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DATE:

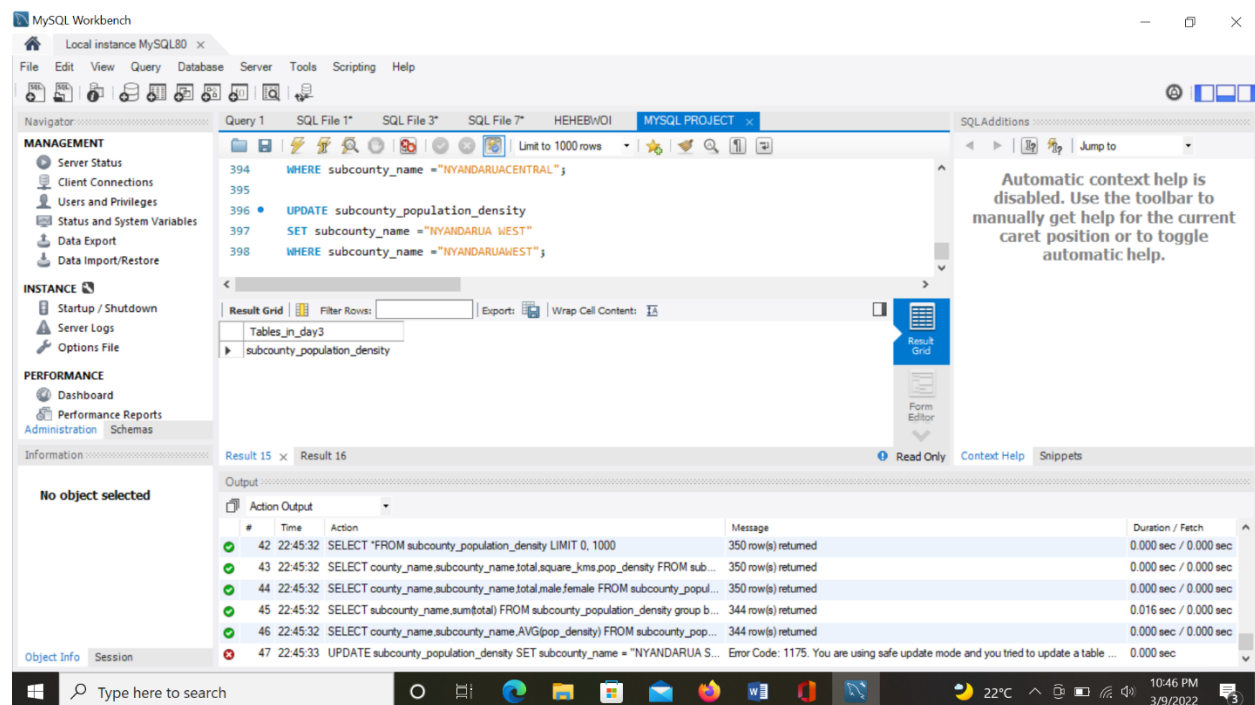
2022-03-09

Q: WHAT IS SQL AND HOW IS IT USEFUL?

A: Structured Query Language (SQL) is **the standard and most widely used programming language for relational databases**. It is used to manage and organize data in all sorts of systems in which various data relationships exist. SQL is a valuable programming language with strong career prospects.

## SAMPLE RESULTS

### Result 15:



The screenshot displays the MySQL Workbench interface. The central pane shows a SQL query with the following lines:

```
394 WHERE subcounty_name = "NYANDARUACENTRAL";
395
396 UPDATE subcounty_population_density
397 SET subcounty_name = "NYANDARUA WEST"
398 WHERE subcounty_name = "NYANDARUAWEST";
```

Below the query, the 'Result Grid' shows a table with two columns: 'Tables\_in\_day3' and 'subcounty\_population\_density'. The 'Output' pane at the bottom displays the execution log for 'Result 15' and 'Result 16'.

#	Time	Action	Message	Duration / Fetch
42	22:45:32	SELECT *FROM subcounty_population_density LIMIT 0, 1000	350 row(s) returned	0.000 sec / 0.000 sec
43	22:45:32	SELECT county_name.subcounty_name.total.square_kms.pop_density FROM sub...	350 row(s) returned	0.000 sec / 0.000 sec
44	22:45:32	SELECT county_name.subcounty_name.total.male.female FROM subcounty_popul...	350 row(s) returned	0.000 sec / 0.000 sec
45	22:45:32	SELECT subcounty_name.sum(total) FROM subcounty_population_density group b...	344 row(s) returned	0.016 sec / 0.000 sec
46	22:45:32	SELECT county_name.subcounty_name.AVG(pop_density) FROM subcounty_pop...	344 row(s) returned	0.000 sec / 0.000 sec
47	22:45:33	UPDATE subcounty_population_density SET subcounty_name = "NYANDARUA S...	Error Code: 1175. You are using safe update mode and you tried to update a table ...	0.000 sec

## Result 16:

MySQL Workbench interface showing a query execution error. The query is:

```
394 WHERE subcounty_name = "NYANDARUACENTRAL";
395
396 UPDATE subcounty_population_density
397 SET subcounty_name = "NYANDARUA WEST"
398 WHERE subcounty_name = "NYANDARUAWEST";
```

The output pane shows the following error message:

```
47 22:45:33 UPDATE subcounty_population_density SET subcounty_name = "NYANDARUA S... Error Code: 1175. You are using safe update mode and you tried to update a table ... 0.000 sec
```

The table schema for subcounty\_population\_density is shown below:

Field	Type	Null	Key	Default	Extra
id	int	NO	PRI		auto_increment
county_name	varchar(250)	NO			
subcounty_name	varchar(500)	NO			
total	int	YES			
male	int	YES			
female	int	YES			

## Result 17:

MySQL Workbench interface showing a query execution error. The query is:

```
394 WHERE subcounty_name = "NYANDARUACENTRAL";
395
396 UPDATE subcounty_population_density
397 SET subcounty_name = "NYANDARUA WEST"
398 WHERE subcounty_name = "NYANDARUAWEST";
```

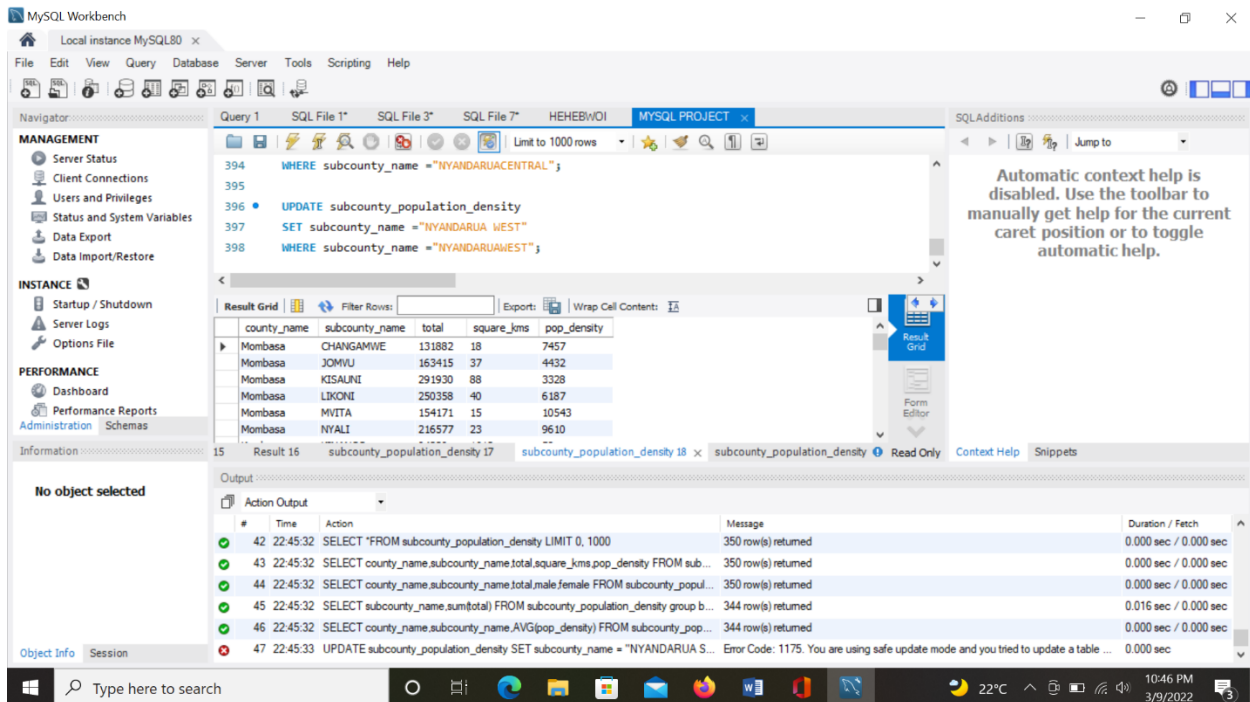
The output pane shows the following error message:

```
47 22:45:33 UPDATE subcounty_population_density SET subcounty_name = "NYANDARUA S... Error Code: 1175. You are using safe update mode and you tried to update a table ... 0.000 sec
```

The table schema for subcounty\_population\_density is shown below:

id	county_name	subcounty_name	total	male	female	square_kms	pop_density
1	Mombasa	CHANGAMWE	131882	68761	63121	18	7457
2	Mombasa	JOMVU	163415	83002	80410	37	4432
3	Mombasa	KISALINI	291930	146748	145176	88	3328
4	Mombasa	LIKONI	250358	126962	123392	40	6187
5	Mombasa	MVITA	154171	75565	78601	15	10543
6	Mombasa	NYALI	216577	109219	107346	23	9610

## Result 18:



The screenshot shows the MySQL Workbench interface. The query editor contains the following SQL code:

```
394 WHERE subcounty_name = "NYANDARUACENTRAL";
395
396 UPDATE subcounty_population_density
397 SET subcounty_name = "NYANDARUA WEST"
398 WHERE subcounty_name = "NYANDARUAWEST";
```

The result grid displays the following data:

county_name	subcounty_name	total	square_kms	pop_density
Mombasa	CHANGAMWE	131882	18	7457
Mombasa	JOMVU	163415	37	4432
Mombasa	KISAUNI	291930	88	3328
Mombasa	LIKONI	250358	40	6187
Mombasa	MVITA	154171	15	10543
Mombasa	NYALI	216577	23	9610

The output pane shows the following action output:

#	Time	Action	Message	Duration / Fetch
42	22:45:32	SELECT * FROM subcounty_population_density LIMIT 0, 1000	350 row(s) returned	0.000 sec / 0.000 sec
43	22:45:32	SELECT county_name, subcounty_name, total, square_kms, pop_density FROM sub...	350 row(s) returned	0.000 sec / 0.000 sec
44	22:45:32	SELECT county_name, subcounty_name, total, male, female FROM subcounty_popul...	350 row(s) returned	0.000 sec / 0.000 sec
45	22:45:32	SELECT subcounty_name, sum(total) FROM subcounty_population_density group b...	344 row(s) returned	0.016 sec / 0.000 sec
46	22:45:32	SELECT county_name, subcounty_name, AVG(pop_density) FROM subcounty_pop...	344 row(s) returned	0.000 sec / 0.000 sec
47	22:45:33	UPDATE subcounty_population_density SET subcounty_name = "NYANDARUA S...	Error Code: 1175. You are using safe update mode and you tried to update a table ...	0.000 sec

## THE CODE:

```
CREATE DATABASE IF NOT EXISTS DAY3;
USE DAY3;
CREATE TABLE subcounty_population_density (
  id INT NOT NULL AUTO_INCREMENT PRIMARY KEY,
  county_name VARCHAR(250) NOT NULL,
  subcounty_name VARCHAR(500) NOT NULL,
  total INT,
  male INT,
  female INT,
  square_kms INT,
  pop_density INT
);
INSERT INTO subcounty_population_density (
  county_name, subcounty_name, total, male, female,
  square_kms,
  pop_density
) VALUES
("Mombasa", "CHANGAMWE", 131882, 68761, 63121, 18, 7457),
("Mombasa", "JOMVU", 163415, 83002, 80410, 37, 4432),
("Mombasa", "KISAUNI", 291930, 146748, 145176, 88, 3328),
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("Mombasa", "NYALI", 216577, 109219, 107346, 23, 9610),  
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SHOW TABLES;
DESCRIBE subcounty_population_density;
SELECT *FROM subcounty_population_density;
SELECT
county_name,subcounty_name,total,square_kms,pop_density
FROM subcounty_population_density;
SELECT county_name,subcounty_name,total,male,female
FROM subcounty_population_density
ORDER BY female desc;
SELECT subcounty_name,sum(total)
FROM subcounty_population_density
group by subcounty_name
order by total;
SELECT county_name,subcounty_name,AVG(pop_density)
FROM subcounty_population_density
GROUP BY subcounty_name
ORDER BY county_name,subcounty_name,pop_density desc;
UPDATE subcounty_population_density
SET subcounty_name = "NYANDARUA SOUTH"
WHERE subcounty_name = "NYANDARUASOUTH";
SET SQL_SAFE_UPDATES = 0;
UPDATE subcounty_population_density
SET subcounty_name ="NYANDARUA NORTH"
WHERE subcounty_name ="NYANDARUANORTH";
UPDATE subcounty_population_density
SET subcounty_name ="NYANDARUA CENTRAL"
WHERE subcounty_name ="NYANDARUACENTRAL";
UPDATE subcounty_population_density
SET subcounty_name ="NYANDARUA WEST"
WHERE subcounty_name ="NYANDARUAWEST";

```

## The Processed Part of the Code

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SHOW TABLES;
DESCRIBE subcounty_population_density;
SELECT *FROM subcounty_population_density;
SELECT
county_name,subcounty_name,total,square_kms,pop_density
FROM subcounty_population_density;
SELECT county_name,subcounty_name,total,male,female

```

```
FROM subcounty_population_density
ORDER BY female desc;
SELECT subcounty_name,sum(total)
FROM subcounty_population_density
group by subcounty_name
order by total;
SELECT county_name,subcounty_name,AVG(pop_density)
FROM subcounty_population_density
GROUP BY subcounty_name
ORDER BY county_name,subcounty_name,pop_density desc;
UPDATE subcounty_population_density
SET subcounty_name = "NYANDARUA SOUTH"
WHERE subcounty_name = "NYANDARUASOUTH";
SET SQL_SAFE_UPDATES = 0;
UPDATE subcounty_population_density
SET subcounty_name ="NYANDARUA NORTH"
WHERE subcounty_name ="NYANDARUANORTH";
UPDATE subcounty_population_density
SET subcounty_name ="NYANDARUA CENTRAL"
WHERE subcounty_name ="NYANDARUACENTRAL";
UPDATE subcounty_population_density
SET subcounty_name ="NYANDARUA WEST"
WHERE subcounty_name ="NYANDARUAWEST";
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