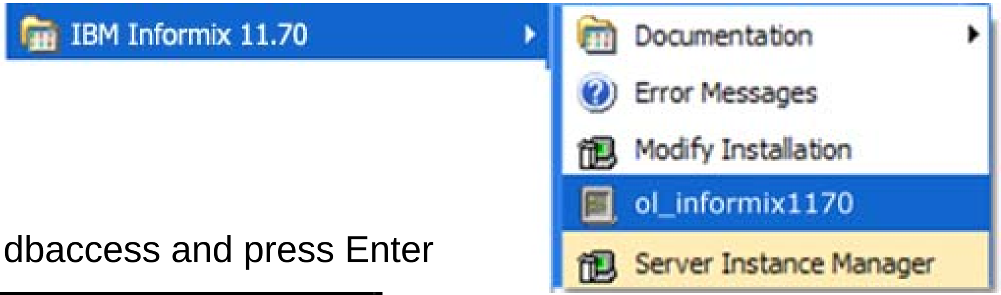
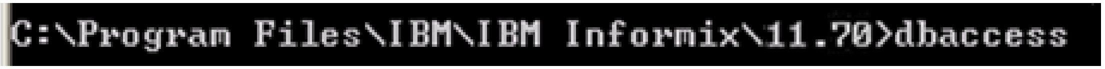
The Informix Detective Game (Student Handout)

Before you start playing the game

1. Start Informix
   a) Start Informix command prompt
      - Start → all Programs → IBM Informix 11.70 → ol_informix_1170



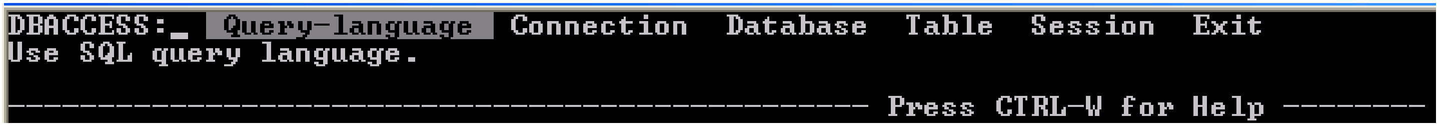
   b) Start DBAccess
      - At the command prompt, type in dbaccess and press Enter



```
C:\Program Files\IBM\IBM Informix\11.70>dbaccess
```

2. Start Informix Detective clue program
   - Click on InformixGame shortcut on your windows desktop

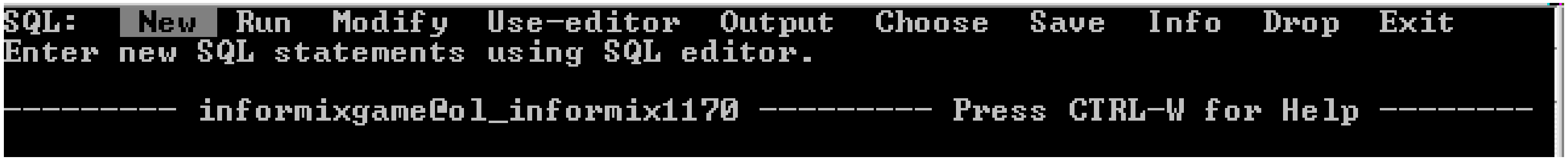
3. Select “Query-language” from the DBAccess main menu



```
DBACCESS:_  Query-language  Connection  Database  Table  Session  Exit
Use SQL query language.

------------------------------------------------ Press CTRL-W for Help --------
```

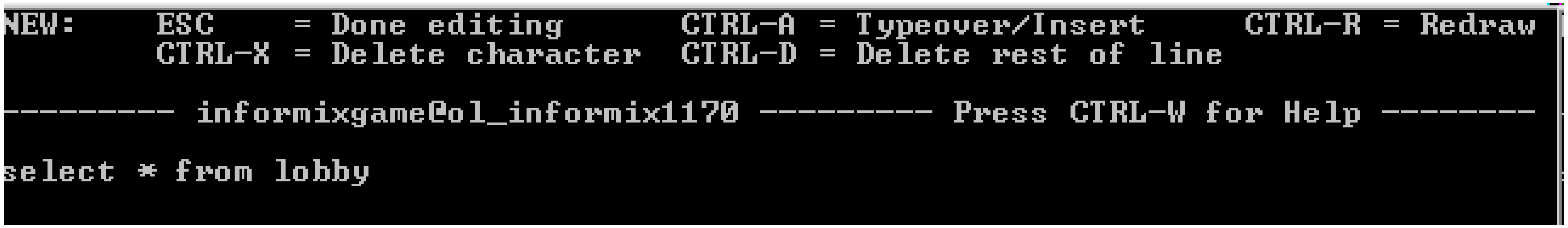
Before you start playing the game

4. Select “New” from the Query-language menu and press Enter



```
SQL:   New  Run  Modify  Use-editor  Output  Choose  Save  Info  Drop  Exit
Enter new SQL statements using SQL editor.

--------- informixgame@ol_informix1170 --------- Press CTRL-W for Help --------
```

5. Try a test command → SELECT * FROM lobby
   (hit ESC; Run)



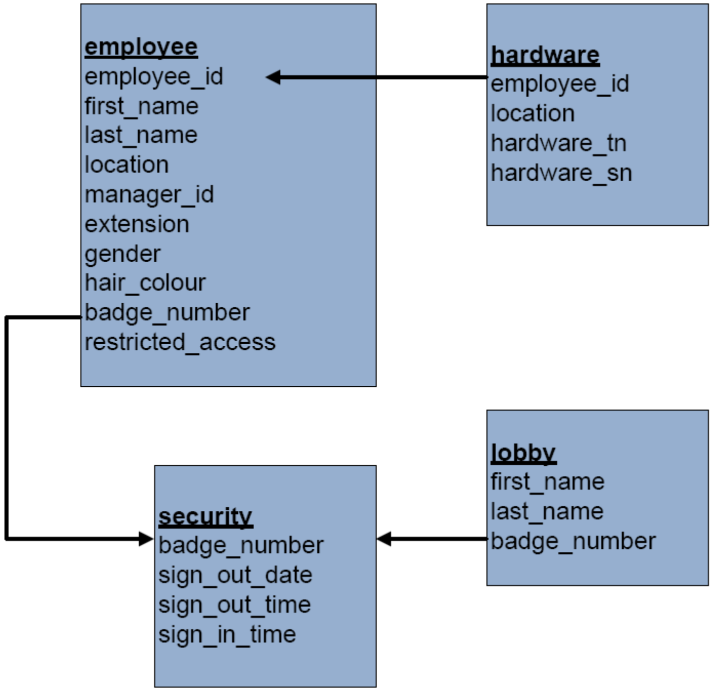
```
NEW:    ESC    = Done editing      CTRL-A = Typeover/Insert     CTRL-R = Redraw
        CTRL-X = Delete character  CTRL-D = Delete rest of line

--------- informixgame@ol_informix1170 --------- Press CTRL-W for Help --------

select * from lobby
```

6. You are now ready to play the game!

Informix Detective Game

- The Informix Detective Game consists of four tables:
  1. **employee** table stores information about each employee such as their employee #, name, manager, office #, phone #, and badge #, etc
  2. **security** table stores information as to when each employee or visitor badged in and out of the building (date and time)
  3. **lobby** table stores the badge # assigned to each visitor by name
  4. **hardware** table stores the serial # and type # for every computer along with its location and the ID of the employee who is its primary user

- Relationships between tables in a relational database are established using “keys”. The relationships defined between the tables of the Informix Detective Game are shown in this diagram. Arrows indicate the fields that have keys associated with them and the relationships that were defined between the tables. You will need to use these keys when joining the tables.



Tips

- Use DBAccess to execute SQL statements

- Enter SQL commands in the “Query-language” tab from the DBAccess main menu

- From the Query-language menu:
  - “New” starts a new SQL statement,
  - “Run” executes the SQL statement,
  - “Modify” modifies your last SQL statement

- When viewing your results, press “Next” to scroll through the entire list of results.

- To see the count of the number of records for an SQL statement, select Next until the number of rows retrieved is displayed.

- If the width of the fields to be displayed is less than 80 characters wide (including the field name), the results are displayed in a table format.

- If the width of the fields to be displayed is greater than 80 characters wide (including the field name), the results for each record is displayed over multiple lines, as defined by the table structure.

Additional Tips

- Note the format of data in the tables
  - gender field contains a single uppercase letter (M or F)
  - hair_colour field contains lowercase entries only (brown, black, blonde, or red)
  - restricted_access field contains a single uppercase letter (Y or N)
  - sign_out_time and sign_in_time fields use a 24-hour format (e.g., 14:00:00)
  - sign_out_date field uses year-month–day format (e.g., 2007-11-07)

    (Note: use the SET DBDATE=y4md- command prior to starting DBAccess)

- The * in place of the column name(s) of the SQL query is equal to identifying all column names

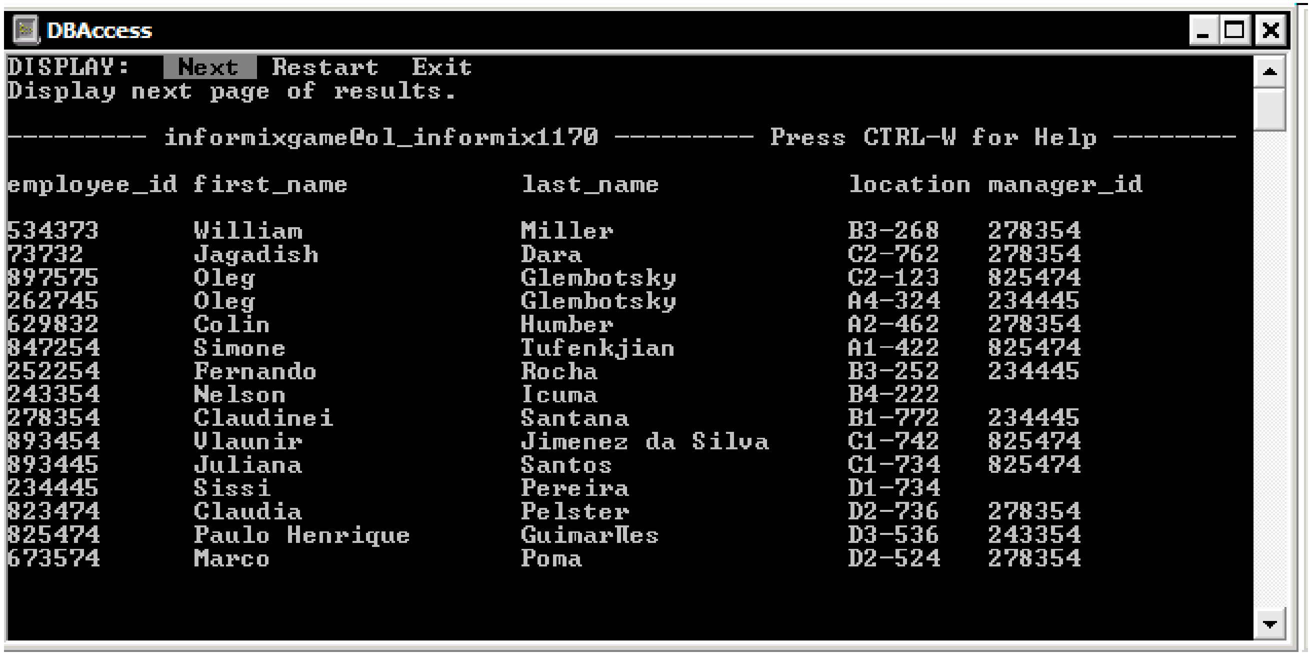
```
SELECT *
FROM lobby
```

  The above query selects all columns from the lobby table.

- AND is used to create compound conditions in a SELECT statement

```
SELECT *
FROM employee
WHERE employee.manager_id = ‘278354’
AND employee.gender = ‘M’
```

Employee Table

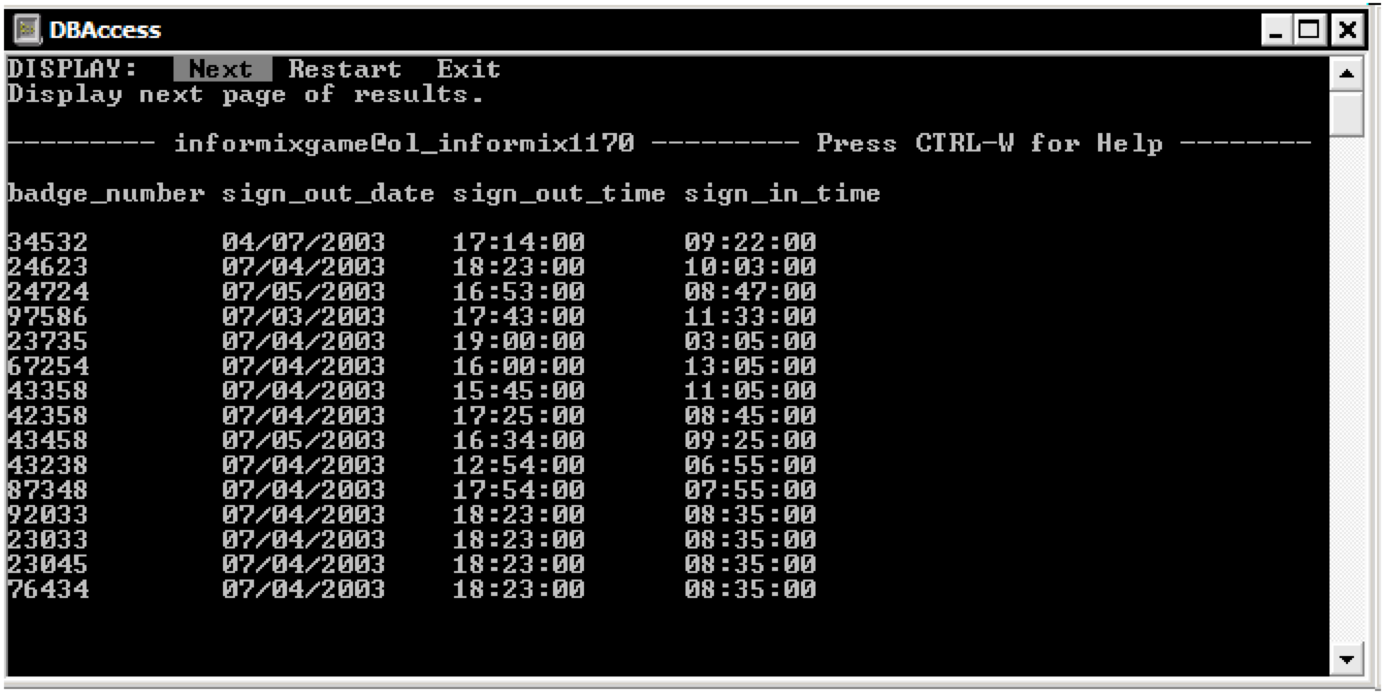


```
DISPLAY:   Next  Restart  Exit
Display next page of results.

--------- informixgame@ol_informix1170 --------- Press CTRL-W for Help --------

employee_id first_name           last_name            location manager_id

534373      William              Miller               B3-268   278354
73732       Jagadish             Dara                 C2-762   278354
897575      Oleg                 Glembotsky           C2-123   825474
262745      Oleg                 Glembotsky           A4-324   234445
629832      Colin                Humber               A2-462   278354
847254      Simone               Tufenkjian           A1-422   825474
252254      Fernando             Rocha                B3-252   234445
243354      Nelson               Icuma                B4-222
278354      Claudinei            Santana              B1-772   234445
893454      Vlaunir              Jimenez da Silva     C1-742   825474
893445      Juliana              Santos               C1-734   825474
234445      Sissi                Pereira              D1-734
823474      Claudia              Pelster              D2-736   278354
825474      Paulo Henrique       Guimarπes            D3-536   243354
673574      Marco                Poma                 D2-524   278354
```

- In the employee table, the columns (or fields) are: **employee_id, first_name, last_name, location, manager_id, extension, gender, hair_colour, badge_number,** and **restricted_access**

- There are 140 rows (records) in the **employee** table but only a subset of the results table is shown. You need to page down (using “Next” menu option) to see additional records.

Security Table

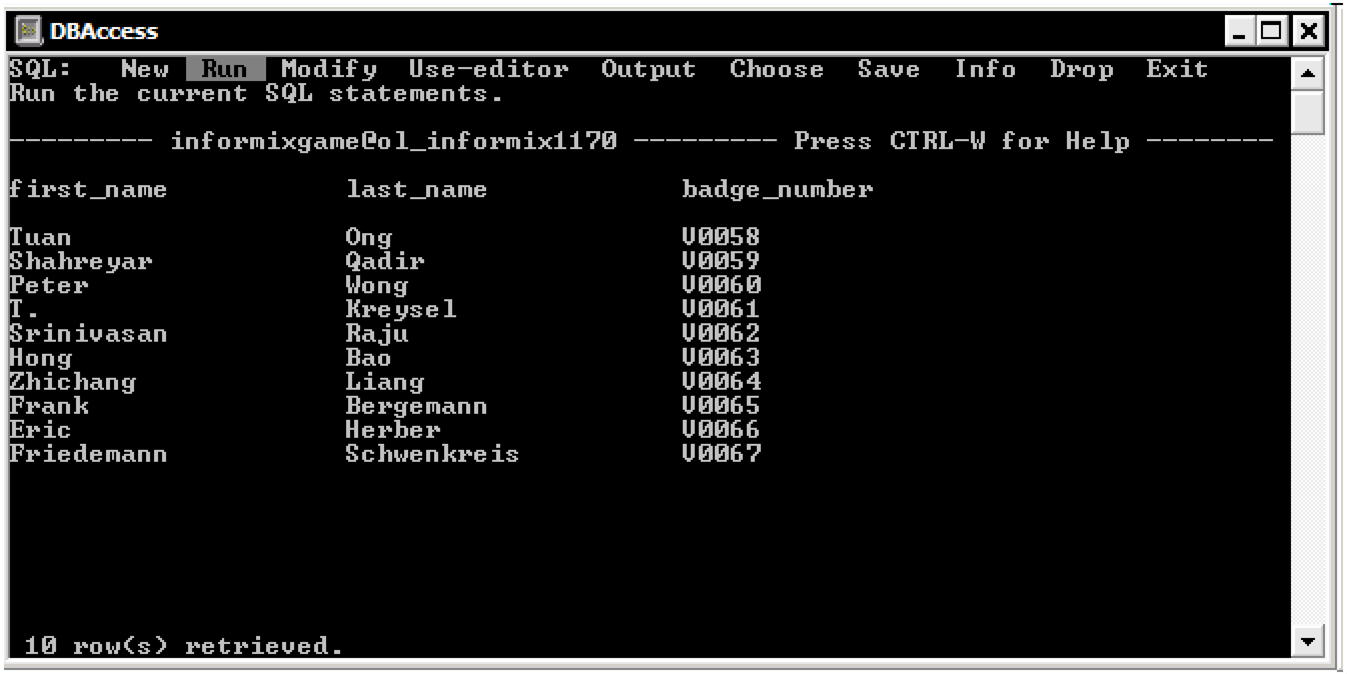


```
DISPLAY:  Next  Restart  Exit
Display next page of results.

--------- informixgame@ol_informix1170 --------- Press CTRL-W for Help --------

badge_number sign_out_date sign_out_time sign_in_time

34532        04/07/2003    17:14:00      09:22:00
24623        07/04/2003    18:23:00      10:03:00
24724        07/05/2003    16:53:00      08:47:00
97586        07/03/2003    17:43:00      11:33:00
23735        07/04/2003    19:00:00      03:05:00
67254        07/04/2003    16:00:00      13:05:00
43358        07/04/2003    15:45:00      11:05:00
42358        07/04/2003    17:25:00      08:45:00
43458        07/05/2003    16:34:00      09:25:00
43238        07/04/2003    12:54:00      06:55:00
87348        07/04/2003    17:54:00      07:55:00
92033        07/04/2003    18:23:00      08:35:00
23033        07/04/2003    18:23:00      08:35:00
23045        07/04/2003    18:23:00      08:35:00
76434        07/04/2003    18:23:00      08:35:00
```

- In the security table, the columns (or fields) are: **badge_number, sign_out_date, sign_out_time,** and **sign_in_time**

- There are 151 rows (records) in the security table but only a subset of the results table is shown on each page. You need to page down (using “Next” menu option) to see additional records.

Lobby Table

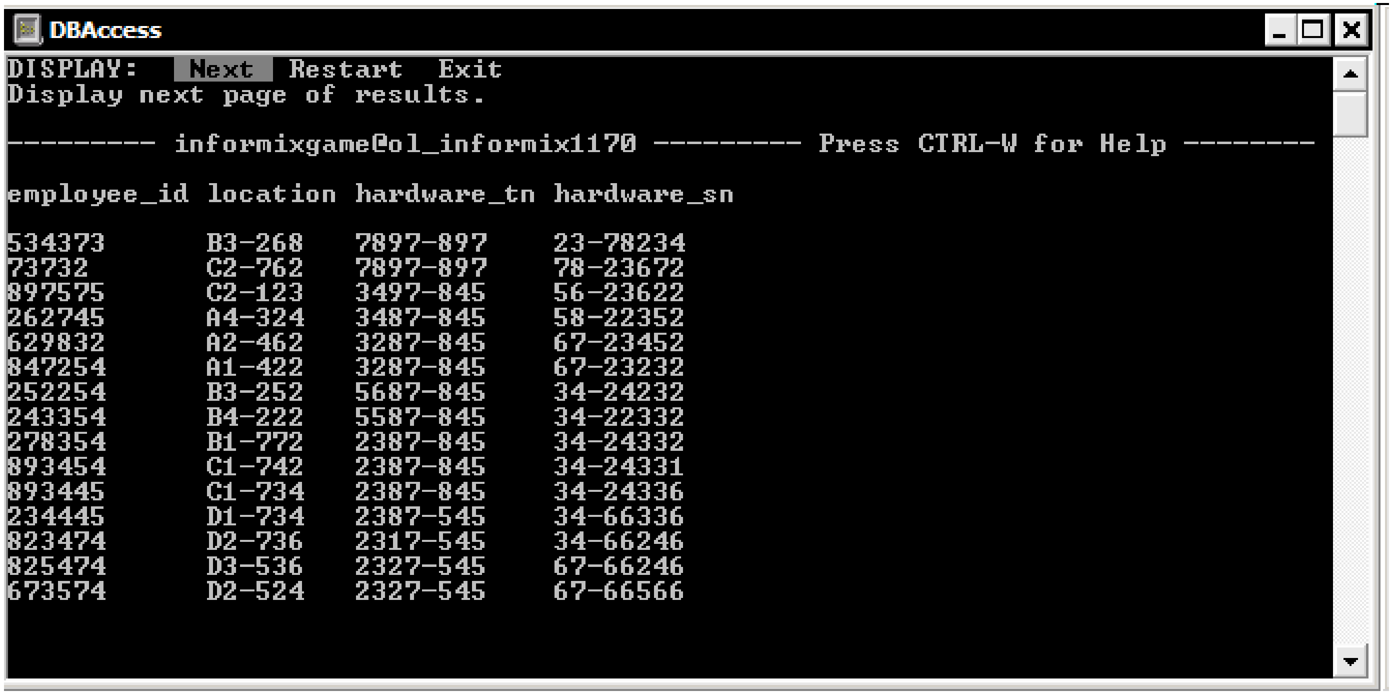


```
SQL:   New  Run  Modify  Use-editor  Output  Choose  Save  Info  Drop  Exit
Run the current SQL statements.

--------- informixgame@ol_informix1170 --------- Press CTRL-W for Help --------

first_name           last_name            badge_number

Tuan                 Ong                  V0058
Shahreyar            Qadir                V0059
Peter                Wong                 V0060
T.                   Kreysel              V0061
Srinivasan           Raju                 V0062
Hong                 Bao                  V0063
Zhichang             Liang                V0064
Frank                Bergemann            V0065
Eric                 Herber               V0066
Friedemann           Schwenkreis          V0067




 10 row(s) retrieved.
```

- In the lobby table, the columns (or fields) are: **first_name, last_name,** and **badge_number**

- There are 10 rows (records) in the lobby table.

Hardware Table



```
DISPLAY:   Next   Restart   Exit
Display next page of results.

---------- informixgame@ol_informix1170 ---------- Press CTRL-W for Help ---------

employee_id location hardware_tn hardware_sn

534373      B3-268   7897-897    23-78234
73732       C2-762   7897-897    78-23672
897575      C2-123   3497-845    56-23622
262745      A4-324   3487-845    58-22352
629832      A2-462   3287-845    67-23452
847254      A1-422   3287-845    67-23232
252254      B3-252   5687-845    34-24232
243354      B4-222   5587-845    34-22332
278354      B1-772   2387-845    34-24332
893454      C1-742   2387-845    34-24331
893445      C1-734   2387-845    34-24336
234445      D1-734   2387-545    34-66336
823474      D2-736   2317-545    34-66246
825474      D3-536   2327-545    67-66246
673574      D2-524   2327-545    67-66566
```

- In the hardware table, the columns (or fields) are: **employee_id, location, hardware_tn,** and **hardware_sn**

- There are 140 rows (records) in the hardware table but only a subset of the results table is shown on each page. You need to page down (using “Next” menu option) to see additional records.

SELECT Statement

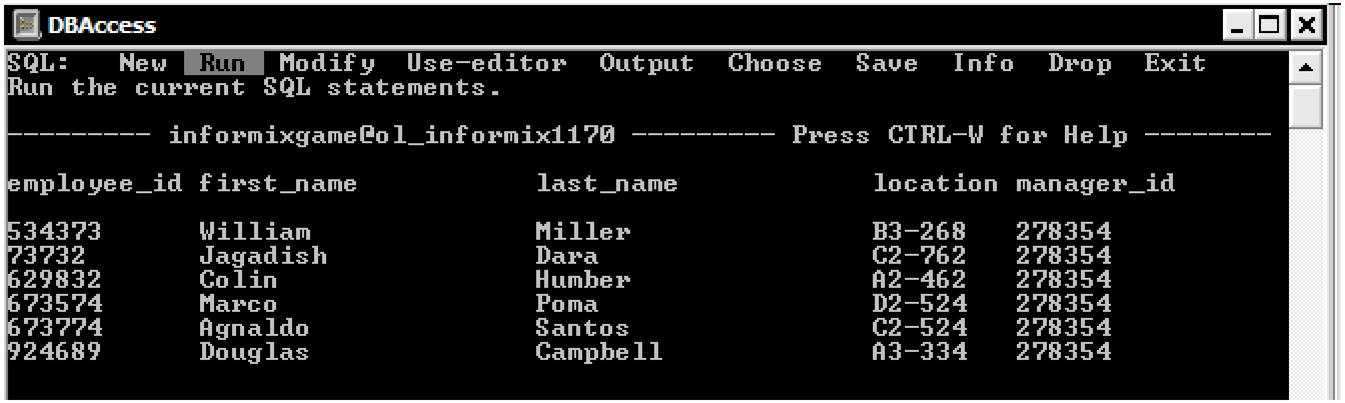
To select all of the rows and columns from the **employee** table where

a) the employee reports to Claudinei Santana (hint: employee id = 278354), and

b) the employee is male

SELECT *
FROM employee
WHERE employee.manager_id = ‘278354’ AND employee.gender = ‘M’

This statement will produce the following result:



```
SQL:   New  Run  Modify  Use-editor  Output  Choose  Save  Info  Drop  Exit
Run the current SQL statements.

--------- informixgame@ol_informix1170 --------- Press CTRL-W for Help --------

employee_id first_name           last_name            location manager_id

534373      William              Miller               B3-268   278354
73732       Jagadish             Dara                 C2-762   278354
629832      Colin                Humber               A2-462   278354
673574      Marco                Poma                 D2-524   278354
673774      Agnaldo              Santos               C2-524   278354
924689      Douglas              Campbell             A3-334   278354
```

Note: In order to see the output in a tabular format as shown here, use the following syntax:

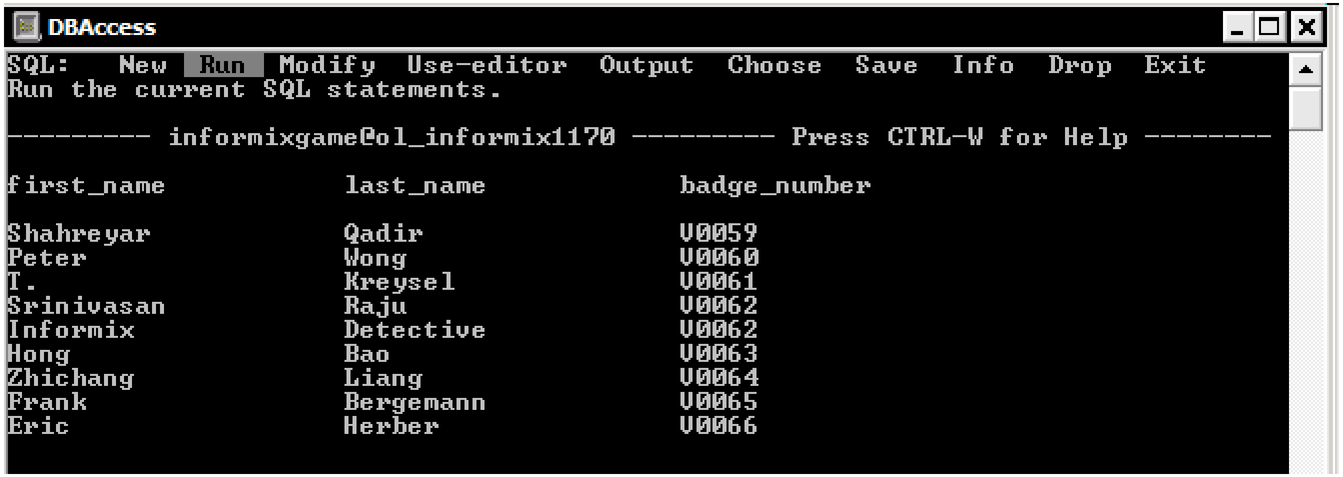
SELECT employee_id, first_name, last_name, location, manager_id
FROM employee
WHERE employee.manager_id = ‘278354’ **AND** employee.gender = ‘M’

BETWEEN Predicate

The BETWEEN predicate compares a single value to an inclusion range of values (i.e. all values BETWEEN a specified Maximum Value and Minimum Value).

For example, to select all of the rows and columns from the **lobby** table where the visitor's badge number is between 59 and 66, issue the following statement:

```
SELECT * FROM lobby
WHERE lobby.badge_number BETWEEN ‘V0059’ AND ‘V0066’
```



```
SQL:   New  Run  Modify  Use-editor  Output  Choose  Save  Info  Drop  Exit
Run the current SQL statements.

--------- informixgame@ol_informix1170 --------- Press CTRL-W for Help --------

first_name           last_name            badge_number

Shahreyar            Qadir                V0059
Peter                Wong                 V0060
T.                   Kreysel              V0061
Srinivasan           Raju                 V0062
Informix             Detective            V0062
Hong                 Bao                  V0063
Zhichang             Liang                V0064
Frank                Bergemann            V0065
Eric                 Herber               V0066
```

UPDATE Statement

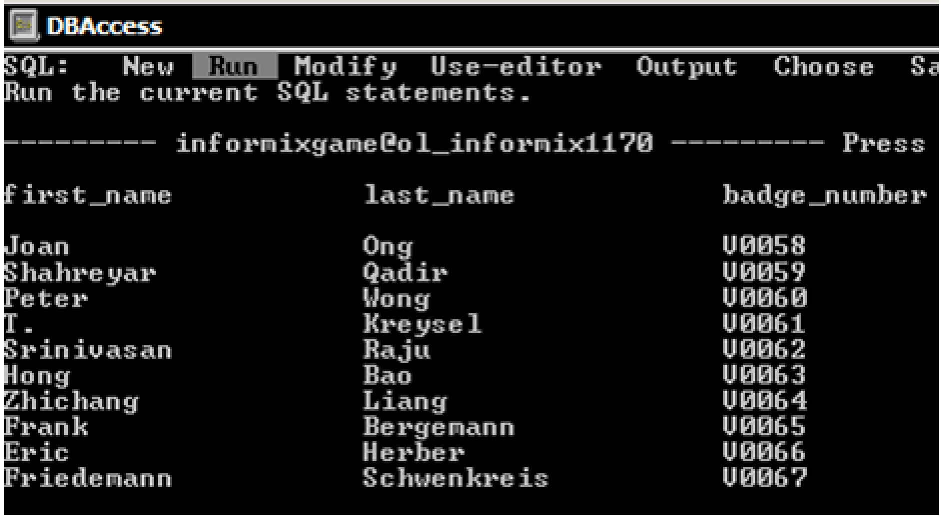
The UPDATE statement is used to change data in a table.

With this statement, you can change the value of one or more columns for each row that satisfies the search condition of the WHERE clause. The format is:

UPDATE table name
SET column name = expression
WHERE conditions for rows to meet if any

Note: if you do not use the WHERE clause, all rows will be updated.

```
UPDATE lobby
SET first_name = 'Joan'
WHERE lobby.badge_number = 'V0058'
```



```
SQL:   New  Run  Modify  Use-editor  Output  Choose  Sa
Run the current SQL statements.

--------- informixgame@ol_informix1170 --------- Press

first_name           last_name            badge_number

Joan                 Ong                  V0058
Shahreyar            Qadir                V0059
Peter                Wong                 V0060
T.                   Kreysel              V0061
Srinivasan           Raju                 V0062
Hong                 Bao                  V0063
Zhichang             Liang                V0064
Frank                Bergemann            V0065
Eric                 Herber               V0066
Friedemann           Schwenkreis          V0067
```

INSERT Statement

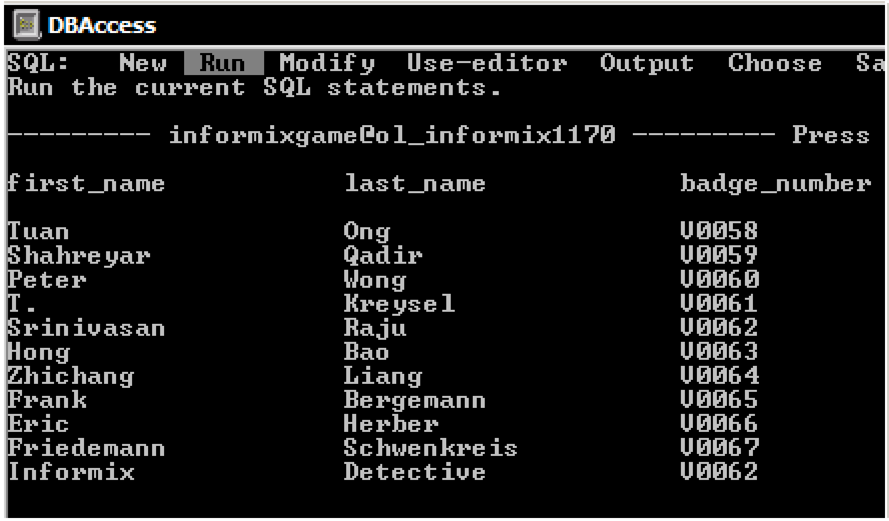
The INSERT statement is used to add data to a table. The format of this statement is:

```
INSERT INTO tablename (column name(s))
VALUES (value(s));
```

To add a visitor named “Informix Detective" to the **lobby** table, issue this command:

```
INSERT INTO lobby (first_name, last_name, badge_number)
VALUES (‘Informix', 'DETECTIVE', 'V0062')
```

This statement will produce the following result:



```
Run the current SQL statements.

---------- informixgame@ol_informix1170 ---------- Press

first_name            last_name             badge_number

Tuan                  Ong                   V0058
Shahreyar             Qadir                 V0059
Peter                 Wong                  V0060
T.                    Kreysel               V0061
Srinivasan            Raju                  V0062
Hong                  Bao                   V0063
Zhichang              Liang                 V0064
Frank                 Bergemann             V0065
Eric                  Herber                V0066
Friedemann            Schwenkreis           V0067
Informix              Detective             V0062
```

Note: This insertion is the 11th record of the lobby table and the table now has two records with badge_number = ‘V0062’

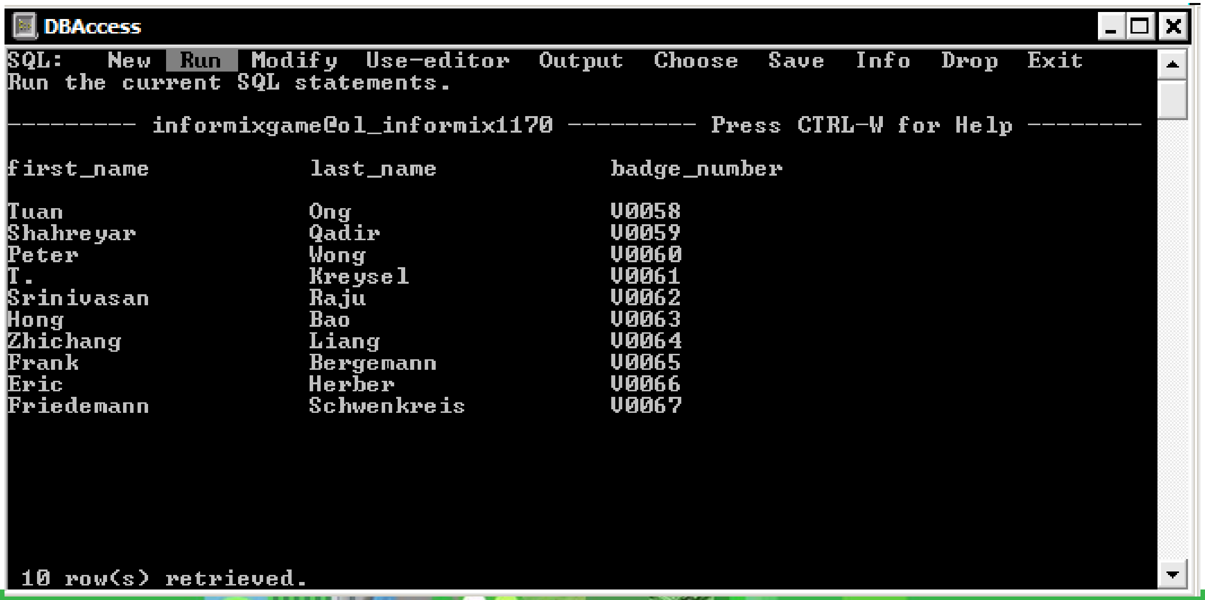
DELETE Statement

Use the DELETE statement to remove records (rows) from a table. The format is:

DELETE FROM table name
WHERE conditions for rows to meet if any

For example, to remove the record for the visitor with a last name of Detective from the **lobby** table, issue the following statement:

DELETE FROM lobby
WHERE lobby.last_name = ‘Detective'



```
SQL:   New  Run  Modify  Use-editor  Output  Choose  Save  Info  Drop  Exit
Run the current SQL statements.

--------- informixgame@ol_informix1170 --------- Press CTRL-W for Help --------

first_name               last_name                badge_number

Tuan                     Ong                      V0058
Shahreyar                Qadir                    V0059
Peter                    Wong                     V0060
T.                       Kreysel                  V0061
Srinivasan               Raju                     V0062
Hong                     Bao                      V0063
Zhichang                 Liang                    V0064
Frank                    Bergemann                V0065
Eric                     Herber                   V0066
Friedemann               Schwenkreis              V0067




 10 row(s) retrieved.
```

Note: Following this deletion there are only 10 records in the lobby table and only one record with **badge_number = ‘V0062’**

Joining tables

The process of combining data from two or more tables is called joining tables.

The columns involved in the join condition do not have to be identical; however, they must be compatible.

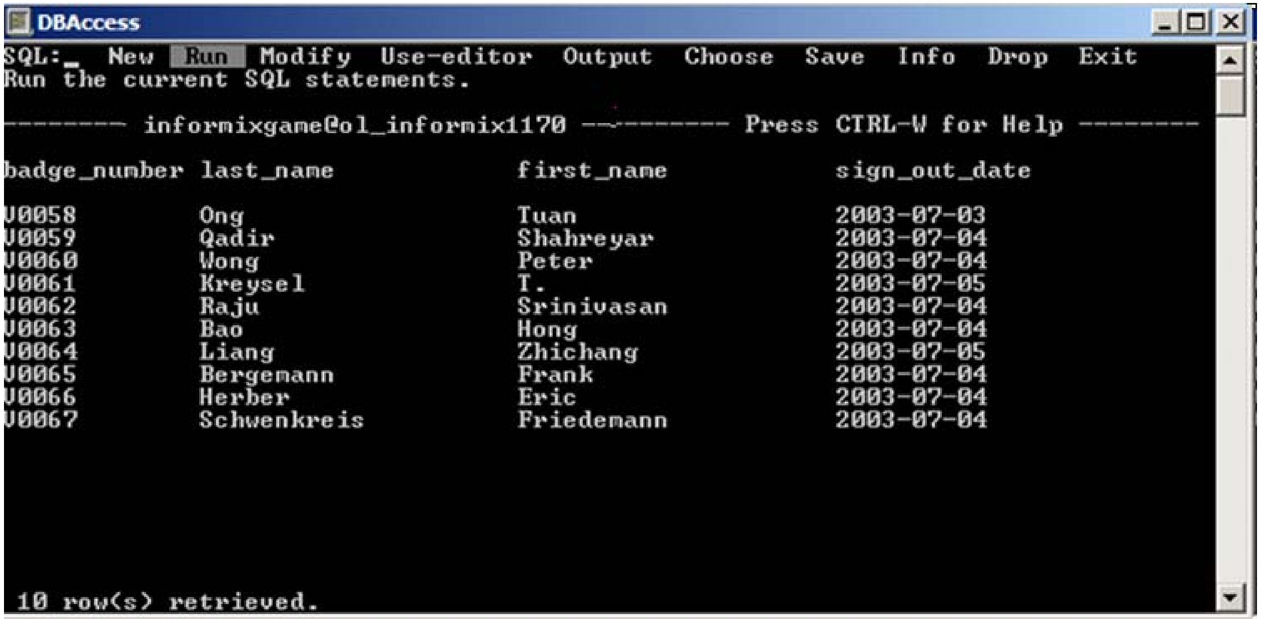
To join the **lobby** table to the **security** table, issue the following command:

```
SELECT *
FROM lobby, security
WHERE security.badge_number = lobby.badge_number
```

Note: The fields shown are from both the lobby and security tables.

Recall: The Security table has 151 rows but only 10 that satisfy the join condition.

Note: In order to see output in a tabular format as shown here, use the following syntax.



```
SQL:_  New  Run  Modify  Use-editor  Output  Choose  Save  Info  Drop  Exit
Run the current SQL statements.

-------- informixgame@ol_informix1170 ---------- Press CTRL-W for Help --------

badge_number last_name          first_name          sign_out_date

U0058        Ong                Tuan                2003-07-03
U0059        Qadir              Shahreyar           2003-07-04
U0060        Wong               Peter               2003-07-04
U0061        Kreysel            T.                  2003-07-05
U0062        Raju               Srinivasan          2003-07-04
U0063        Bao                Hong                2003-07-04
U0064        Liang              Zhichang            2003-07-05
U0065        Bergemann          Frank               2003-07-04
U0066        Herber             Eric                2003-07-04
U0067        Schwenkreis        Friedemann          2003-07-04



 10 row(s) retrieved.
```

```
SELECT lobby.badge_number, lobby.last_name, lobby.first_name, security.sign_out_date
FROM lobby, security
WHERE security.badge_number = lobby.badge_number
```