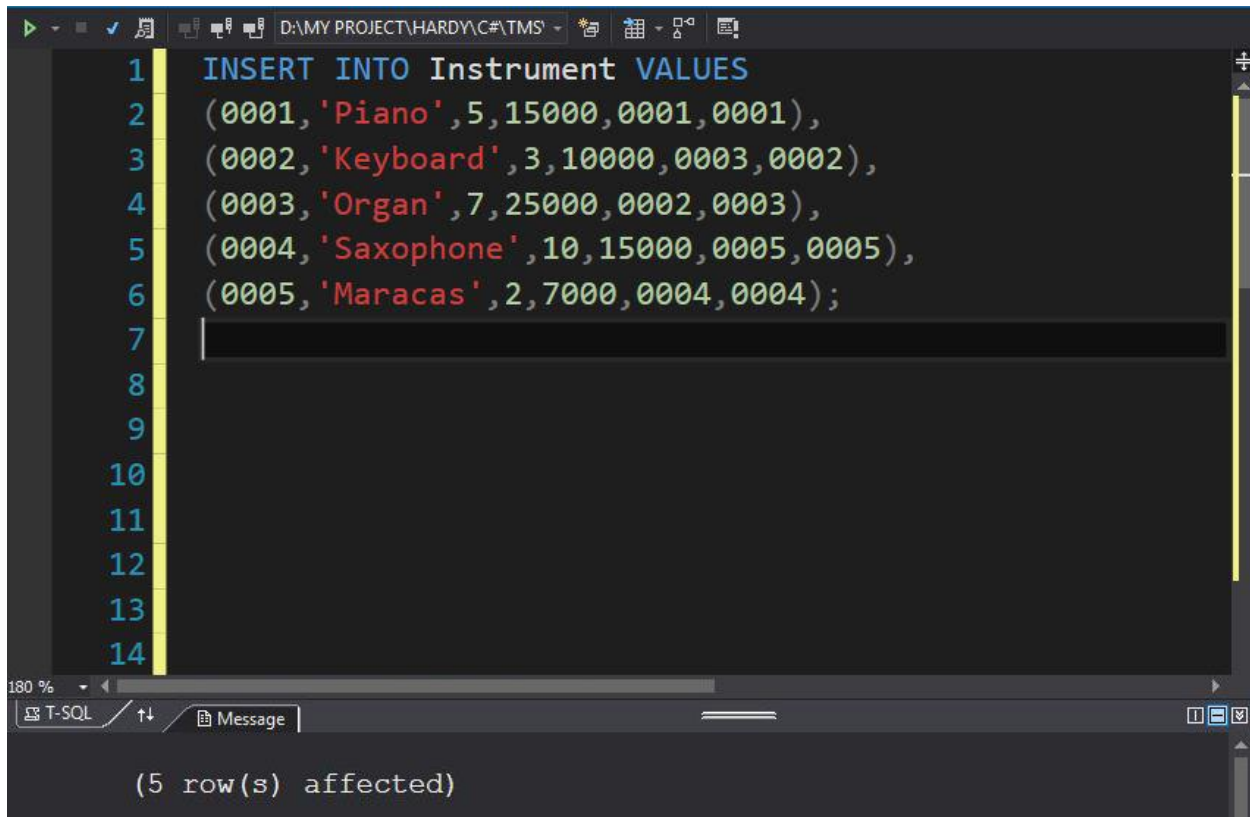
```

1 CREATE TABLE Instrument
2 (
3     InstrumentID int PRIMARY KEY,
4     Name varchar (100) NOT NULL,
5     Quantity int NOT NULL,
6     Rental_Price money NOT NULL,
7     ClassID int FOREIGN KEY REFERENCES Class(ClassID
8     SupplierID int FOREIGN KEY REFERENCES Supplier(S
9 )

```

Command(s) completed successfully.

Figure 16: Instrument table create query



```

1 INSERT INTO Instrument VALUES
2 (0001, 'Piano', 5, 15000, 0001, 0001),
3 (0002, 'Keyboard', 3, 10000, 0003, 0002),
4 (0003, 'Organ', 7, 25000, 0002, 0003),
5 (0004, 'Saxophone', 10, 15000, 0005, 0005),
6 (0005, 'Maracas', 2, 7000, 0004, 0004);
7
8
9
10
11
12
13
14

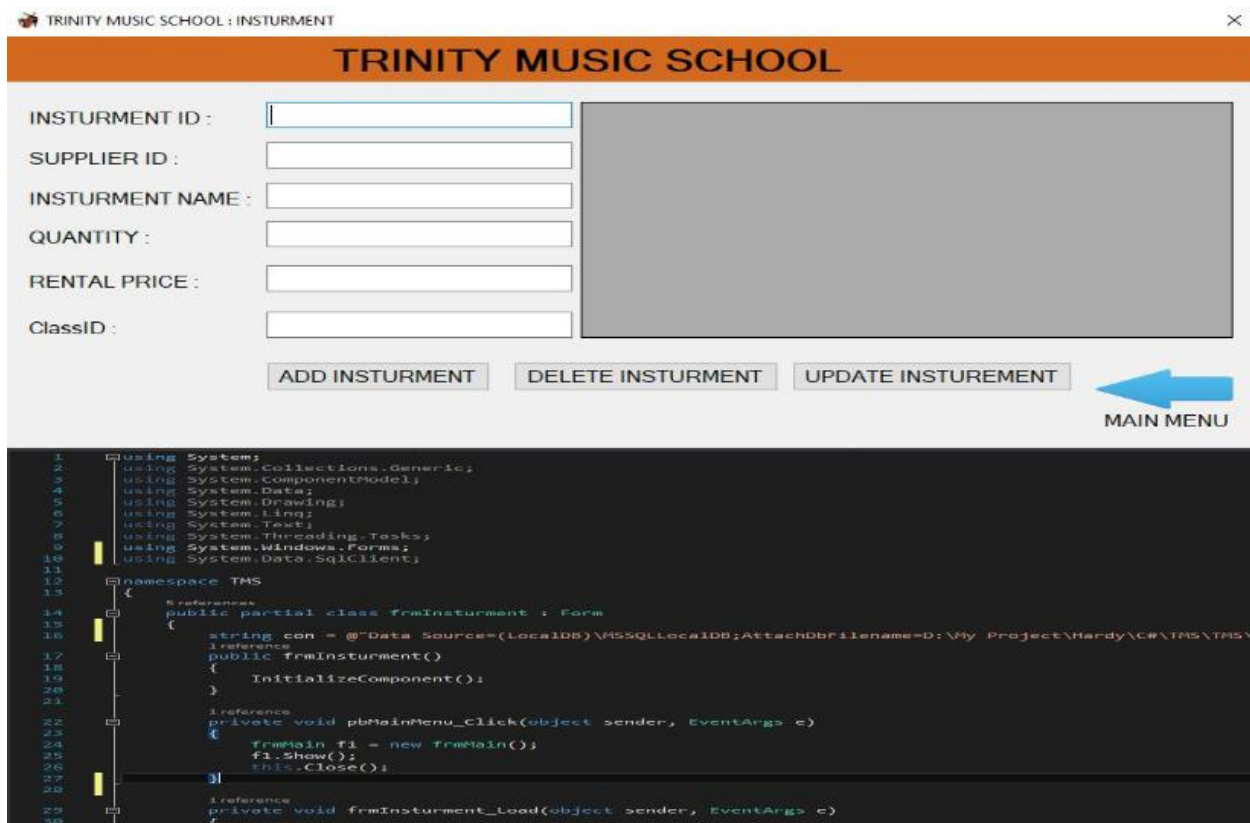
```

(5 row(s) affected)

Figure 15: Instrument table insert data query



Now a table called Instrument is created, with 6 columns of data types of InstrumentID, Name, Quantity, Rental\_Price, ClassID and SupplierID respectively, integer, varchar, integer, money, integer and integer. The primary key is InstrumentID, so it is naturally unique and NULL. The foreign key is ClassID and SupplierID references Class table and Supplier table. The insert query contains only the data types that are subject to the table's scheme, so the data is valid and the data entered.



TRINITY MUSIC SCHOOL : INSTRUMENT

**TRINITY MUSIC SCHOOL**

INSTURMENT ID :

SUPPLIER ID :

INSTURMENT NAME :

QUANTITY :

RENTAL PRICE :

ClassID :

ADD INSTURMENT DELETE INSTURMENT UPDATE INSTUREMENT

MAIN MENU

```

1  using System;
2  using System.Collections.Generic;
3  using System.ComponentModel;
4  using System.Data;
5  using System.Drawing;
6  using System.Linq;
7  using System.Text;
8  using System.Threading.Tasks;
9  using System.Windows.Forms;
10 using System.Data.SqlClient;
11
12 namespace TMS
13 {
14     References
15     public partial class frmInstrument : Form
16     {
17         string con = @"Data Source=(localdb)\MSSQLLocalDB;AttachDbFilename=D:\My Project\Hardy\C#\TMS\TMS\
18         public frmInstrument()
19         {
20             InitializeComponent();
21         }
22         private void pbMainMenu_Click(object sender, EventArgs e)
23         {
24             frmMain f1 = new frmMain();
25             f1.Show();
26             this.Close();
27         }
28         private void frmInstrument_Load(object sender, EventArgs e)
29         {
30

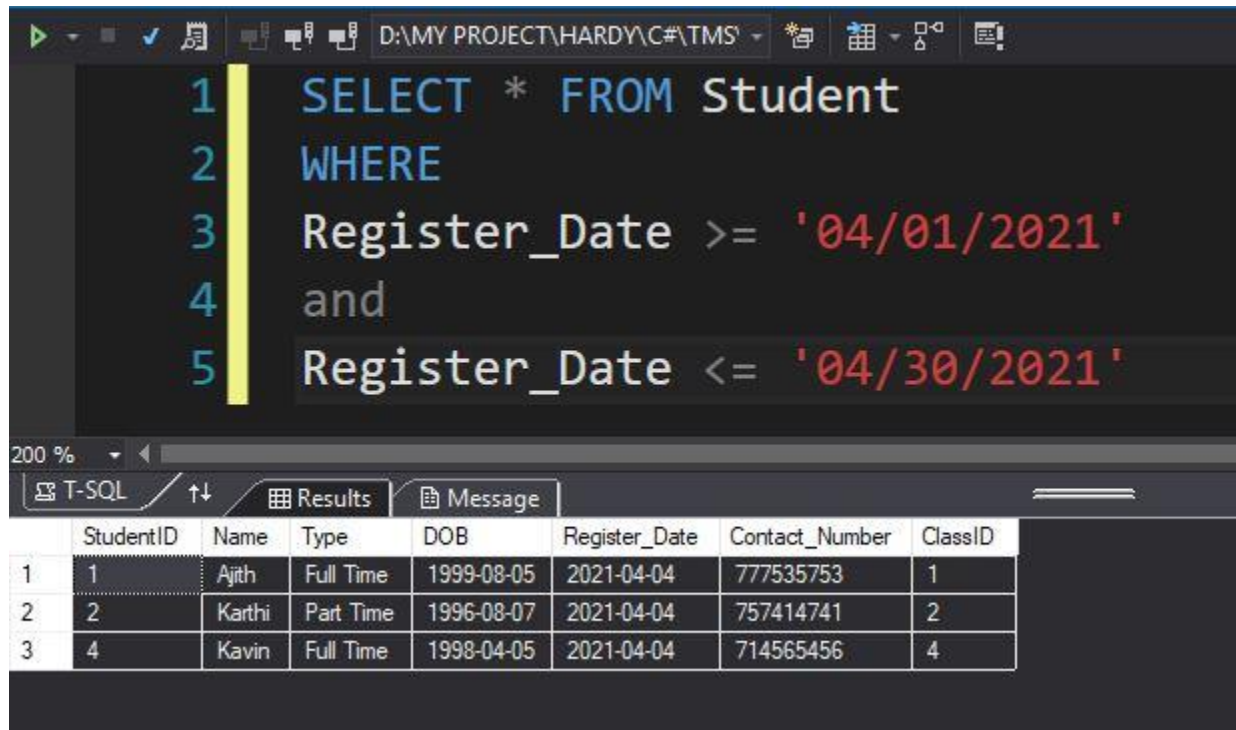
```

Figure 17: Instrument interface design and code

## QUERY DEMONSTRATION

Issues reported in the document will now be evaluated, then queries will be written and the output of the function of those queries will be displayed in the database.

### Task1: Student details with No of student registration for given month



The screenshot shows a SQL Server Enterprise Manager window with a T-SQL query editor. The query is as follows:

```

1 SELECT * FROM Student
2 WHERE
3   Register_Date >= '04/01/2021'
4   and
5   Register_Date <= '04/30/2021'

```

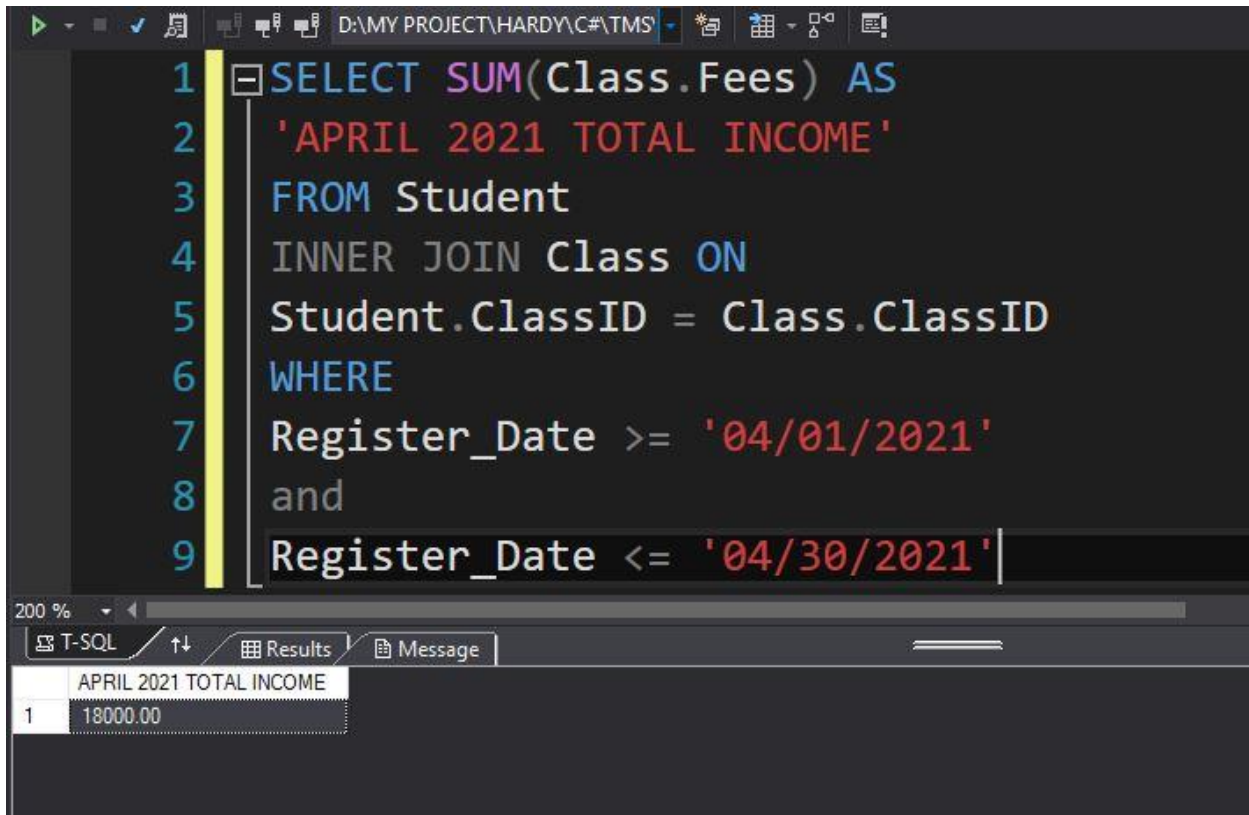
Below the query editor, the 'Results' tab is active, displaying a table with 8 columns: StudentID, Name, Type, DOB, Register\_Date, Contact\_Number, and ClassID. The table contains 3 rows of data.

	StudentID	Name	Type	DOB	Register_Date	Contact_Number	ClassID
1	1	Ajith	Full Time	1999-08-05	2021-04-04	777535753	1
2	2	Karthi	Part Time	1996-08-07	2021-04-04	757414741	2
3	4	Kavin	Full Time	1998-04-05	2021-04-04	714565456	4

Figure 18: Task 1 Query

- I have taken Registered Month April 2021

Task2: Total Income received for a given month form the student



The screenshot shows a SQL Server Enterprise Manager window with a T-SQL query editor. The query is as follows:

```
1 SELECT SUM(Class.Fees) AS  
2 'APRIL 2021 TOTAL INCOME'  
3 FROM Student  
4 INNER JOIN Class ON  
5 Student.ClassID = Class.ClassID  
6 WHERE  
7 Register_Date >= '04/01/2021'  
8 and  
9 Register_Date <= '04/30/2021'
```

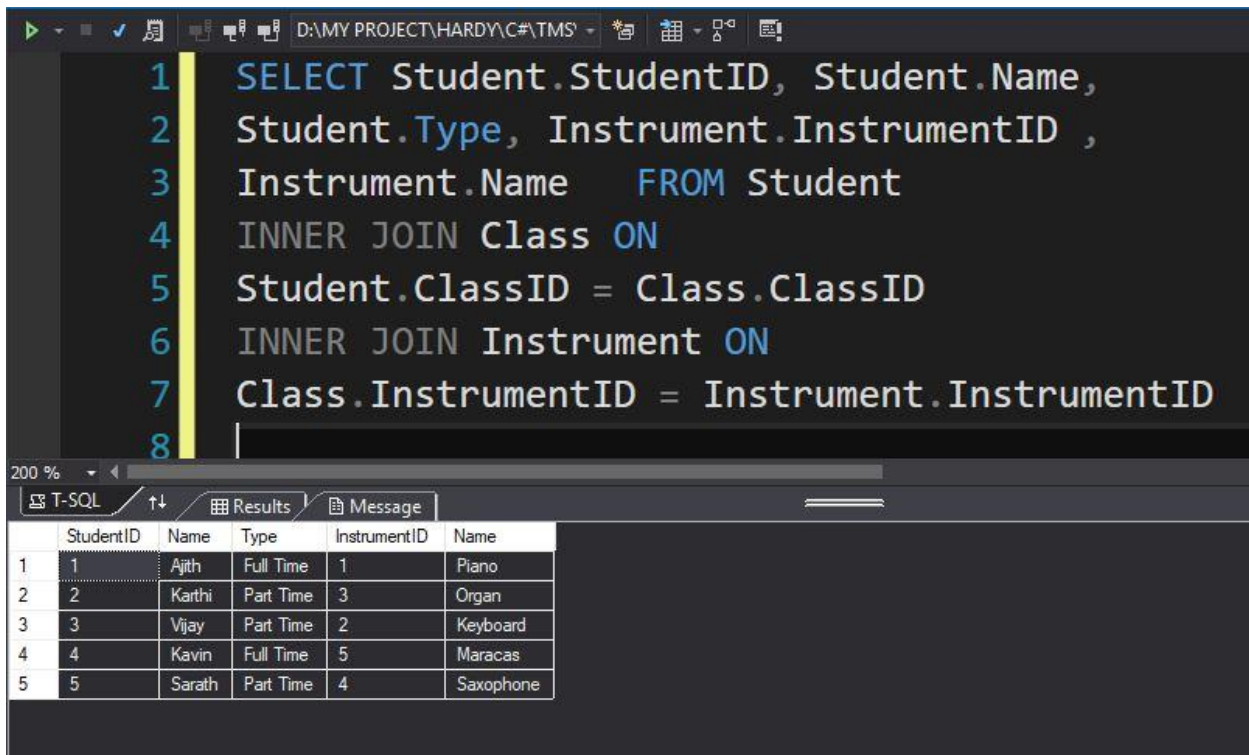
Below the query editor, the 'Results' tab is active, displaying a single row of data:

	APRIL 2021 TOTAL INCOME
1	18000.00

Figure 19: Task 2 Query

- I have taken Registered Month April 2021

### Task3: Student details with their playing instruments



```

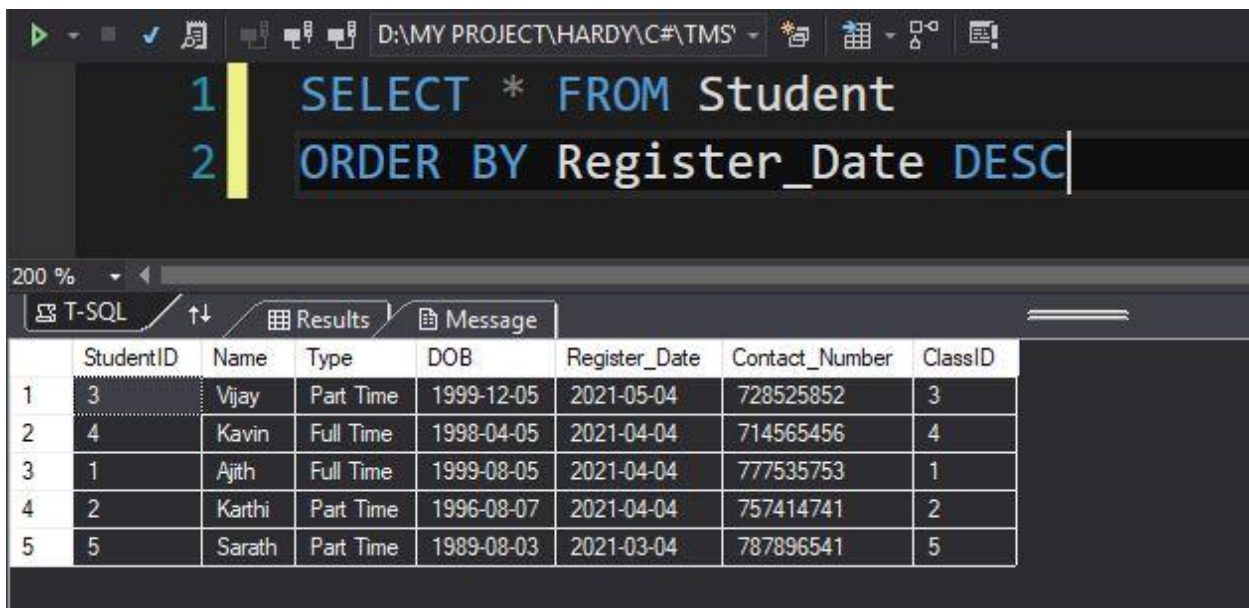
1 SELECT Student.StudentID, Student.Name,
2 Student.Type, Instrument.InstrumentID ,
3 Instrument.Name FROM Student
4 INNER JOIN Class ON
5 Student.ClassID = Class.ClassID
6 INNER JOIN Instrument ON
7 Class.InstrumentID = Instrument.InstrumentID
8

```

	StudentID	Name	Type	InstrumentID	Name
1	1	Ajith	Full Time	1	Piano
2	2	Karthi	Part Time	3	Organ
3	3	Vijay	Part Time	2	Keyboard
4	4	Kavin	Full Time	5	Maracas
5	5	Sarath	Part Time	4	Saxophone

Figure 20: Task 3 Query

### Task4: Filter the student's records based on the registration date



```

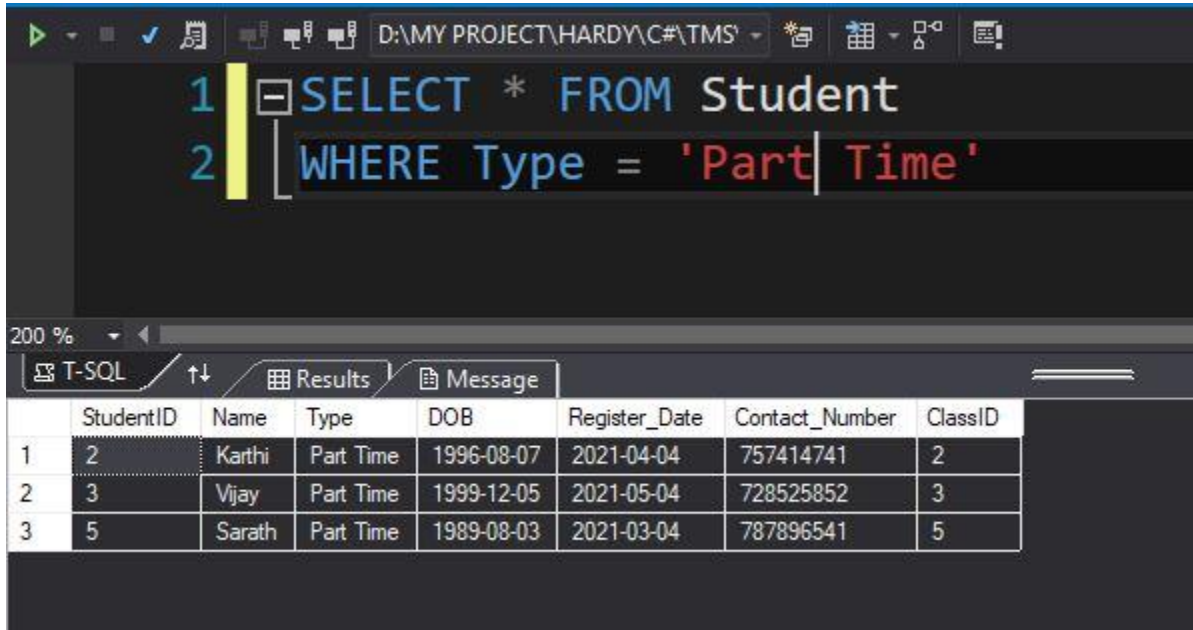
1 SELECT * FROM Student
2 ORDER BY Register_Date DESC

```

	StudentID	Name	Type	DOB	Register_Date	Contact_Number	ClassID
1	3	Vijay	Part Time	1999-12-05	2021-05-04	728525852	3
2	4	Kavin	Full Time	1998-04-05	2021-04-04	714565456	4
3	1	Ajith	Full Time	1999-08-05	2021-04-04	777535753	1
4	2	Karthi	Part Time	1996-08-07	2021-04-04	757414741	2
5	5	Sarath	Part Time	1989-08-03	2021-03-04	787896541	5

Figure 21: Task 4 Query

Task5: Show only the Part time classes



The screenshot shows a SQL Server Enterprise Manager window with a T-SQL query editor. The query is as follows:

```
1 SELECT * FROM Student
2 WHERE Type = 'Part Time'
```

The results pane shows the following data:

	StudentID	Name	Type	DOB	Register_Date	Contact_Number	ClassID
1	2	Karthi	Part Time	1996-08-07	2021-04-04	757414741	2
2	3	Vijay	Part Time	1999-12-05	2021-05-04	728525852	3
3	5	Sarath	Part Time	1989-08-03	2021-03-04	787896541	5

Figure 22: Task 5 Query

## References

Erkec, E., 2020. *SQLShack*. [Online]

Available at: <https://www.sqlshack.com/overview-of-microsoft-sql-server-management-studio-ssms/>

[Accessed 2021 04 05].

tutorialspoint, 2021. *SQL - Overview*. [Online]

Available at: <https://www.tutorialspoint.com/sql/sql-overview.htm>

[Accessed 2021 04 05].