

**МИНЦИФРЫ РОССИИ
ФЕДЕРАЛЬНОЕ ГОСУДАРСТВЕННОЕ БЮДЖЕТНОЕ
ОБРАЗОВАТЕЛЬНОЕ
УЧРЕЖДЕНИЕ ВЫСШЕГО ОБРАЗОВАНИЯ
«САНКТ-ПЕТЕРБУРГСКИЙ ГОСУДАРСТВЕННЫЙ УНИВЕРСИТЕТ
ТЕЛЕКОММУНИКАЦИЙ ИМ. ПРОФ. М.А. БОНЧ-БРУЕВИЧА»
(СПбГУТ)**

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Дисциплина: Технологии обеспечения информационной безопасности
больших данных

**ОТЧЕТ
ПО ПРАКТИЧЕСКОЙ РАБОТЕ 2**

Направление/специальность подготовки:

10.04.01 Информационная безопасность

(код и наименование направления/специальности)

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Задание

1. Установите СУБД MySQL. Создайте в домашней директории файл `my.cnf`, задав в нем логин и пароль, который указывался при установке.
2. Создайте базу данных `example`, разместите в ней таблицу `users`, состоящую из двух столбцов, числового `id` и строкового `name`.
3. Создайте дампы базы данных `example` из предыдущего задания, разверните содержимое дампа в новую базу данных `sample`.
4. (по желанию) Ознакомьтесь более подробно с документацией утилиты `mysqldump`. Создайте дамп единственной таблицы `help_keyword` базы данных `mysql`. Причем добейтесь того, чтобы дамп содержал только первые 100 строк таблицы.
5. Проанализировать структуру БД для `vk`. Создать структуру: таблицы- пользователи, группы, сообщения, комментарии, активность
6. Добавить необходимую таблицу/таблицы для того, чтобы можно было использовать лайки для медиафайлов, постов и пользователей.
7. Используя сервис <http://filldb.info> или другой по вашему желанию, сгенерировать тестовые данные для всех таблиц, учитывая логику связей. Для всех таблиц, где это имеет смысл, создать не менее 100 строк. Создать локально БД `vk` и загрузить в неё тестовые данные.

Ход выполнения работы

1. Устанавливаем MySQL.

```
vk@vkvm:~$ sudo uname -v
[sudo] password for vk:
#19-Ubuntu SMP Fri May 7 14:22:03 UTC 2021
vk@vkvm:~$ sudo apt-get install mysql-server mysql-client mysql-common
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
The following package was automatically installed and is no longer required:
  net-tools
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  libaio1 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-bin libfcgi-perl libfcgi0ldbl
  libhtml-template-perl libmecab2 libprotobuf-lite23 mecab-ipadic
  mecab-ipadic-utf8 mecab-utils mysql-client-8.0 mysql-client-core-8.0
  mysql-server-8.0 mysql-server-core-8.0
Suggested packages:
  libipc-sharedcache-perl mailx tinyca
The following NEW packages will be installed:
  libaio1 libcgi-fast-perl libcgi-pm-perl libevent-core-2.1-7
  libevent-pthreads-2.1-7 libfcgi-bin libfcgi-perl libfcgi0ldbl
```

Редактируем файл **my.cfg**

```
GNU nano 5.4 /etc/mysql/my.cnf *
#
# The MySQL database server configuration file.
#
# You can copy this to one of:
# - "/etc/mysql/my.cnf" to set global options,
# - "~/.my.cnf" to set user-specific options.
#
# One can use all long options that the program supports.
# Run program with --help to get a list of available options and with
# --print-defaults to see which it would actually understand and use.
#
# For explanations see
# http://dev.mysql.com/doc/mysql/en/server-system-variables.html
#
# * IMPORTANT: Additional settings that can override those from this file!
#   The files must end with '.cnf', otherwise they'll be ignored.
#

!includedir /etc/mysql/conf.d/
!includedir /etc/mysql/mysql.conf.d/
[client]
user=vk
password=zbhjnrbd

bind-address=0.0.0.0
```

Перезагружаем сервис MySQL для применения конфигураций:

```
vk@vkvm:~$ sudo /etc/init.d/mysql restart
Restarting mysql (via systemctl): mysql.service.
```

Проверяем доступ:

```
vk@vkvm:~$ sudo mysql -u vk -p
Enter password:
ERROR 1045 (28000): Access denied for user 'vk'@'localhost' (using password: YES)
```

Создаем пользователя:

```
For server side help, type 'help contents'

mysql>
mysql>
mysql> CREATE USER 'vk'@'localhost' IDENTIFIED by 'zbhjnrbd'
-> ;
Query OK, 0 rows affected (0,36 sec)

mysql>
```

Проверяем доступ

```
vk@vkvm:~$ sudo mysql -u vk -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 15
Server version: 8.0.26-0ubuntu0.21.04.3 (Ubuntu)

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

mysql>
```

Теперь сервис запускается от имени пользователя VK

Посмотрим список доступных баз данных

```
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
+-----+
1 row in set (0,10 sec)
```

Создаем таблицу в БД:

```
mysql> CREATE DATABASE konovalova_db
-> ;
Query OK, 1 row affected (0,00 sec)

mysql>
```

Проверяем создание таблицы:

```
mysql>
mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| information_schema |
| konovalova_db |
| mysql |
| performance_schema |
| sys |
+-----+
5 rows in set (0,01 sec)

mysql>
```


Дадим новому пользователю неограниченные права к созданной базе :

```
mysql>
mysql> GRANT ALL ON konovalova_db.* TO vk@localhost;
Query OK, 0 rows affected (0,00 sec)

mysql>
```

Зайдем в базу данных konovalova_db и добавим таблицу users с полями Id и name.

```
mysql>
mysql> USE konovalova_db;
Database changed
mysql> CREATE TABLE users (id INT, name VARCHAR(30));
Query OK, 0 rows affected (0,12 sec)

mysql> █
```

Создадим дамп базы данных и проверим, что файл дампа появился.

```
vk@vkvm:~$ sudo mysqldump -u root -p konovalova_db > DB_Konovalova
Enter password:
vk@vkvm:~$ ls -l
total 220924
-rw-rw-r-- 1 vk vk 1842 окт 9 01:27 DB_Konovalova
```

```
GNU nano 5.4                                DB Konovalova
-- MySQL dump 10.13  Distrib 8.0.26, for Linux (x86_64)
--
-- Host: localhost      Database: konovalova_db
--
-- Server version        8.0.26-0ubuntu0.21.04.3

/*!40101 SET @OLD_CHARACTER_SET_CLIENT=@@CHARACTER_SET_CLIENT */;
/*!40101 SET @OLD_CHARACTER_SET_RESULTS=@@CHARACTER_SET_RESULTS */;
/*!40101 SET @OLD_COLLATION_CONNECTION=@@COLLATION_CONNECTION */;
/*!50503 SET NAMES utf8mb4 */;
/*!40103 SET @OLD_TIME_ZONE=@@TIME_ZONE */;
/*!40103 SET TIME_ZONE='+00:00' */;
/*!40014 SET @OLD_UNIQUE_CHECKS=@@UNIQUE_CHECKS, UNIQUE_CHECKS=0 */;
/*!40014 SET @OLD_FOREIGN_KEY_CHECKS=@@FOREIGN_KEY_CHECKS, FOREIGN_KEY_CHECKS=0 */;
/*!40101 SET @OLD_SQL_MODE=@@SQL_MODE, SQL_MODE='NO_AUTO_VALUE_ON_ZERO' */;
/*!40111 SET @OLD_SQL_NOTES=@@SQL_NOTES, SQL_NOTES=0 */;

--
-- Table structure for table `users`
--

DROP TABLE IF EXISTS `users`;
/*!40101 SET @saved_cs_client      = @@character_set_client */;
/*!50503 SET character_set_client = utf8mb4 */;
CREATE TABLE `users` (
  `id` int DEFAULT NULL,
  `name` varchar(30) DEFAULT NULL
) ENGINE=InnoDB DEFAULT CHARSET=utf8mb4 COLLATE=utf8mb4_0900_ai_ci;
/*!40101 SET character_set_client = @saved_cs_client */;

--
-- Dumping data for table `users`
--

LOCK TABLES `users` WRITE;
/*!40000 ALTER TABLE `users` DISABLE KEYS */;
/*!40000 ALTER TABLE `users` ENABLE KEYS */;
UNLOCK TABLES;
/*!40103 SET TIME_ZONE=@OLD_TIME_ZONE */;

/*!40101 SET SQL_MODE=@OLD_SQL_MODE */;
```

Создадим базу данных, восстановим в нее базу данных из дампа и проверим, что все получилось.

```

vk@vkv:~$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 22
Server version: 8.0.26-0ubuntu0.21.04.3 (Ubuntu)

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

mysql> CREATE DATABASE dump_db;
Query OK, 1 row affected (0,01 sec)

mysql> SHOW DATABASES;
+-----+
| Database |
+-----+
| dump_db  |
| information_schema |
| konovalova_db |
| mysql    |
| performance_schema |
| sys      |
+-----+
6 rows in set (0,00 sec)

mysql>

```

```

mysql> GRANT ALL ON dump_db.* TO vk@localhost;
Query OK, 0 rows affected (0,00 sec)

```

```

vk@vkv:~$ sudo mysql dump_db < DB_Konovalova
vk@vkv:~$ sudo mysql -u root -p
Enter password:
Welcome to the MySQL monitor.  Commands end with ; or \g.
Your MySQL connection id is 28
Server version: 8.0.26-0ubuntu0.21.04.3 (Ubuntu)

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

mysql> USE dump_db;
Reading table information for completion of table and column names
You can turn off this feature to get a quicker startup with -A

Database changed
mysql> SHOW tables;
+-----+
| Tables_in_dump_db |
+-----+
| users              |
+-----+
1 row in set (0,00 sec)

mysql>

```

Сделаем дам из первых 100 строк таблицы help_keyword базы данных mysql.

```

vk@vkv:~$ sudo mysqldump -u root -p -w "true limit 100" mysql help_keyword > help_keyword_dump
Enter password:
vk@vkv:~$

```

Создадим базу данных VK. В созданной базе создадим набор таблиц и параметров в таблицах. Затем создадим дамп базы данных.


```

mysql> CREATE DATABASE vk_db;
Query OK, 1 row affected (0.03 sec)

mysql> USE vk_db;
Database changed
mysql> CREATE TABLE users (id INT, Name VARCHAR(30), Surname VARCHAR(35), e-mail VARCHAR(45), last_active TIMESTAMP);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'e-mail VARCHAR(45), las
t_active TIMESTAMP' at line 1
mysql> CREATE TABLE community_group (id INT, Name VARCHAR(30), Number_records INT(20), Number_likes INT(30), Number_sub INT(20));
Query OK, 0 rows affected, 3 warnings (2.09 sec)

mysql> CREATE TABLE message (id INT, sender_id INT, Destination_id INT, time DATETIME);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near 'time DATETIME' at line 1
mysql> CREATE TABLE message (id INT, sender_id INT, Destination_id INT, time DATETIME);
Query OK, 0 rows affected (0.30 sec)

mysql> CREATE TABLE comments (id INT, sender_id INT, comment VARCHAR(150), time DATETIME);
Query OK, 0 rows affected (0.37 sec)

mysql>
mysql> CREATE TABLE likes (id INT, sender_id INT, destination_id, time DATETIME);
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server version for the right syntax to use near ', time DATETIME' at line 1
mysql> CREATE TABLE likes (id INT, sender_id INT, destination_id INT, time DATETIME);
Query OK, 0 rows affected (0.02 sec)

mysql>

```

На сайт <http://filldb.info> импортируем дамп, подберем и сгенерируем данные, экспортируем заполненную базу данных.

Final Step: Export Database

1. Database structure → 2. Generate data → 3. Export database

Step 3 - Export Database

Table	Rows	Options
likes	100	View Data JSON CSV
message	100	View Data JSON CSV
users	100	View Data JSON CSV
comments	100	View Data JSON CSV
community_group	100	View Data JSON CSV

Do you like this project? A small \$5 donation will keep it free for everyone.

Export Database Export 2 (Beta) Export as Zip Archive

Загрузим импортированную базу данных и заполним ей локальную базу данных.

```

vk@vkvm:~$ sudo mysql -u root -p vk_db < fulldb09-10-2021\ 13-01.sql
[sudo] password for vk:
Enter password:

```

```
Database changed
mysql> SELECT * FROM users;
```

id	Name	Surname	email	last_active
4	Tremaine	Wisozk	tara.nolan@example.org	2013-06-28 12:06:35
6	Timmy	Corkery	isom.ziemann@example.net	1988-11-26 03:10:19
2	Larry	Kovacek	belle.zboncak@example.net	1999-12-14 12:31:59
1	Anastacio	Weber	sylvan.king@example.org	1993-08-25 16:11:49
5	Koby	McLaughlin	amy.schulist@example.com	1978-04-07 14:32:53
3	Celestino	Kozey	rigoberto.bechtelar@example.org	1981-02-26 19:15:24
5	Dane	Lubowitz	jbeer@example.org	1981-01-21 15:27:47
4	Alden	Mertz	funk.jewel@example.org	1978-06-05 11:11:00
7	Dante	Dach	unique.monahan@example.com	2008-07-08 22:50:41
8	Osborne	Weissnat	erich.bayer@example.net	2019-05-04 08:25:50
9	Trace	Volkman	cheidenreich@example.net	2019-03-15 16:44:53

```
11 rows in set (0,00 sec)

mysql>
```

```
mysql> SELECT * FROM comments;
```

id	sender_id	comment	time
5	8	I could say if I would talk on such a thing as "I get what I used to it in with the strange creatures of her sharp little chin. "I've a right to grow	197
7	4	House, sharply and very soon had to run back into the teapot. "At any rate a book of rules for shutting people up like telescopes; this time she found	197
8	3	Hock turtle in a long, low hall, which was full of tears, "I do wish I could not join the dance?" "Thank you, sir, for your walk!" "Coming in a mourn	197
5	4	House to Alice again. "No, I give it up," Alice replied: 'what's the answer?' "I haven't the least notice of them can explain it," said Alice. "Exactl	197
2	7	Gryphon. "Of course," the Dodo had paused as if she had made the whole thing, and she did not appear, and after a minute or two sobb	197
4	2	Take your choice!" The Duchess took her choice, and was going to turn into a pig, my dear," said Alice, who felt very glad to find herself still in ex	197
8	4	Harch Hare. "I didn't write it, and finding it very much," said Alice; 'but a grin without a great interest in questions of eating and drinking. "They	197
5	7	Footman, and began whistling. "Oh, there's no room at all the other side will make you a song?" "Oh, a song, please, if the Queen merely remarking tha	197
3	5	At last the Caterpillar angrily, rearing itself upright as it spoke (it was still, I fancy-who's to go nearer till she fancied she heard a little tim	197
5	7	Gryphon replied rather crossly: "Of course you know the song, 'I'd have said to the confused clamour of the moment she appeared on the hearth and grin	197
7	4	Dodo, 'the best way you have just been picked up.' "What's in it?" said the youth, 'and your jaws are too weak for anything tougher than suet; Yet you	197
5	9	My notion was that she was now more than Alice could hardly hear the name of nearly everything there. "That's the first day," said the matter and the	197
8	5	Gryphon, and all that," he said in an angry tone, 'Why, Mary Ann, and be turned out of the trees upon her arm, that it might appear to others that wha	197
3	9	There ought to be true! If she should chance to be told so. "It's really dreadful," she muttered to herself, 'in my going out altogether, like a thun	197

Вывод: в данной лабораторной работе была изучена система управления базами данных MySQL, а также утилита mysqldump.