IBM DB2 at UW

(a mini-tutorial)

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DB2: what is it?

DB2 is a relational DBMS and a set of tools:

- a command-line interface to SQL
- an ESQL preprocessor for C language

This tutorial covers (briefly):

- How do I run it?
- Useful hints
- What if something goes wrong?

DB2 documentation:

will be available on-line
from the course web page

First Steps

- DB2 is **only** available on **`rees.math`**
- your environment should be set up correctly; using:

  ```
  rees$ source ~db2cs338/sqllib/db2profile
  ```

  essentially:

  ```
  # DB2 STUFF
  DB2INSTANCE=db2; export DB2INSTANCE
  INSTHOME=/usr/db2
  PATH=$PATH:/usr/db2/sqllib/bin
  PATH=$PATH:/usr/db2/sqllib/adm
  PATH=$PATH:/usr/db2/sqllib/misc
  LD_LIBRARY_PATH=$LD_LIBRARY_PATH:
                          /usr/db2/sqllib/lib
  LC_CTYPE=""; export LC_CTYPE
  ```

- you don't need any DB2 password

First Steps (example)

```
@algonquin[159]% rlogin rees
Last login: algonquin.uwater (pts/0) Sun May  7
[...]
rees$ source ~db2/sqllib/db2profile
rees$ db2
(c) Copyright IBM Corporation 1993,1997
Command Line Processor for DB2 SDK 6.1.0

You can issue database manager commands and SQL
statements from the command prompt. For example:
    db2 => connect to sample
    db2 => bind sample.bnd

[...]

For more detailed help, refer to the Online
Reference Manual.

db2 =>
```

Commecting to a Database

```
db2 => connect to cs338

   Database Connection Information

 Database server         = DB2/SUN 7.2.0
 SQL authorization ID    = DAVID
 Local database alias    = CS338

db2 =>
```

Excuting Queries

SQL queries and update requestss can be entered directly at the **`db2 =>`** prompt.

Example:

```
db2 => select aid,name \
db2 (cont.) => from david.author

AID         NAME
----------- --------------------
          1 Toman, David
          2 Chomicki, Jan
          3 Saake, Gunter

  3 record(s) selected.
```

ending line with **`\`** allows entering long queries
ending with (**`<cr>`**) executes the query.

What tables are there?

```
db2 => list tables

Table/View        Schema     Type  Creation time
----------------- ---------- ----- --------------------
ARTICLE           DAVID      T     2000-05-08-15.53.39
AUTHOR            DAVID      T     2000-05-08-15.53.36
BOOK              DAVID      T     2000-05-08-15.53.37
JOURNAL           DAVID      T     2000-05-08-15.53.38
PROCEEDINGS       DAVID      T     2000-05-08-15.53.38
PUBLICATION       DAVID      T     2000-05-08-15.53.36
WROTE             DAVID      T     2000-05-08-15.53.37
  7 record(s) selected.
```

Is that all?

```
db2 => list tables for all

Table/View        Schema    Type  Creation time
--------------- --------- ----- --------------------
ARTICLE           DAVID     T     2000-05-08-15.53.39
AUTHOR            DAVID     T     2000-05-08-15.53.36
BOOK              DAVID     T     2000-05-08-15.53.37
JOURNAL           DAVID     T     2000-05-08-15.53.38
PROCEEDINGS       DAVID     T     2000-05-08-15.53.38
PUBLICATION       DAVID     T     2000-05-08-15.53.36
WROTE             DAVID     T     2000-05-08-15.53.37
CHECKS            SYSCAT    V     1999-09-10-10.55.30
COLCHECKS         SYSCAT    V     1999-09-10-10.55.30
...
SYSTABLES         SYSIBM    T     1999-09-10-10.55.12
...
SYSVIEWS          SYSIBM    T     1999-09-10-10.55.12
COLDIST           SYSSTAT   V     1999-09-10-10.55.39
COLUMNS           SYSSTAT   V     1999-09-10-10.55.39
FUNCTIONS         SYSSTAT   V     1999-09-10-10.55.39
INDEXES           SYSSTAT   V     1999-09-10-10.55.40
TABLES            SYSSTAT   V     1999-09-10-10.55.40

  146 record(s) selected.
```

HELP!

```
db2 => ?
  ACTIVATE DATABASE       ECHO                          PRUNE HISTORY/LOGFILE
  ADD NODE                EXPORT                        QUERY CLIENT
  ATTACH                  FORCE APPLICATION             QUIESCE TABLESPACES
  ATTACH TO               GET/RESET/UPDATE ADMIN CFG    QUIT
  BACKUP DATABASE         GET AUTHORIZATIONS            REBIND
  BIND                    GET CONNECTION STATE          RECONCILE
  CATALOG APPC NODE       GET INSTANCE                  REDISTRIBUTE NODEGROUP
  CATALOG APPCLU NODE     GET MONITOR SWITCHES          REGISTER
  CATALOG APPN NODE       GET SNAPSHOT                  RELEASE
  CATALOG DATABASE        GET/RESET/UPDATE CLI CFG      REORG TABLE
  CATALOG DCS DATABASE    GET/RESET/UPDATE DB CFG       REORGCHK
  CATALOG GLOBAL DATABASE GET/RESET/UPDATE DBM CFG      RESET MONITOR
  CATALOG IPXSPX NODE     HELP                          RESTART DATABASE
  CATALOG LDAP DATABASE   IMPORT                        RESTORE DATABASE
  CATALOG LDAP NODE       INITIALIZE TAPE               REWIND TAPE
  CATALOG LOCAL NODE      INVOKE                        ROLLFORWARD DATABASE
  CATALOG NETBIOS NODE    LIST ACTIVE DATABASES         RUNSTATS
  CATALOG NPIPE NODE      LIST APPLICATIONS             SET CLIENT
  CATALOG ODBC DATA S.    LIST BACKUP/HISTORY           SET CONNECTION
  CATALOG TCPIP NODE      LIST COMMAND OPTIONS          SET RUNTIME DEGREE
  CHANGE DATABASE COMMENT LIST DATABASE DIRECTORY       SET TABLESPACE CONTAINERS
  CHANGE SQLISL           LIST DCS APPLICATIONS         SET TAPE POSITION
  CONNECT                 LIST DCS DIRECTORY            TERMINATE
  CONNECT RESET           LIST INDOUBT TRANSACTIONS     UNCATALOG DATABASE
  CONNECT TO              LIST NODE DIRECTORY           UNCATALOG DCS DATABASE
  CREATE DATABASE         LIST NODEGROUPS               UNCATALOG LDAP DATABASE
  DB2START/DB2STOP        LIST NODES                    UNCATALOG LDAP NODE
  DEACTIVATE DATABASE     LIST ODBC DATA SOURCES        UNCATALOG NODE
  DEREGISTER              LIST PACKAGES/TABLES          UNCATALOG ODBC DATA S.
  DESCRIBE                LIST TABLESPACE CONTAINERS    UPDATE COMMAND OPTIONS
  DETACH                  LIST TABLESPACES              UPDATE HISTORY
  DISCONNECT              LOAD                          UPDATE LDAP NODE
  DROP DATABASE           LOAD QUERY                    UPDATE MONITOR SWITCHES
  DROP NODE               PREP/PRECOMPILE

Note:  Some commands are operating system specific and may not be available.
```

More HELP!

```
db2 => blah blah
DB21034E  The command was processed as an SQL
statement because it was not a valid Command Line
Processor command.  During SQL processing it
returned: SQL0104N  An unexpected token "blah" was
found following "BEGIN-OF-STATEMENT".  Expected
tokens may include:  "<values>".  SQLSTATE=42601

db2 => ? DB21034E

 DB21034E The command was processed as an SQL
          statement because it was not a valid
          Command Line Processor command.  During
          SQL processing it returned:

Explanation:  This message is displayed before the
SQL error message.  The error may be caused by a
syntax error in a non-SQL command.

User Response:  Correct the error and resubmit the
                command.
```

Explanation of all errors:

Message Reference (on-line)

More (More HELP!)

```
db2 => ? SQL0104N

 SQL0104N An unexpected token "<token>" was found
          following "<text>".  Expected tokens may
          include: "<token-list>".

Explanation:  A syntax error in the SQL statement
was detected at the specified token following the
text "<text>".  The "<text>" field indicates the 20
characters of the SQL statement that preceded the
token that is not valid.

As an aid to the programmer, a partial list of valid
tokens is provided in the SQLERRM field of the SQLCA
as "<token-list>".  This list assumes the statement
is correct to that point.

The statement cannot be processed.

User Response:  Examine and correct the statement in
the area of the specified token.

sqlcode:  -104
sqlstate:  42601
```

Scripts

To run code from a file **`batch.file`** use:

```
rees$ db2 -f batch.file

<DB2 messages here; input is NOT echoed>
```

Samples from the classes **`samples<n>.db2`**
Results **`results<n>.db2`**

all on the “lectures” web page