

MySQL Practice



1. Running the program using the MySQL 8.0 Command Line Client

1.1 Enter the command to display all databases.

```
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 20
Server version: 8.0.35 MySQL Community Server - GPL

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affiliates. Other names may be trademarks of their respective
owners.

Type 'help;' or '\h' for help. Type '\c' to clear the current input statement.

mysql> show databases;
+-----+
| Database |
+-----+
| cool_company2 |
| coolcompany |
| information_schema |
| mysql |
| performance_schema |
| sys |
+-----+
6 rows in set (0.00 sec)

mysql>
```

1.2 Select the database named "sys".

```
mysql> use sys;
Database changed
mysql> _
```

1.3 Show all tables in the database "sys".

```
mysql> show tables;
+-----+
| Tables_in_sys |
+-----+
| host_summary |
| host_summary_by_file_io |
| host_summary_by_file_io_type |
| host_summary_by_stages |
| host_summary_by_statement_latency |
| host_summary_by_statement_type |
| innodb_buffer_stats_by_schema |
| innodb_buffer_stats_by_table |
| innodb_lock_waits |
+-----+
```

1.4 Show all data in the "host-summary" table

```
mysql> select * from host_summary;
```

host	statements	statement_latency	statement_avg_latency	table_scans	file_ios	file_io_latency	current_connections
current_memory	total_memory_allocated						
localhost	3477	7.63 s	2.19 ms	330	279	139.24 ms	2
6.22 MiB	1.25 GiB						

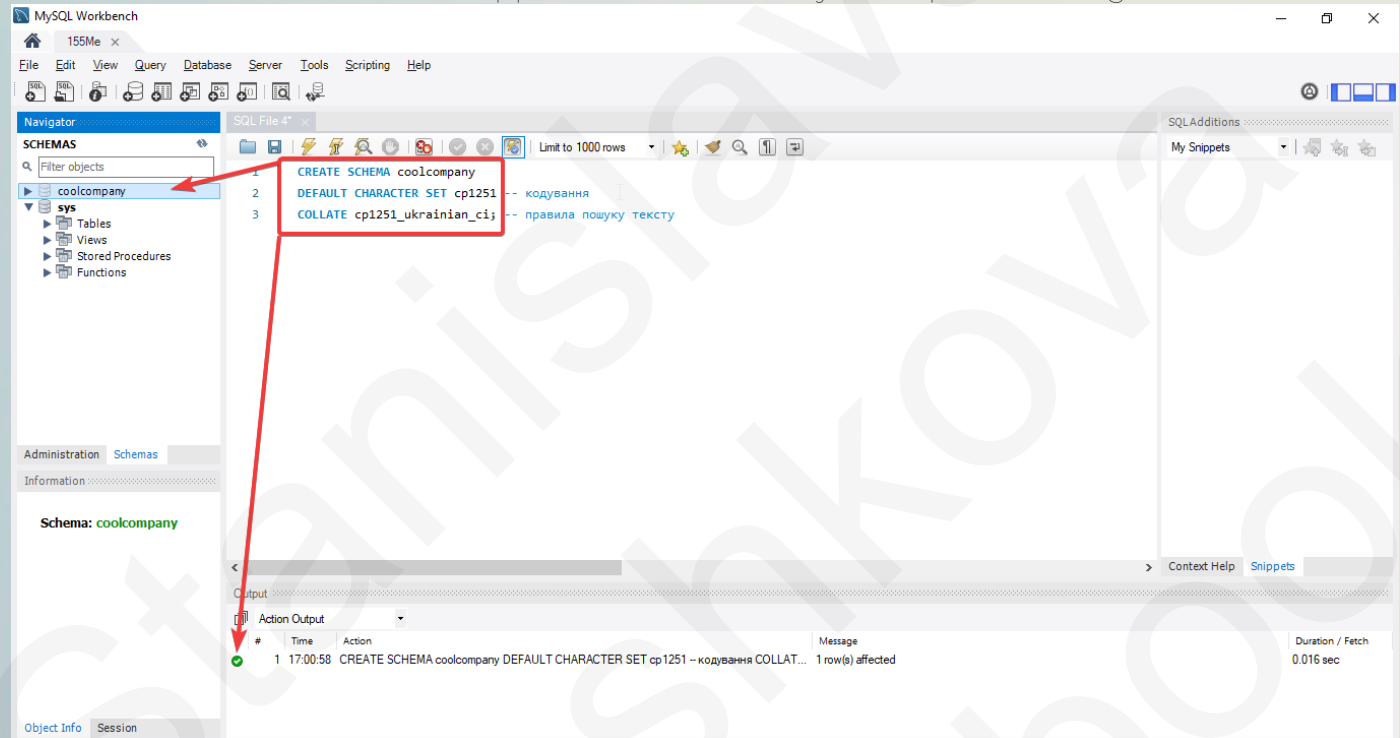
1 row in set (0.07 sec)

1.5 Exit the command line.

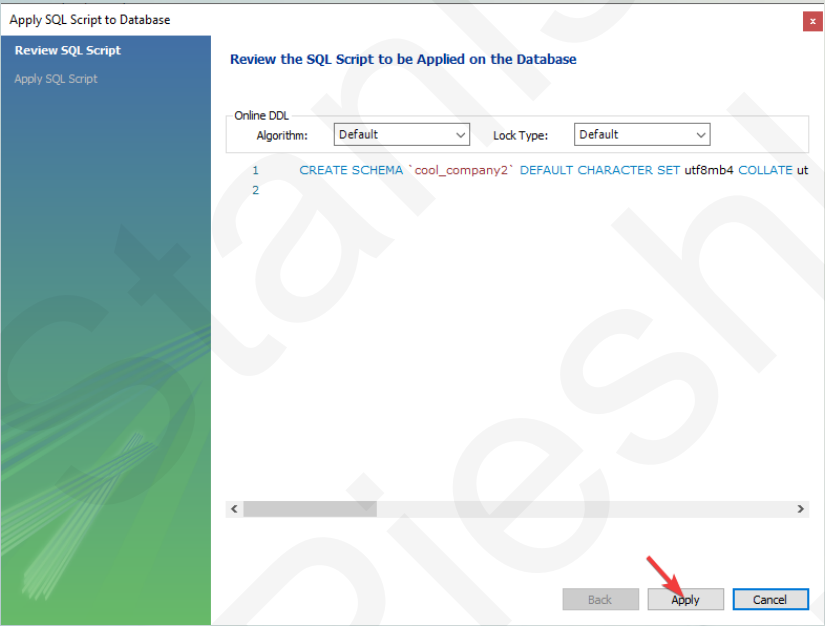
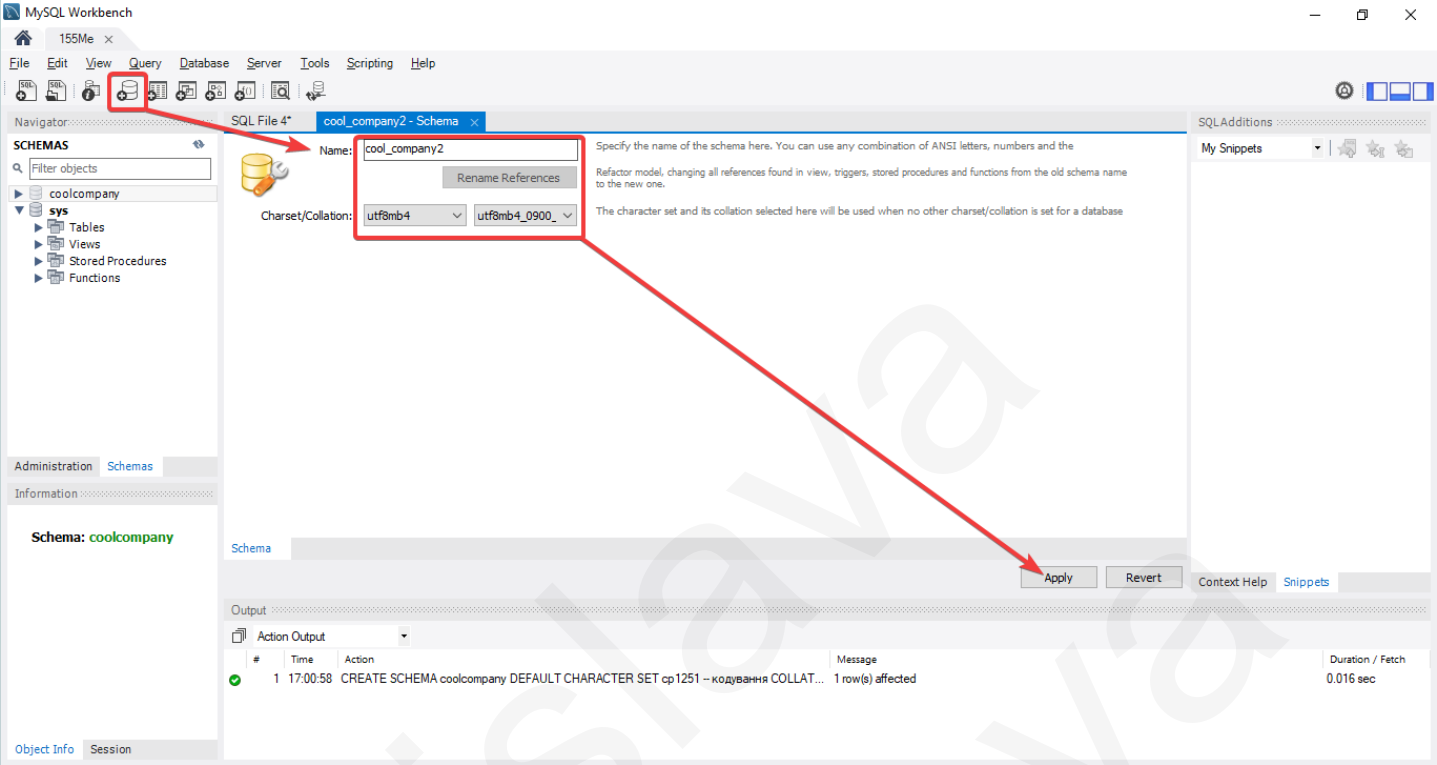
```
mysql> exit
```

2. Create a database in two ways

2.1 Create a database that will support the Ukrainian Cyrillic alphabet using commands.



2.2 Create a database that will support the Ukrainian Cyrillic alphabet using the MySQL Workbench functionality.



3. How to create a table in the Database (and what is the Primary Key)

3.1 Creating the "student" table using the commands.

The screenshot shows the MySQL Workbench interface. In the left sidebar, the 'Schemas' panel is open, showing a tree view of databases. The 'coolcompany' database is selected, and its 'Tables' folder is expanded, showing the 'student' table. A red arrow points from the 'student' table in the sidebar to the SQL editor. The SQL editor contains the following commands:

```
1 USE coolcompany;
2 CREATE TABLE student (
3   student_id INTEGER PRIMARY KEY,
4   student_name VARCHAR(50),
5   city VARCHAR (30)
6 );
```

The 'Output' panel at the bottom shows the execution results:

#	Time	Action	Message	Duration / Fetch
1	17:30:35	USE coolcompany	0 row(s) affected	0.000 sec
2	17:30:35	CREATE TABLE student (student_id INTEGER PRIMARY KEY, student_name VARCHAR(50)...	0 row(s) affected	0.032 sec

3.2 Display the table.

The screenshot shows the MySQL Workbench interface. In the left sidebar, the 'Schemas' panel is open, showing a tree view of databases. The 'coolcompany' database is selected, and its 'Tables' folder is expanded, showing the 'student' table. A red arrow points from the 'student' table in the sidebar to the SQL editor. The SQL editor contains the following commands:

```
1 USE coolcompany;
2 CREATE TABLE student (
3   student_id INTEGER PRIMARY KEY,
4   student_name VARCHAR(50),
5   city VARCHAR (30)
6 );
7
8 DESCRIBE student;
```

The 'Result Grid' panel shows the table structure:

Field	Type	Null	Key	Default	Extra
student_id	int	NO	PRI	NULL	
student_name	varchar(50)	YES		NULL	
city	varchar(30)	YES		NULL	

The 'Output' panel at the bottom shows the execution results:

#	Time	Action	Message	Duration / Fetch
1	17:30:35	USE coolcompany	0 row(s) affected	0.000 sec
2	17:30:35	CREATE TABLE student (student_id INTEGER PRIMARY KEY, student_name VARCHAR(50)...	0 row(s) affected	0.032 sec
3	17:34:05	DESCRIBE student	3 row(s) returned	0.016 sec / 0.000 sec

3.3 Create a table named "video" using the graphical shell of the MySQL Workbench program.

MySQL Workbench interface showing the 'video - Table' configuration window. The 'Columns' tab is active, displaying the table structure for 'video' in the 'coolcompany' schema. The columns are:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
video_id	INT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
video_name	VARCHAR(50)	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
description	VARCHAR(200)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

The 'video_name' column is highlighted. The 'Apply' button is indicated by a red arrow.

Apply SQL Script to Database dialog box. The 'Review SQL Script' tab is active, showing the SQL script for creating the 'video' table. The script is:

```
1 CREATE TABLE `coolcompany`.`video` (  
2   `video_id` INT NOT NULL,  
3   `video_name` VARCHAR(50) NOT NULL,  
4   `description` VARCHAR(200) NULL,  
5   PRIMARY KEY (`video_id`),  
6   UNIQUE INDEX `video_name_UNIQUE` (`video_name` ASC) VISIBLE;  
7 )
```

The 'Apply' button is highlighted with a red arrow.

Navigator showing the 'video' table selected under the 'coolcompany' schema. The 'video' table is highlighted with a red box.

4. How to edit tables in a SQL database

4.1 Add a column with emails to the student table.

The screenshot shows the SQL Enterprise Manager interface. In the left pane, the 'student' table is selected under the 'coolcompany' database. The 'Columns' tab is active, showing the existing columns: student_id (int PK), student_name (varchar(50)), and city (varchar(30)).

The main query window displays the following SQL statement:

```
ALTER TABLE student ADD email VARCHAR(30);
```

The 'Output' pane shows the execution results:

#	Time	Action	Message	Duration / Fetch
1	15:23:24	ALTER TABLE student ADD email VARCHAR(30)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec

The screenshot shows the SQL Enterprise Manager interface. The query window displays the following SQL statements:

```
USE coolcompany;  
DESCRIBE student;
```

The 'Result Grid' shows the table structure after the column addition:

Field	Type	Null	Key	Default	Extra
student_id	int	NO	PRI		
student_name	varchar(50)	YES			
city	varchar(30)	YES			
email	varchar(30)	YES			

The 'Output' pane shows the execution results for the DESCRIBE statement:

#	Time	Action	Message	Duration / Fetch
1	15:23:24	ALTER TABLE student ADD email VARCHAR(30)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
2	15:25:20	DESCRIBE student	4 row(s) returned	0.000 sec / 0.000 sec

4.2 Delete the email column from the Student table.

The screenshot shows the SQL Enterprise Manager interface. The left pane displays the database schema for 'coolcompany', with the 'student' table selected. The 'Columns' list shows 'student_id', 'student_name', and 'city'. The 'Query 1' window contains the following SQL script:

```
1 ALTER TABLE student ADD email VARCHAR(30);
2
3 ALTER TABLE student DROP COLUMN email;
```

The third query is highlighted with a red box. The 'Output' pane shows the execution results:

#	Time	Action	Message	Duration / Fetch
1	15:23:24	ALTER TABLE student ADD email VARCHAR(30)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
2	15:25:20	DESCRIBE student	4 row(s) returned	0.000 sec / 0.000 sec
3	15:30:04	ALTER TABLE student DROP COLUMN email	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec

The third row in the output is circled in red. The 'Object Info' pane on the left shows the 'student' table with columns: 'student_id' (int PK), 'student_name' (varchar(50)), and 'city' (varchar(30)).

The screenshot shows the SQL Enterprise Manager interface. The left pane displays the database schema for 'coolcompany', with the 'student' table selected. The 'Query 1' window contains the following SQL script:

```
1 USE coolcompany;
2 DESCRIBE student;
```

The second query is highlighted with a red box. The 'Output' pane shows the execution results:

#	Time	Action	Message	Duration / Fetch
1	15:23:24	ALTER TABLE student ADD email VARCHAR(30)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
2	15:25:20	DESCRIBE student	4 row(s) returned	0.000 sec / 0.000 sec
3	15:30:04	ALTER TABLE student DROP COLUMN email	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
4	15:31:29	DESCRIBE student	3 row(s) returned	0.016 sec / 0.000 sec

The 'Result Grid' shows the output of the 'DESCRIBE student' query:

Field	Type	Null	Key	Default	Extra
student_id	int	NO	PRI		
student_name	varchar(50)	YES			
city	varchar(30)	YES			

The 'Object Info' pane on the left shows the 'student' table with columns: 'student_id' (int PK), 'student_name' (varchar(50)), and 'city' (varchar(30)).

* Attempting to enter more than 30 characters in an email column.

The screenshot shows the SQL Enterprise Manager interface. In the left pane, the 'student' table is selected under the 'coolcompany' schema. The 'Columns' list shows 'student_id' (int PK), 'student_name' (varchar(50)), and 'city' (varchar(30)). The main pane displays a SQL query window with the following code:

```
1 INSERT INTO student
2 VALUES (6, 'Дракон Микола', 'Донецьк', 'MykolaTheGreatDragonOfDonetsk@yahoo.com');
```

The query is executed, and the 'Output' pane shows the 'Action Output' table:

#	Time	Action	Message	Duration / Fetch
1	15:46:50	ALTER TABLE student ADD email VARCHAR(30)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
2	15:46:55	DESCRIBE student	4 row(s) returned	0.000 sec / 0.000 sec
3	15:47:01	INSERT INTO student VALUES (6, 'Дракон Микола', 'Донецьк', 'MykolaTheGreatDragonOfDonetsk@yahoo.com')	Error Code: 1406. Data too long for column 'email' at row 1	0.000 sec

The error message for row 3 is circled in red, indicating the failure due to the email being too long for the current column definition.

4.3 Change the size of characters that can be contained in the email column.

The screenshot shows the SQL Enterprise Manager interface. The SQL query window contains the following code:

```
1 ALTER TABLE student ADD email VARCHAR(30);
2
3 ALTER TABLE student DROP COLUMN email;
4
5 ALTER TABLE student MODIFY COLUMN email VARCHAR(100);
```

The query is executed, and the 'Output' pane shows the 'Action Output' table:

#	Time	Action	Message	Duration / Fetch
1	15:46:50	ALTER TABLE student ADD email VARCHAR(30)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
2	15:46:55	DESCRIBE student	4 row(s) returned	0.000 sec / 0.000 sec
3	15:47:01	INSERT INTO student VALUES (6, 'Дракон Микола', 'Донецьк', 'MykolaTheGreatDragonOfDonetsk@yahoo.com')	Error Code: 1406. Data too long for column 'email' at row 1	0.000 sec
4	15:48:11	ALTER TABLE student MODIFY COLUMN email VARCHAR(100)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec

The successful execution of the 'ALTER TABLE' statement (row 4) is circled in red.

The screenshot shows the SQL Enterprise Manager interface. The SQL query window contains the following code:

```
1 USE coolcompany;
2 DESCRIBE student;
```

The query is executed, and the 'Result Grid' shows the table structure:

Field	Type	Null	Key	Default	Extra
student_id	int	NO	PRI	NULL	
student_name	varchar(50)	YES		NULL	
city	varchar(30)	YES		NULL	
email	varchar(100)	YES		NULL	

The 'email' row is circled in red, confirming the column size has been successfully increased to 100 characters.

** Attempting to enter more than 30 characters in an email column after expanding the column to 100 characters.

Query 1 SQL File 3* SQL File 4* x

```
1 INSERT INTO student
2 VALUES (6, 'Дракон Микола', 'Донецк', 'MykolaTheGreatDragonOfDonetsk@yahoo.com');
```

Output

#	Time	Action	Message	Duration / Fetch
1	15:46:50	ALTER TABLE student ADD email VARCHAR(30)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
2	15:46:55	DESCRIBE student	4 row(s) returned	0.000 sec / 0.000 sec
3	15:47:01	INSERT INTO student VALUES (6, 'Дракон Микола', 'Донецк', 'MykolaTheGreatDragonOf...	Error Code: 1406. Data too long for column 'email' at row 1	0.000 sec
4	15:48:11	ALTER TABLE student MODIFY COLUMN email VARCHAR(100)	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0	0.016 sec
5	15:49:08	DESCRIBE student	4 row(s) returned	0.000 sec / 0.000 sec
6	15:51:43	INSERT INTO student VALUES (6, 'Дракон Микола', 'Донецк', 'MykolaTheGreatDragonOf...	1 row(s) affected	0.015 sec

4.4 Edit a table using MySQL graphical tools

Table Name: student Schema: coolcompany

Charset/Collation: cp1251 cp1251_bin Engine: InnoDB

Comments:

Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
INT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
VARCHAR(50)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
VARCHAR(30)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
VARCHAR(100)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL

Columns Indexes Foreign Keys Triggers Partitioning Options

Apply Revert Context Help Snippets

4.5 Delete the column you just added

Query 1 SQL File 3* SQL File 4* SQL File 5* **student - Table**

Table Name: Schema: **coolcompany**

Charset/Collation: Engine:

Comments:

Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
student_id	INT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
student_name	VARCHAR(50)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
city	VARCHAR(30)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
email	VARCHAR(100)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
studentcol		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Column Name: Data Type:
Charset/Collation: Default:
Comments:

Storage: ☐ Virtual ☐ Stored
☐ Primary Key ☐ Not Null ☐ Unique
☐ Binary ☐ Unsigned ☐ Zero Fill
☐ Auto Increment ☐ Generated

Columns Indexes Foreign Keys Triggers Partitioning Options

4.6 Change the size of characters that can be contained in the email column from 100 to 200.

155Me x

File Edit View Query Database Server Tools Scripting Help

Navigator:

SCHEMAS

- cool_company2
- coolcompany**
 - Tables
 - student**
 - Columns
 - student_id
 - student_name
 - city
 - email
 - Indexes
 - Foreign Keys
 - Triggers
 - video
 - Views
 - Stored Procedures
 - Functions

Administration **Schemas**

Information:

Table: student

Columns: student_id int PK, student_name varchar(50), city varchar(30)

Query 1 SQL File 3* SQL File 4* SQL File 5* **student - Table**

Table Name: Schema: **coolcompany**

Charset/Collation: Engine:

Comments:

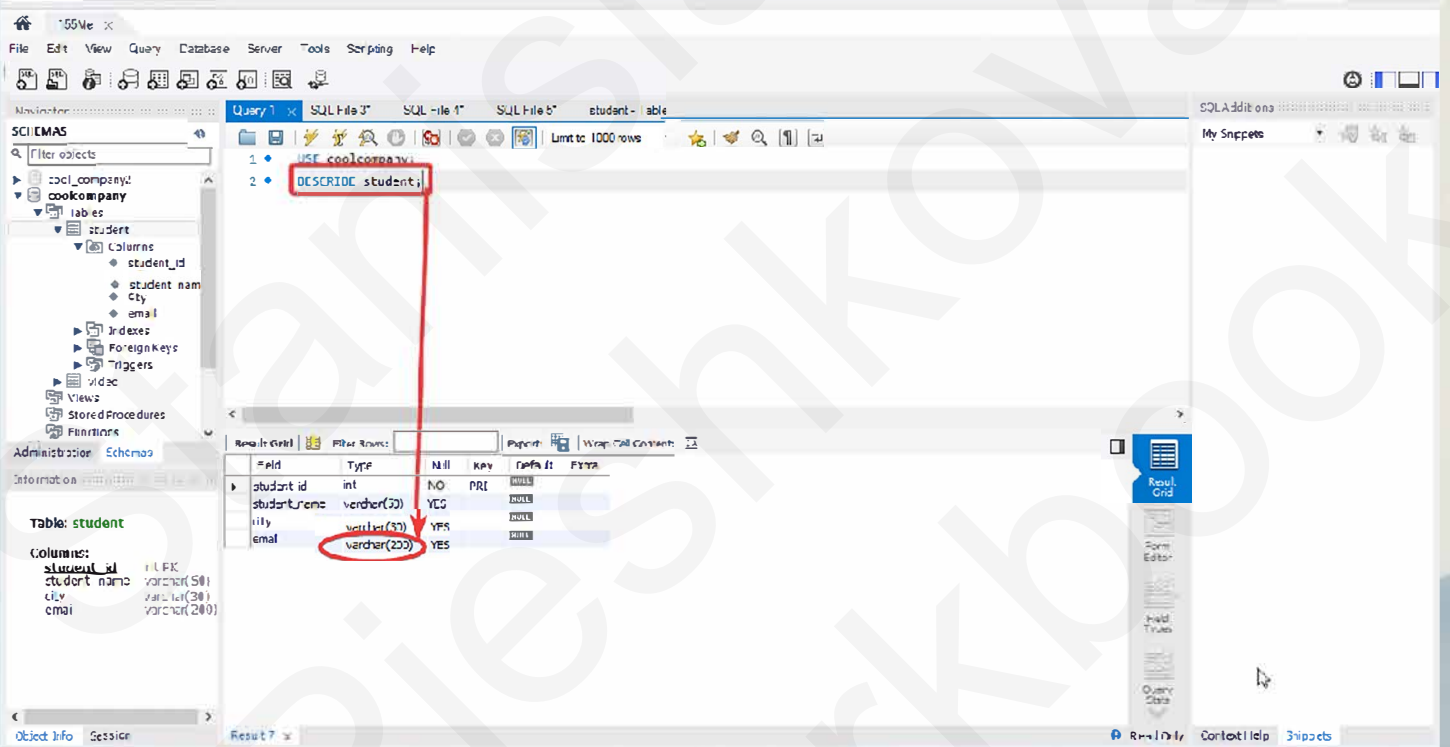
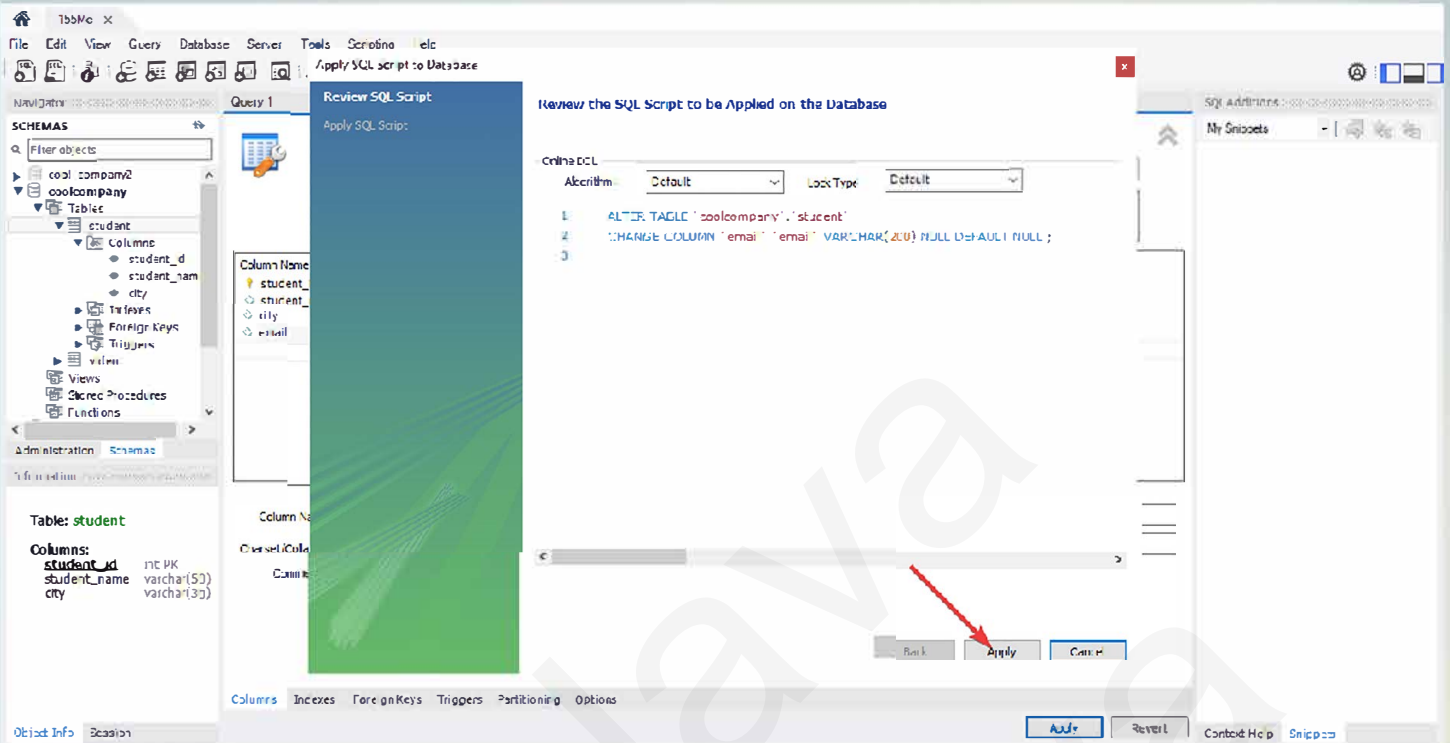
Column Name	Datatype	PK	NN	UQ	B	UN	ZF	AI	G	Default/Expression
student_id	INT	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
student_name	VARCHAR(50)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
city	VARCHAR(30)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL
email	VARCHAR(200)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	NULL

Column Name: Data Type:
Charset/Collation: Default:
Comments:

Storage: ☐ Virtual ☐ Stored
☐ Primary Key ☐ Not Null ☐ Unique
☐ Binary ☐ Unsigned ☐ Zero Fill
☐ Auto Increment ☐ Generated

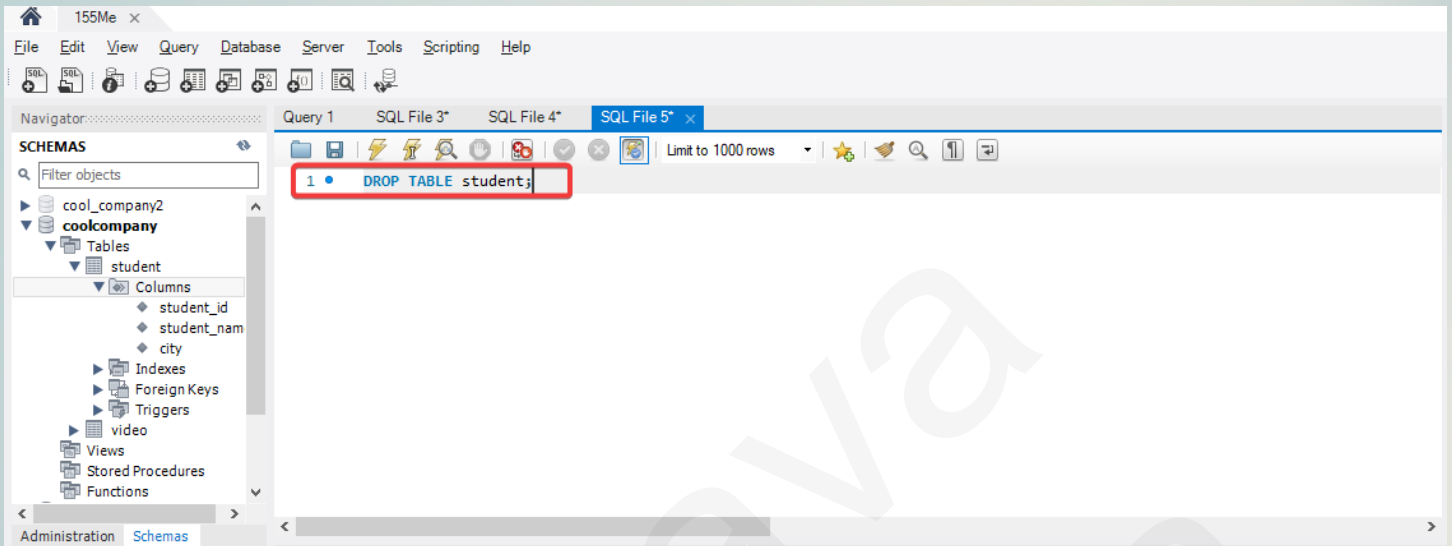
Columns Indexes Foreign Keys Triggers Partitioning Options

Context Help Snippets

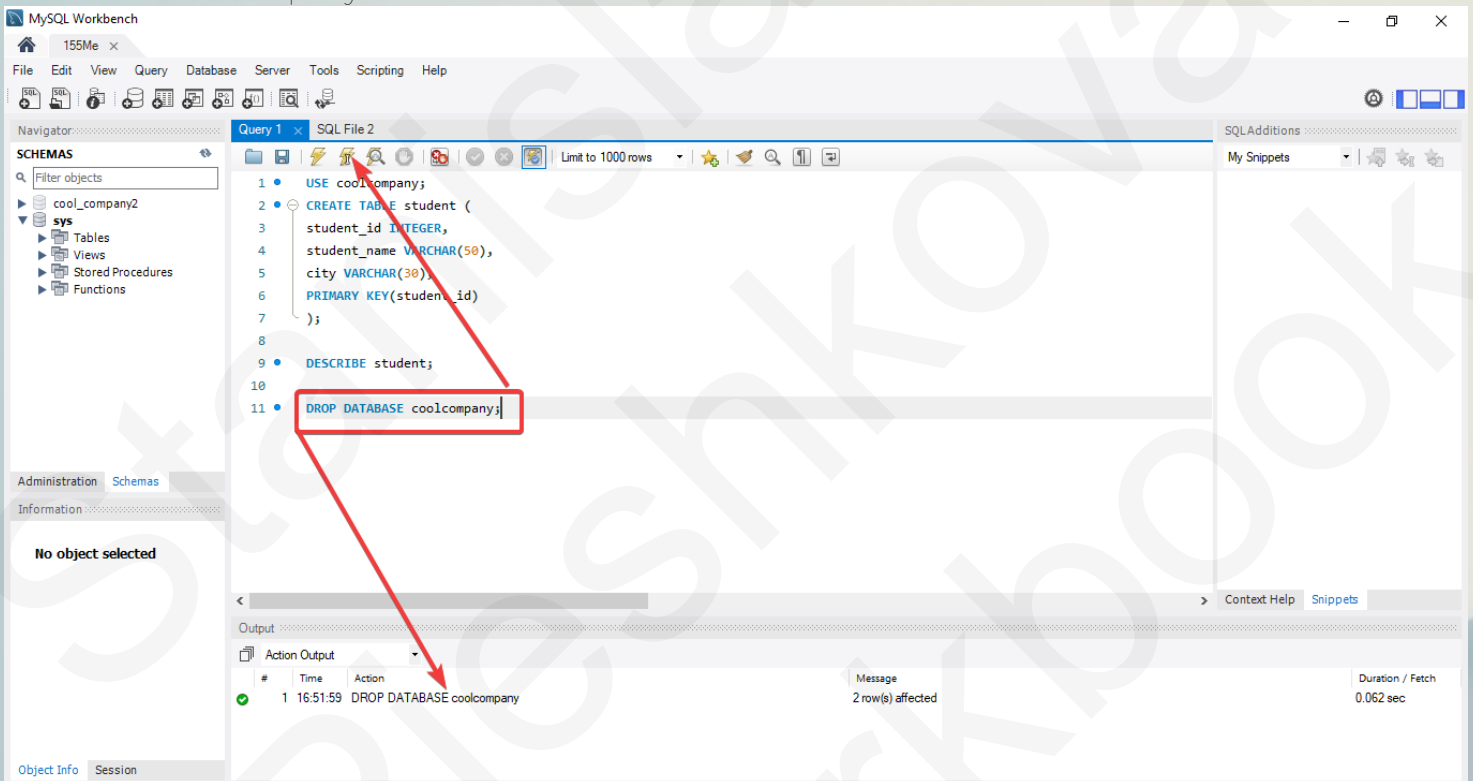


5. Delete a table and database

5.1 Delete the student table from the database.

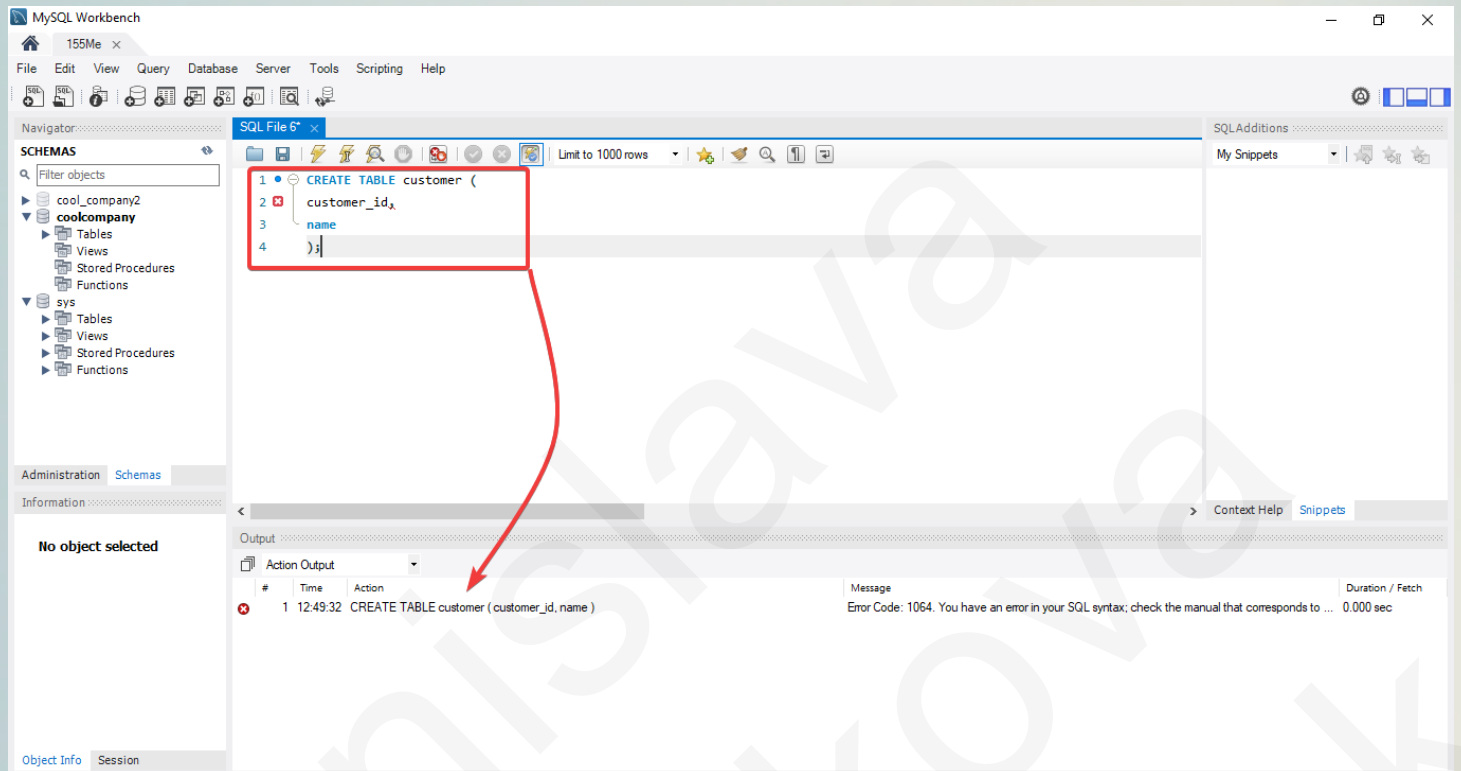


5.2 Delete coolcompany database.



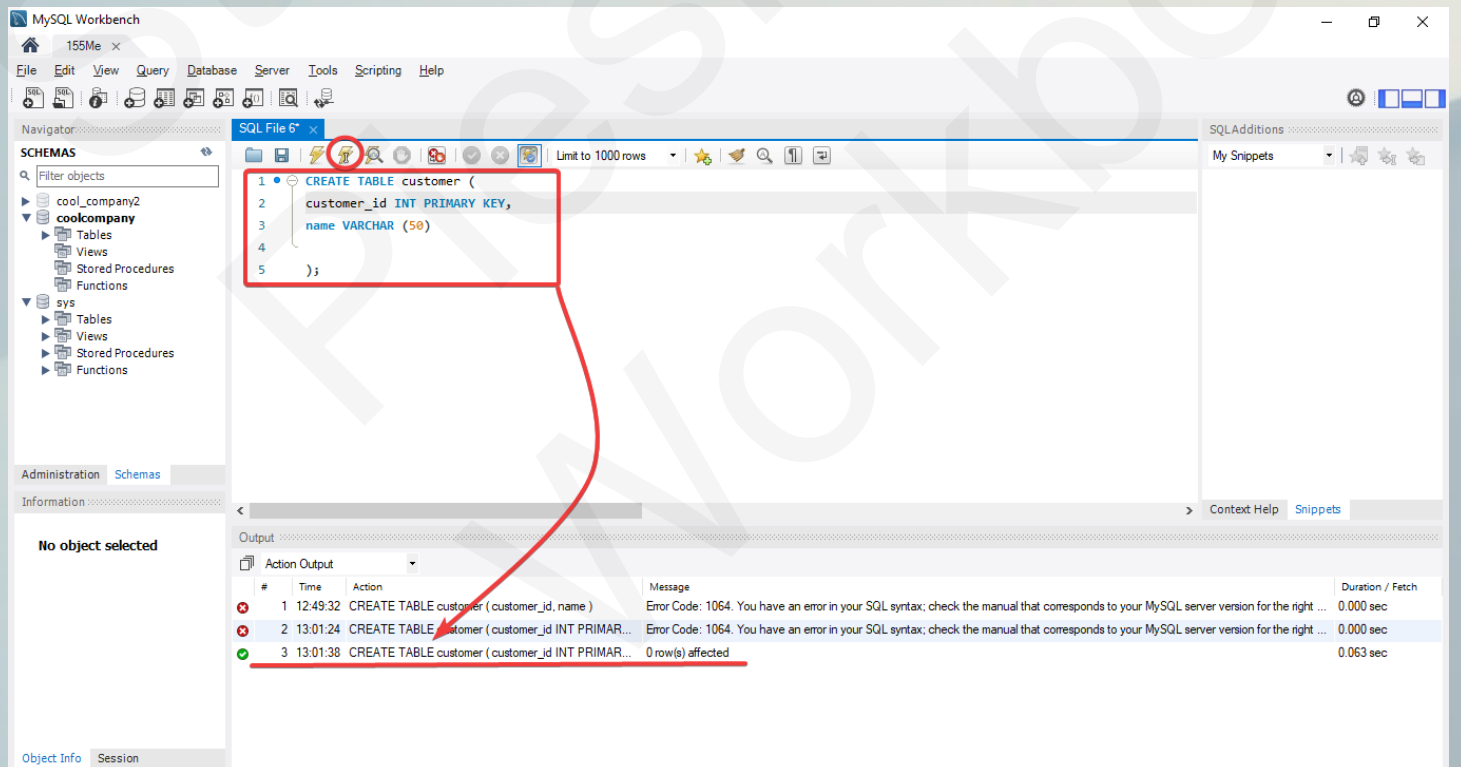
6. Working with data types

6.1 Create a table without specifying a data type.



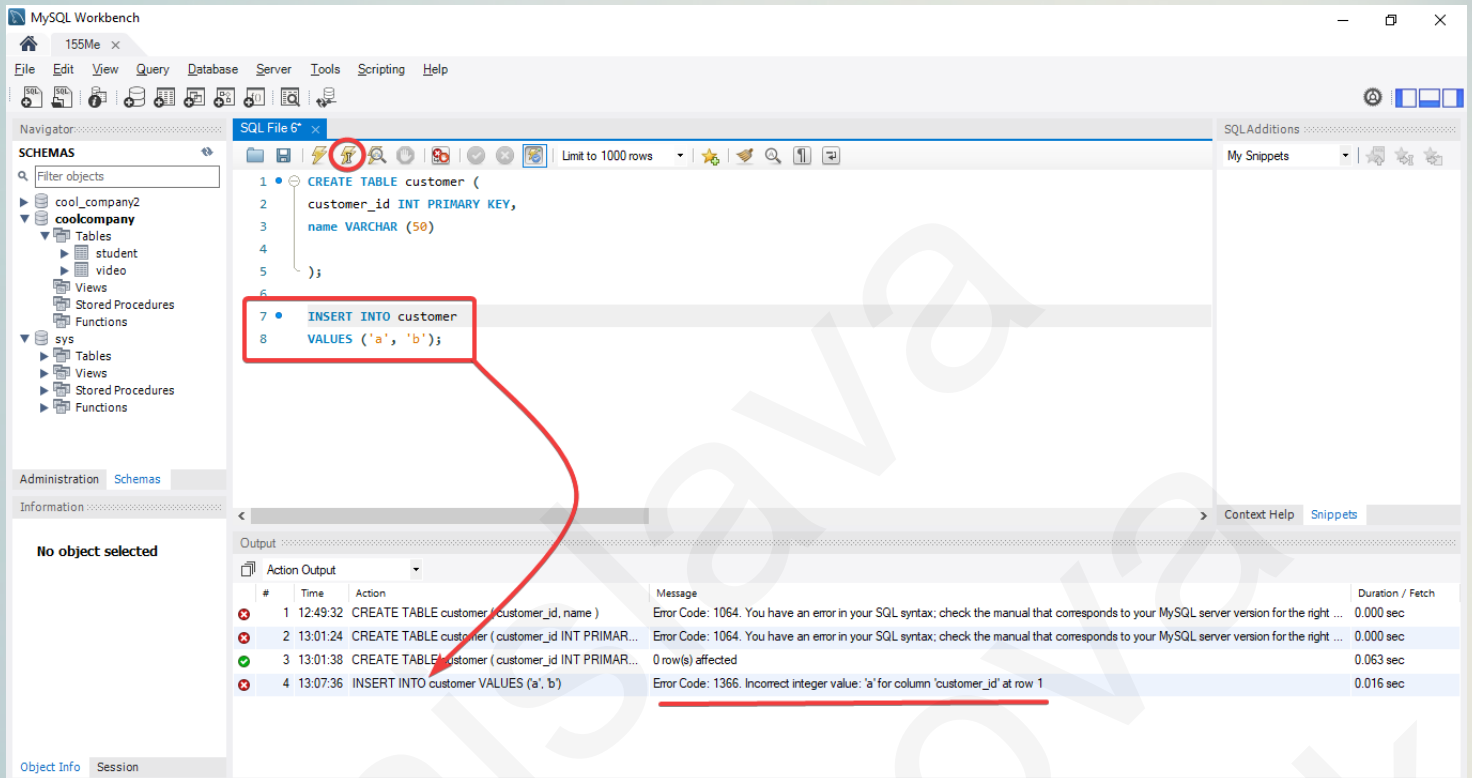
As expected, the system generates an error, because you cannot create a column without specifying the data type of each of them.

6.2 Specify the data types of each column and create a table.



The table was created successfully without errors.

6.3 Add data to the table that does not fit its type.



We get the expected error. After all, you can't insert a text value into a column with an ID (INT type).

6.4 Fill in the table with the appropriate data types. To speed up this process, we use the visual components of MySQL Workbench.

