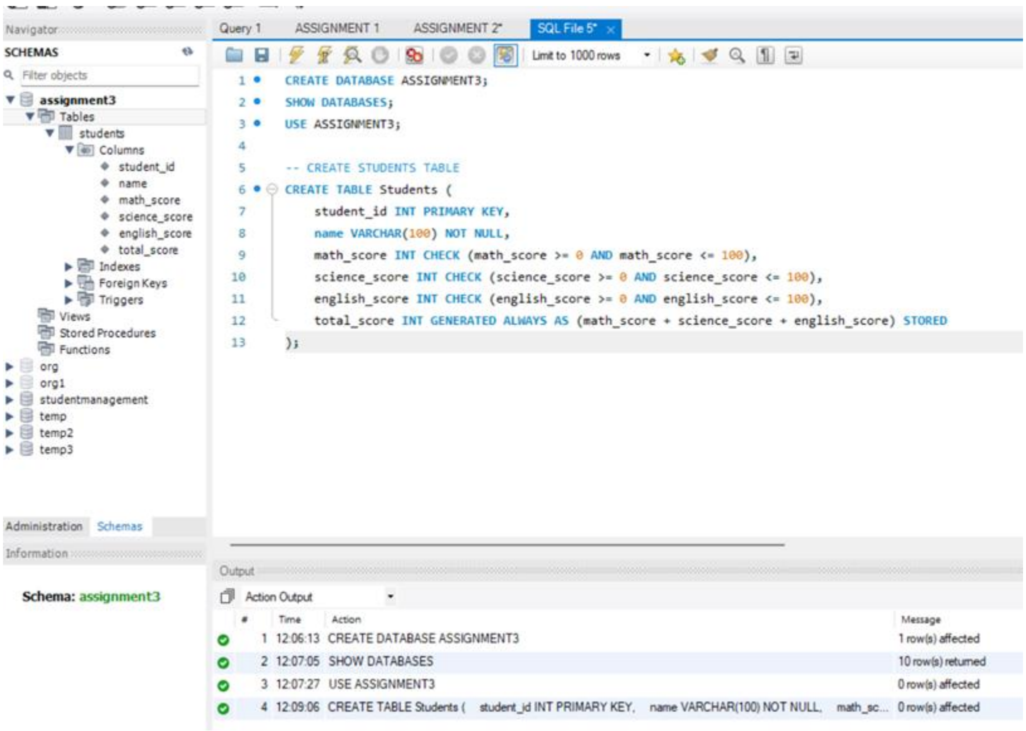
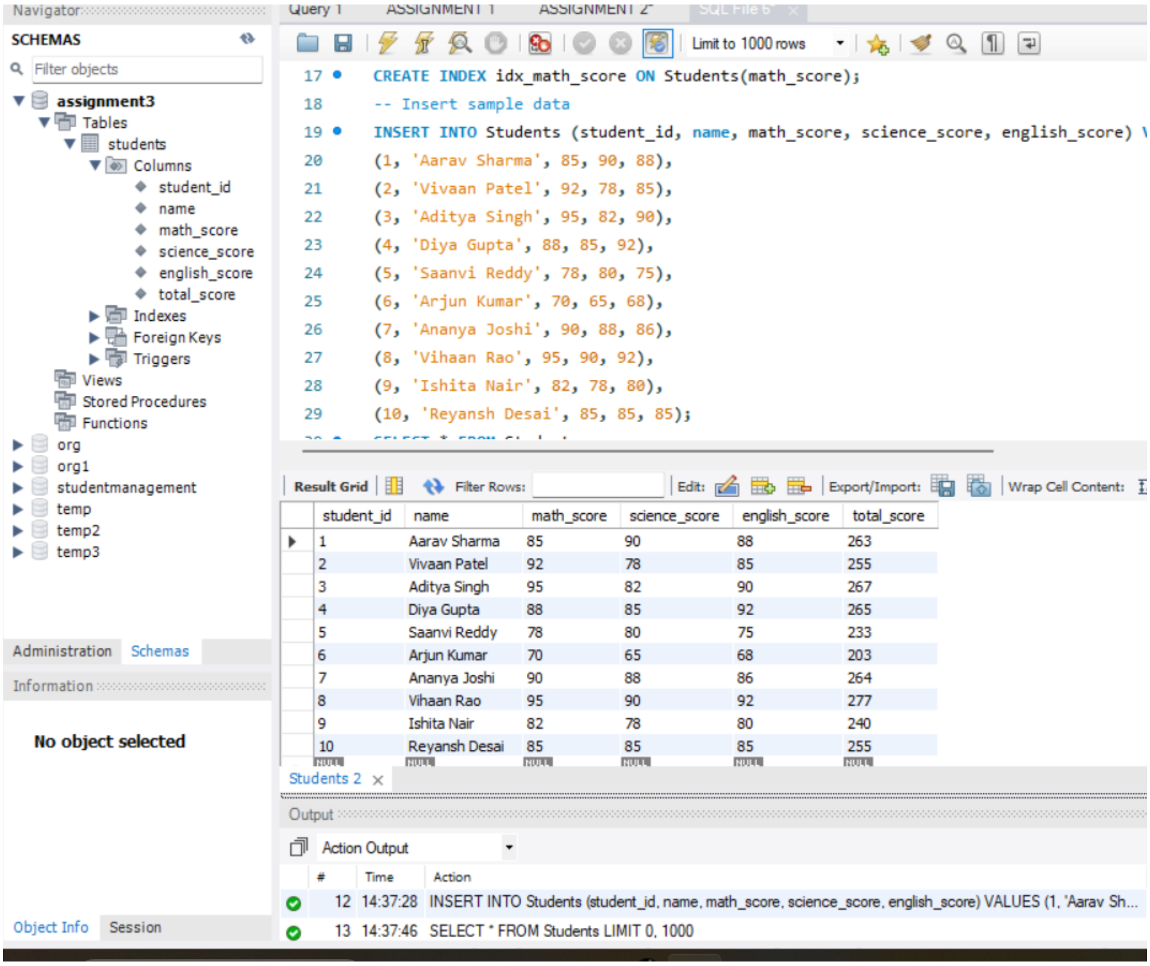


```sql
CREATE DATABASE ASSIGNMENT3;
SHOW DATABASES;
USE ASSIGNMENT3;

-- CREATE STUDENTS TABLE
CREATE TABLE Students (
    student_id INT PRIMARY KEY,
    name VARCHAR(100) NOT NULL,
    math_score INT CHECK (math_score >= 0 AND math_score <= 100),
    science_score INT CHECK (science_score >= 0 AND science_score <= 100),
    english_score INT CHECK (english_score >= 0 AND english_score <= 100),
    total_score INT GENERATED ALWAYS AS (math_score + science_score + english_score) STORED
);
```

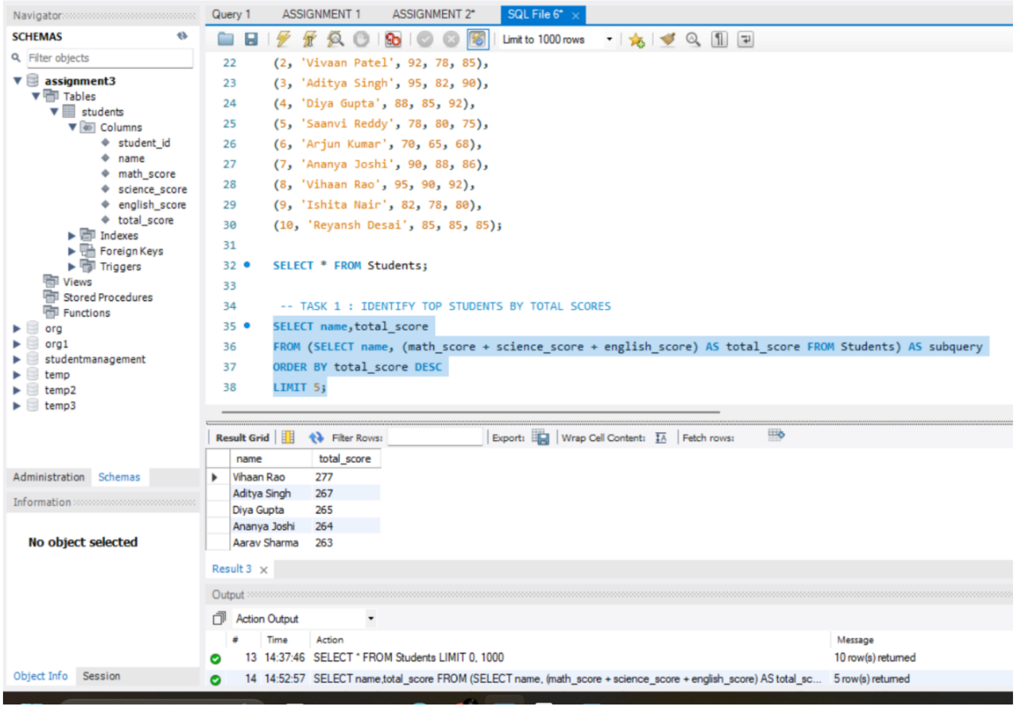
	#	Time	Action	Message
✓	1	12:06:13	CREATE DATABASE ASSIGNMENT3	1 row(s) affected
✓	2	12:07:05	SHOW DATABASES	10 row(s) returned
✓	3	12:07:27	USE ASSIGNMENT3	0 row(s) affected
✓	4	12:09:06	CREATE TABLE Students (student_id INT PRIMARY KEY, name VARCHAR(100) NOT NULL, math_sc...	0 row(s) affected



```sql
CREATE INDEX idx_math_score ON Students(math_score);
-- Insert sample data
INSERT INTO Students (student_id, name, math_score, science_score, english_score) \
(1, 'Aarav Sharma', 85, 90, 88),
(2, 'Vivaan Patel', 92, 78, 85),
(3, 'Aditya Singh', 95, 82, 90),
(4, 'Diya Gupta', 88, 85, 92),
(5, 'Saanvi Reddy', 78, 80, 75),
(6, 'Arjun Kumar', 70, 65, 68),
(7, 'Ananya Joshi', 90, 88, 86),
(8, 'Vihaan Rao', 95, 90, 92),
(9, 'Ishita Nair', 82, 78, 80),
(10, 'Reyansh Desai', 85, 85, 85);
```

student_id	name	math_score	science_score	english_score	total_score
1	Aarav Sharma	85	90	88	263
2	Vivaan Patel	92	78	85	255
3	Aditya Singh	95	82	90	267
4	Diya Gupta	88	85	92	265
5	Saanvi Reddy	78	80	75	233
6	Arjun Kumar	70	65	68	203
7	Ananya Joshi	90	88	86	264
8	Vihaan Rao	95	90	92	277
9	Ishita Nair	82	78	80	240
10	Reyansh Desai	85	85	85	255
NULL	NULL	NULL	NULL	NULL	NULL

	#	Time	Action
✓	12	14:37:28	INSERT INTO Students (student_id, name, math_score, science_score, english_score) VALUES (1, 'Aarav Sh...
✓	13	14:37:46	SELECT * FROM Students LIMIT 0, 1000



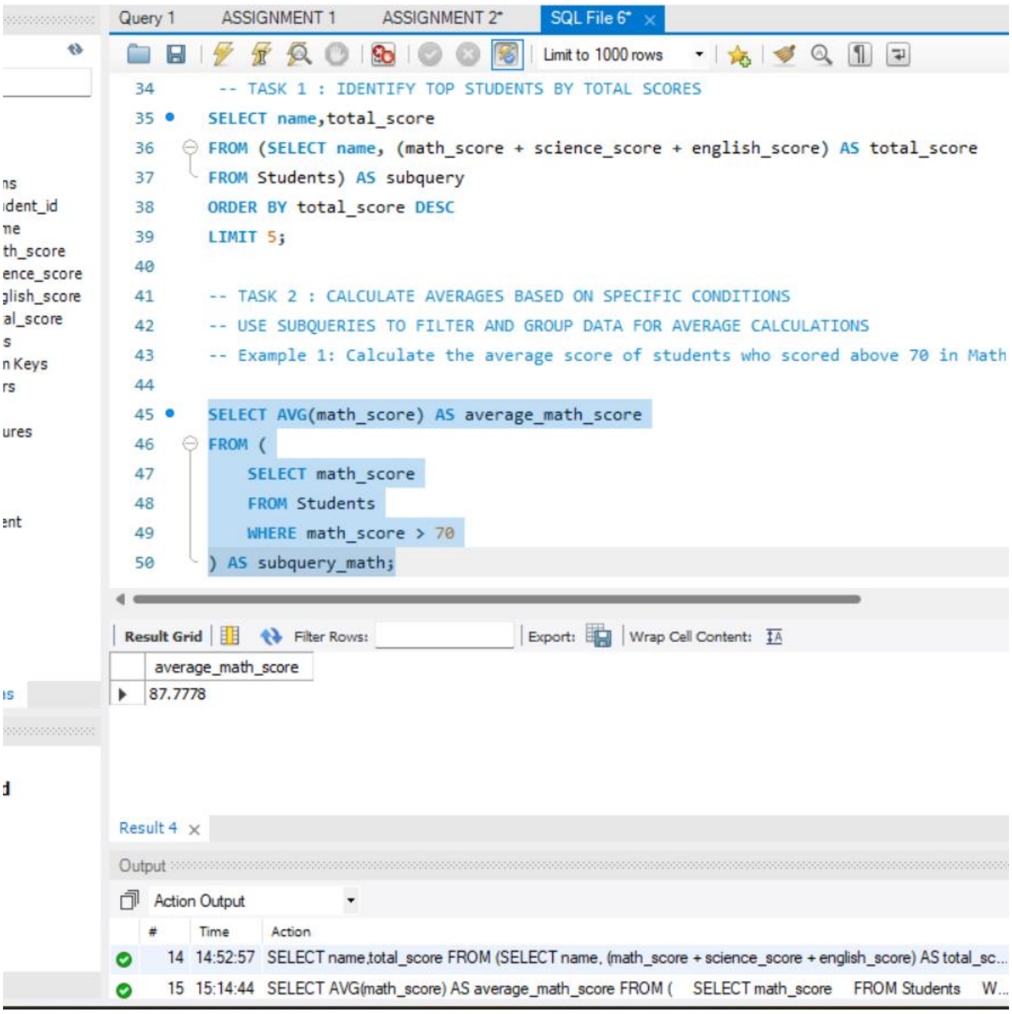
```sql
    (2, 'Vivaan Patel', 92, 78, 85),
    (3, 'Aditya Singh', 95, 82, 90),
    (4, 'Diya Gupta', 88, 85, 92),
    (5, 'Saanvi Reddy', 78, 80, 75),
    (6, 'Arjun Kumar', 70, 65, 68),
    (7, 'Ananya Joshi', 90, 88, 86),
    (8, 'Vihaan Rao', 95, 90, 92),
    (9, 'Ishita Nair', 82, 78, 80),
    (10, 'Reyansh Desai', 85, 85, 85);

SELECT * FROM Students;

 -- TASK 1 : IDENTIFY TOP STUDENTS BY TOTAL SCORES
SELECT name,total_score
FROM (SELECT name, (math_score + science_score + english_score) AS total_score FROM Students) AS subquery
ORDER BY total_score DESC
LIMIT 5;
```

name	total_score
Vihaan Rao	277
Aditya Singh	267
Diya Gupta	265
Ananya Joshi	264
Aarav Sharma	263

```
#   Time      Action                                                                                  Message
13  14:37:46  SELECT * FROM Students LIMIT 0, 1000                                                    10 row(s) returned
14  14:52:57  SELECT name,total_score FROM (SELECT name, (math_score + science_score + english_score) AS total_sc...   5 row(s) returned
```



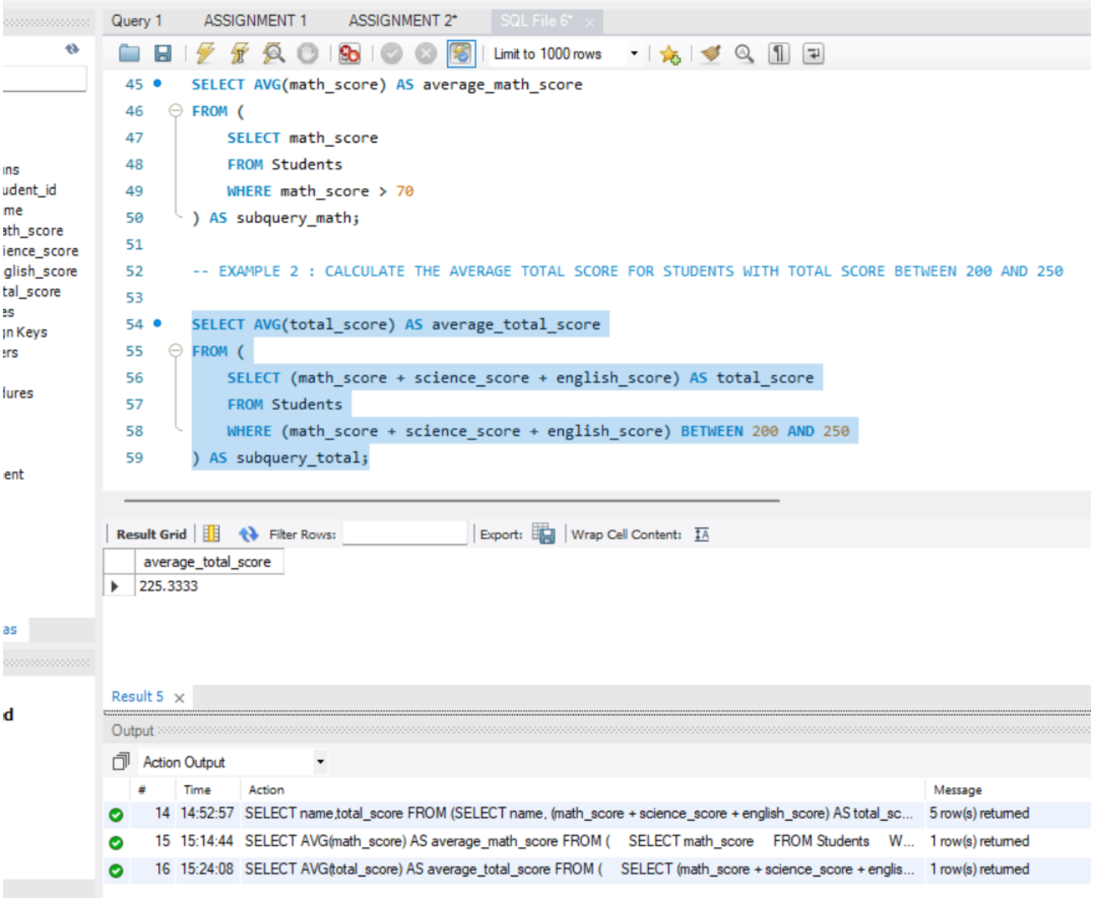
```sql
  -- TASK 1 : IDENTIFY TOP STUDENTS BY TOTAL SCORES
SELECT name,total_score
FROM (SELECT name, (math_score + science_score + english_score) AS total_score
FROM Students) AS subquery
ORDER BY total_score DESC
LIMIT 5;

-- TASK 2 : CALCULATE AVERAGES BASED ON SPECIFIC CONDITIONS
-- USE SUBQUERIES TO FILTER AND GROUP DATA FOR AVERAGE CALCULATIONS
-- Example 1: Calculate the average score of students who scored above 70 in Math

SELECT AVG(math_score) AS average_math_score
FROM (
    SELECT math_score
    FROM Students
    WHERE math_score > 70
) AS subquery_math;
```

average_math_score
87.7778

```
#   Time      Action
14  14:52:57  SELECT name,total_score FROM (SELECT name, (math_score + science_score + english_score) AS total_sc...
15  15:14:44  SELECT AVG(math_score) AS average_math_score FROM (    SELECT math_score    FROM Students    W...
```



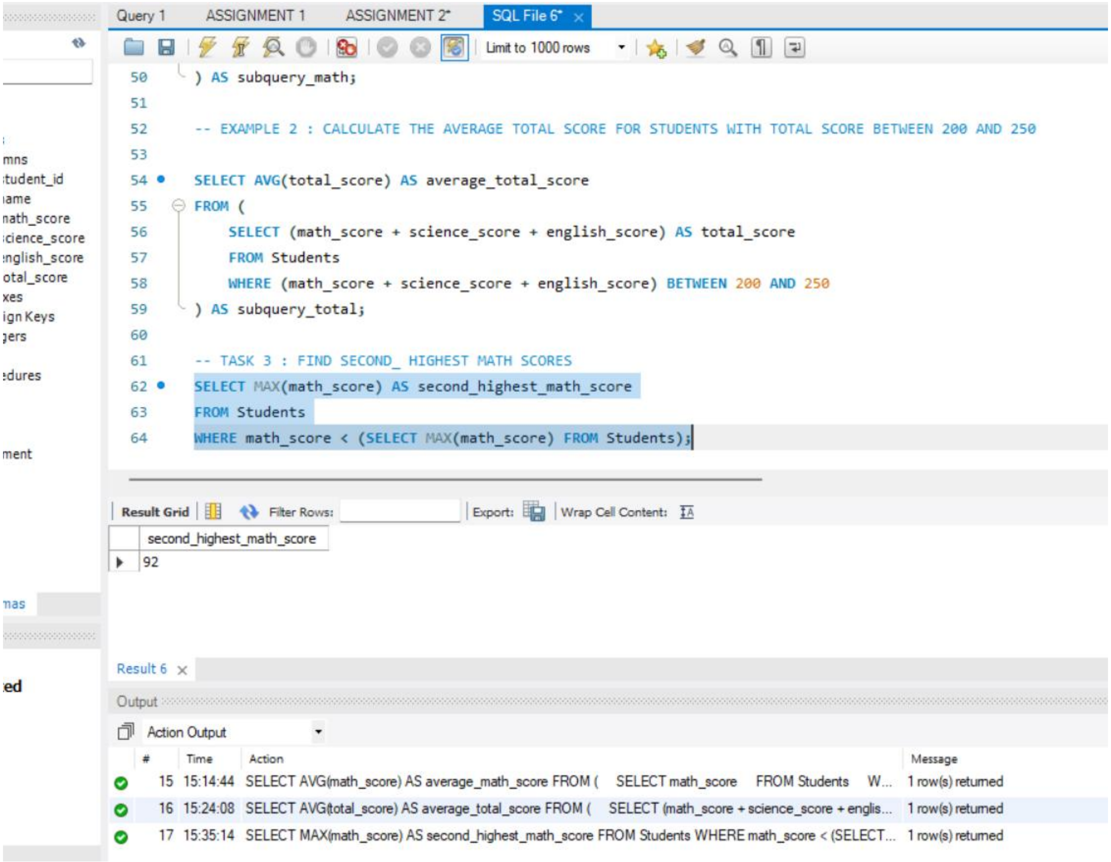
```sql
SELECT AVG(math_score) AS average_math_score
FROM (
    SELECT math_score
    FROM Students
    WHERE math_score > 70
) AS subquery_math;

-- EXAMPLE 2 : CALCULATE THE AVERAGE TOTAL SCORE FOR STUDENTS WITH TOTAL SCORE BETWEEN 200 AND 250

SELECT AVG(total_score) AS average_total_score
FROM (
    SELECT (math_score + science_score + english_score) AS total_score
    FROM Students
    WHERE (math_score + science_score + english_score) BETWEEN 200 AND 250
) AS subquery_total;
```

average_total_score
225.3333

	#	Time	Action	Message
✓	14	14:52:57	SELECT name,total_score FROM (SELECT name, (math_score + science_score + english_score) AS total_sc...	5 row(s) returned
✓	15	15:14:44	SELECT AVG(math_score) AS average_math_score FROM (SELECT math_score FROM Students W...	1 row(s) returned
✓	16	15:24:08	SELECT AVG(total_score) AS average_total_score FROM (SELECT (math_score + science_score + englis...	1 row(s) returned



```sql
) AS subquery_math;

-- EXAMPLE 2 : CALCULATE THE AVERAGE TOTAL SCORE FOR STUDENTS WITH TOTAL SCORE BETWEEN 200 AND 250

SELECT AVG(total_score) AS average_total_score
FROM (
    SELECT (math_score + science_score + english_score) AS total_score
    FROM Students
    WHERE (math_score + science_score + english_score) BETWEEN 200 AND 250
) AS subquery_total;

-- TASK 3 : FIND SECOND_ HIGHEST MATH SCORES
SELECT MAX(math_score) AS second_highest_math_score
FROM Students
WHERE math_score < (SELECT MAX(math_score) FROM Students);
```

second_highest_math_score
92

	#	Time	Action	Message
✓	15	15:14:44	SELECT AVG(math_score) AS average_math_score FROM (SELECT math_score FROM Students W...	1 row(s) returned
✓	16	15:24:08	SELECT AVG(total_score) AS average_total_score FROM (SELECT (math_score + science_score + englis...	1 row(s) returned
✓	17	15:35:14	SELECT MAX(math_score) AS second_highest_math_score FROM Students WHERE math_score < (SELECT...	1 row(s) returned