# Technical University of Moldova

01.11.2018

# DB Laboratory 4

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Semester 1

Chisinau 2018

## General purpose:

**Learn about Creating Table of DataBase**

## Tasks:

- Answer Questions at the end of Chapter 4;

- Solve ex. 1, 2 at the end of Chapter 4;

- Create a database which name is "Universitate";

  - Grupe;

  - Discipline;

- Create the following tables on your database;

## Answers to Questions:

1. What features does SQL Transact-SQL Query Editor offer?

   - It lets us write sql queries and execute them specifying the desirable database.

   - provides user with autocomplete and error checking subroutine.

   - Built in Debugging system.

2. What do DDL, DML, DCL and TCL mean?

   - Data Definition Language consists of the SQL commands that can be used to define the database schema. It simply deals with descriptions of the database schema and is used to create and modify the structure of database objects in database.

3. DDL commands:

   - COMMENT

   - RENAME

   - ALTER

   - TRUNCATE

   - DROP

4. DML commands:

   - UPDATE

   - INSERT

   - SELECT

   - DELETE

5. TCL commands:

   - SAVEPOINT

   - REVOKE

6. DCL commands:

   - GRANT

   - ROLLBACK

   - COMMIT

7. Integrity constraints are used to ensure accuracy and consistency of data in a relational database. SQL Server uses following constraints

   - Not NULL - disallows the entrance of NULL values into a column

   - Unique - value in that column for every row of data in the table must have a unique value.

   - Primary Key - identifies one or more columns in a table that make a row of data unique. Foreign Key - references a primary key in the parent table.

   - Check - Check (CHK) constraints can be utilized to check the validity of data entered into particular table columns.

8. You cannot delete a column that has a CHECK constraint without deleting the constraint first. Also, it is not possible to delete a column that has PRIMARY KEY or FOREIGN KEY constraints or other dependencies except when using the Table Designer. When using Object Explorer or Transact-SQL, you must first remove all dependencies on the column.

9. Modifying the data type of a column that already contains data can result in the permanent loss of data when the existing data is converted to the new type. In addition, code and applications that depend on the modified column may fail. These include queries, views, stored procedures, user-defined

functions, and client applications. Note that these failures will cascade. For example, a stored procedure that calls a user-defined function that depends on the modified column may fail.

## Task Realization:

1. Which number can be put in a column with type DECIMAL(4, 1)?

   - 116,2 is answer because it exactly 4 digits with 1 digits after comma.

2. Consider Col1 is INT and Col2 is DECIMAL(2, 1). What type Col3 should be to contain the result of Col1 * Col2?

| | Id_Student | Nume_Student | Adresa_Postala_Student | Id_Disciplina |
|---|---|---|---|---|
| 197 | 168 | Martis | mun. Chisinau, bd. Mircea cel ... | 119 |
| 198 | 169 | Matko | mun. Chisinau, str. Maria Drag... | 115 |
| 199 | 169 | Matko | mun. Chisinau, str. Maria Drag... | 118 |
| 200 | 170 | Maxim | mun. Chisinau, bd. Dacia, 5/4 | 101 |
| 201 | 170 | Maxim | mun. Chisinau, bd. Dacia, 5/4 | 107 |
| 202 | 171 | Matasari | mun. Chisinau, str. Albi?oara, 7 | 112 |
| 203 | 171 | Matasari | mun. Chisinau, str. Albi?oara, 7 | 116 |
| 204 | 172 | Mazareanu | mun. Chi?inau, str. Calea Orhei... | 101 |
| 205 | 172 | Mazareanu | mun. Chi?inau, str. Calea Orhei... | 107 |
| 206 | 172 | Mazareanu | mun. Chi?inau, str. Calea Orhei... | 119 |
| 207 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 102 |
| 208 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 106 |
| 209 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 107 |
| 210 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 113 |
| 211 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 115 |
| 212 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 117 |
| 213 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 120 |
| 214 | 174 | Mesesan | mun. Chisinau, str. Bogdan Vo... | 108 |
| 215 | 174 | Mesesan | mun. Chisinau, str. Bogdan Vo... | 117 |

Figure 1: Creating The table "Grupe"

In order to save the result of multiplication Col3 must have DECIMAL(2, 1) as type, since DECIMAL has higher precedence than INT

| | Id_Grupa | Cod_Grupa | Specialitate | Nume_Facultate |
|---|---|---|---|---|
| 1 | 1 | CIB171 | Cibernetica | Informatica si Cibernetica |
| 2 | 2 | INF171 | Informatica | Informatica si Cibernetica |
| 3 | 3 | TI171 | Tehnologii Informationale | Informatica si Cibernetica |

Figure 2: Aflafi toate datele despre grupele de studii de la facultate

| | Id_Disciplina | Disciplina | Nr_ore_plan_disciplina |
|---|---|---|---|
| 9 | 107 | Baze de date | 60 |
| 10 | 100 | Sisteme de operare | 60 |
| 11 | 101 | Programarea calculatoarelor | 60 |
| 12 | 116 | Proiectarea sistemelor informatice | 60 |
| 13 | 120 | Programe aplicative | 46 |
| 14 | 102 | Informatica aplicata | 46 |
| 15 | 103 | Sisteme de calcul | 46 |
| 16 | 106 | Programarea WEB | 46 |
| 17 | 111 | Modelarea sistemelor | 46 |
| 18 | 109 | Retele informatice | 46 |
| 19 | 114 | Tehnologii de procesare a informatiei | 46 |
| 20 | 115 | Programarea declarativa | 46 |
| 21 | 119 | Integrare informationala europeana | 20 |

Figure 3: Sa se obtina lista disciplinelor in ordine descrescatoare a numarului de ore.

| | Id_Disciplina | Disciplina | Nume_Profesor | Prenume_Profesor |
|---|---|---|---|---|
| 1 | 118 | Practica de productie | Ungureanu | Iulia |
| 2 | 100 | Sisteme de operare | Popescu | Gabriel |
| 3 | 103 | Sisteme de calcul | Popescu | Gabriel |
| 4 | 104 | Asamblare si depanare PC | Popescu | Gabriel |
| 5 | 110 | Matematica discreta | Olteanu | Andrei |
| 6 | 112 | Limbaje evaluate de programare (Java,.NET) | Negru | Sergiu |
| 7 | 118 | Practica de productie | Nechita | Vasile |
| 8 | 111 | Modelarea sistemelor | Nazarie | Alexandru |
| 9 | 102 | Informatica aplicata | Munteanu | Alexandru |
| 10 | 115 | Programarea declarativa | Munteanu | Alexandru |
| 11 | 101 | Programarea calculatoarelor | Mocanu | Diana |
| 12 | 106 | Programarea WEB | Mocanu | Diana |
| 13 | 113 | Programarea aplicatiilor Windows | Mocanu | Diana |
| 14 | 118 | Practica de productie | Misan | Andrei |
| 15 | 120 | Programe aplicative | Mircea | Sorin |
| 16 | 119 | Integrare informationala europeana | Mircea | Maria |
| 17 | 107 | Baze de date | Micu | Elena |
| 18 | 108 | Structuri de date si algoritmi | Micu | Elena |
| 19 | 114 | Tehnologii de procesare a informatiei | Ilascu | Ionela |
| 20 | 105 | Cercetari operationale | Frent | Tudor |
| 21 | 109 | Retele informatice | Dogar | Alexandru |
| 22 | 108 | Structuri de date si algoritmi | Bivol | Ion |
| 23 | 117 | Practica de licenta | Bivol | Ion |
| 24 | 116 | Proiectarea sistemelor informatice | Avram | Sanda |

Figure 4: Aflati cursurile (Disciplina) predate de fiecare profesor (NumeProfesor, PrenumeProfesor) sortate descrescator dupa nume apoi prenume.

| | Id_Disciplina | Disciplina |
|---|---|---|
| 1 | 101 | Programarea calculatoarelor |
| 2 | 104 | Asamblare si depanare PC |
| 3 | 105 | Cercetari operationale |
| 4 | 108 | Structuri de date si algoritmi |
| 5 | 112 | Limbaje evaluate de programare (Java,.NET) |
| 6 | 113 | Programarea aplicatiilor Windows |
| 7 | 114 | Tehnologii de procesare a informatiei |
| 8 | 115 | Programarea declarativa |
| 9 | 116 | Proiectarea sistemelor informatice |
| 10 | 118 | Practica de productie |
| 11 | 119 | Integrare informationala europeana |

Figure 5: Afi ati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

| | Id_Student | Nume_Student | Prenume_Student | Data_Nastere_Student | Adresa_Postala_Student |
|---|---|---|---|---|---|
| 1 | 100 | Brasovianu | Teodora | 2000-11-24 | mun. Chisinau, str. Tighina, 23/3 |
| 2 | 101 | Cosovanu | Geanina | 2000-08-04 | mun. Chisinau, bd. Decebal, 76 |
| 3 | 107 | Diaconu | Samuel | 2000-12-25 | or. Ungheni, str. Gh. Cristiuc, 10 |
| 4 | 118 | Gheorghescu | Gabriel | 2001-01-01 | mun. Chisinau, bd. Moscova, 20 |
| 5 | 119 | Ghimpu | Eduard | 2000-01-21 | mun. Chisinau, or. Cricova, str. Chisinaului, 84 |
| 6 | 137 | Nicolescu | Aurel | 1999-06-18 | or. Leova, str.Stefan cel Mare, 50 |
| 7 | 138 | Oncioiu | Costin-Ilie | 1999-06-12 | or. Leova, str. Stefan cel Mare, 67/1 |
| 8 | 150 | Suciu | Ionut | 2000-05-15 | or. Anenii Noi, str. Concilierii Nationale, 2 |
| 9 | 151 | Timu | Andrei | 2001-08-10 | or. Donduseni, str. S. Lazo, 16 |
| 10 | 152 | Vacareanu | Stefan | 2000-02-19 | or. Donduseni, str. Comarov, 12 |
| 11 | 163 | Lucaciu | Raul | 2000-04-23 | mun. Chi?inau, str. Uzinelor, 88 |
| 12 | 164 | Lucaciu | Alexandru | 1999-11-13 | or. Ceadir-Lunga, str. Lenin, 54 |
| 13 | 165 | Lucasu | Victor | 2000-04-21 | mun. Chisinau, str. Ismail, 33 |
| 14 | 166 | Marcu | Daniel | 2000-03-11 | mun. Chisinau, str. M. Basarab, 5/1 |
| 15 | 172 | Mazareanu | Sergiu | 1995-02-23 | mun. Chi?inau, str. Calea Orheiului, 107/1 |

Figure 6: Sa se afi eze lista studentilor al caror nume se termina in ,,u"

| | Nume_Student | Prenume_Student |
|---|---|---|
| 1 | Damian | Roxana |
| 2 | Danci | Larisa |
| 3 | Gheorghescu | Gabriel |
| 4 | Popa | Mihaela |
| 5 | Varga | Izabella |
| 6 | Viman | Viorel |
| 7 | Timu | Andrei |
| 8 | Vacareanu | Stefan |
| 9 | Covas | Roman |
| 10 | Matko | Mihai |
| 11 | Marcu | Daniel |

Figure 7: Afi ati numele  i prenumele primilor 5 studenti, care au obtinut note in ordine descrescatoare la al doilea test de la disciplina Baze de date. Sa se foloseasca optiunea TOP ... WITH TIES.
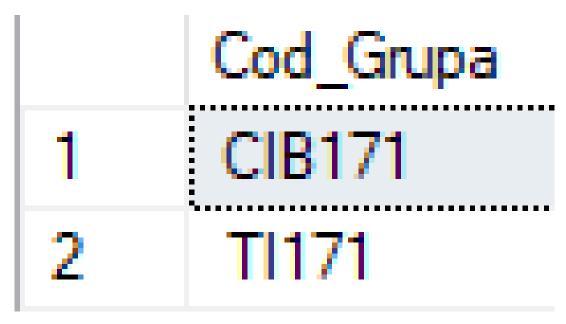
| | Cod_Grupa |
|---|---|
| 1 | CIB171 |
| 2 | TI171 |

Figure 8: in ce grupa (CodGrupa) invata studentii care locuiesc pe strada 31 August?

| | Id_Student | Nume_Student | Adresa_Postala_Student | Id_Disciplina |
|---|---|---|---|---|
| 197 | 168 | Martis | mun. Chisinau, bd. Mircea cel ... | 119 |
| 198 | 169 | Matko | mun. Chisinau, str. Maria Drag... | 115 |
| 199 | 169 | Matko | mun. Chisinau, str. Maria Drag... | 118 |
| 200 | 170 | Maxim | mun. Chisinau, bd. Dacia, 5/4 | 101 |
| 201 | 170 | Maxim | mun. Chisinau, bd. Dacia, 5/4 | 107 |
| 202 | 171 | Matasari | mun. Chisinau, str. Albi?oara, 7 | 112 |
| 203 | 171 | Matasari | mun. Chisinau, str. Albi?oara, 7 | 116 |
| 204 | 172 | Mazareanu | mun. Chi?inau, str. Calea Orhei... | 101 |
| 205 | 172 | Mazareanu | mun. Chi?inau, str. Calea Orhei... | 107 |
| 206 | 172 | Mazareanu | mun. Chi?inau, str. Calea Orhei... | 119 |
| 207 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 102 |
| 208 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 106 |
| 209 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 107 |
| 210 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 113 |
| 211 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 115 |
| 212 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 117 |
| 213 | 173 | Medrea | mun. Chisinau, or. Vadul lui Vo... | 120 |
| 214 | 174 | Mesesan | mun. Chisinau, str. Bogdan Vo... | 108 |
| 215 | 174 | Mesesan | mun. Chisinau, str. Bogdan Vo... | 117 |

Figure 9: Afi ati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

|    | Prenume_Student | Nume_Student | Nota |
|----|-----------------|--------------|------|
| 24 | Maria | Mesesan | 6 |
| 25 | Mihai | Ene | 5 |
| 26 | Norbert | Galambosi | 5 |
| 27 | Ovidiu | Dordai | 5 |
| 28 | Radu | Nicolae | 7 |
| 29 | Raul | Lucaciu | 6 |
| 30 | Robert | Poienar | 5 |
| 31 | Roland | Letea | 7 |
| 32 | Roman | Covas | 5 |
| 33 | Sergiu | Muresan | 7 |
| 34 | Sergiu | Orian | 7 |
| 35 | Teodora | Brasovianu | 6 |
| 36 | Valentina | Pitigoi | 5 |
| 37 | Viorel | Viman | 6 |

Figure 10: Afi ati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

| | Nume_Profesor | Prenume_Profesor | Nota | Id_Student |
|---|---|---|---|---|
| 1 | Micu | Elena | 2 | 101 |
| 2 | Micu | Elena | 2 | 119 |
| 3 | Micu | Elena | 2 | 165 |
| 4 | Micu | Elena | 3 | 111 |
| 5 | Micu | Elena | 3 | 156 |
| 6 | Micu | Elena | 4 | 135 |
| 7 | Micu | Elena | 4 | 169 |

Figure 11: Afi ati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

| | Nume_Student | Prenume_Student | Disciplina | Tip_Evaluare | Nota | TheYear |
|---|---|---|---|---|---|---|
| 37 | Luca | Alex | Sisteme de calcul | Examen | 7 | 2018 |
| 38 | Luca | Alex | Sisteme de calcul | Reusita curenta | 7 | 2018 |
| 39 | Luca | Alex | Sisteme de calcul | Testul 1 | 9 | 2017 |
| 40 | Luca | Alex | Sisteme de calcul | Testul 2 | 10 | 2017 |
| 41 | Luca | Alex | Sisteme de operare | Examen | 9 | 2018 |
| 42 | Luca | Alex | Sisteme de operare | Reusita curenta | 9 | 2018 |
| 43 | Luca | Alex | Sisteme de operare | Testul 1 | 7 | 2017 |
| 44 | Luca | Alex | Sisteme de operare | Testul 2 | 6 | 2017 |
| 45 | Luca | Alex | Structuri de date si algori | Examen | 10 | 2018 |
| 46 | Luca | Alex | Structuri de date si algori | Reusita curenta | 10 | 2018 |
| 47 | Luca | Alex | Structuri de date si algori | Testul 1 | 9 | 2017 |
| 48 | Luca | Alex | Structuri de date si algori | Testul 2 | 7 | 2017 |
| 49 | Luca | Alex | Tehnologii de procesare... | Examen | 10 | 2018 |
| 50 | Luca | Alex | Tehnologii de procesare... | Reusita curenta | 10 | 2018 |
| 51 | Luca | Alex | Tehnologii de procesare... | Testul 1 | 8 | 2017 |
| 52 | Luca | Alex | Tehnologii de procesare... | Testul 2 | 9 | 2017 |

Figure 12: Afi ati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

| | Nume_Student | Prenume_Student | Disciplina | Id_Disciplina |
|---|---|---|---|---|
| 6 | Florea | Ioan | Baze de date | 107 |
| 7 | Florea | Ioan | Structuri de date si algoritmi | 108 |
| 8 | Florea | Ioan | Retele informatice | 109 |
| 9 | Florea | Ioan | Tehnologii de procesare a... | 114 |
| 10 | Florea | Ioan | Practica de licenta | 117 |
| 11 | Florea | Ioan | Practica de productie | 118 |
| 12 | Florea | Ioan | Integrare informationala e... | 119 |
| 13 | Florea | Ioan | Programe aplicative | 120 |

Figure 13: Afiati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

| | Prenume_Student | Nume_Student | Disciplina | Not: |
|---|---|---|---|---|
| 196 | Stefan | Vacareanu | Proiectarea sistemelor informatice | 10 |
| 197 | Stefana | Judea | Practica de licenta | 9 |
| 198 | Stefana | Judea | Programarea calculatoarelor | 9 |
| 199 | Stefana | Judea | Programarea WEB | 9 |
| 200 | Teodora | Brasovianu | Cercetari operationale | 9 |
| 201 | Teodora | Brasovianu | Integrare informationala europeana | 9 |
| 202 | Teodora | Brasovianu | Practica de licenta | 10 |
| 203 | Teodora | Brasovianu | Programarea aplicatiilor Windows | 9 |
| 204 | Tudor | Maxim | Baze de date | 9 |
| 205 | Tudor | Maxim | Programarea calculatoarelor | 10 |
| 206 | Valentina | Pitigoi | Programarea calculatoarelor | 9 |
| 207 | Valentina | Pitigoi | Sisteme de calcul | 10 |
| 208 | Victor | Lucasu | Informatica aplicata | 9 |
| 209 | Victor | Lucasu | Practica de licenta | 9 |
| 210 | Victor | Lucasu | Programarea aplicatiilor Windows | 10 |
| 211 | Victor | Lucasu | Programarea declarativa | 9 |
| 212 | Victor | Lucasu | Proiectarea sistemelor informatice | 9 |

Figure 14: Afiati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

| | Disciplina | NrOfProf |
|---|---|---|
| 1 | Practica de productie | 3 |
| 2 | Structuri de date si algoritmi | 2 |

Figure 15: Afiati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

Figure 16: Afi ati care dintre discipline au denumirea formata din mai mult de 20 de caractere?



Figure 17: Afi ati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

Figure 18: Afi ati care dintre discipline au denumirea formata din mai mult de 20 de caractere?

## Conclusion

During This lab work i find out how to write SQL Queries in Transact SQL. I Also trained how to make correct JOINs, GROUP BYs ans SubQueries. Also I familiarized With SQL Language. [1]

# References

[1] SQL Server Management Studio 2017, Tutorials for Lab 3