

PROGRAM 3

Consider the following schema:

SUPPLIERS (sid: integer, sname: string, address: string)

PARTS (pid: integer, pname: string, color: string)

CATALOG (sid: integer, pid: integer, cost: real)

The Catalog relation lists the prices charged for parts by Suppliers. Write the following queries in SQL:

- 1) Create the above tables by properly specifying the primary keys and the foreign keys.

The screenshot shows the phpMyAdmin interface for a database named 'suppliers'. The 'Structure' tab is selected, showing the 'catalog' table. The table has 3 columns: 'sid' (integer), 'pid' (integer), and 'cost' (real). The 'catalog' table is highlighted in the table list. The console at the bottom shows the SQL command to create the 'catalog' table with foreign key constraints.

Filters

Containing the word:

Table	Action	Rows	Type	Collation	Size	Overhead
catalog	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	48.0 K1B	-
parts	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	16.0 K1B	-
suppliers	Browse Structure Search Insert Empty Drop	0	InnoDB	utf8mb4_general_ci	16.0 K1B	-
3 tables	Sum				80.0 K1B	0 B

Print Data dictionary

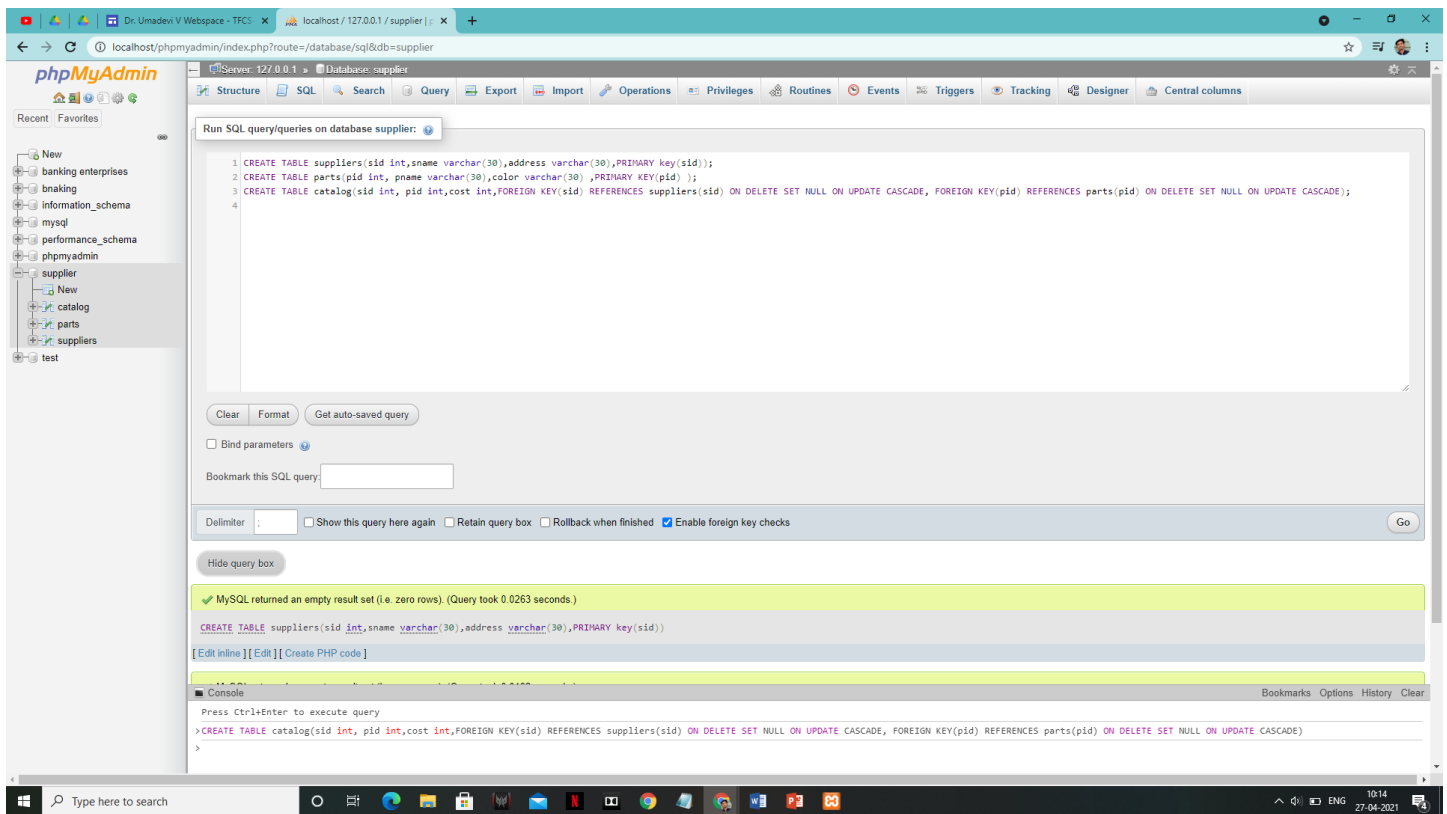
Create table

Name: Number of columns: 4

Go

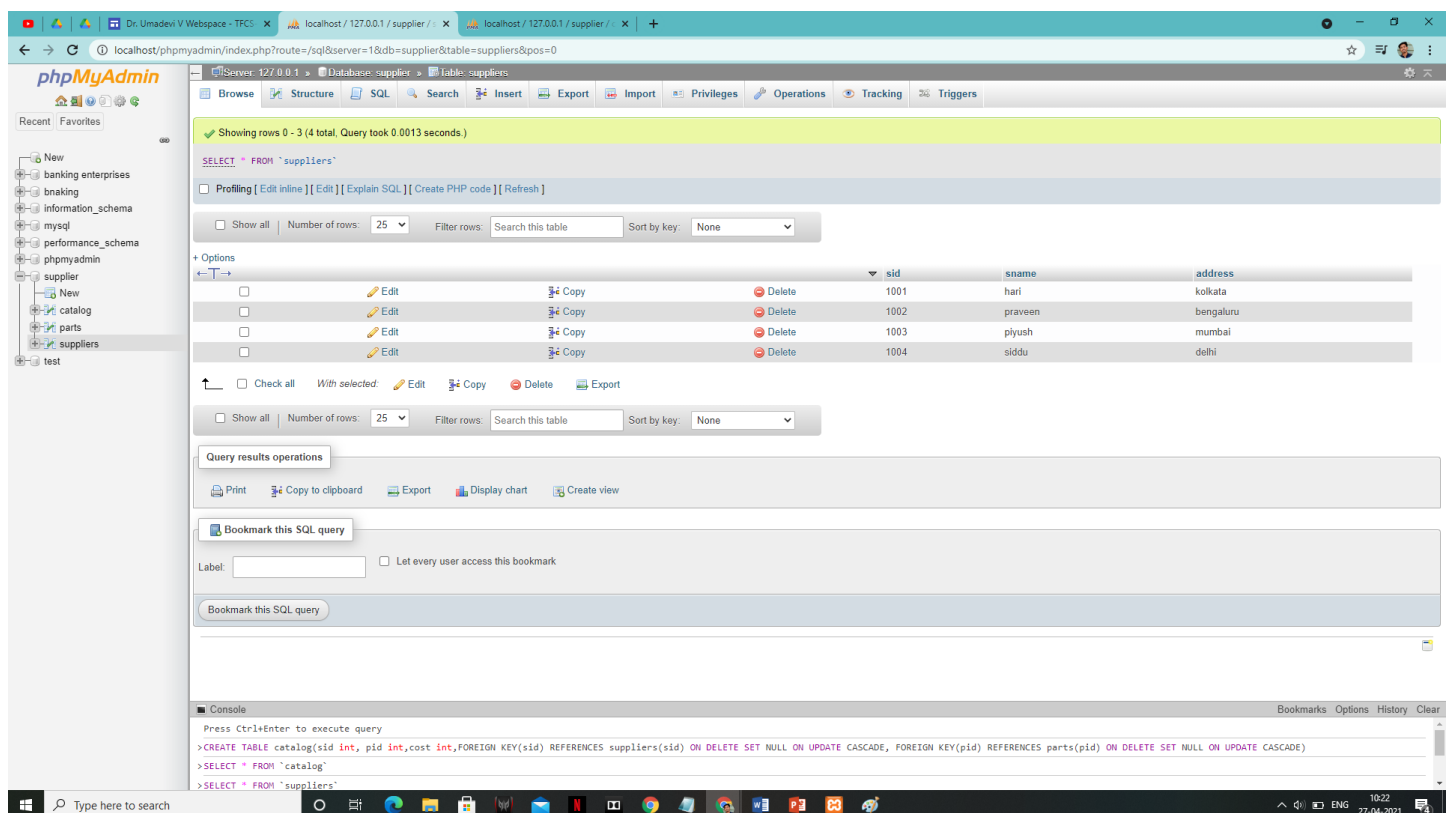
Console

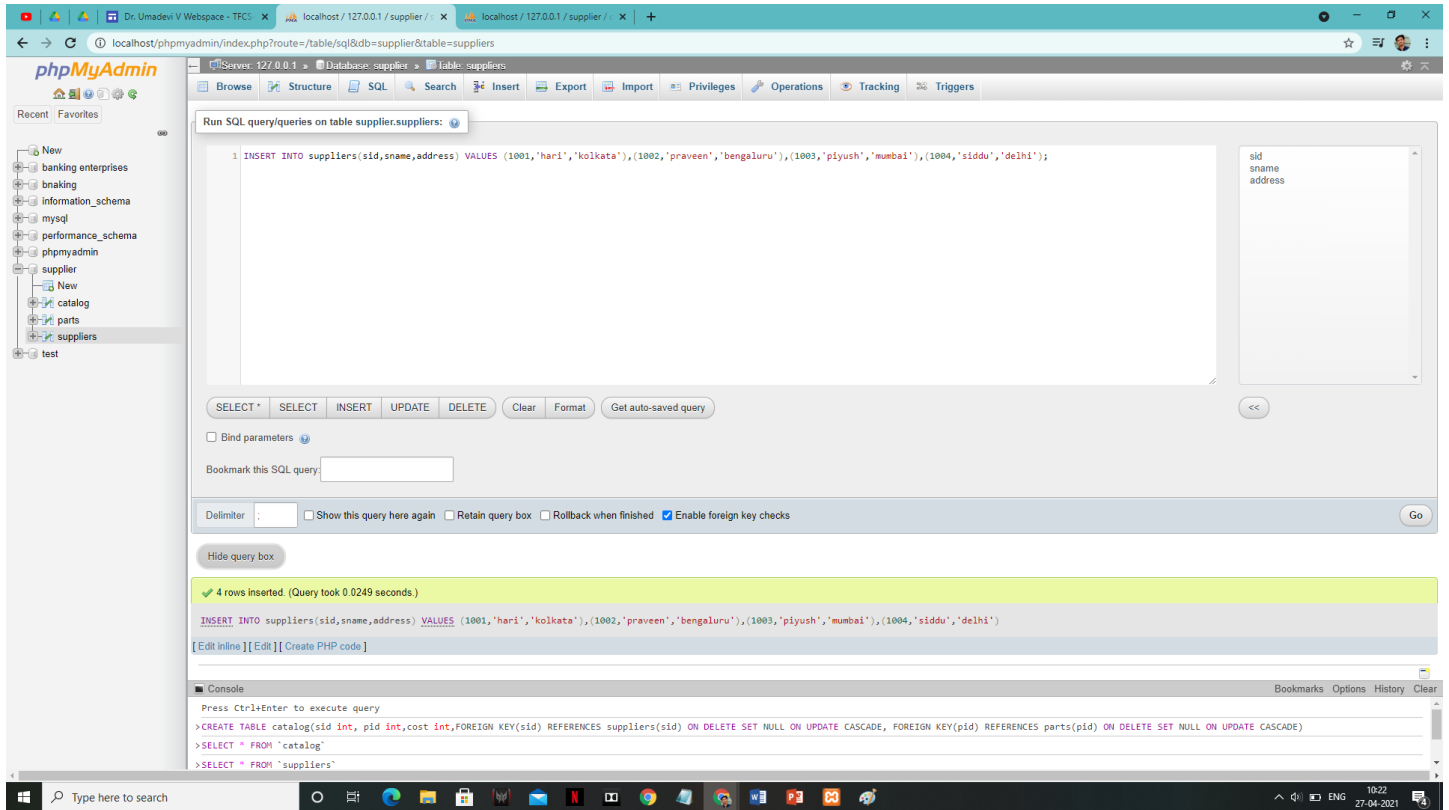
```
Press Ctrl+Enter to execute query
> CREATE TABLE catalog(sid int, pid int, cost int, FOREIGN KEY(sid) REFERENCES suppliers(sid) ON DELETE SET NULL ON UPDATE CASCADE, FOREIGN KEY(pid) REFERENCES parts(pid) ON DELETE SET NULL ON UPDATE CASCADE)
>
```



2) Enter tuples for each relation.

'suppliers' table:





'PARTS' table:

phpMyAdmin interface showing the 'parts' table in the 'supplier' database. The table contains 5 rows of data:

	pid	pname	color
<input type="checkbox"/>	2001	laptop	black
<input type="checkbox"/>	2002	charger	black
<input type="checkbox"/>	2003	mobile	red
<input type="checkbox"/>	2004	headphone	blue
<input type="checkbox"/>	2005	ipad	red

The console shows the following SQL queries:

```
> CREATE TABLE catalog(sid int, pid int, cost int, FOREIGN KEY(sid) REFERENCES suppliers(sid) ON DELETE SET NULL ON UPDATE CASCADE, FOREIGN KEY(pid) REFERENCES parts(pid) ON DELETE SET NULL ON UPDATE CASCADE)
> SELECT * FROM 'catalog'
```

phpMyAdmin interface showing the 'Run SQL query/queries on table supplier:parts' dialog. The query executed is:

```
INSERT INTO parts(pid,pname,color) VALUES(2001,'laptop','black'),(2002,'charger','black'),(2003,'mobile','red'),(2004,'headphone','blue'),(2005,'ipad','red');
```

The result shows 5 rows inserted. The console shows the following SQL queries:

```
> CREATE TABLE catalog(sid int, pid int, cost int, FOREIGN KEY(sid) REFERENCES suppliers(sid) ON DELETE SET NULL ON UPDATE CASCADE, FOREIGN KEY(pid) REFERENCES parts(pid) ON DELETE SET NULL ON UPDATE CASCADE)
> SELECT * FROM 'catalog'
```

'CATALOG' table:

The screenshot displays the phpMyAdmin web interface. The left sidebar shows a database structure with a 'supplier' database containing tables 'catalog', 'parts', and 'suppliers'. The main panel is titled 'Run SQL query/queries on table supplier.catalog:'. It contains an SQL editor with the following query:

```
1 INSERT INTO catalog(sid,pid,cost) VALUES (1001,2001,50000),(1001,2002,1500),(1001,2003,16000),(1001,2004,2000),(1001,2005,65000),(1002,2001,50000),(1002,2005,65000),(1003,2004,2000),(1004,2003,16000);
```

Below the editor are buttons for 'SELECT *', 'SELECT', 'INSERT', 'UPDATE', 'DELETE', 'Clear', 'Format', and 'Get auto-saved query'. There is also a checkbox for 'Bind parameters' and a 'Bookmark this SQL query' field. At the bottom of the editor area, there are checkboxes for 'Show this query here again', 'Retain query box', 'Rollback when finished', and 'Enable foreign key checks' (which is checked). A 'Go' button is on the right.

The execution result is shown in a green box: '9 rows inserted (Query took 0.0093 seconds)'. Below this, the executed query is repeated. At the bottom, the 'Console' tab shows the following commands:

```
Press Ctrl+Enter to execute query
> CREATE TABLE catalog(sid int, pid int, cost int, FOREIGN KEY(sid) REFERENCES suppliers(sid) ON DELETE SET NULL ON UPDATE CASCADE, FOREIGN KEY(pid) REFERENCES parts(pid) ON DELETE SET NULL ON UPDATE CASCADE)
> SELECT * FROM 'catalog'
> SELECT * FROM 'suppliers'
```

The Windows taskbar at the bottom shows the date and time as 10:37 on 27-04-2021.

i. Find the pnames of parts for which there is some supplier.

The screenshot shows the phpMyAdmin web interface. The left sidebar displays a database structure with 'supplier' selected. The main panel shows a SQL query: `1 SELECT DISTINCT pname FROM parts p,catalog c WHERE p.pid=c.pid;`. Below the query, the results are displayed as a table with one column, 'pname', containing the following values: laptop, charger, mobile, headphone, and ipad. The status bar at the bottom indicates 'Showing rows 0 - 4 (5 total, Query took 0.0055 seconds)'.

Run SQL query/queries on database supplier:

```
1 SELECT DISTINCT pname FROM parts p,catalog c WHERE p.pid=c.pid;
```

Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: ☐ Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

Showing rows 0 - 4 (5 total, Query took 0.0055 seconds)

```
SELECT DISTINCT pname FROM parts p,catalog c WHERE p.pid=c.pid
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table

+ Options

pname
laptop
charger
mobile
headphone
ipad

☐ Show all Number of rows: 25 Filter rows: Search this table

Query result operations Console

Press Ctrl+Enter to execute query

```
>CREATE TABLE catalog(sid int, pid int,cost int,FOREIGN KEY(sid) REFERENCES suppliers(sid) ON DELETE SET NULL ON UPDATE CASCADE, FOREIGN KEY(pid) REFERENCES parts(pid) ON DELETE SET NULL ON UPDATE CASCADE)
>SELECT * FROM `catalog`
>SELECT * FROM `suppliers`
```

ii. Find the snames of suppliers who supply every part.

localhost / 127.0.0.1 / supplier | x localhost / 127.0.0.1 / supplier / x +

localhost/phpmyadmin/index.php?route=/database/sql&db=supplier

Server: 127.0.0.1 x Database: supplier x Table: suppliers

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Run SQL query/queries on database supplier:

```
1 SELECT sname FROM suppliers WHERE sid IN(SELECT sid from catalog GROUP by sid having count(pid)=(SELECT count(*) from parts));
```

Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

Showing rows 0 - 0 (1 total, Query took 0.0038 seconds)

```
SELECT sname FROM suppliers WHERE sid IN(SELECT sid from catalog GROUP by sid having count(pid)=(SELECT count(*) from parts))
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table

+ Options

					sname
<input type="checkbox"/>	Edit	Copy	Delete		hari

☐ Check all With selected: Edit Copy Delete Export

☐ Show all Number of rows: 25 Filter rows: Search this table

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

☐ Let every user access this bookmark

Console

iii. Find the snames of suppliers who supply every red part.

localhost / 127.0.0.1 / supplier | x localhost / 127.0.0.1 / supplier / x +

localhost/phpmyadmin/index.php?route=/database/sql&db=supplier

Server: 127.0.0.1 x Database: supplier x Table: suppliers

Browse Structure SQL Search Insert Export Import Privileges Operations Tracking Triggers

Run SQL query/queries on database supplier:

```
1 SELECT * FROM suppliers s WHERE NOT EXISTS((SELECT pid FROM parts WHERE color='red') EXCEPT (SELECT pid FROM catalog c WHERE c.sid=s.sid));
```

Clear Format Get auto-saved query

☐ Bind parameters

Bookmark this SQL query:

Delimiter: Show this query here again ☐ Retain query box ☐ Rollback when finished ☒ Enable foreign key checks Go

Hide query box

Showing rows 0 - 0 (1 total, Query took 0.0045 seconds)

```
SELECT * FROM suppliers s WHERE NOT EXISTS((SELECT pid FROM parts WHERE color='red') EXCEPT (SELECT pid FROM catalog c WHERE c.sid=s.sid))
```

☐ Profiling [Edit inline] [Edit] [Explain SQL] [Create PHP code] [Refresh]

☐ Show all Number of rows: 25 Filter rows: Search this table

+ Options

				sid	sname	address
<input type="checkbox"/>	Edit	Copy	Delete	1001	hari	kolkata

☐ Check all With selected: Edit Copy Delete Export

☐ Show all Number of rows: 25 Filter rows: Search this table

Query results operations

Print Copy to clipboard Export Display chart Create view

Bookmark this SQL query

Console

iv. Find the pnames of parts supplied by hari Suppliers and by no one else.

The screenshot shows the phpMyAdmin interface for a database named 'supplier'. The 'parts' table is selected. A SQL query is entered in the 'Run SQL query/queries on database supplier:' box:

```
1 SELECT * FROM parts WHERE pid in (SELECT pid FROM catalog WHERE sid in (SELECT sid from suppliers WHERE sname='hari') EXCEPT (SELECT pid from catalog WHERE sid in (SELECT sid from suppliers WHERE sname<>'hari')));
```

The query is executed, and the results are displayed in a table with the following columns: pid, pname, and color. The results show one row:

pid	pname	color
2002	charger	black

The interface also shows options for displaying the results, such as 'Show all', 'Number of rows: 25', and 'Filter rows: Search this table'. There are also buttons for 'Print', 'Copy to clipboard', 'Export', 'Display chart', and 'Create view'.

v. Find the sids of suppliers who charge more for some part than the average cost of that part (averaged over all the suppliers who supply that part)

The screenshot shows the phpMyAdmin interface with a query executed on the 'supplier' database. The query is:

```
SELECT pname,sid,cost FROM parts,catalog c1 WHERE parts.pid=c1.pid AND cost=(SELECT Avg(cost) FROM catalog c2 WHERE c1.pid=c2.pid)
```

The result shows 8 rows of data:

pname	sid	cost
laptop	1001	50000
charger	1001	1500
mobile	1001	16000
headphone	1001	2000
ipad	1001	65000
laptop	1002	50000
ipad	1002	65000
headphone	1003	2000

vi. For each part, find the sname of the supplier who charges the most for that part.

The screenshot shows the phpMyAdmin interface with a query executed on the 'supplier' database. The query is:

```
SELECT * FROM suppliers s,parts p,catalog c WHERE p.pid=c.pid AND c.sid=s.sid AND cost in (SELECT MAX(cost) FROM catalog c1 WHERE c1.pid=p.pid);
```

The result shows 8 rows of data:

sid	sname	address	pid	pname	color	sid	pid	cost
1001	hari	kolkata	2001	laptop	black	1001	2001	50000
1001	hari	kolkata	2002	charger	black	1001	2002	1500
1001	hari	kolkata	2003	mobile	red	1001	2003	16000
1001	hari	kolkata	2004	headphone	blue	1001	2004	2000
1001	hari	kolkata	2005	ipad	red	1001	2005	65000
1002	praveen	bengaluru	2001	laptop	black	1002	2001	50000
1002	praveen	bengaluru	2005	ipad	red	1002	2005	65000
1003	piyush	mumbai	2004	headphone	blue	1003	2004	2000

vii. Find the sids of suppliers who supply only red parts.

The screenshot shows the phpMyAdmin interface for a database named 'supplier'. The 'SQL' tab is selected, and a query is entered in the 'Run SQL query/queries on database supplier:' box. The query is: `SELECT * FROM suppliers s WHERE NOT EXISTS ((SELECT pid from catalog c WHERE c.sid=s.sid) EXCEPT(SELECT pid FROM parts WHERE color='red'));`

Below the query box, there are buttons for 'Clear', 'Format', and 'Get auto-saved query'. There is also a checkbox for 'Bind parameters' and a text input for 'Bookmark this SQL query'. At the bottom of the query box, there are checkboxes for 'Show this query here again', 'Retain query box', 'Rollback when finished', and 'Enable foreign key checks' (which is checked). A 'Go' button is on the right.

Below the query box, there is a 'Hide query box' button. The results section shows 'Showing rows 0 - 0 (1 total, Query took 0.0051 seconds.)'. The query is repeated. There are links for 'Profiling', 'Edit inline', 'Edit', 'Explain SQL', 'Create PHP code', and 'Refresh'. Below this, there are checkboxes for 'Show all', a 'Number of rows' dropdown set to 25, and a 'Filter rows' search box.

Below the results section, there is a table with one row of data:

	sid	sname	address
<input type="checkbox"/>	1004	siddu	delhi

Below the table, there are buttons for 'Edit', 'Copy', and 'Delete'. There are also checkboxes for 'Check all', 'With selected', 'Edit', 'Copy', 'Delete', and 'Export'. Below this, there are checkboxes for 'Show all', a 'Number of rows' dropdown set to 25, and a 'Filter rows' search box.

Below the table, there is a 'Query results operations' section with buttons for 'Print', 'Copy to clipboard', 'Export', 'Display chart', and 'Create view'. Below this, there is a 'Bookmark this SQL query' button and a checkbox for 'Let every user access this bookmark'.

The bottom of the screen shows the Windows taskbar with the search bar and various application icons. The system clock shows 14:41 on 10-05-2021.