CS3431 – Database Systems I

Project Overview

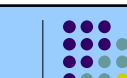
Murali Mani

One continuous course project

- **Description:** Envision a database application, and implement it fully.
- **Teaming :** Teams of 2 students each
- **Grading :** Collect points over the phases

Phases

- Phase 0: (due Sep 10, 7:59 am)
  - Decide on your team and project. Send an email to cs3431-ta@cs.wpi.edu with (a) the people in the team (b) project title and a short one para description of what you will work on for this project
- Phase 1: (due Sep 21, 7:59 am via turnin)
  - Represent the application requirements as an ER schema, translate the ER to relational, analyze the relational design using normalization theory, come up with DDL statements for the relational schema, test the DDL statements.
- Phase 2: (due Oct 12, 7:59 am via turnin)
  - Analyze the operations needed for your application, represent them in SQL DML, build an interface for the end-user. Demonstrate your working project to the TA/instructor.



What DBMS to use?

- Oracle
  - Accounts already created, Server version 10.2.0.3.0
  - Documentation: `http://otn.oracle.com`
- mySQL: Version 5.0. 45
  - To create an account, visit `http://www.wpi.edu/Academics/CCC`
  - Documentation: `http://www.mysql.com`

How to set up Oracle

- Check the type of shell that you are using. For this from your unix prompt, type:
  `echo $SHELL`
- Most of you will get for above " /bin/tcsh " – this means you are using turbo c-shell
- From your shell prompt, type :
  `echo $PATH`
- Set environment variables based on if path is empty or not (next slide)

How to set up Oracle

- Add following to your .cshrc at the end – if your path is not empty

```
setenv ORACLE_BASE /usr/local/oracle/
setenv ORACLE_HOME /usr/local/oracle/product/11.1.0/db_1
setenv PATH ${PATH}:${ORACLE_HOME}/bin
setenv ORACLE_SID WPIDBR2
setenv TWO_TASK ${ORACLE_SID}
```


How to set up Oracle (contd…)

- Add to .cshrc – if your path is empty

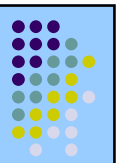
```
setenv PATH .
setenv ORACLE_BASE /usr/local/oracle
setenv ORACLE_HOME
  /usr/local/oracle/product/11.1.0/db_1
setenv PATH ${PATH}:${ORACLE_HOME}/bin
setenv ORACLE_SID WPIDBR2
setenv TWO_TASK ${ORACLE_SID}
```


How to set up Oracle (contd…)

- After editing file .cshrc
- Please run :

```
source ~/.cshrc
```


Problems while setting up Oracle



- Important – Set up Oracle immediately and see that it is working
- Many of you will run into problems, typically due to simple typos (be careful !! Have an extra “shell” open and working – so even if you make mistakes, you can undo changes from the working shell).
- If you have identified a project partner, start working with him/her on this !

Oracle introduction

- Connecting
  - `sqlplus <userName>/<passwd>`
  - For example,
  - `sqlplus myname/myname`
  - Change passwd using password command
  - You will end up submitting your passwd; therefore don’t use password that you use for other purposes.

Oracle useful commands

These commands can be executed from the SQL shell

```
SELECT * FROM cat; -- lists tables you have created
SELECT table_name FROM user_tables; -- as above.

DESCRIBE <tableName>; -- describes the schema for
  the table with name tableName

help index; -- shows list of help topics;
help start; -- illustrates how to use command start

exit; -- exit from the SQL shell
```


Using Oracle from Windows

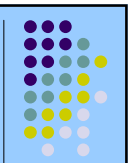
- Multiple ways:
  - Use aquastudio software from aquafold.com (NOT free).
  - Use DreamCoder for Oracle 4.2 (FREE !!)
    Connect as:

    ```
    server: oracle.wpi.edu
    port: 1521 (this is the default)
    SID: WPIDBR2
    ```

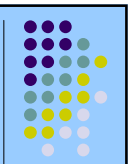
  - Download oracle client for windows. Connect using sqlplus client or other tools:

    ```
    sqlplus mmani/mmani@//oracle.wpi.edu:1521/WPIDBR2
    ```


MySQL introduction



- Connecting
  - `mysql -h<host> -u<user> -p<passwd> <dbname>`
- Useful commands
  - `show tables;`
  - `describe <tableName>;`
  - `exit;`
  - Look at manual for other commands.



Working with the Data Server

Testing that you are set

```
CREATE TABLE student(sNum INTEGER,sName VARCHAR (30));
  -- creates table student    with two columns

INSERT INTO student VALUES (1, 'Joe');
  -- insert one row into the student table

SELECT * FROM student;
  -- select all rows from student table

DELETE FROM student;
  -- delete all rows in the student table

DROP TABLE student;
  -- drop student table

Purge recyclebin;
  -- purge recyclebin tables that get created.
```


Running scripts in SQLPlus

To enter OS environment, use sqlplus command:

```
Host
```

Now you can execute OS commands, like :

```
cd.. , exit , etc.
```

- Create a file in your file system in the current directory called `createTable.sql`
  - `@createTable -- executes the script`
  - `start createTable -- also executes the script`
- If you want to save your output to a file (similar to **script** in Unix)
  - `spool <fileName>`
  - `<executeCmds...>`
  - `spool off;`

Loading data from a text file (SQLLDR utility)

- `CREATE TABLE myTable1 (a int, b int);`

- Create data file, say: sample.dat
- Put data into the file :

```
1,11
2,22
3,33
4,44
```

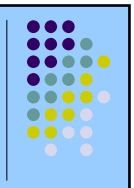

Loading from text file (Contd)

- Create control file, say load.ctl

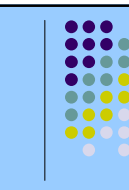
```
LOAD DATA
INFILE sample.dat
INTO TABLE myTable1
FIELDS TERMINATED BY ‘,’
(a,b)
```

- Invoke SQL Loader (from your UNIX shell):
  - `$ sqlldr <user/password> control=load.ctl`

Building Interfaces



- Call Level Interface
  - Perl – to build web interfaces
  - JDBC – Java, servlets etc
- Embedded SQL
  - C API (Pro*C)
  - C++API (Pro*C++)
  - Java API (SQLJ) [Oracle]



Get Started Now …

- Pick project partner (feel free to use mywpi to recruit partner)
- Jointly toss around ideas about cool project
- Try out basics – to assure you have access to oracle (or mysql)