Database Testing

Test N.	Test Date	Test Elements/ What was tested	Test Data/Method Used	Expected Output	Actual Output
1	10/30/2014	**Database Name**	Query sp_helpdb;	Name of the database should be dB_ISMT, Same as name used to create database	Name of the database was dB_ISMT

100 %

Results | Messages

	name	db_size	owner	dbid	created	status	compatibility_level
1	dB_ISMT	3.83 MB	Super\Atoot	7	Nov 20 2014	Status=ONLINE, Updateability=READ_WRITE, UserAcc...	110

Critical Review:

The first test performed was the name of database created. Sp_Helpdb query that displays all information about databases in system was used for the testing. Testing showed name of the database is dB_ISMT which matches the database name used while creating database. This shows test of database is successful.

2	10/30/2014	**Database status**	Query sp_helpdb dB_ISMT;	Database status should be online, storage max size should be unlimitage, should be Read/Write	Showed status ONLINE, max size of file Unlimited and is Read/Write enabled

Results | Messages

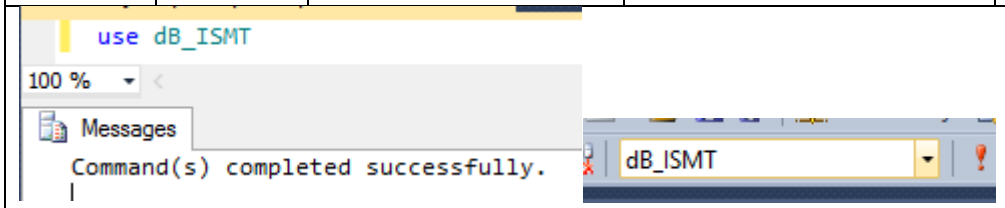
	name	db_size	owner	dbid	created	status	compatibility_level
1	dB_ISMT	3.83 MB	Super\Atoot	7	Nov 20 2014	Status=ONLINE, Updateability=READ_WRITE, UserAcc...	110

	name	fileid	filename	filegroup	size	maxsize	growth	usage
1	dB_ISMT	1	C:\Program Files\Microsoft SQL Server\MSSQL11.MSS...	PRIMARY	3136 KB	Unlimited	1024 KB	data only
2	dB_ISMT_log	2	C:\Program Files\Microsoft SQL Server\MSSQL11.MSS...	NULL	784 KB	2147483648 KB	10%	log only

Critical Review:

As shown in figure, test showed detailed information about database dB_ISMT. This information was generated after executing query sp_helpdb dB_ISMT;. In the status colum, Status is ONLINE and updateability= Read/write. Similarry images shows max size of file is unlimited. This shows database is fine and working.

3	10/30/2014	**Using Database**	USE dB_ISMT;	After Execution of query Should be able to use created database name dB_ISMT	Upon execution of query, active database was turned as dB_ISMT and success message appeared.



Critical Revie:

After creating a database it is must that user should able to USE that database. For that Test is done if database is usable or not. USE clause is used with database name to use the database and make database as active database. Test result shows USE clause was able to use the database. Images above confirms test validity.

4	10/30/2014	**Numeber Tables in database and Table Names**	SELECT * FROM information_schema.tables;	Number of Data Table should match Entity number from Schema Diagram ie; 10 and Names of tables should me according to schema diagram.	Number of datatable was 10. Names of tables are according to schema diagram.

Results | Messages

	TABLE_CATALOG	TABLE_SCHEMA	TABLE_NAME	TABLE_TYPE
1	dB_ISMT	dbo	tblDepartment	BASE TABLE
2	dB_ISMT	dbo	tblProgram	BASE TABLE
3	dB_ISMT	dbo	tblEnroll_Type	BASE TABLE
4	dB_ISMT	dbo	tblSemester	BASE TABLE
5	dB_ISMT	dbo	tblGuardian	BASE TABLE
6	dB_ISMT	dbo	tblStudying	BASE TABLE
7	dB_ISMT	dbo	tblStudent	BASE TABLE
8	dB_ISMT	dbo	tblTeacher	BASE TABLE
9	dB_ISMT	dbo	tblUnit	BASE TABLE
10	dB_ISMT	dbo	tblGrade	BASE TABLE

Critical Revie:

It is must that developed database system matches the entity number and name exactly as of schema diagram. Schema diagram of current system consists 10 Entities and their name are as follows: tblStudent, tblDepartment, tblGrade, tblTeacher, tblUnit, tblProgram, tblEnroll_Type, tblSemester, tblStudying, tblGuardian. As for the test result, it shows Number of entities and their names are exactly as expected. Use of select * from information_schema.tables displayed all the objects in the database. This helped to count and read names of entities in database and compare them with expected result. Test results shows dB_ISMT is well development according to schema diagram of system.

5	10/30/2014	**Attributes in Student Table**	Query used sp_help tblStudent;	Attributes in tables should be according to Query used to create table.	Number and names of column in table was according to query used to create table.

```
sp_help tblStudent;
```

100 %

Results | Messages

	Name	Owner	Type	Created_datetime
1	tblStudent	dbo	user table	2014-11-16 20:19:56.347

	Column_name	Type	Computed	Length	Prec	Scale	Nullable	TrimTrailingBlanks	FixedLenNullInSource	Collation
1	StudentID	int	no	4	10	0	no	(n/a)	(n/a)	NULL
2	GuardianID	int	no	4	10	0	no	(n/a)	(n/a)	NULL
3	Enroll_Type	nvarchar	no	20			no	(n/a)	(n/a)	SQL_Latin1_General_CP1_CI_A
4	Name	nvarchar	no	100			no	(n/a)	(n/a)	SQL_Latin1_General_CP1_CI_A
5	Address	nvarchar	no	60			yes	(n/a)	(n/a)	SQL_Latin1_General_CP1_CI_A
6	Gender	nvarchar	no	20			yes	(n/a)	(n/a)	SQL_Latin1_General_CP1_CI_A
7	Email	nvarchar	no	-1			yes	(n/a)	(n/a)	SQL_Latin1_General_CP1_CI_A
8	Contact	nvarchar	no	30			yes	(n/a)	(n/a)	SQL_Latin1_General_CP1_CI_A
9	Photo	image	no	16			yes	(n/a)	(n/a)	NULL

Critical Revie:

After it is confirmed that Entities in database are based on schema diagram of the system, it is necessary to make sure attibutes in those entitties are also satisfies the schema diagram. For this report generatated after executing query sp_help with table tblstudent is compared to expected output. Number of columns and their names are as expected ie. Matched the attibutes in schema diagram.

6	10/30/2014	Inserting Duplicate value in primary key attribute.	Insert statement with duplicate value for primary keyed column. Insert into tblStudent (StudentID, Name) values (1001, 'RAM')	Should throw error message. Does not allow inserting new row.	Threw error message saying violation of primary key constraint.

```
Insert into tblSemester values ( 'First', 'First Semester');
```

100 %

Messages

```
Msg 2627, Level 14, State 1, Line 1
Violation of PRIMARY KEY constraint 'PK_Semester'. Cannot insert duplicate key in object 'dbo.tblSemester'. The d
The statement has been terminated.
```

Critical Revie:

In is must that a primary column should not accept duplicated data. To test this duplicated i.e. value that is already exits in that column is inserted to either primary or unique keyed column. In tblSemester, Semester column is Primary and already has value= First. Now new insert statement is executed trying to insert another row with semester value =First. Now this is violating primary key constraint name PK_Semester. This test result shows dublicated values are not allowed in primary or unique columns of tables in developed database system.

7	10/30/2014	FOREIGN KEY TEST: Insert Invalid data in foreign key column	Inserting into child data before parent data. Insert into tblGrade(10001, 1004,90)	Should throw error message. Does not allow inserting new row.	Threw error message saying violation of Foreign key constraint.

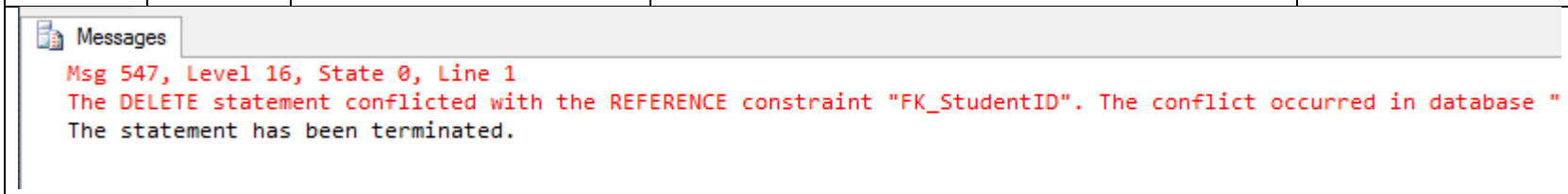
Messages

```
Msg 547, Level 16, State 0, Line 2
The INSERT statement conflicted with the FOREIGN KEY constraint "FK_StudentID@2". The conflict occurred in databa
The statement has been terminated.
```

Critical Revie:

Testing of Foreign key is really important in relational database. It tests dependencies in database. In this taste in child column (foreign keyed column) a new data is inserted that is not already exists in parent column (Primary key). If it succeed, it shows dependencies, relations are not well managed in the system. But as result show new rows was not able to insert row it is asking for data that is already exists in parent column. It describes this test is successful.

8	10/30/2014	Foreign key Test: Delete a record that is still referenced by data in other table	Delete Student Table's row of studentID 1001 who is referenced in grade table. Delete from tblStudent where StudentID=1001;	Should throw error message. Does not allow inserting new row.	Threw error message saying violation of foreign key constraint.



Critical Revie:

This test is similar to the test done in Test Number 9. But in this test data is tried to be deleted even when it is referenced in another table. For test data from student table is deleted while it is referenced in grade table. Generatated error message upon execution of SQL query, it says delete statement conficts with reference constraint named FK_studentID from another table. As expected result is deleting such data should throw error message and actual output was error message, test is succesful.

9	10/30/2014	Insert new row in table	Insert Statement used to delete and using data not conflicting with table rules	Should successfully insert new row in the table.	Message appeared saying query executed successfully and 1 row affected.

```
insert into tblSemester(Semester,Description) values ('Seventh','This is Seventh Semester')
```

100 %

Messages

```
(1 row(s) affected)
```

Critical Revie:

DML while it is not affecting tables rules should be executable. To test this New row in semester table is inserted using unique data for primary key semester. Now as image above for this test shows execution is successful. This shows inserting SQL is working fine in this developed data table system.

10	10/30/2014	Update row in table	Update Statement used to delete and using data not conflicting with table rules ;	Should successfully update the row from the table.	Message appeared saying query executed successfully and 1 row affected.

```
Update tblSemester set Semester='SEVENTH' WHERE Semester='Seventh';
```

100 %

Messages

```
(1 row(s) affected)
```

Critical Revie:

Now similar to insert DML test, Update query is performed on same table not affecting rules of the table. Execution of query was successful. This hows Update DML is executable in developed data tables.

11	10/30/2014	Deleting a row from table	Delete Statement used to delete and using data not conflicting with table rules	Should successfully delete the row from the table.	Message appeared saying query executed successfully and 1 row affected.

```
Delete from tblSemester WHERE Semester='SEVENTH';
```

100 %

Messages

```
(1 row(s) affected)
```

Critical Revie:

Now as Semester SEVENTH from semester table is not referenced to any other child column. Delete statement should able to delete this row. As shown above in test image, execution of delete statement using WHILE clause to filter SEVENTH semester has affected 1 row. This shows, deleting rows in developed system is working fine.

12	10/30/2014	Selecting from Multiple table (Relationship Test)	Select Statement to join and extracting information from multiple table. Qeury used: Select S.Name, ST.Semester from tblstudent S, tblStudying ST where ST.StudentID=S.StudentID and ST.Semester= 'Second';	Should display names and semester of student who is studying in First semester extracting data from two tables.	Execution of query displayed names and semester of second semester students.

Results | Messages

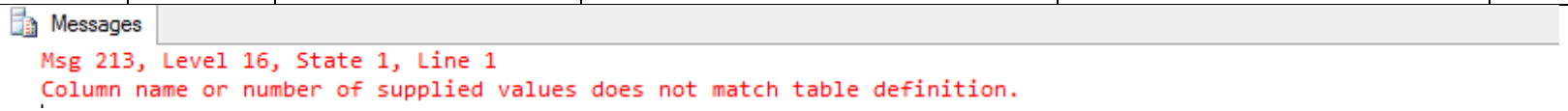
	Name	Semester
1	Ajit	Second
2	Lane	Second
3	Caesar	Second

Critical Review:

To test the relationship in database, data is retrieved from multiple tables. No maintain dependencies and relationship parent and child column are compared to filter out unwanted rows. Then Where clause is used for filter student of second semester. This test shows developed database is compatible with creating join

with multiple tables to retrieve information.

13		Inserting values to more column than the table's definition.	Insert Query: Insert into tblGrade(1001,1001,88,'TestData');	Should not allow to insert new row and should throw error message.	Upon execution of test query error message was displayed saying number of column does not match table definition.

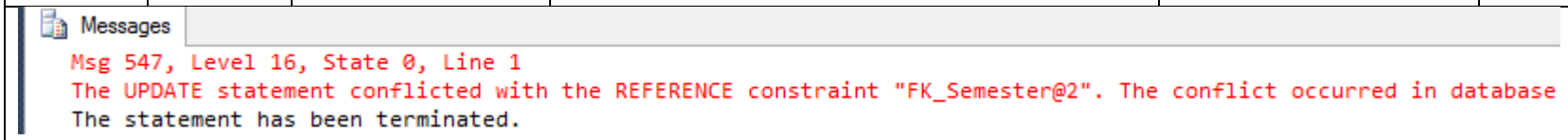


Critical Review:

This test is done to check weather table accepts insert of data more than its definition. For that insert statement is used with larger column data than the definition of table in which new row is to be inserted. Addional value 'TestData' is inserted into tblGrade which has only 3 attibutes hence insert statement violets the table definition. Error message upon execution shows result is well expected and only data that satisfy table definition is allowed to be inserted in table.

14	10/30/2014	If a data in a table is updated, check whether other relevant data is	Inserting larger data than n specified in nvarchar(n) i.e. Is inserted in Enroll Type of 20 in Enroll_Type column of tblEroll_Type table Update table tblSemester set	Should throw error message disallowing to insert new row.	Error message appared saying it violates foreign key rule.

		updated as Well	Semester=’ThirdSem’ where Semester=’Third’		



Critical Revie:

In this test, while updating a row while it is referenced to other column is tested. For this, Updating a row form Semester where semester=Third is tried. This column is referenced in table Studying and Third semester is still stored in studying.

This showed it is not allowed to update a row while it is referenced.