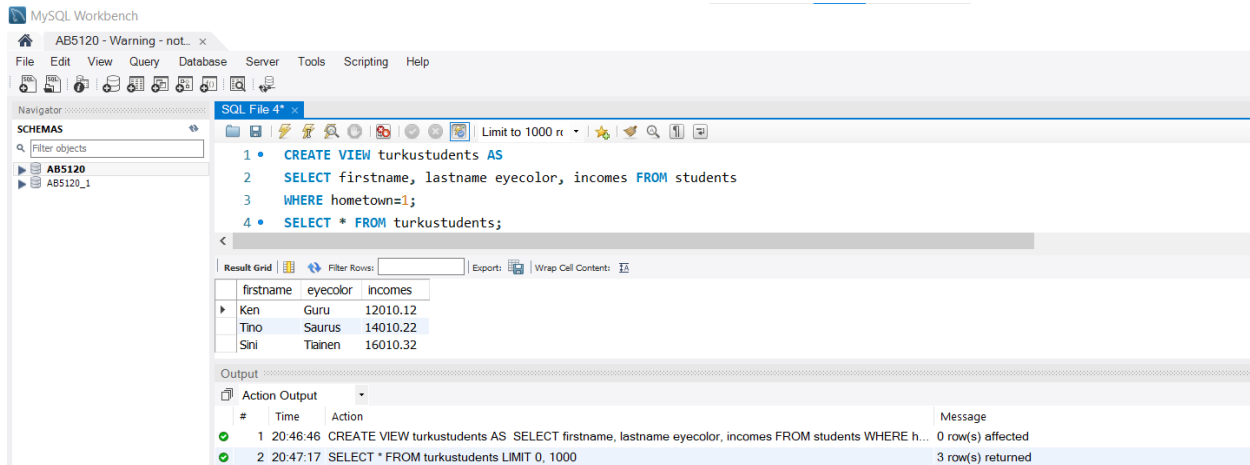


HARJOITUS 7

7_1_A



MySQL Workbench interface showing the execution of SQL queries. The left sidebar displays the 'SCHEMAS' panel with 'AB5120' and 'AB5120_1' listed. The main editor shows the following SQL code:

```
1 • CREATE VIEW turkustudents AS
2 • SELECT firstname, lastname eyecolor, incomes FROM students
3 • WHERE hometown=1;
4 • SELECT * FROM turkustudents;
```

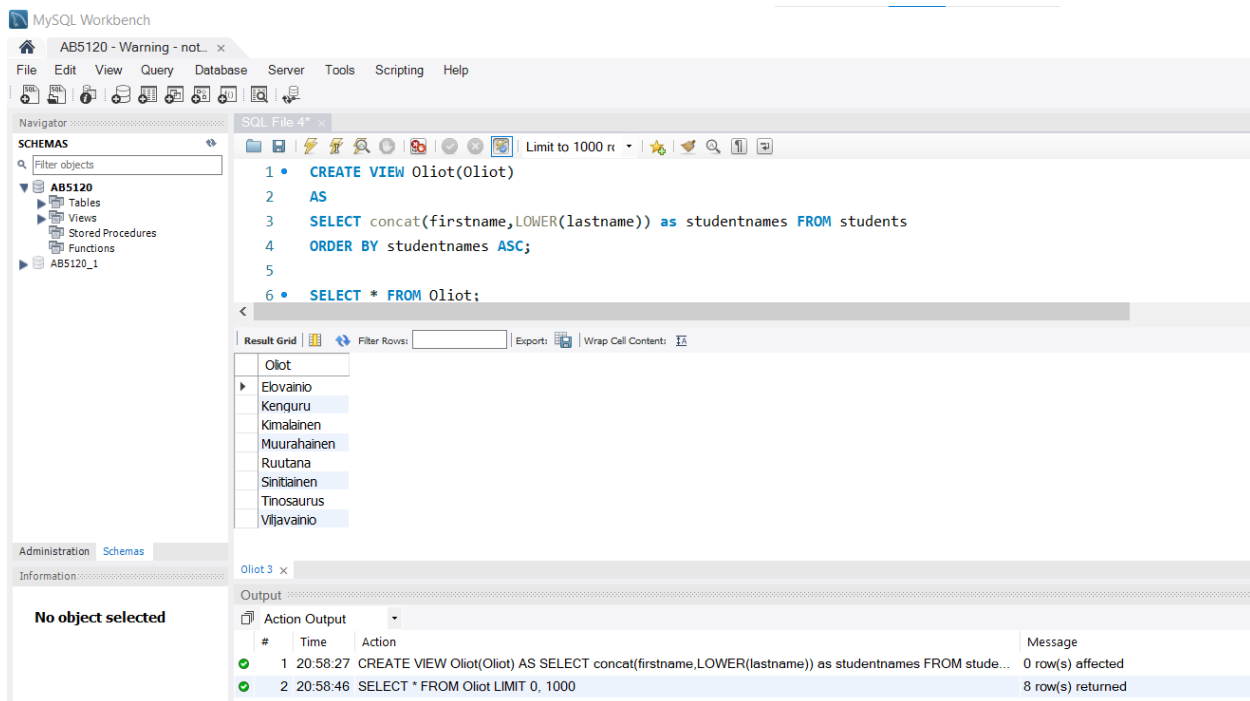
The 'Result Grid' displays the output of the second query, showing three rows of data:

firstname	eyecolor	incomes
Ken	Guru	12010.12
Tino	Saurus	14010.22
Sini	Tiainen	16010.32

The 'Output' panel shows the execution log:

#	Time	Action	Message
1	20:46:46	CREATE VIEW turkustudents AS SELECT firstname, lastname eyecolor, incomes FROM students WHERE hometown=1;	0 row(s) affected
2	20:47:17	SELECT * FROM turkustudents LIMIT 0, 1000	3 row(s) returned

7_1_B



MySQL Workbench interface showing the execution of SQL queries. The left sidebar displays the 'SCHEMAS' panel with 'AB5120' and 'AB5120_1' listed. The main editor shows the following SQL code:

```
1 • CREATE VIEW Olot(Olot)
2 • AS
3 • SELECT concat(firstname,LOWER(lastname)) as studentnames FROM students
4 • ORDER BY studentnames ASC;
5
6 • SELECT * FROM Olot;
```

The 'Result Grid' displays the output of the second query, showing eight rows of data:

Olot
Elovainio
Kenguru
Kimainen
Muurahainen
Ruutana
Sinitainen
Tinosaurus
Vijavainio

The 'Output' panel shows the execution log:

#	Time	Action	Message
1	20:58:27	CREATE VIEW Olot(Olot) AS SELECT concat(firstname,LOWER(lastname)) as studentnames FROM students ORDER BY studentnames ASC;	0 row(s) affected
2	20:58:46	SELECT * FROM Olot LIMIT 0, 1000	8 row(s) returned

7_2_A

MySQL Workbench

AB5120 - Warning - not... x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

AB5120

AB5120_1

SQL File 4* x

Limit to 1000 rows

```
1 CREATE VIEW KaupunkiKeskiarvoTulot(City, student_avg_income_by_city) AS
2 SELECT cityname, AVG(incomes) AS incomeavg FROM students
3 INNER JOIN cities
4 ON cities.cityID=students.hometown
5 GROUP BY cityname
6 ORDER BY incomeavg DESC;
7
8 SELECT * FROM KaupunkiKeskiarvoTulot;
```

Result Grid

City	student_avg_income_by_city
Tampere	15510.120000
Turku	14010.220000
Lahti	0.000000

KaupunkiKeskiarvoTulot28 x

Output

Action Output

#	Time	Action	Message
1	21:31:09	CREATE VIEW KaupunkiKeskiarvoTulot(City, student_avg_income_by_city) AS SELECT cityname, AVG(in...	0 row(s) affected
2	21:31:22	SELECT * FROM KaupunkiKeskiarvoTulot LIMIT 0, 1000	3 row(s) returned

7_2_B

MySQL Workbench

AB5120 - Warning - not... x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

AB5120

Tables

Views

Stored Procedures

Functions

AB5120_1

SQL File 4* x

Limit to 1000 rows

```
1 CREATE VIEW Stipendiehdokkaat
2 AS
3 SELECT lastname,firstname,coursename, grade FROM courses
4 INNER JOIN studentgrades
5 ON studentgrades.courseID=courses.courseID
6 INNER JOIN students
7 ON students.studentID=studentgrades.studentID
8 WHERE grade = (SELECT MAX(grade) FROM studentgrades)
9 ORDER BY coursename ASC, lastname ASC, firstname ASC;
10
11 SELECT * FROM Stipendiehdokkaat;
```

Result Grid

lastname	firstname	coursename	grade
Guru	Ken	Ohjelmointi	5
Guru	Ken	Ruotsi	5
Ana	Ruut	Tietokannat	5
Guru	Ken	Tietokannat	5

Stipendiehdokkaat 11 x

Output

Action Output

#	Time	Action	Message
1	22:12:26	CREATE VIEW Stipendiehdokkaat AS SELECT lastname,firstname,coursename, grade FROM courses INNE...	0 row(s) affected
2	22:12:39	SELECT * FROM Stipendiehdokkaat LIMIT 0, 1000	4 row(s) returned

7_3_A

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

```
1 • SELECT lastname, firstname FROM students
2 WHERE hometown=(SELECT hometown FROM students WHERE firstname="Ken") AND firstname != "Ken";
3
4
```

The Result Grid shows the following data:

lastname	firstname
Saurus	Tino
Tainen	Sini

The Output pane shows the execution log:

#	Time	Action	Message
1	22:16:05	SELECT hometown FROM students WHERE firstname="Ken" LIMIT 0, 1000	1 row(s) returned
2	22:17:10	SELECT lastname, firstname FROM students WHERE hometown=(SELECT hometown FROM students WHERE...	3 row(s) returned
3	22:18:22	SELECT lastname, firstname FROM students WHERE hometown=(SELECT hometown FROM students WHERE...	2 row(s) returned

7_3_B

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

```
1 • SELECT lastname, firstname, incomes FROM students
2 WHERE incomes = (SELECT MIN(incomes) FROM students);
3
4
```

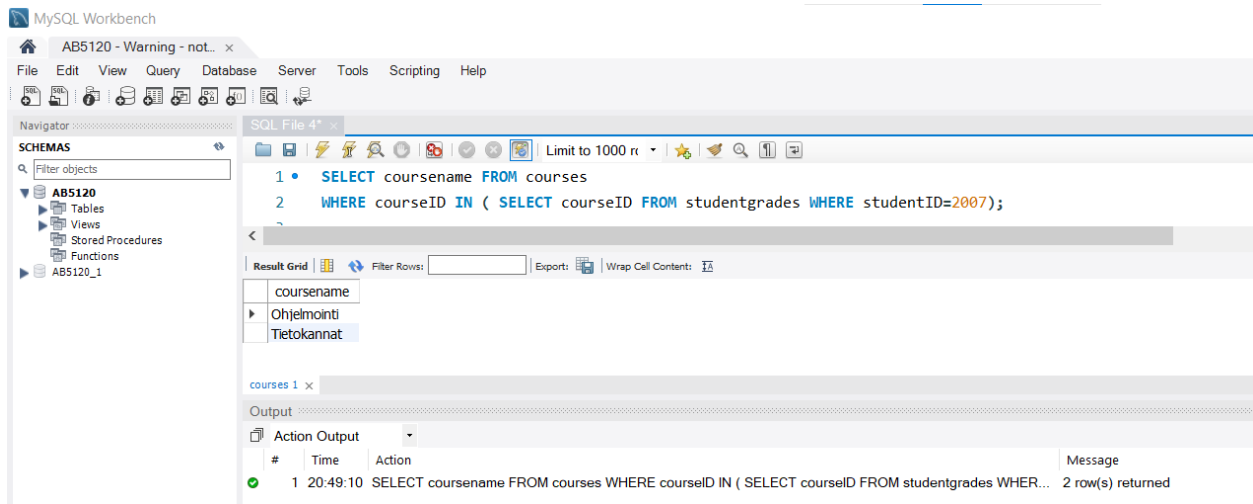
The Result Grid shows the following data:

lastname	firstname	incomes
Vainio	Vilja	0.00
Vainio	Elo	0.00

The Output pane shows the execution log:

#	Time	Action	Message
1	22:24:43	SELECT lastname, firstname, incomes FROM students WHERE incomes = (SELECT MIN(incomes) FROM st...	2 row(s) returned

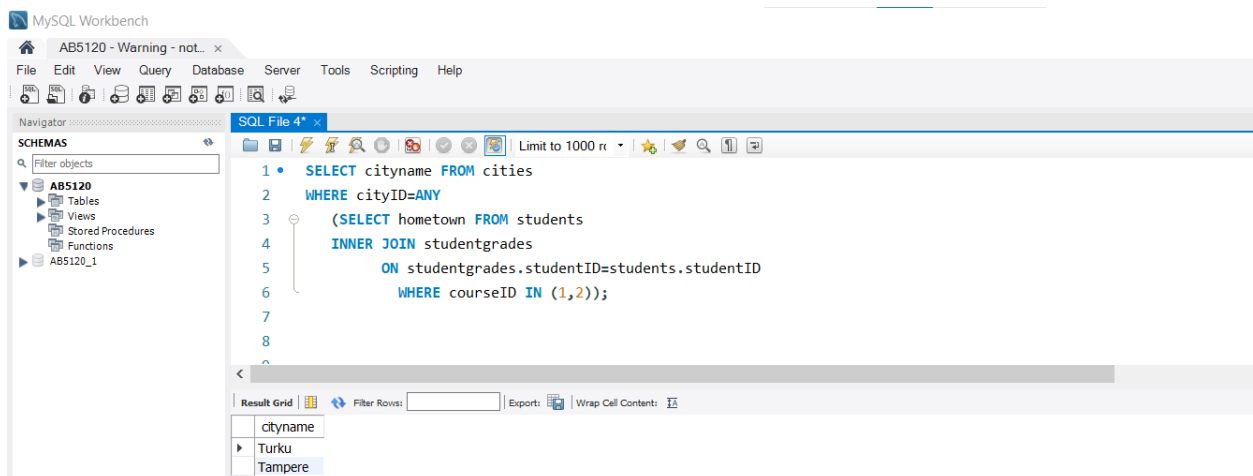
7_3_C



7_4_A

I have two solutions here because I was not sure whether I understood the question well!

Solution 1



Solution B

MySQL Workbench interface showing a query in the SQL editor. The query is:

```
1 • SELECT cityname FROM cities
2 WHERE cityID=ANY
3   (SELECT hometown FROM students
4     INNER JOIN studentgrades
5       ON studentgrades.studentID=students.studentID
6       INNER JOIN courses
7         ON courses.courseID=studentgrades.courseID
8       WHERE coursename="ohjelmointi");
```

The result grid shows the following data:

cityname
Turku
Tampere

7_4_B

MySQL Workbench interface showing two queries and their results.

Query 1:

```
1 • SELECT coursename FROM courses
2 WHERE EXISTS(
3   SELECT studentID FROM studentgrades WHERE courseID= courses.courseID AND studentID=2007)
4
```

The result grid shows the following data:

coursename
Ohjelmointi
Tietokannat

Query 2:

```
courses 16 x
```

Output:

#	Time	Action	Message
1	23:13:12	SELECT coursename FROM courses WHERE EXISTS(SELECT studentID FROM studentgrades WHERE co...	2 row(s) returned

7_5

MySQL Workbench

connection_xampp - W... x

File Edit View Query Database Server Tools Scripting Help

Navigator

SCHEMAS

Filter objects

harjoitus6

Tables

Views

Stored Procedures

Functions

phpmyadmin

student_db

Tables

Views

Stored Procedures

Functions

cities

Limit to 1000 rows

1 • CREATE INDEX i_hometowntaxratelastnamefirstnameincomes ON students(hometown, taxrate, lastname, firstname, incomes)

2

3

Output

Action Output

#	Time	Action	Message
1	23:20:16	CREATE INDEX i_hometowntaxratelastnamefirstnameincomes ON students(hometown, taxrate, lastname, firstn...	0 row(s) affected Records: 0 Duplicates: 0 Warnings: 0