

**RELATIONAL DATABASE (mysql)**

**Children crèche and after school Center**



**April 27, 2018**

**Modelfarm road chilcare**

**IDA Technology & Business Park, Model Farm Road, Cork**

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# Introduction

## Background

Model Farm Road Childcare is a Montessori and after school day care for children. It is situated at IDA Technology & Business Park, Model Farm Road Cork. Model Farm Road Childcare was established in September 2016, manage by Elaine Birmingham.

Presently, Model Farm Road has 25 teachers, 70 children, 15 rooms 2 cook, one manager. Model Farm Road Childcare is at present using files and a computer to store their data. It is very difficult to keep track of payment for each child on a weekly basis and searching for children’s records can be time consuming.

A database system would give the manager quick access to children’s data and enable them to check records of payment as there would be a payment entry form which will allow entry to database and can be accessed anywhere by an employee.

# Entity/Attribute

## Staff

* Staff-No
* First-Name
* Last-Name
* Address
* Qualification
* Shift
* Job-Title
* Phone
* Work-Hours
* Salary

## Child

* Child-No
* First-Name
* Last-Name
* Address
* Medical-Condition
* Allergy
* Date-of-Birth
* Fees
* Due-fees
* Gender
* Start-Date
* Finished-Date

## Class room

* Class-No
* Class-Type
* Size-of-Room

# Definition of Normalization

Normalization is the process of organizing data in a database. This includes creating tables and establishing relationships between those tables according to rules designed both to protect the data and to make the database more flexible by eliminating redundancy, inconsistency and for security reason.

## 1NF

1NF disallow composite attribute whose values for an individual tuple are not atomic. In 1NF we eliminate duplicate columns from same table and create separate table for each related group of data with its own primary key.

## 2NF

2NF enable to add new rule after satisfying 1NF rule by removing subsets of data type to multiple rows of a table and place them in separate table then create relationships between these table and their predecessor through foreign key.

## 3NF

3NF enable to apply new rules after satisfying 1NF and 2NF. This eliminates functional dependency on non-primary key fields to depend on primary key and reference parent table.

# Unsort data:

## Attribute

**Crèche** (Staff-No, First-Name, Last-Name, Address, Qualification, Shift, Job-Title, Phone, Work-Hours, Salary, Child-No, First-Name, Last-Name, Address, Medical-Condition, Allergy, Date-of-Birth, Fees, Due-fees, Gender, Start-Date, Finished-Date, Parent-Name, Parent-Phone, Class-No, Class-Type, Size-of-Room).

## 1NF

**Child** (Child-No, Staff-No, First-Name, Last-Name, Address, Medical-Condition, Allergy, Date-Of-Birth, Fees, Due-Fees, Gender, Start-Date, Finished-Date, Shift, Qualification, Job-Title, Phone, Work-Hour Salary)

**Child Care** (Child-No, Class-No, Class Type, Room Size)

## 2NF

**Child Care** (Child-No, Class-No)

Child (Child-No, Staff-No, First-Name, Last-Name, Address, Class-No, Medical-Condition, Allergy, Date-of-Birth, Fees, Due-Fees, Start-Date, Finished-Date, Gender, Address, Qualification, Job-Title, Phone, Work-Hour, Salary)

**Class room** (Class-No, Type, Room-Size, Location)

## 3NF

**Staff** (Staff-No, First-Name, Last-Name, Address, Shift, Qualification, Job-Title, Phone, Work-Hours, Salary)

**Child** (Child-No, Staff-No, First-Name, Last-Name Address, Medical-Condition, Allergy, Date-Of-Birth, Fees, Due-Fees, Start-Date, Finished-Date, Gender)

**Class Room** (Class-No, Staff-No, Class Type, Location, Size)

**Childcare** (Child No, Class No)

# Entity-Entity Matric

## Model Farm Road Childcare creche

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Entity Name** | **Staff** | **Child** | **Class Room** | **Child Care** |
| **Staff** |  | **M:1** |  |  |
| **Child** | **1:M** |  |  | **M:1** |
|  |  |  |  | **M:1** |
|  |  | **1:M** | **1:M** |  |

## Basic ER Diagram

Looked after by M:1

|  |
| --- |
| **Child** |

|  |
| --- |
| **Staff** |

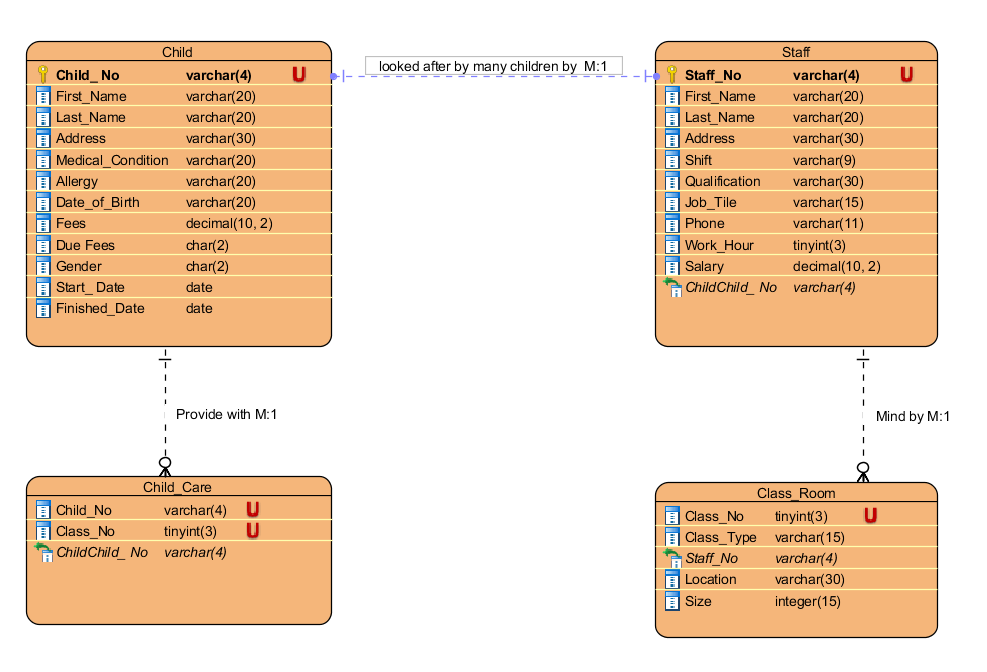
Provide with M:1

|  |
| --- |
| **Class Room** |

Minded by M:1

|  |
| --- |
| **Child care** |

## Details ER Diagram

****

# Data Dictionary

## Staff

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Attribute**  **Name** | **Description** | **Key** | **Data Type** | **Length** | **Validation/Check** | **Default Value** |
| **Staff No** | **Identifying No of Staff** | **Primary key** | **Varchar** | **4** |  |  |
| **First Name** | **Staff’s First Name** |  | **Varchar** | **20** |  |  |
| **Last Name** | **Staff’s Last Name** |  | **varchar** | **20** |  |  |
| **Address** | **Address of Staff** |  | **varchar** | **30** |  |  |
| **Shift** | **Staff shift** |  | **varchar** | **9** |  |  |
| **Qualification** | **Staff Qualification** |  | **varchar** | **30** | **Level 5, level 6 and HND diploma.** |  |
| **Job Title** | **Staff Job Title** |  | **varchar** | **15** | **Manager, Cook, Supervisor and Cleaner, Junior teacher** |  |
| **Phone** | **Staff Phone No** |  | **varchar** | **11** |  |  |
| **Work Hours** | **Staff Working Hour** |  | **tinyint** |  |  |  |
| **Salary** | **Staff Salary** |  | **decimal** | **(10,2)** |  |  |

## Child

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Attribute**  **Name** | **Description** | **Key** | **Data Type** | **Length** | **Validation/Check** | **Default Value** |
| **Child No** | **Identifying No of Child** | **Primary key** | **Varchar** | **4** | **Identity (1,1)** |  |
| **First Name** | **Child’s First Name** |  | **Varchar** | **20** |  |  |
| **Last Name** | **Child’s Last Name** |  | **varchar** | **20** |  |  |
| **Address** | **Child Address** |  | **varchar** | **100** |  |  |
| **Medical Condition** | **Identifying Child Medical Condition** |  | **varchar** | **20** |  |  |
| **Allergy** | **Identifying Child Allergy** |  | **varchar** | **20** |  |  |
| **Date-of-Birth** | **Identifying Age of the Child** |  | **Date** |  |  |  |
| **Fees** | **Identifying fees value** |  | **Decimal** |  |  |  |
| **Due Fees** | **Child fee due** |  | **Char** | **‘Y’ ‘N ‘** | **Field** |  |
| **Gender** | **Sex Type** |  | **Char** |  | **‘F’ ‘M‘** |  |
| **Start Date** | **Date** |  | **Date** |  |  |  |
| **Finished Date** | **Date** |  | **Date** |  |  |  |

## Class Room

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Attribute**  **Name** | **Description** | **Key** | **Data Type** | **Length** | **Validation/Check** | **Default Value** |
| **Class No** | **Identifying No of Class** | **Primary key** | **int** |  | **Identity (1,1)** |  |
| **Class type** | **Identifying type of Class** |  | **Varchar** | **15** |  |  |
| **Size of room** | **Identifying room Size** |  | **varchar** | **15** |  |  |

## Child Care

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Attribute**  **Name** | **Description** | **Key** | **Data Type** | **Length** | **Validation/Check** | **Default Value** |
| **Child No** | **Identifying No of Child** | **Primary key** | **int** |  | **Must match the child record table** |  |
| **Class No** | **Identifying No of Class** | **Primary key** | **int** |  | **Must match the Class record table** |  |

# Data insertion form

## Staff Form

|  |
| --- |
|  |

## Child Form

|  |
| --- |
|  |

## Class Room form

|  |
| --- |
|  |

## Child Care Form

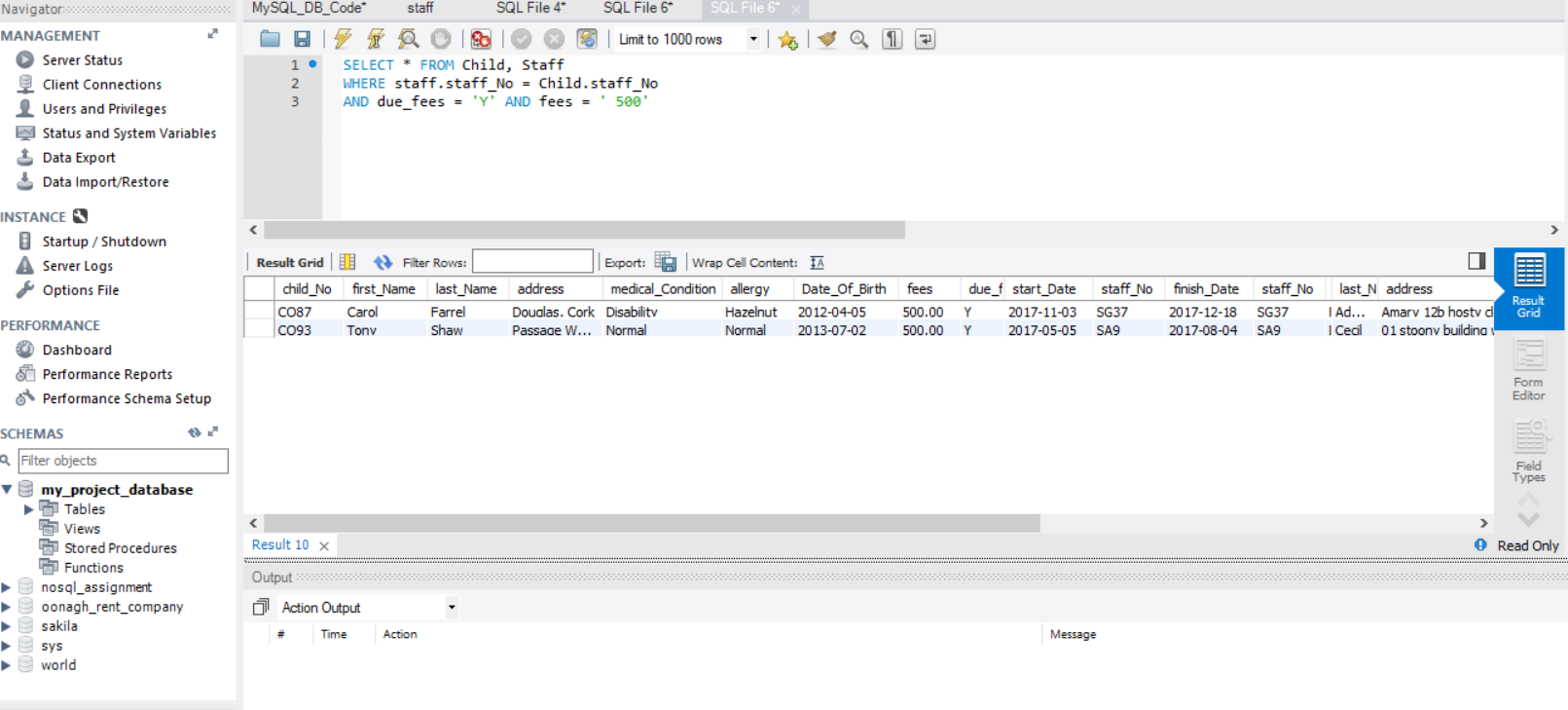
|  |
| --- |
|  |

# Query

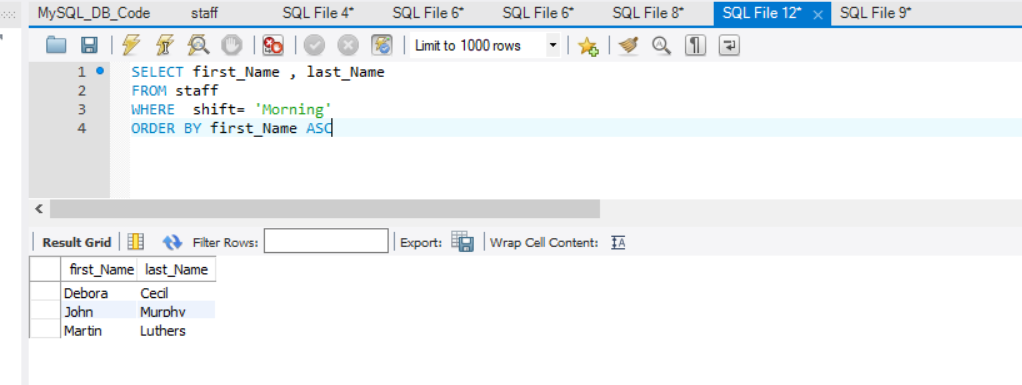
1. To display amount of fees not pay and staff assign to the child.
2. To display name of the staff working morning shift in ascending order
3. Name of child less than 5 years old
4. To display child and staff name working with non-allergy child that not pay fees

## Query result

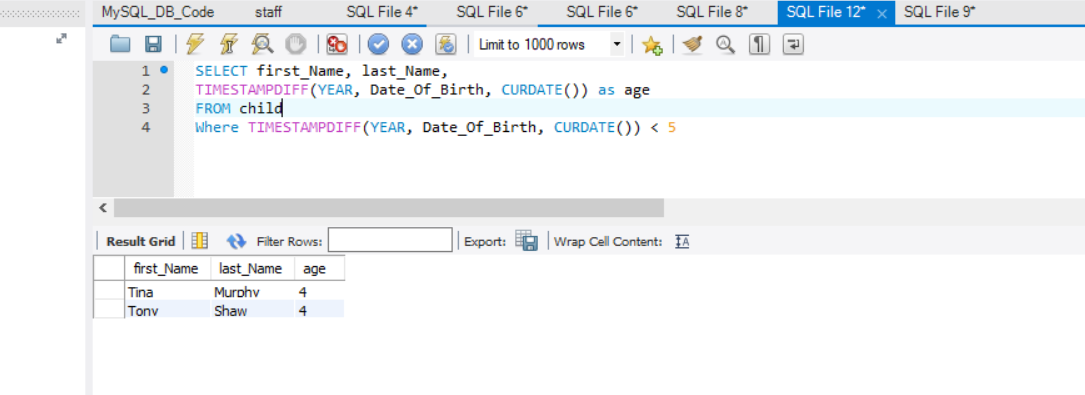
1. To display amount of fees not pay and staff assign to the child.

****

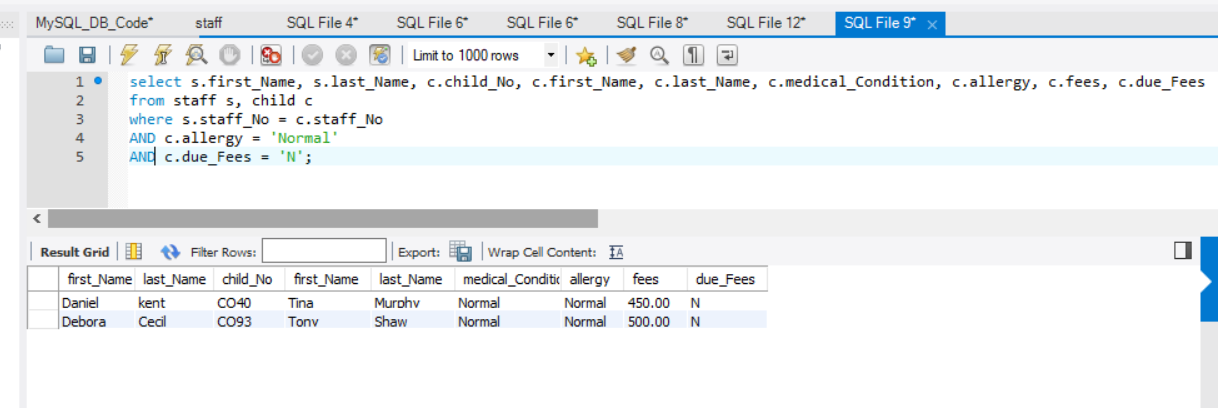
2 .To display name of the staff working morning shift in ascending order



3. Name of child less than 5 years old



4. To display child and staff name working with non-allergy child that not pay fees



# Code for creating Staff table

CREATE TABLE STAFF(

Staff\_No VARCHAR(4) NOT NULL,

First\_Name VARCHAR(20),

Last\_Name VARCHAR(20),

Address VARCHAR(30),

Shift VARCHAR(9),

Qualification VARCHAR(30),

Job\_Title VARCHAR(15),

phone VARCHAR(11),

work\_Hours tinyint,

salary DECIMAL,

PRIMARY KEY (staff\_No)

);

# Code to insert data on staff table

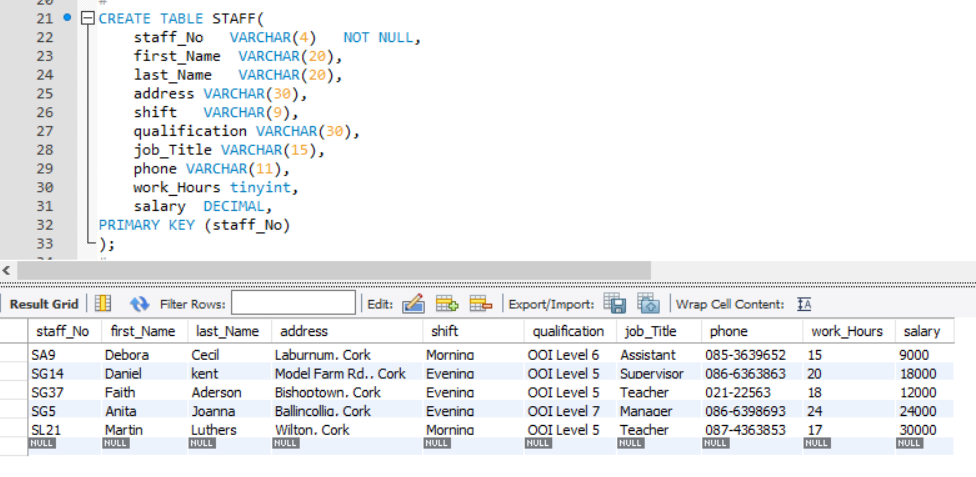
INSERT INTO STAFF VALUES('SL21', 'Martin', 'Luthers', '12 Eagle valley''Wilton, Cork', 'Morning', 'QQI Level 5', 'Teacher', '087-4363853','17', 30000);

INSERT INTO STAFF VALUES('SG37', 'Faith', 'Aderson', 'Amary 12b hosty close' 'Bishoptown, Cork', 'Evening', 'QQI Level 5', 'Teacher', '021-22563', '18', 12000);

INSERT INTO STAFF VALUES('SG14', 'Daniel', 'kent', 'abey court 16''Model Farm Rd., Cork', 'Evening', 'QQI Level 5', 'Supervisor', '086-6363863', '20', 18000);

INSERT INTO STAFF VALUES('SA9', 'Debora', 'Cecil', '01 stoony building wilton''Laburnum, Cork', 'Morning', 'QQI Level 6', 'Assistant', '085-3639652', '15', 9000);

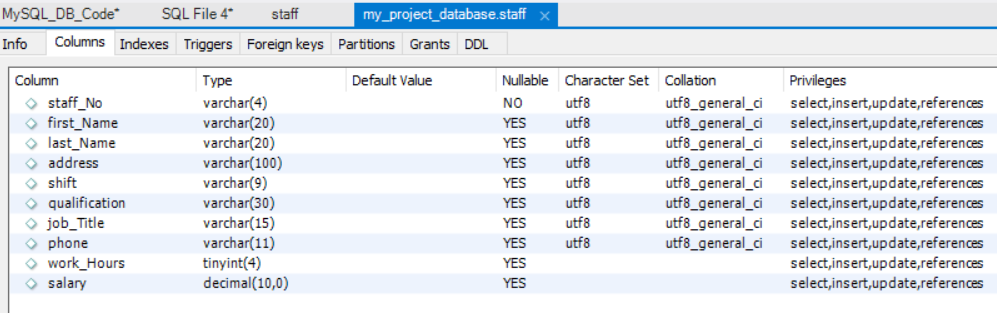
INSERT INTO STAFF VALUES('SG5', 'Anita', 'Joanna', '43 D Errica house''Ballincollig, Cork', 'Evening', 'QQI Level 7', 'Manager', '086-6398693', '24', 24000);

****

# Result after change

I decided to make changes because address space is too small for some addresses, when am entry data into some tables, then I increase it to varchar (100).

The diagram above show previous data length.

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# Child table code creation

CREATE TABLE CHILD(

child\_No VARCHAR(4) NOT NULL,

first\_Name VARCHAR(20),

last\_Name VARCHAR(20),

address VARCHAR(100),

medical\_Condition VARCHAR(20),

allergy VARCHAR(20),

Date\_Of\_Birth DATE,

fees DECIMAL,

due\_fees CHAR,

start\_Date DATE,

staff\_No VARCHAR(4),

finish\_Date DATE,

PRIMARY KEY (child\_No),

FOREIGN KEY (staff\_No) REFERENCES STAFF(staff\_No)

);

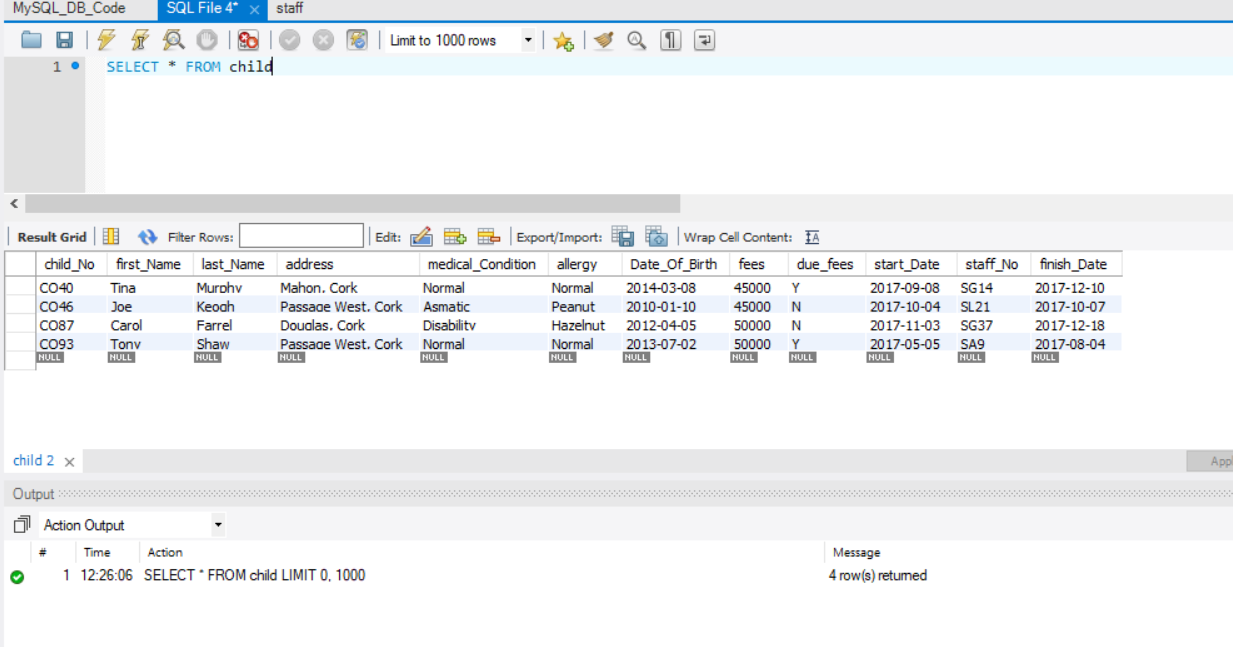
# Child data insertion

INSERT INTO CHILD VALUES('CO46', 'Joe', 'Keogh', 'Passage West, Cork', 'Asmatic', 'Peanut', '2010-01-10', 45000, 'N', '2017-10-04', 'SL21', '2017-10-07');

INSERT INTO CHILD VALUES('CO87', 'Carol', 'Farrel', 'Douglas, Cork','Disability', 'Hazelnut', '2012-04-05', 50000, 'N', '2017-11-03', 'SG37', '2017-12-18' );

INSERT INTO CHILD VALUES('CO40', 'Tina', 'Murphy', 'Mahon, Cork','Normal', 'Normal', '2014-03-08', 45000, 'Y', '2017-09-08', 'SG14', '2017-12-10');

INSERT INTO CHILD VALUES('CO93', 'Tony', 'Shaw', 'Passage West, Cork','Normal', 'Normal', '2013-07-02', 50000, 'Y', '2017-05-05', 'SA9', '2017-08-04');

****

# Class room code for creating table

CREATE TABLE CLASS\_ROOM(

class\_No tinyint NOT NULL,

staff\_No VARCHAR(4),

class\_Type VARCHAR(15),

location VARCHAR(30),

size VARCHAR(15),

PRIMARY KEY (class\_No),

FOREIGN KEY (staff\_No) REFERENCES STAFF(staff\_No)

);

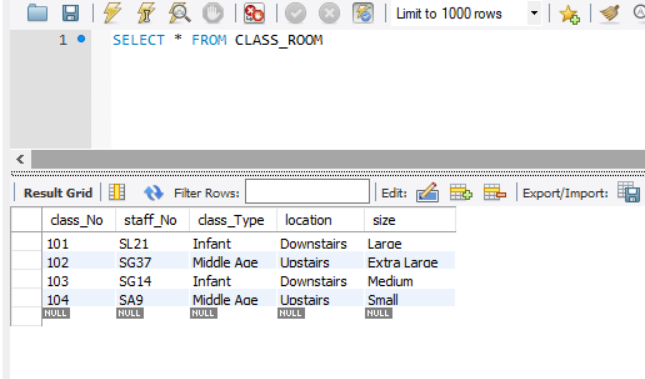
# Code to insert data into Classroom

INSERT INTO CLASS\_ROOM VALUES(101,'SL21', 'Infant', 'Downstairs', 'Large');

INSERT INTO CLASS\_ROOM VALUES(102, 'SG37', 'Middle Age', 'Upstairs', 'Extra Large');

INSERT INTO CLASS\_ROOM VALUES(103,'SG14', 'Infant', 'Downstairs', 'Medium');

INSERT INTO CLASS\_ROOM VALUES(104, 'SA9', 'Middle Age', 'Upstairs', 'Small');



# Code to create Child\_Care Table

CREATE TABLE CHILDCARE(

child\_No VARCHAR(4),

class\_No tinyint,

CONSTRAINT PK\_ChildCare PRIMARY KEY (Child\_No, Class\_No)

FOREIGN KEY (child\_No) REFERENCES CHILD(child\_No),

FOREIGN KEY (class\_No) REFERENCES CLASS\_ROOM(class\_No)

);

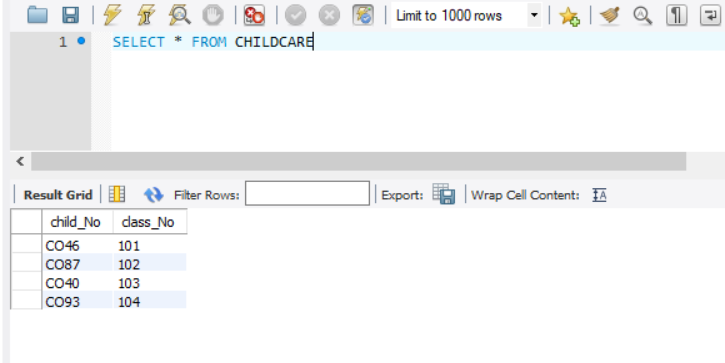
# Child Care data insertion

INSERT INTO CHILDCARE VALUES('CO46', 101);

INSERT INTO CHILDCARE VALUES('CO87', 102);

INSERT INTO CHILDCARE VALUES('CO40', 103);

INSERT INTO CHILDCARE VALUES('CO93', 104);



# Conclusions

Following my reviewed, the test I did went smoothly and I had no problems, except for the fact that data grid was difficult to use in layout horizontally. However, the form was still work well. In future, I will like to rearrange form in horizontal as it was done on vertical.

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