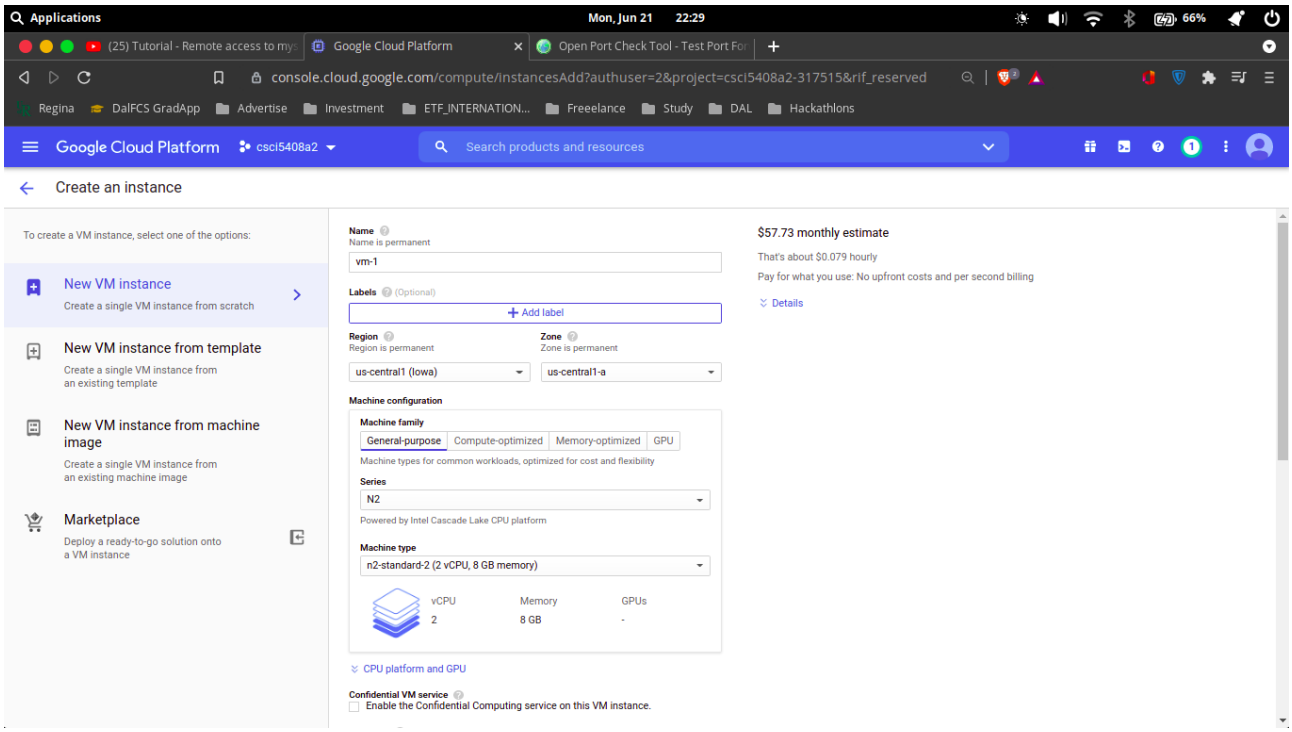
CSCI 5408 DATA MANAGEMENT AND WAREHOUSING
ASSIGNMENT – 2

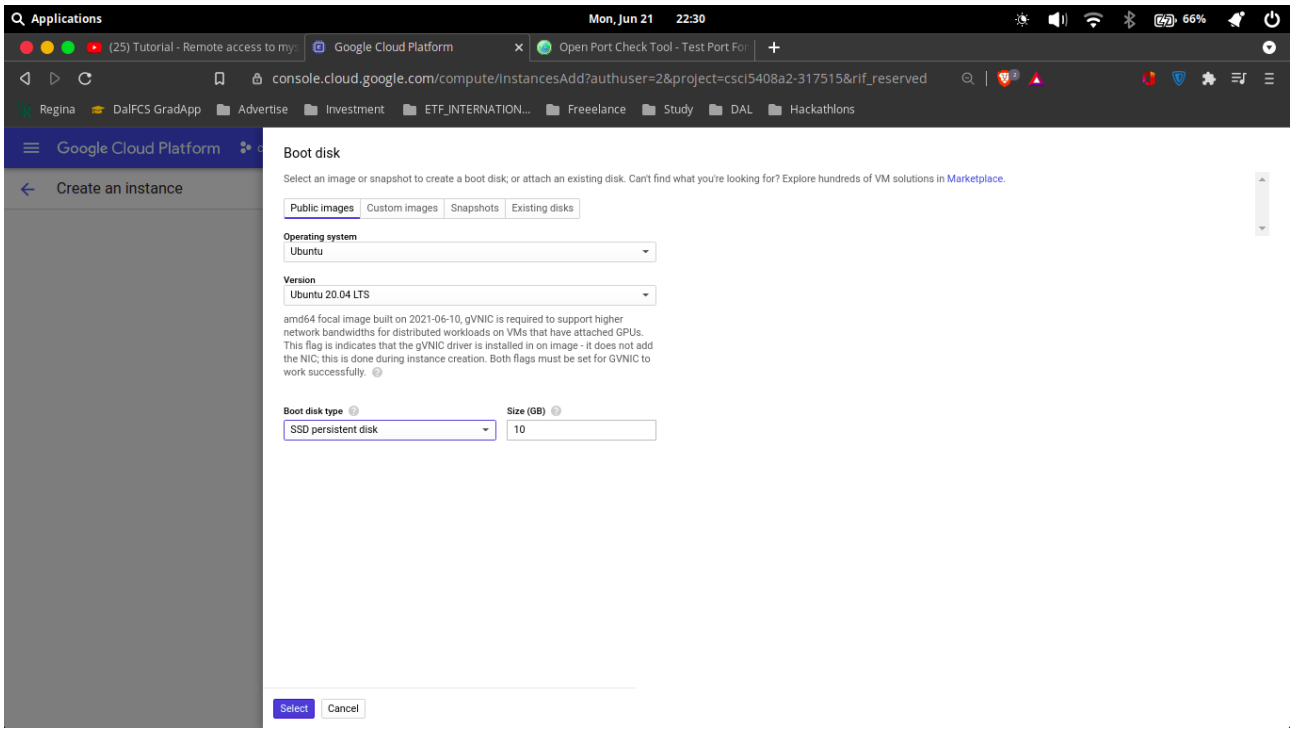
SUBMITTED TO: PROF. SAURABH DEY

SUBMITTED BY:
DHRUV DOSHI
B00883311

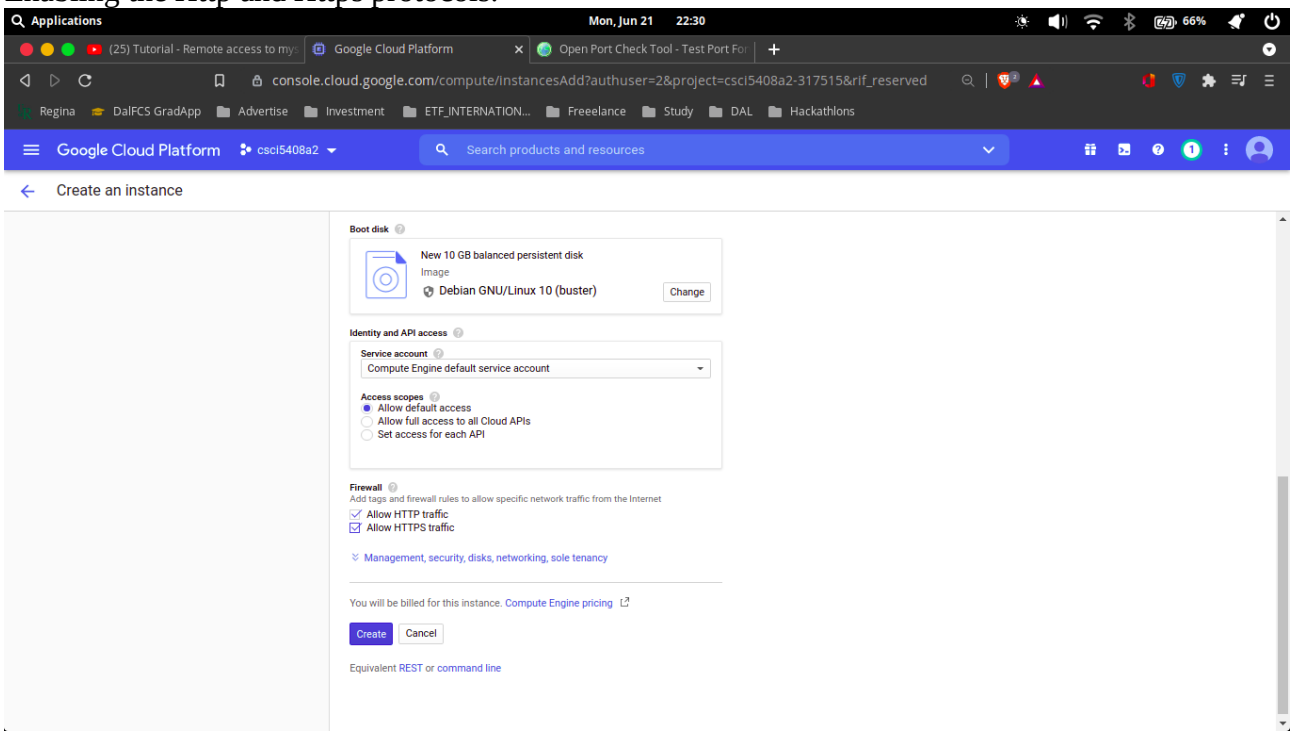
Starting the VM Instance:



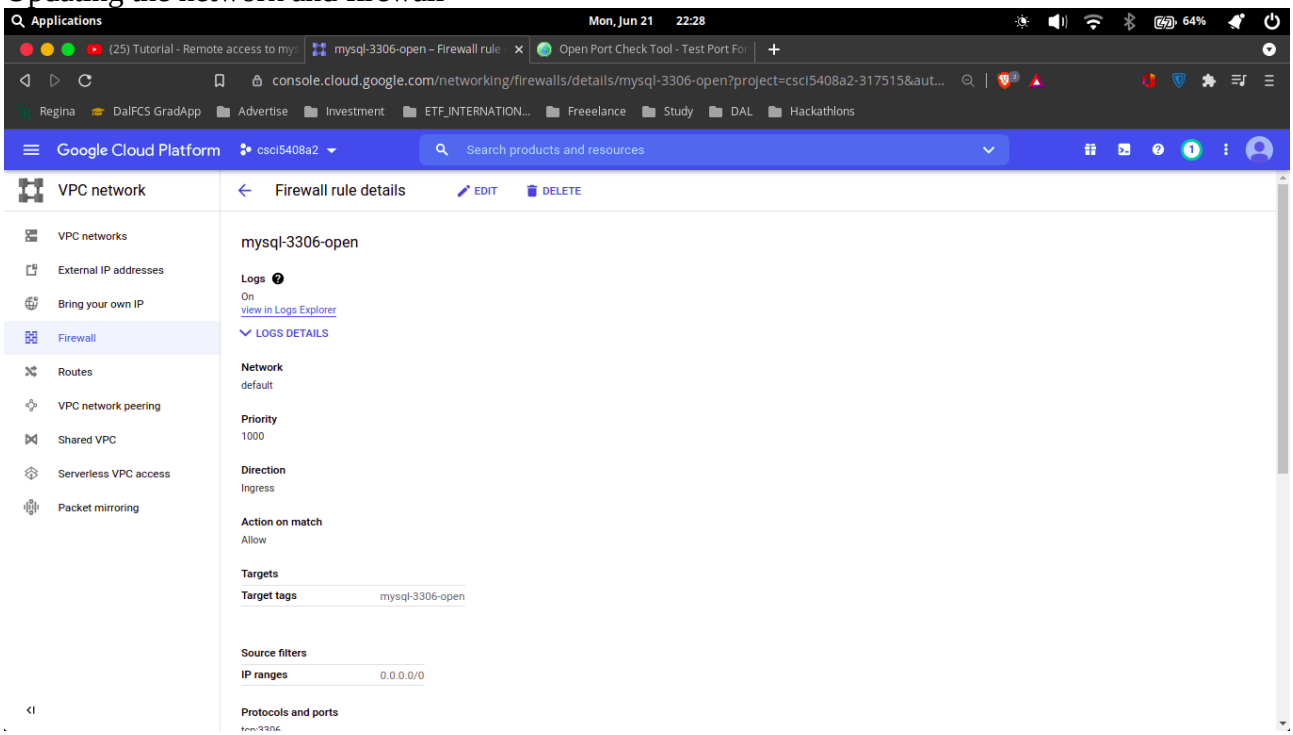
Choosing the Disk:



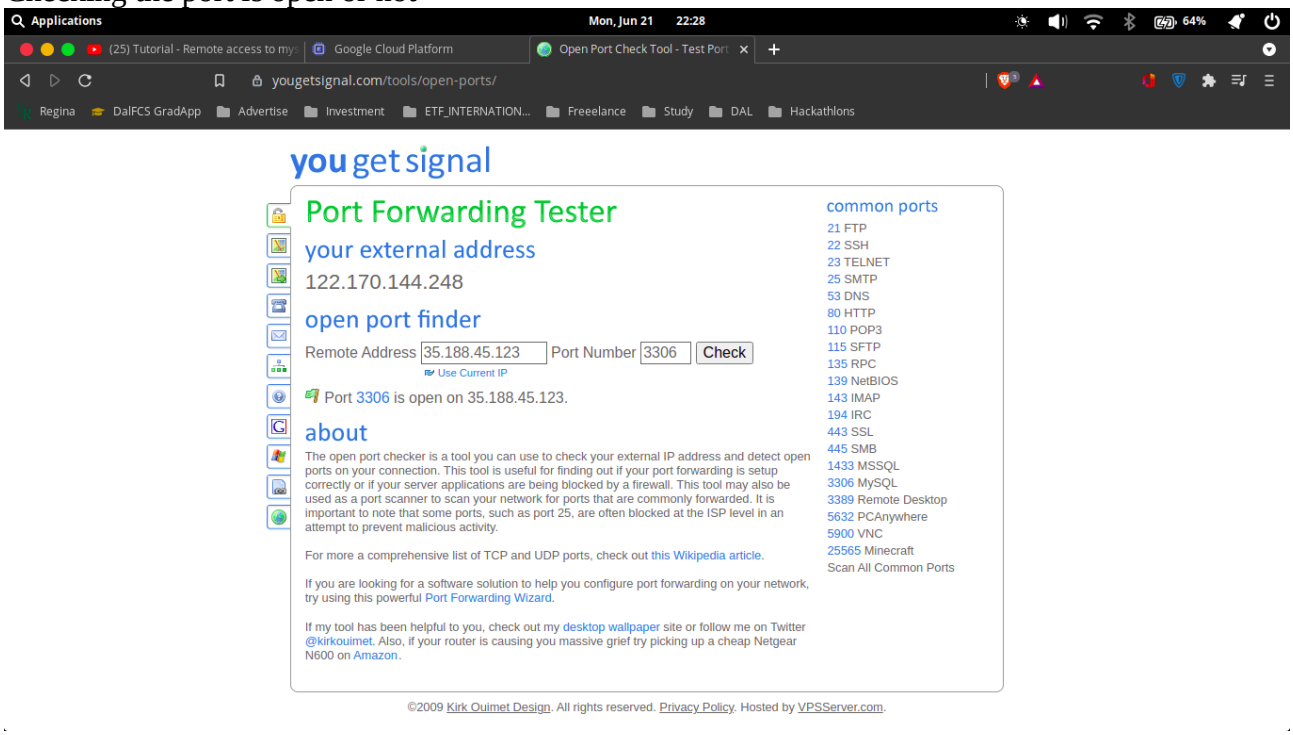
Enabling the Http and Https protocols:



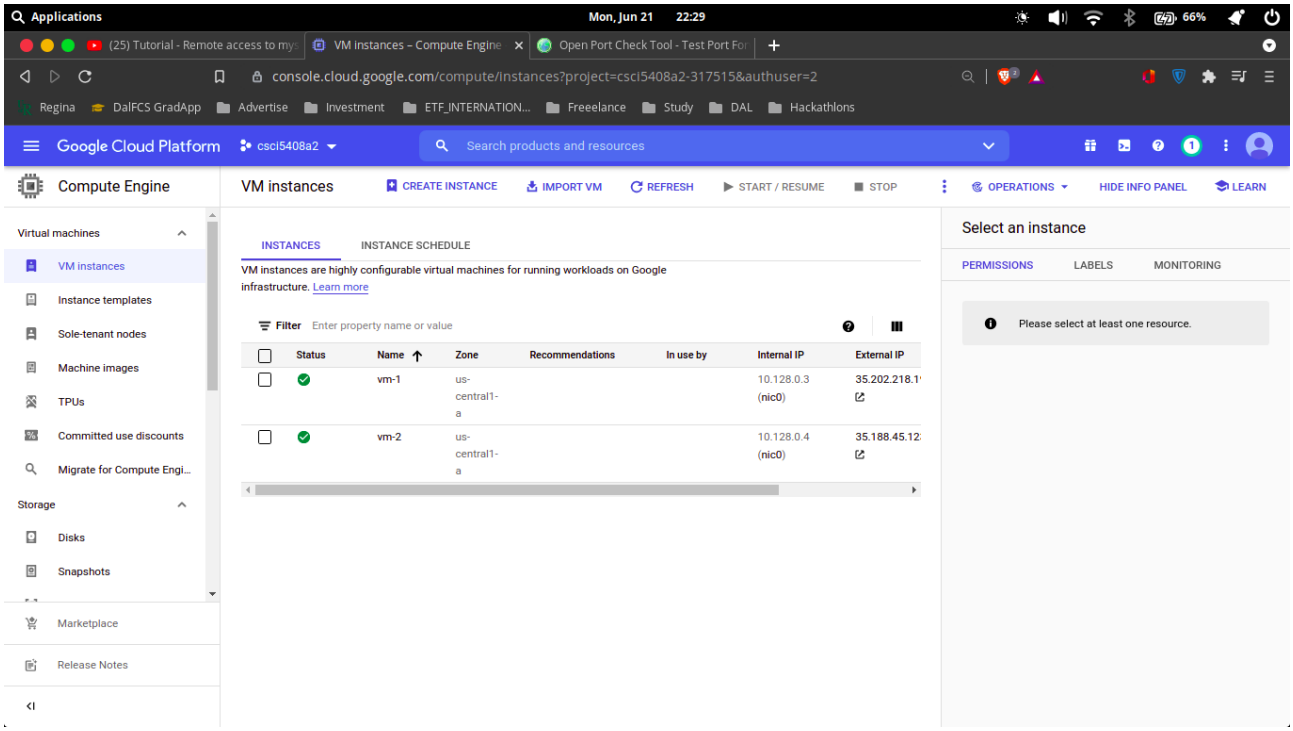
Updating the network and firewall



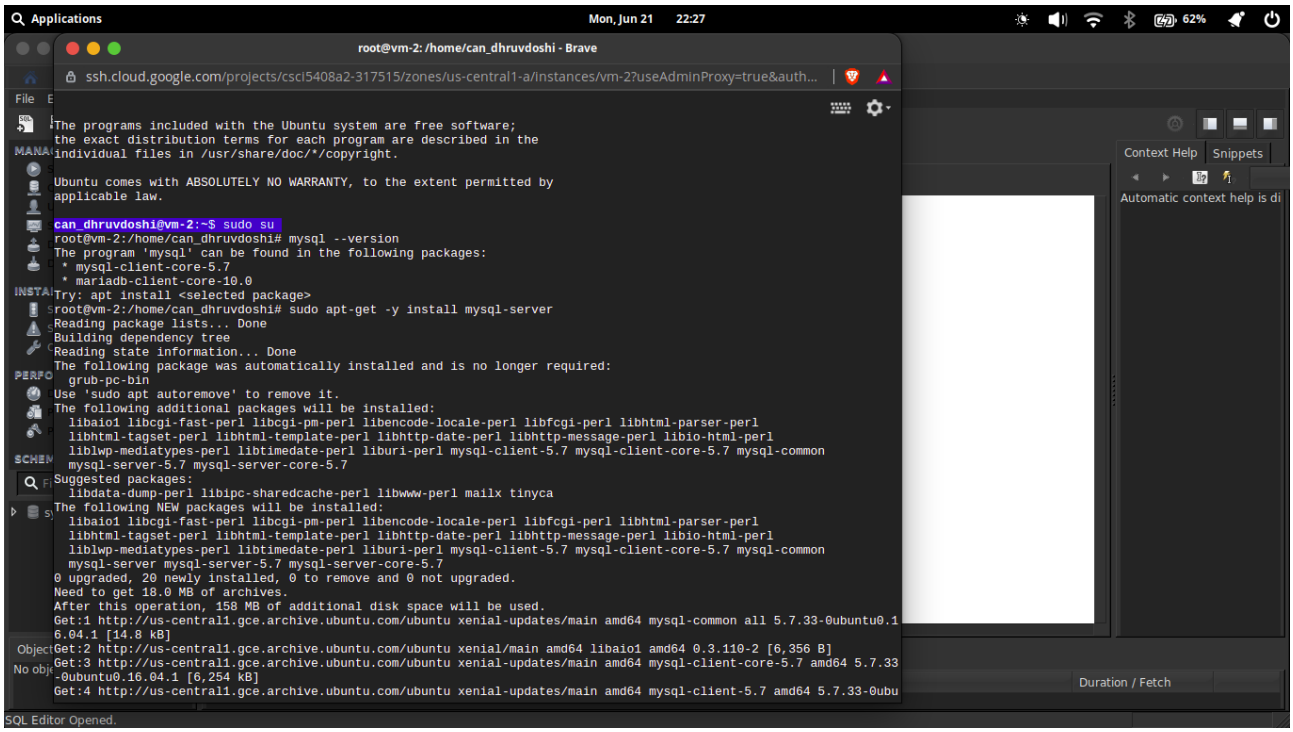
Checking the port is open or not



Final VM instances:



SSH Shell


Applications
Mon, Jun 21 22:27
62%
root@vm-2: /home/can_dhruvdoshi - Brave
ssh.cloud.google.com/projects/csci5408a2-317515/zones/us-central1-a/instances/vm-2?useAdminProxy=true&auth...
The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.
Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
can_dhruvdoshi@vm-2:~$ sudo su
root@vm-2:/home/can_dhruvdoshi# mysql --version
The program 'mysql' can be found in the following packages:
* mysql-client-core-5.7
* mariadb-client-core-10.0
Try: apt install <selected package>
root@vm-2:/home/can_dhruvdoshi# sudo apt-get -y install mysql-server
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following package was automatically installed and is no longer required:
grub-pc-bin
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
libaio1 libcgi-fast-perl libcgi-pm-perl libencode-locale-perl libfcgi-perl libhtml-parser-perl
libhtml-tagset-perl libhtml-template-perl libhttp-date-perl libhttp-message-perl libio-html-perl
liblwp-mediatypes-perl libtimedate-perl liburi-perl mysql-client-5.7 mysql-client-core-5.7 mysql-common
mysql-server-5.7 mysql-server-core-5.7
Suggested packages:
libdata-dump-perl libipc-sharedcache-perl libwww-perl mailx tinyca
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Get:2 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial/main amd64 libaio1 amd64 0.3.110-2 [6,356 B]
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Snippets
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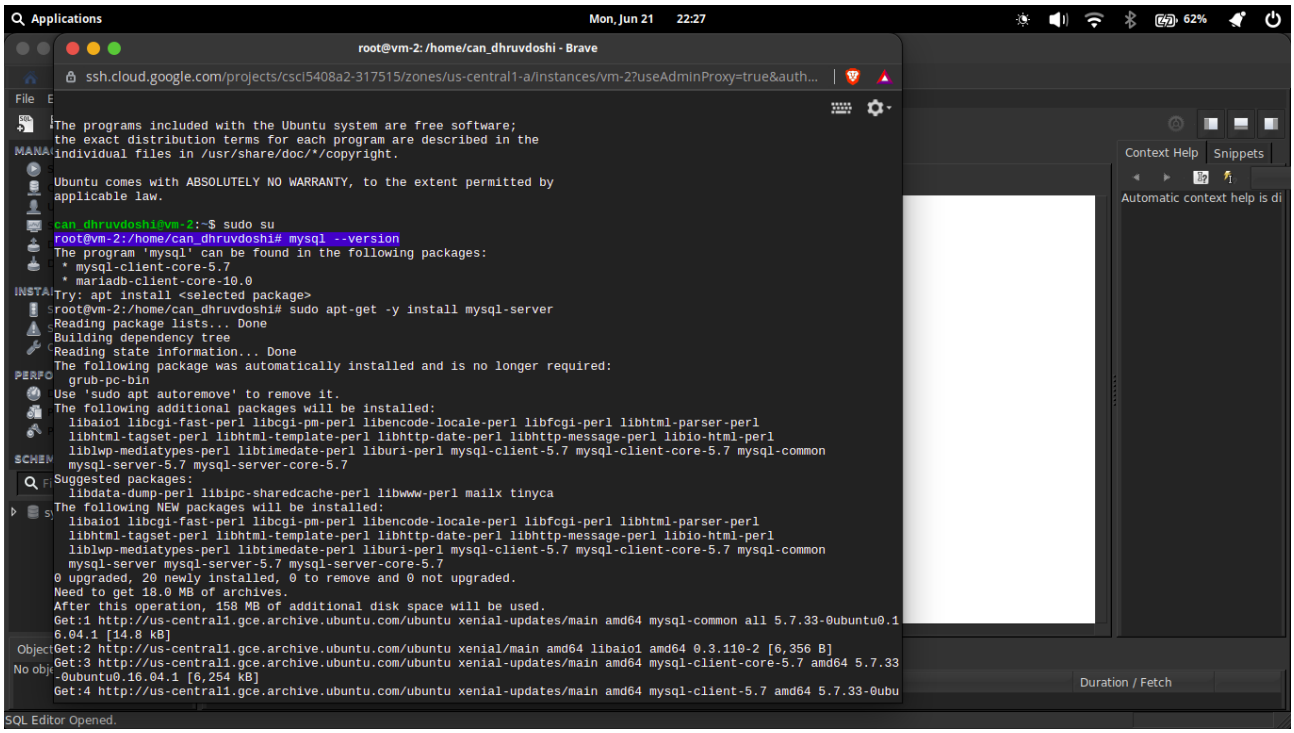
SQL Editor Opened.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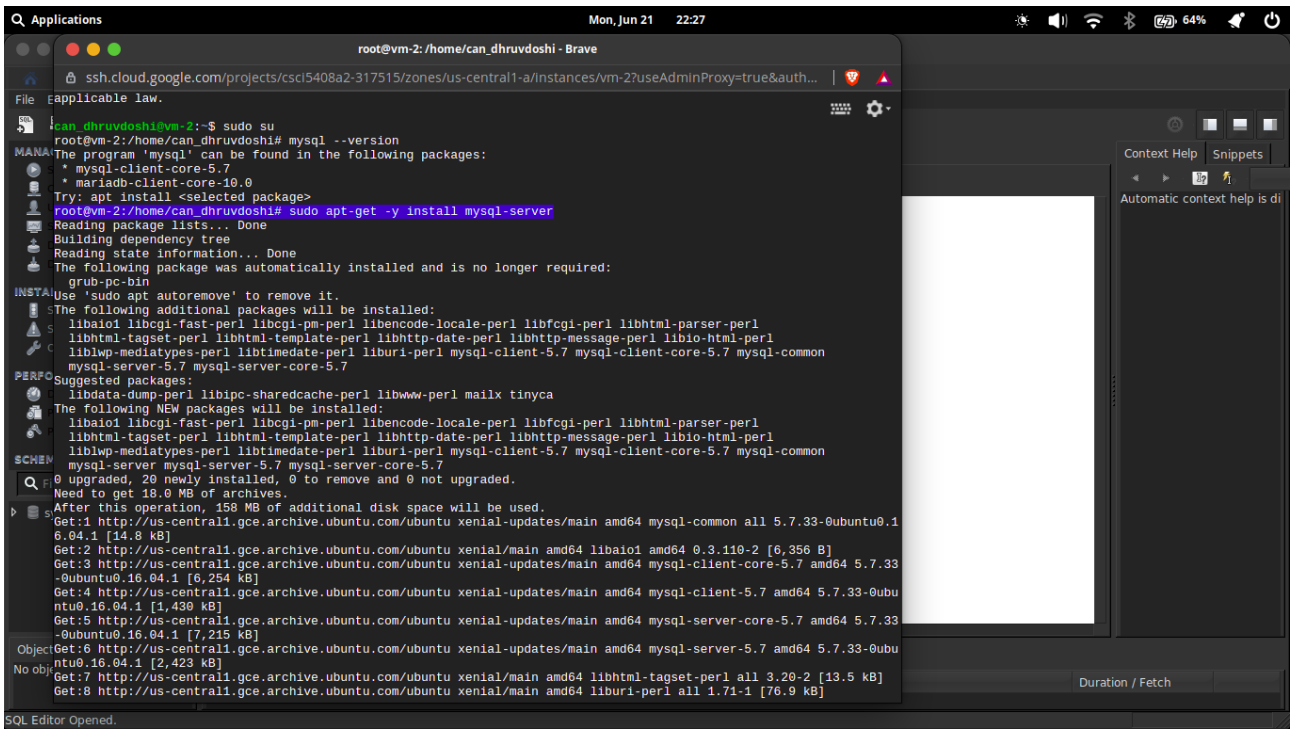
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Get:5 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-updates/main amd64 mysql-server-core-5.7 amd64 5.7.33-0ubuntu0.16.04.1 [7,215 kB]
Get:6 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial-updates/main amd64 mysql-server-5.7 amd64 5.7.33-0ubuntu0.16.04.1 [2,423 kB]
Get:7 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial/main amd64 libhtml-tagset-perl all 3.20-2 [13.5 kB]
Get:8 http://us-central1.gce.archive.ubuntu.com/ubuntu xenial/main amd64 liburi-perl all 1.71-1 [76.9 kB]
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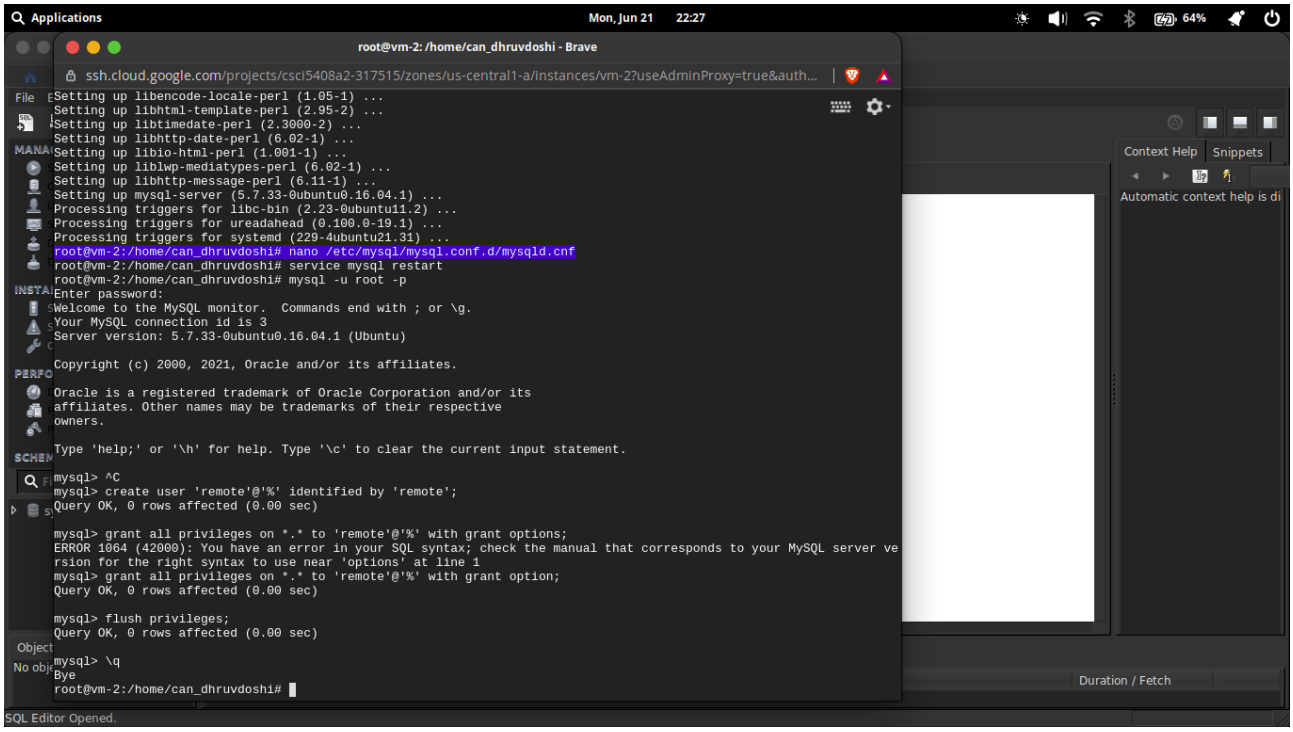
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Setting up libencode-locale-perl (1.05-1) ...
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Setting up libtimedate-perl (2.3000-2) ...
Setting up libhttp-date-perl (6.02-1) ...
Setting up libio-html-perl (1.001-1) ...
Setting up liblwp-mediatypes-perl (6.02-1) ...
Setting up libhttp-message-perl (6.11-1) ...
Setting up mysql-server (5.7.33-0ubuntu0.16.04.1) ...
Processing triggers for libc-bin (2.23-0ubuntu11.2) ...
Processing triggers for ureadahead (0.100.0-19.1) ...
Processing triggers for systemd (229-4ubuntu21.31) ...
root@vm-2:/home/can_dhruvdoshi# nano /etc/mysql/mysql.conf.d/mysqld.cnf
root@vm-2:/home/can_dhruvdoshi# service mysql restart
root@vm-2:/home/can_dhruvdoshi# mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.7.33-0ubuntu0.16.04.1 (Ubuntu)
Copyright (c) 2000, 2021, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or its
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> ^C
mysql> create user 'remote'@'%' identified by 'remote';
Query OK, 0 rows affected (0.00 sec)
mysql> grant all privileges on *.* to 'remote'@'%' with grant options;
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 'options' at line 1
mysql> grant all privileges on *.* to 'remote'@'%' with grant option;
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mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)
mysql> \q
Bye
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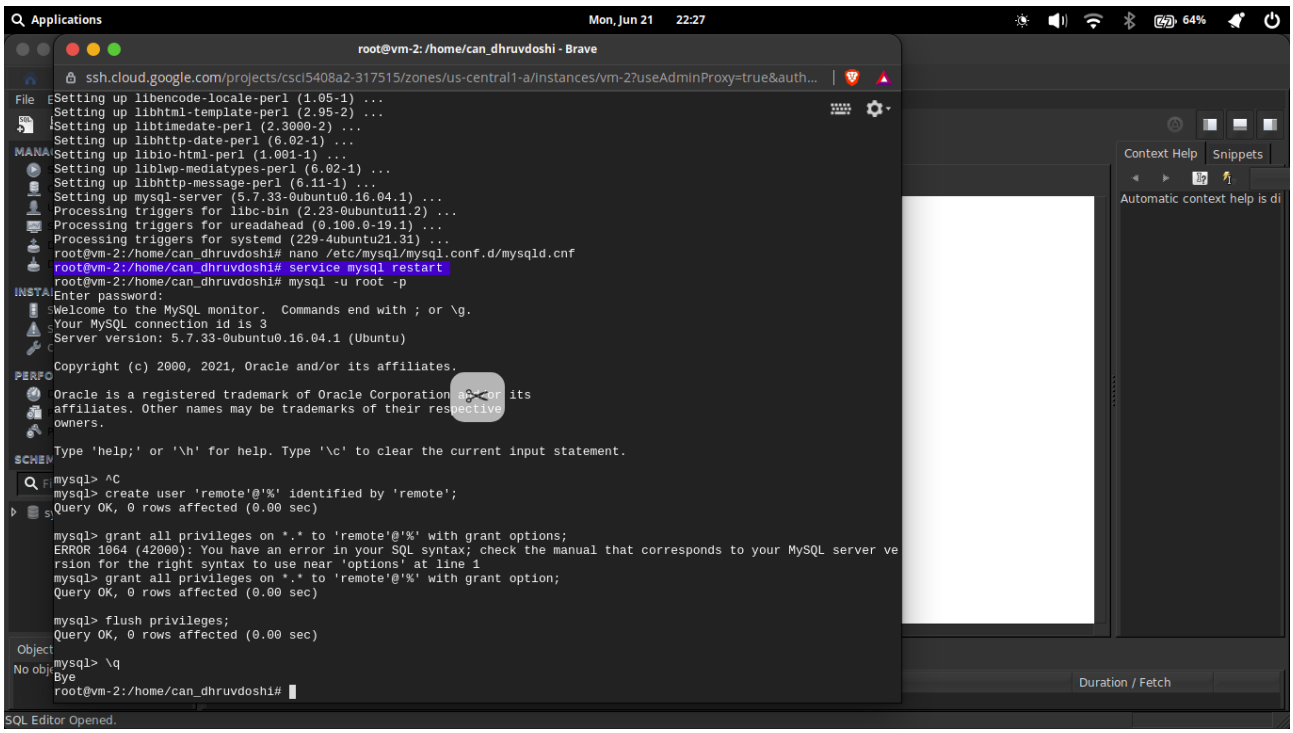
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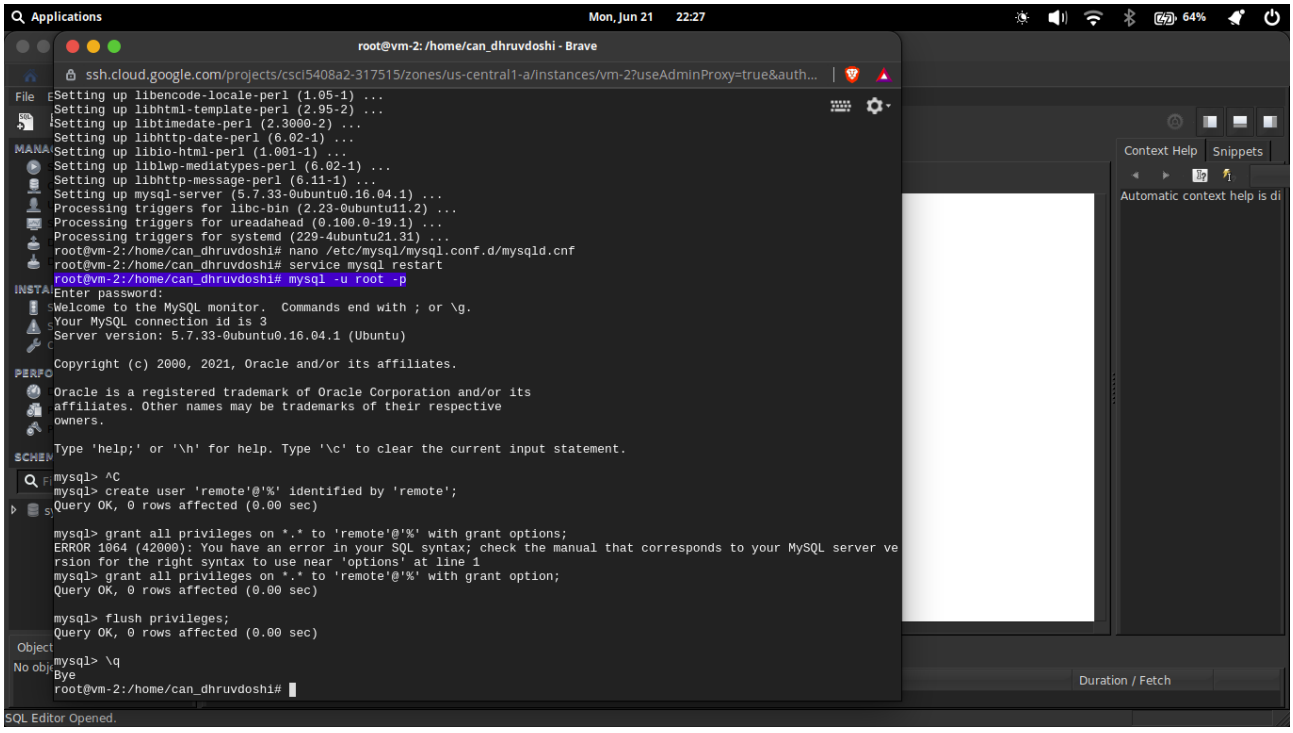
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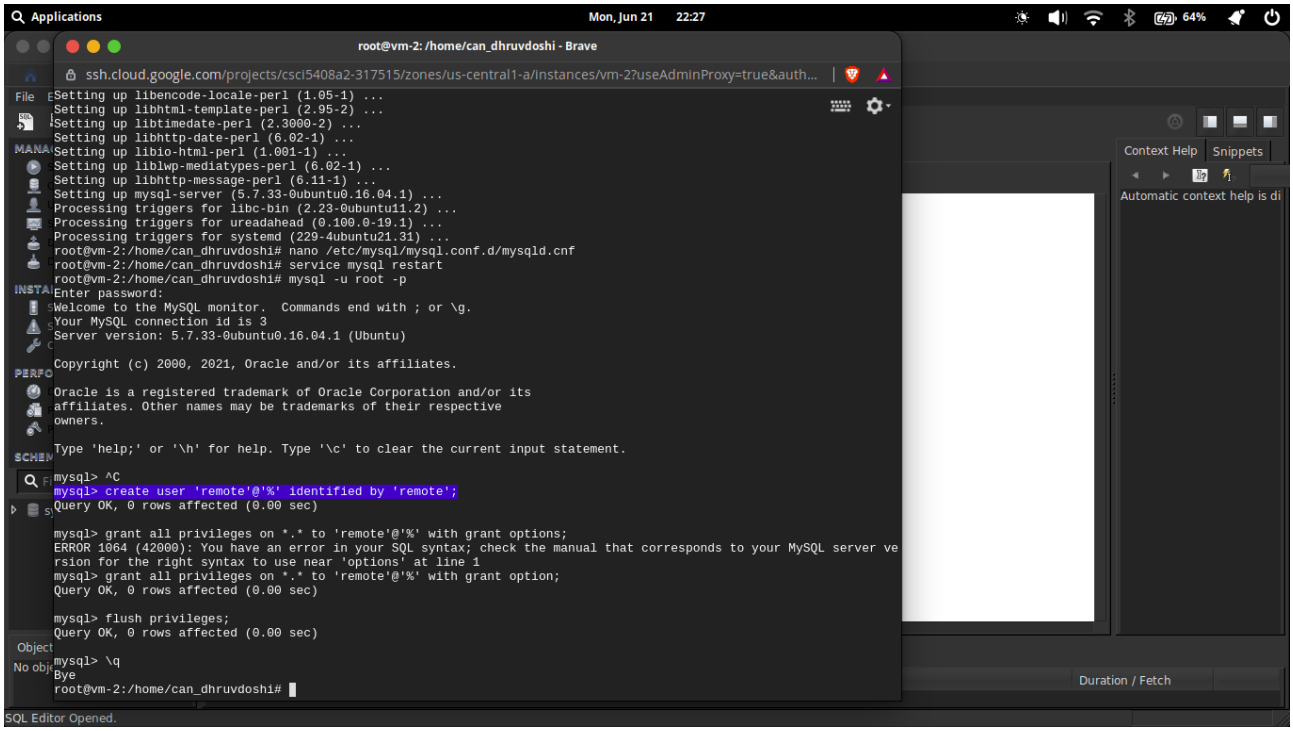
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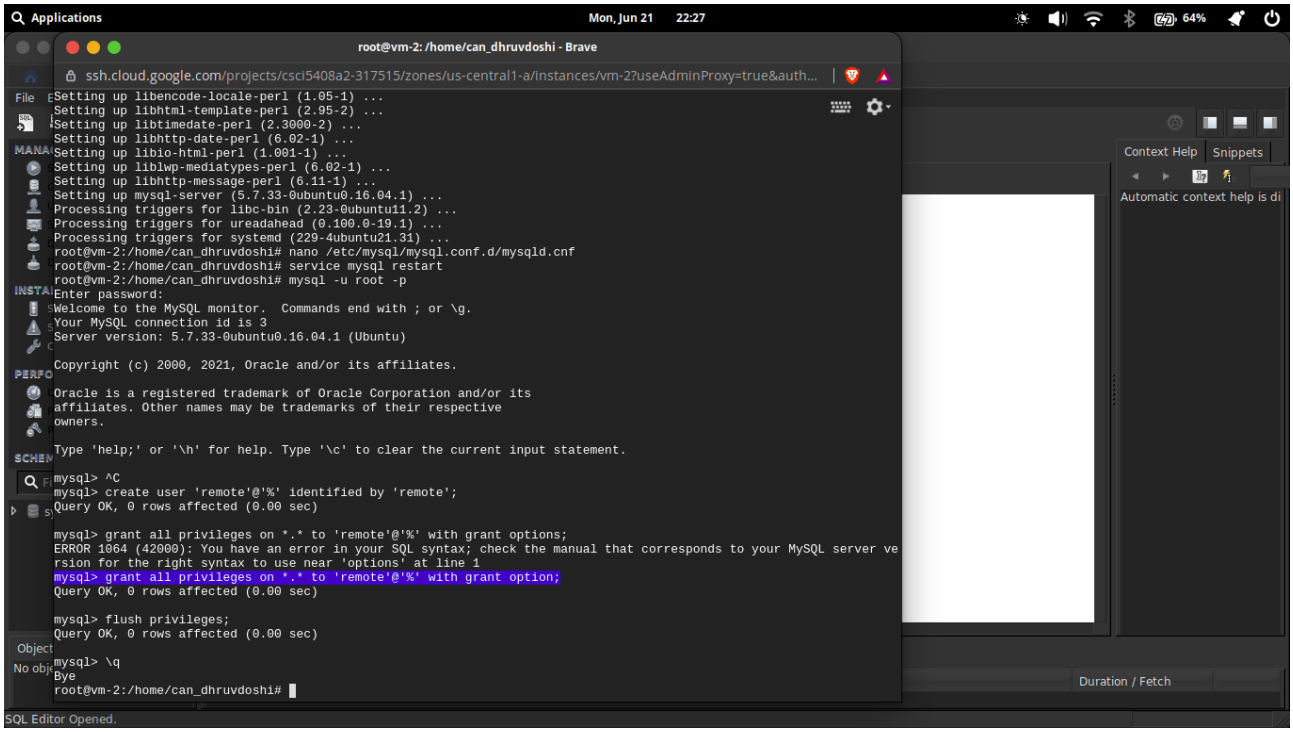
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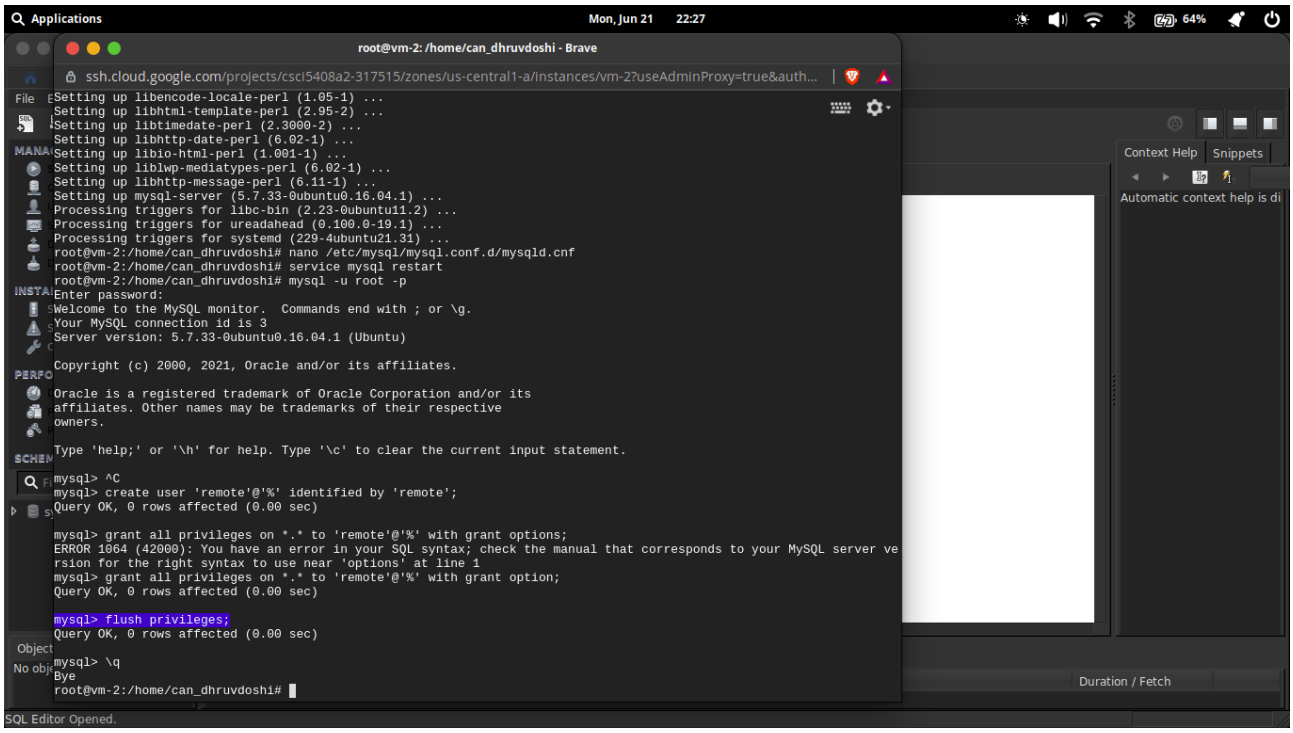
Setting up mysql-server (5.7.33-0ubuntu0.16.04.1) ...
Processing triggers for libc-bin (2.23-0ubuntu11.2) ...
Processing triggers for ureadahead (0.100.0-19.1) ...
Processing triggers for systemd (229-4ubuntu21.31) ...
root@vm-2:/home/can_dhruvdoshi# nano /etc/mysql/mysql.conf.d/mysqld.cnf
root@vm-2:/home/can_dhruvdoshi# service mysql restart
root@vm-2:/home/can_dhruvdoshi# mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.7.33-0ubuntu0.16.04.1 (Ubuntu)
Copyright (c) 2000, 2021, Oracle and/or its affiliates.
Oracle is a registered trademark of Oracle Corporation and/or its
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> ^C
mysql> create user 'remote'@'%' identified by 'remote';
Query OK, 0 rows affected (0.00 sec)
mysql> grant all privileges on *.* to 'remote'@'%' with grant options;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server ve
rsion for the right syntax to use near 'options' at line 1
mysql> grant all privileges on *.* to 'remote'@'%' with grant option;
Query OK, 0 rows affected (0.00 sec)
mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)
mysql> \q
Bye
root@vm-2:/home/can_dhruvdoshi#
Context Help
Snippets
Automatic context help is di
Duration / Fetch
SQL Editor Opened.


Applications
Mon, Jun 21 22:27
64%
root@vm-2: /home/can_dhruvdoshi - Brave
ssh.cloud.google.com/projects/csci5408a2-317515/zones/us-central1-a/instances/vm-2?useAdminProxy=true&auth...
Setting up libencode-locale-perl (1.05-1) ...
Setting up libhtml-template-perl (2.95-2) ...
Setting up libtimedate-perl (2.3000-2) ...
Setting up libhttp-date-perl (6.02-1) ...
Setting up libio-html-perl (1.001-1) ...
Setting up liblwp-mediatypes-perl (6.02-1) ...
Setting up libhttp-message-perl (6.11-1) ...
Setting up mysql-server (5.7.33-0ubuntu0.16.04.1) ...
Processing triggers for libc-bin (2.23-0ubuntu11.2) ...
Processing triggers for ureadahead (0.100.0-19.1) ...
Processing triggers for systemd (229-4ubuntu21.31) ...
root@vm-2:/home/can_dhruvdoshi# nano /etc/mysql/mysql.conf.d/mysqld.cnf
root@vm-2:/home/can_dhruvdoshi# service mysql restart
root@vm-2:/home/can_dhruvdoshi# mysql -u root -p
Enter password:
Welcome to the MySQL monitor. Commands end with ; or \g.
Your MySQL connection id is 3
Server version: 5.7.33-0ubuntu0.16.04.1 (Ubuntu)
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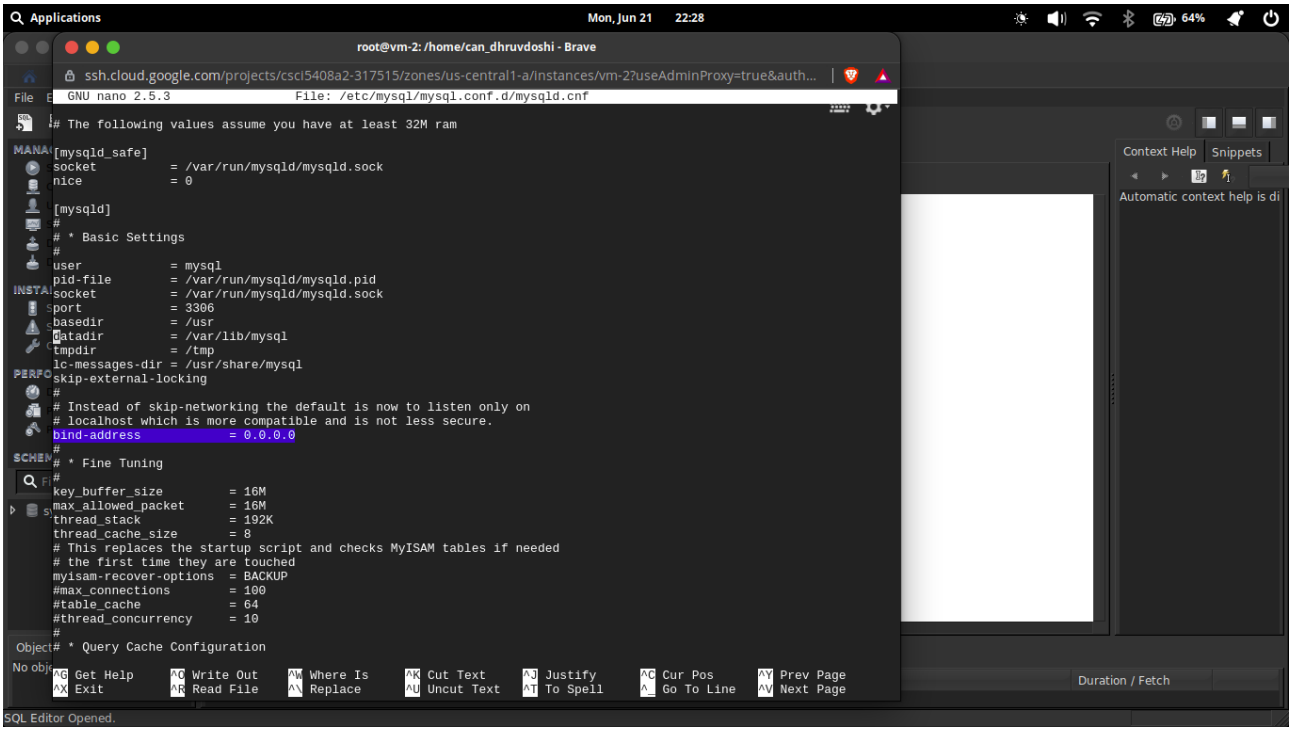
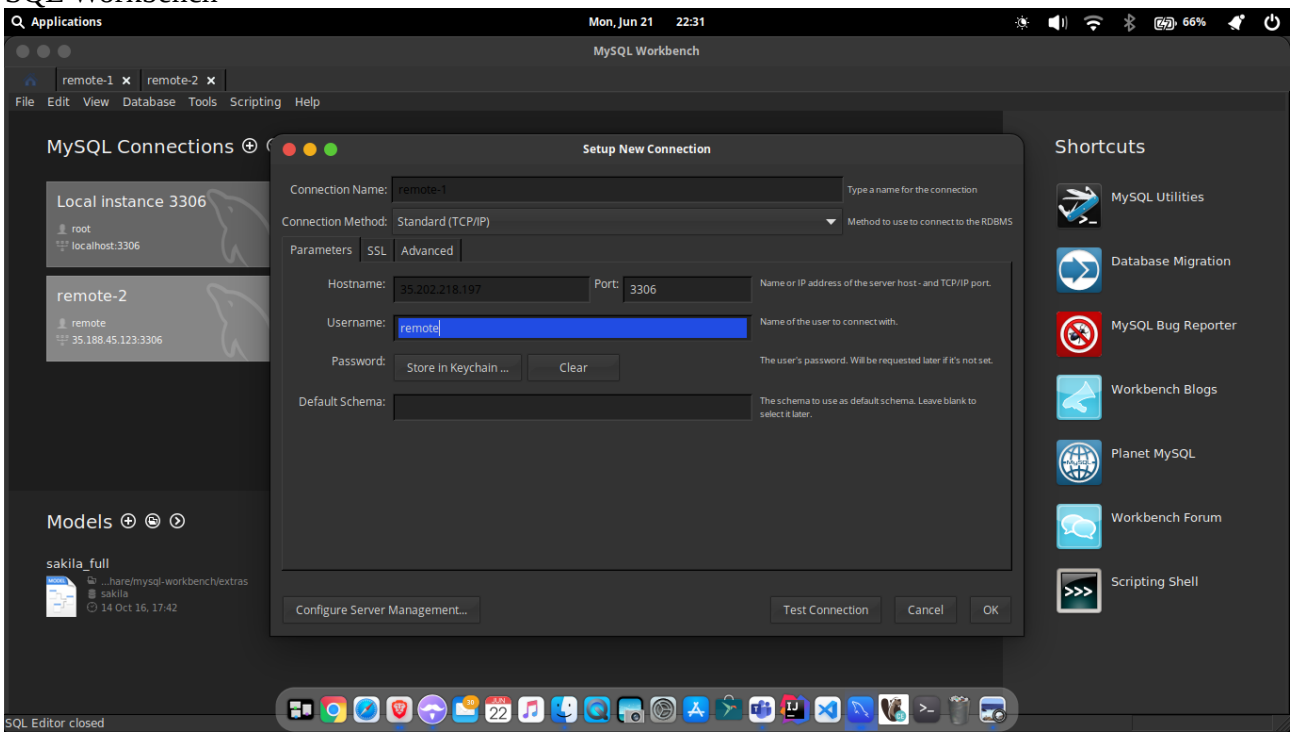
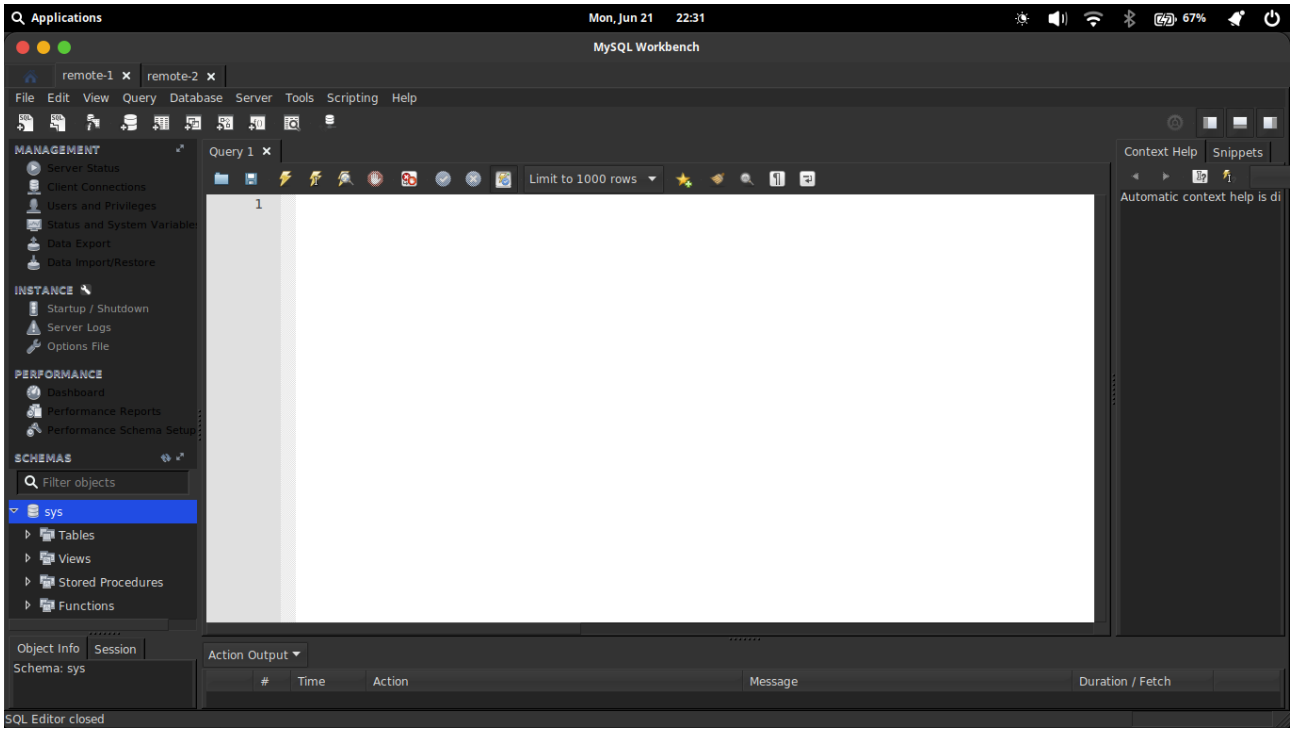
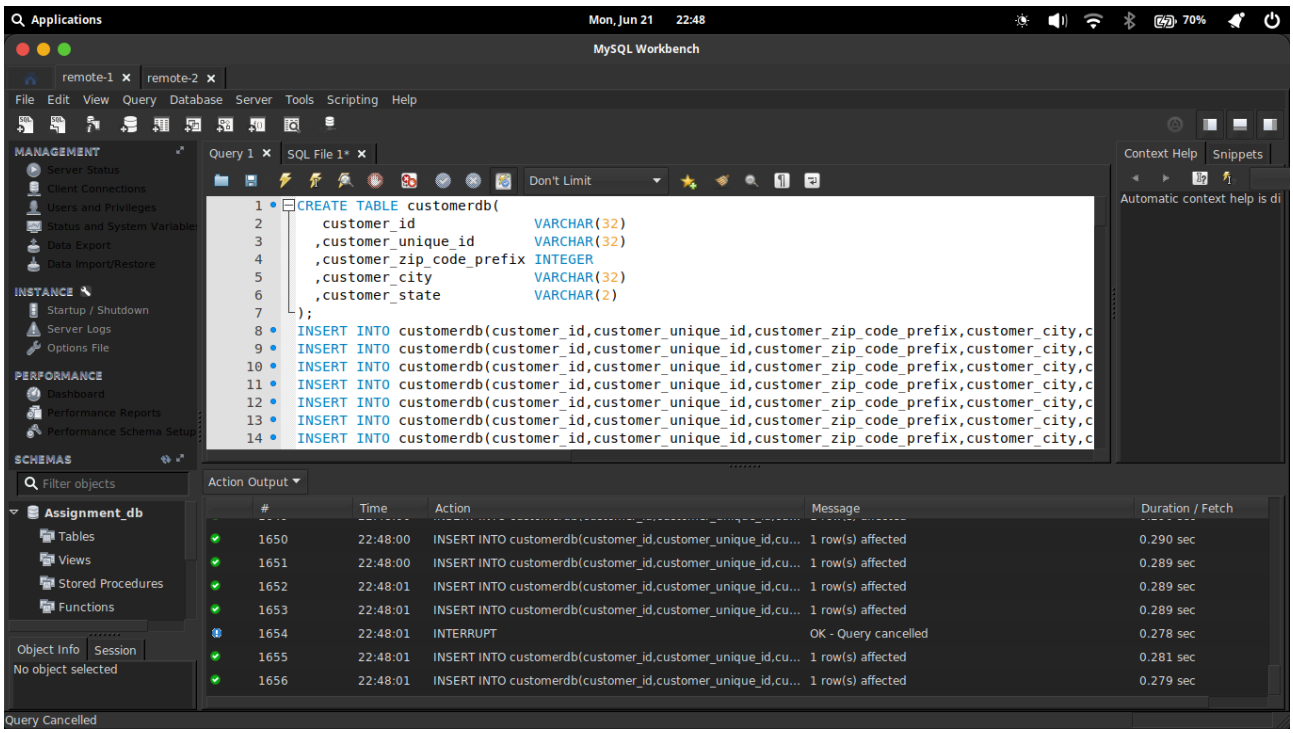
mysql> create user 'remote'@'%' identified by 'remote';
Query OK, 0 rows affected (0.00 sec)
mysql> grant all privileges on *.* to 'remote'@'%' with grant options;
ERROR 1064 (42000): You have an error in your SQL syntax; check the manual that corresponds to your MySQL server ve
rsion for the right syntax to use near 'options' at line 1
mysql> grant all privileges on *.* to 'remote'@'%' with grant option;
Query OK, 0 rows affected (0.00 sec)
mysql> flush privileges;
Query OK, 0 rows affected (0.00 sec)
mysql> \q
Bye
root@vm-2:/home/can_dhruvdoshi#
Context Help
Snippets
Automatic context help is di
Duration / Fetch
SQL Editor Opened.


Applications
Mon, Jun 21 22:28
64%
root@vm-2: /home/can_dhruvdoshi - Brave
ssh.cloud.google.com/projects/csci5408a2-317515/zones/us-central1-a/instances/vm-2?useAdminProxy=true&auth...
GNU nano 2.5.3 File: /etc/mysql/mysql.conf.d/mysqld.cnf
The following values assume you have at least 32M ram
[mysqld_safe]
socket = /var/run/mysqld/mysqld.sock
nice = 0
[mysqld]
#
* Basic Settings
#
user = mysql
pid-file = /var/run/mysqld/mysqld.pid
socket = /var/run/mysqld/mysqld.sock
port = 3306
basedir = /usr
datadir = /var/lib/mysql
tmpdir = /tmp
lc-messages-dir = /usr/share/mysql
skip-external-locking
#
Instead of skip-networking the default is now to listen only on
localhost which is more compatible and is not less secure.
bind-address = 0.0.0.0
#
* Fine Tuning
#
key_buffer_size = 16M
max_allowed_packet = 16M
thread_stack = 192K
thread_cache_size = 8
# This replaces the startup script and checks MyISAM tables if needed
# the first time they are touched
myisam-recover-options = BACKUP
#max_connections = 100
#table_cache = 64
#thread_concurrency = 10
#
* Query Cache Configuration
^G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos ^Y Prev Page
^X Exit ^R Read File ^\ Replace ^U Uncut Text ^T To Spell ^_ Go To Line ^V Next Page
Context Help
Snippets
Automatic context help is di
Duration / Fetch
SQL Editor Opened.

SQL Workbench






Applications
Mon, Jun 21 22:48
MySQL Workbench
remote-1
remote-2
File Edit View Query Database Server Tools Scripting Help
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Filter objects
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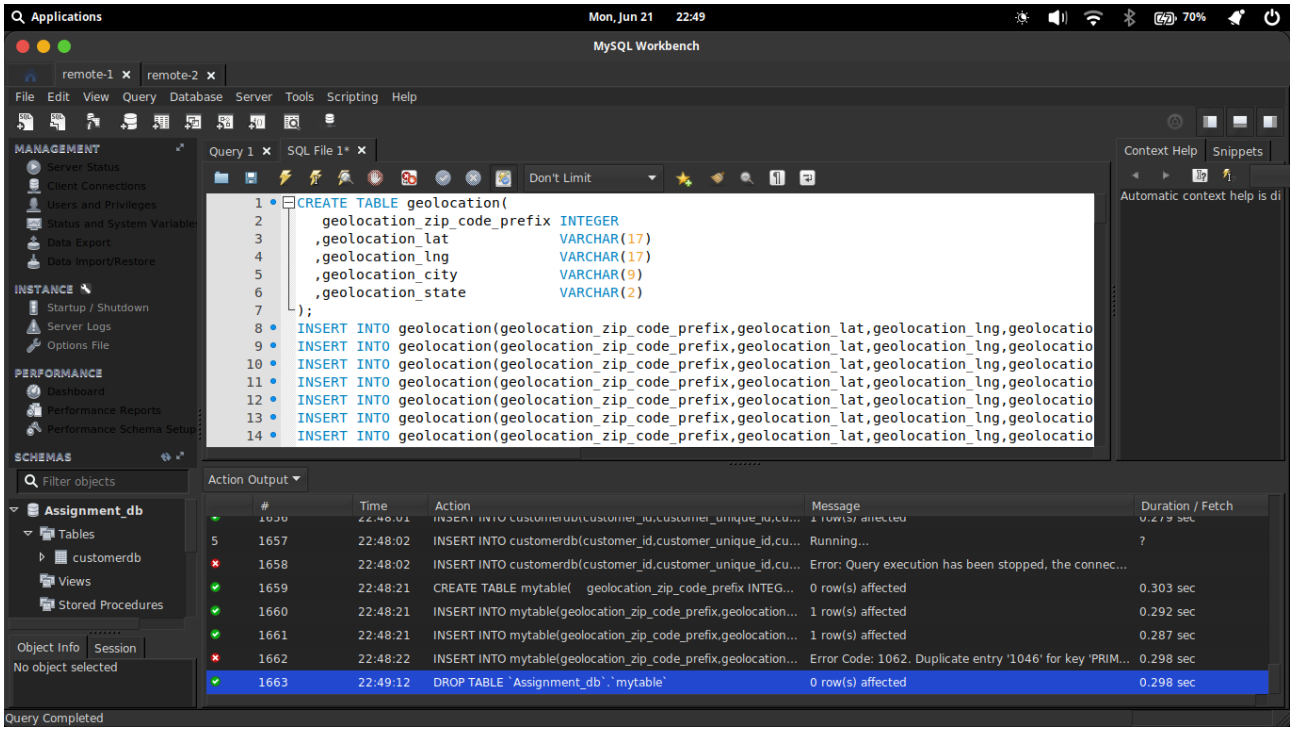
Object Info
Session
No object selected
Query 1
SQL File 1*
Don't Limit
1 CREATE TABLE customerdb(
2 customer_id VARCHAR(32)
3 ,customer_unique_id VARCHAR(32)
4 ,customer_zip_code_prefix INTEGER
5 ,customer_city VARCHAR(32)
6 ,customer_state VARCHAR(2)
7);
8 INSERT INTO customerdb(customer_id,customer_unique_id,customer_zip_code_prefix,customer_city,c
9 INSERT INTO customerdb(customer_id,customer_unique_id,customer_zip_code_prefix,customer_city,c
10 INSERT INTO customerdb(customer_id,customer_unique_id,customer_zip_code_prefix,customer_city,c
11 INSERT INTO customerdb(customer_id,customer_unique_id,customer_zip_code_prefix,customer_city,c
12 INSERT INTO customerdb(customer_id,customer_unique_id,customer_zip_code_prefix,customer_city,c
13 INSERT INTO customerdb(customer_id,customer_unique_id,customer_zip_code_prefix,customer_city,c
14 INSERT INTO customerdb(customer_id,customer_unique_id,customer_zip_code_prefix,customer_city,c
Context Help
Snippets
Automatic context help is di
Action Output
Time Action Message Duration / Fetch
1650 22:48:00 INSERT INTO customerdb(customer_id,customer_unique_id,cu... 1 row(s) affected 0.290 sec
1651 22:48:00 INSERT INTO customerdb(customer_id,customer_unique_id,cu... 1 row(s) affected 0.289 sec
1652 22:48:01 INSERT INTO customerdb(customer_id,customer_unique_id,cu... 1 row(s) affected 0.289 sec
1653 22:48:01 INSERT INTO customerdb(customer_id,customer_unique_id,cu... 1 row(s) affected 0.289 sec
1654 22:48:01 INTERRUPT OK - Query cancelled 0.278 sec
1655 22:48:01 INSERT INTO customerdb(customer_id,customer_unique_id,cu... 1 row(s) affected 0.281 sec
1656 22:48:01 INSERT INTO customerdb(customer_id,customer_unique_id,cu... 1 row(s) affected 0.279 sec
Query Cancelled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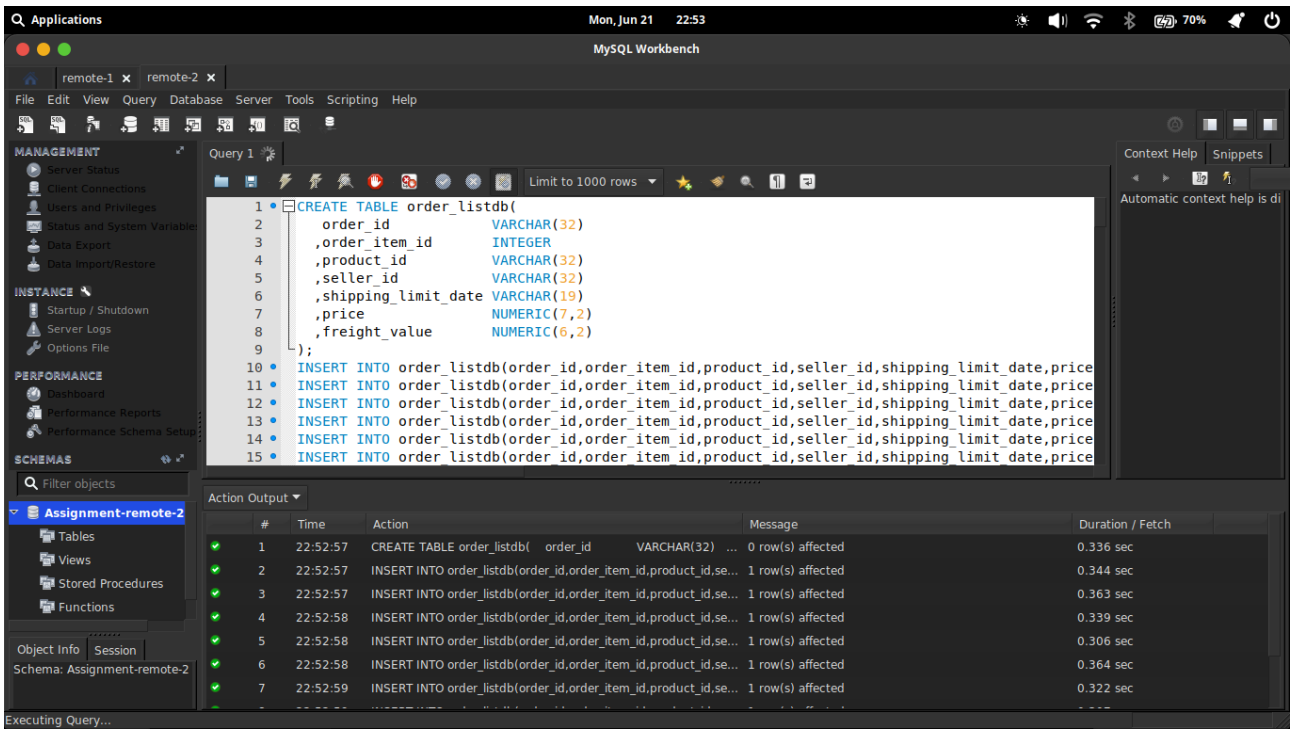
SCHEMAS
Filter objects
Assignment_db
Tables
customerdb
Views
Stored Procedures
Object Info
Session
No object selected
Query 1
SQL File 1*
Don't Limit
1 CREATE TABLE geolocation(
2 geolocation_zip_code_prefix INTEGER
3 ,geolocation_lat VARCHAR(17)
4 ,geolocation_lng VARCHAR(17)
5 ,geolocation_city VARCHAR(9)
6 ,geolocation_state VARCHAR(2)
7);
8 INSERT INTO geolocation(geolocation_zip_code_prefix,geolocation_lat,geolocation_lng,geolocatio
9 INSERT INTO geolocation(geolocation_zip_code_prefix,geolocation_lat,geolocation_lng,geolocatio
10 INSERT INTO geolocation(geolocation_zip_code_prefix,geolocation_lat,geolocation_lng,geolocatio
11 INSERT INTO geolocation(geolocation_zip_code_prefix,geolocation_lat,geolocation_lng,geolocatio
12 INSERT INTO geolocation(geolocation_zip_code_prefix,geolocation_lat,geolocation_lng,geolocatio
13 INSERT INTO geolocation(geolocation_zip_code_prefix,geolocation_lat,geolocation_lng,geolocatio
14 INSERT INTO geolocation(geolocation_zip_code_prefix,geolocation_lat,geolocation_lng,geolocatio
Context Help
Snippets
Automatic context help is di
Action Output
Time Action Message Duration / Fetch
5 1657 22:48:02 INSERT INTO customerdb(customer_id,customer_unique_id,cu... Running... ?
1658 22:48:02 INSERT INTO customerdb(customer_id,customer_unique_id,cu... Error: Query execution has been stopped, the connec...
1659 22:48:21 CREATE TABLE mytable(geolocation_zip_code_prefix INTEG... 0 row(s) affected 0.303 sec
1660 22:48:21 INSERT INTO mytable(geolocation_zip_code_prefix,geolocation... 1 row(s) affected 0.292 sec
1661 22:48:21 INSERT INTO mytable(geolocation_zip_code_prefix,geolocation... 1 row(s) affected 0.287 sec
1662 22:48:22 INSERT INTO mytable(geolocation_zip_code_prefix,geolocation... Error Code: 1062. Duplicate entry '1046' for key 'PRIM... 0.298 sec
1663 22:49:12 DROP TABLE `Assignment_db`.`mytable` 0 row(s) affected 0.298 sec
Query Completed


Applications
Mon, Jun 21 22:53
70%
MySQL Workbench
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Assignment-remote-2
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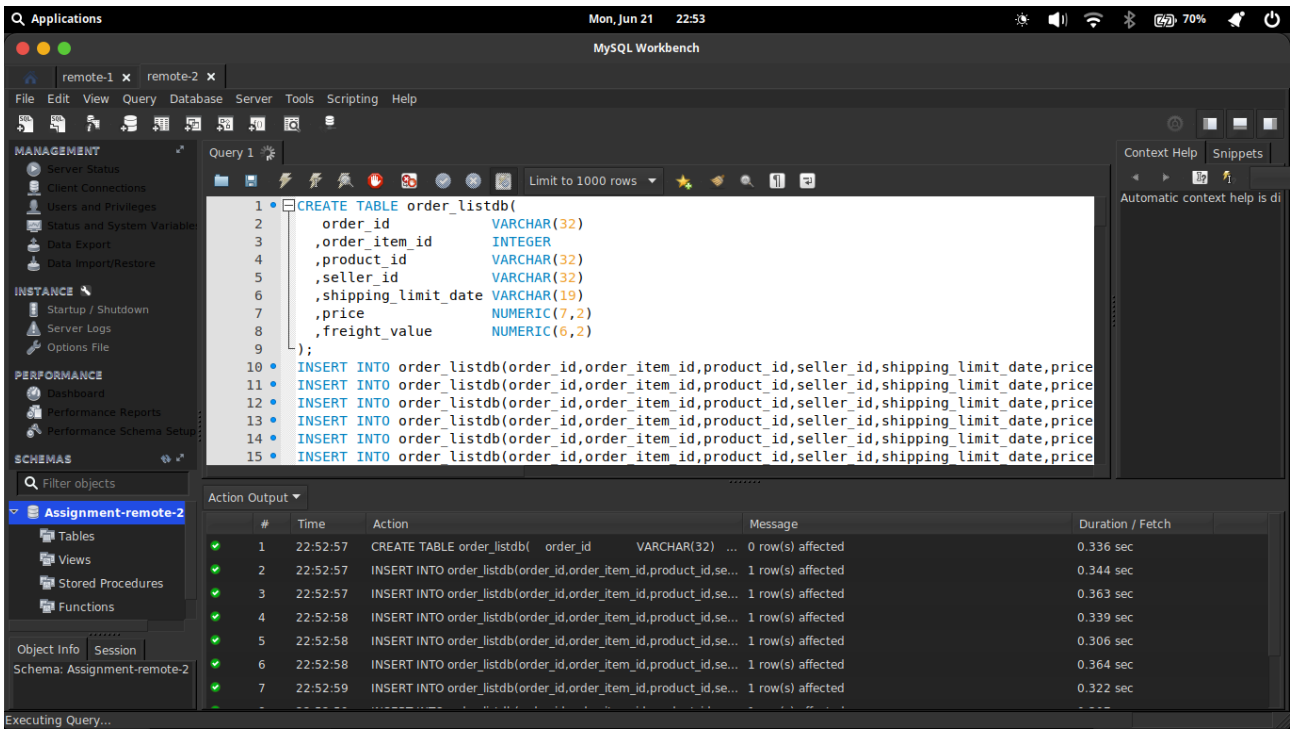
Object Info
Session
Schema: Assignment-remote-2
Query 1
Limit to 1000 rows
Context Help
Snippets
Automatic context help is di
1 CREATE TABLE order_listdb(
2 order_id VARCHAR(32)
3 ,order_item_id INTEGER
4 ,product_id VARCHAR(32)
5 ,seller_id VARCHAR(32)
6 ,shipping_limit_date VARCHAR(19)
7 ,price NUMERIC(7,2)
8 ,freight_value NUMERIC(6,2)
9);
10 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
11 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
12 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
13 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
14 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
15 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
Action Output
Time Action Message Duration / Fetch
1 22:52:57 CREATE TABLE order_listdb(order_id VARCHAR(32) ... 0 row(s) affected 0.336 sec
2 22:52:57 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.344 sec
3 22:52:57 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.363 sec
4 22:52:58 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.339 sec
5 22:52:58 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.306 sec
6 22:52:58 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.364 sec
7 22:52:59 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.322 sec
Executing Query...


Applications
Mon, Jun 21 22:53
70%
MySQL Workbench
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Stored Procedures
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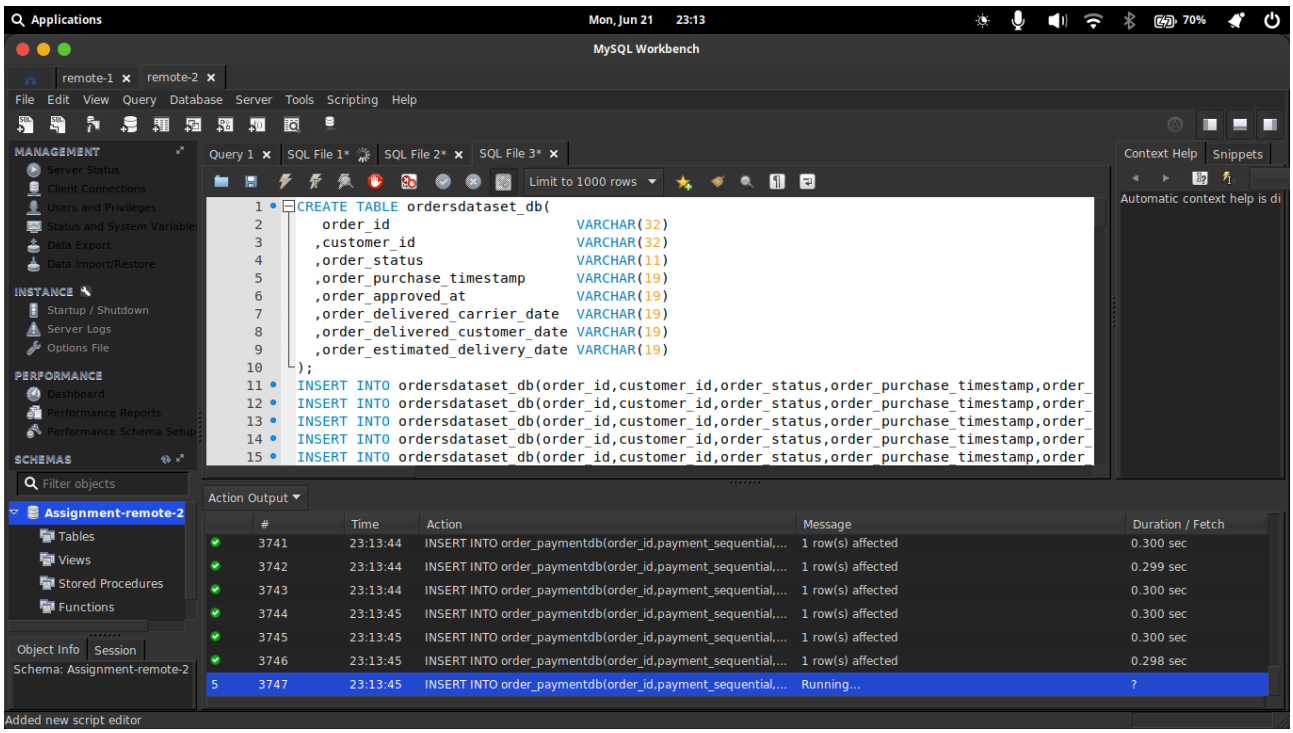
Object Info
Session
Schema: Assignment-remote-2
Query 1
Limit to 1000 rows
Context Help
Snippets
Automatic context help is di
1 CREATE TABLE order_listdb(
2 order_id VARCHAR(32)
3 ,order_item_id INTEGER
4 ,product_id VARCHAR(32)
5 ,seller_id VARCHAR(32)
6 ,shipping_limit_date VARCHAR(19)
7 ,price NUMERIC(7,2)
8 ,freight_value NUMERIC(6,2)
9);
10 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
11 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
12 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
13 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
14 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
15 INSERT INTO order_listdb(order_id,order_item_id,product_id,seller_id,shipping_limit_date,price
Action Output
Time Action Message Duration / Fetch
1 22:52:57 CREATE TABLE order_listdb(order_id VARCHAR(32) ... 0 row(s) affected 0.336 sec
2 22:52:57 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.344 sec
3 22:52:57 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.363 sec
4 22:52:58 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.339 sec
5 22:52:58 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.306 sec
6 22:52:58 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.364 sec
7 22:52:59 INSERT INTO order_listdb(order_id,order_item_id,product_id,se... 1 row(s) affected 0.322 sec
Executing Query...


Applications
Mon, Jun 21 23:13
70%
MySQL Workbench
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Object Info
Session
Schema: Assignment-remote-2
Query 1
SQL File 1*
SQL File 2*
SQL File 3*
Limit to 1000 rows
1 CREATE TABLE ordersdataset_db(
2 order_id VARCHAR(32)
3 ,customer_id VARCHAR(32)
4 ,order_status VARCHAR(11)
5 ,order_purchase_timestamp VARCHAR(19)
6 ,order_approved_at VARCHAR(19)
7 ,order_delivered_carrier_date VARCHAR(19)
8 ,order_delivered_customer_date VARCHAR(19)
9 ,order_estimated_delivery_date VARCHAR(19)
10);
11 INSERT INTO ordersdataset_db(order_id,customer_id,order_status,order_purchase_timestamp,order_
12 INSERT INTO ordersdataset_db(order_id,customer_id,order_status,order_purchase_timestamp,order_
13 INSERT INTO ordersdataset_db(order_id,customer_id,order_status,order_purchase_timestamp,order_
14 INSERT INTO ordersdataset_db(order_id,customer_id,order_status,order_purchase_timestamp,order_
15 INSERT INTO ordersdataset_db(order_id,customer_id,order_status,order_purchase_timestamp,order
Context Help
Snippets
Automatic context help is di
Action Output
Time Action Message Duration / Fetch
3741 23:13:44 INSERT INTO order_paymentdb(order_id,payment_sequential,... 1 row(s) affected 0.300 sec
3742 23:13:44 INSERT INTO order_paymentdb(order_id,payment_sequential,... 1 row(s) affected 0.299 sec
3743 23:13:44 INSERT INTO order_paymentdb(order_id,payment_sequential,... 1 row(s) affected 0.300 sec
3744 23:13:45 INSERT INTO order_paymentdb(order_id,payment_sequential,... 1 row(s) affected 0.300 sec
3745 23:13:45 INSERT INTO order_paymentdb(order_id,payment_sequential,... 1 row(s) affected 0.300 sec
3746 23:13:45 INSERT INTO order_paymentdb(order_id,payment_sequential,... 1 row(s) affected 0.298 sec
5 3747 23:13:45 INSERT INTO order_paymentdb(order_id,payment_sequential,... Running... ?
Added new script editor

VM1
In this instance there are two tables which does not have any primary key or constraints. However there are no data conflicts which could be found as it is in the highest normal form with no data duplications. Here I have updated the constraints with new primary key in one table and a composite primary key in geological data table.

VM2
In this part also there is also there is no requirenment of cleaning of data as they are almost in the highest normal form possible. Continuing with there we could add some relationships betweens these all tables.
Taking a sceraio where we have a table for orders which would communicate with all other tables and then we could have a whole schema where there are relationships.
Here also we have added multiple primary keys across all of the tables. I used to work with reverse engineering and then make the suitable changes further on I used forward engineering to move those changes to the database table.
Here at the end of the work we have the whole systems which is interconnected.

Dump Files:
There are two initial dump files which had been created with the raw data after moving it into the sql from the csv provided files
There are another two dump files after the update.

REFERENCES:

[1]"Datalab documentation | Cloud Datalab Documentation | Google Cloud", *Google Cloud*, 2021. [Online]. Available: https://cloud.google.com/datalab/docs. [Accessed: 21- Jun- 2021]

[2]K. Ouimet, "Open Port Check Tool - Test Port Forwarding on Your Router", *Yougetsignal.com*, 2021. [Online]. Available: https://www.yougetsignal.com/tools/open-ports/. [Accessed: 21- Jun- 2021]

[3]"Before you continue to YouTube", *Youtu.be*, 2021. [Online]. Available: https://youtu.be/8oF4ku_7vxM. [Accessed: 21- Jun- 2021]