# MySQL Differences with Oracle

# Documentation

Reference Manual:

<https://dev.mysql.com/doc/refman/8.0/en/>

# Tools and Programs

Overview of all programs : <https://dev.mysql.com/doc/refman/8.0/en/programs-overview.html>'

## Client Tools mysql (SQL\*Plus)

mysql is a command line client similar to sqlplus

## MySQLWorkbench ( SQL\*Developer)

MySQLWorkbench desktop GUI ( and looks like Windows-only) client similar to SQL\*Developer

## Server Daemon

**Mysqld – is database engine i.e. MySQL Server**

# mysql (i.e. SQL\*Plus)

## Help

To see mysql help:

|  |
| --- |
| mysql> help;  For information about MySQL products and services, visit:  http://www.mysql.com/  For developer information, including the MySQL Reference Manual, visit:  http://dev.mysql.com/  To buy MySQL Enterprise support, training, or other products, visit:  https://shop.mysql.com/  List of all MySQL commands:  Note that all text commands must be first on line and end with ';'  ? (\?) Synonym for `help'.  clear (\c) Clear the current input statement.  connect (\r) Reconnect to the server. Optional arguments are db and host.  delimiter (\d) Set statement delimiter.  ego (\G) Send command to mysql server, display result vertically.  exit (\q) Exit mysql. Same as quit.  go (\g) Send command to mysql server.  help (\h) Display this help.  notee (\t) Don't write into outfile.  print (\p) Print current command.  prompt (\R) Change your mysql prompt.  quit (\q) Quit mysql.  rehash (\#) Rebuild completion hash.  source (\.) Execute an SQL script file. Takes a file name as an argument.  status (\s) Get status information from the server.  system (\!) Execute a system shell command.  tee (\T) Set outfile [to\_outfile]. Append everything into given outfile.  use (\u) Use another database. Takes database name as argument.  charset (\C) Switch to another charset. Might be needed for processing binlog with multi-byte charsets.  warnings (\W) Show warnings after every statement.  nowarning (\w) Don't show warnings after every statement.  resetconnection(\x) Clean session context. |

## System (i.e. host)

Executes OS command

|  |
| --- |
| For server side help, type 'help contents'  mysql> system dir;  Volume in drive C is OS  Volume Serial Number is 0867-9728  Directory of C:\Program Files\MySQL\MySQL Server 8.0\bin |

## Source (i.e. @)

### From inside mysql

**Note "/" for Windows!**

source C:/git/mysql/commands/bind\_var.sql;

### From Command Line

Use redirect:

|  |
| --- |
| pushd "C:\Program Files\MySQL\MySQL Server 8.0\bin\"  mysql -u root -p join\_us < C:/git/mysql/commands/bind\_var.sql |

## Tee ( i.e. spool)

**Note "/" for Windows!**

|  |
| --- |
| tee C:/git/mysql/commands/spool.log;  source C:/git/mysql/commands/bind\_var.sql;  notee; |

Generates spool.log:

|  |
| --- |
| mysql> tee C:/git/mysql/commands/spool.log;source C:/git/mysql/commands/bind\_var.sql;notee;  Logging to file 'C:/git/mysql/commands/spool.log'  Query OK, 0 rows affected (0.00 sec)  +------------+  | @num\_users |  +------------+  | 0 |  +------------+  1 row in set (0.00 sec)  Query OK, 1 row affected (0.00 sec)  +------------+  | @num\_users |  +------------+  | 1517 |  +------------+  1 row in set (0.00 sec)  Outfile disabled. |

## Delimiters

## Scripts Error Handling

# STRICT MODE and Warnings

# SQL

## Key Minuses

* No FULL OUTER JOIN
* No simple data arithmetic
* No || string operator ( concat is used instead)

## Key Pluses

* Easy use of Boolean

select A=B; -- returns 0 or 1

* Multiple INSERT

## Comments

* -- Line comments must have space after two dashes
* /\* \*/ like in Oracle
* # also allowed

## Bind Variables

* Bind variable are prefixed by @
* SELECT INTO … @bind\_var does not have to be inside begin … end

|  |
| --- |
| set @num\_users := 0;  select @num\_users;  select count(\*) into @num\_users from users;  select @num\_users; |

## Issue with Parentheses

## Quotation

### Data

### Metadata

# Transactional Control

<https://dev.mysql.com/doc/refman/8.0/en/commit.html>

## Autocommit

Autocommit is enabled by default

To disable autocommit mode explicitly, use the following statement:

SET autocommit=0;

## Start Transaction

To disable autocommit mode implicitly for a single series of statements, use the START TRANSACTION statement

|  |
| --- |
| SET autocommit=1;  insert into t1 values ('d', 'd');  /\* visible from the other session right away \*/  START TRANSACTION;  insert into t1 values ('e', 'e');  /\* the other session waits \*/  rollback; |

## IF EXISTS and IF NOT EXISTS

## LIMIT ( i.e ROWNUM )

# INFORMATION\_SCHEMA.(i.e. Data Dictionary)

Looks like data dictionary views equivalent to are ALL\_TABLES, ALL\_VIEWS and etc. listed in INFORMATION\_SCHEMA.tables

|  |
| --- |
| SELECT \* FROM INFORMATION\_SCHEMA.tables where table\_schema = 'INFORMATION\_SCHEMA'; |

For example this show all triggers in the current database

|  |
| --- |
| SELECT \* FROM INFORMATION\_SCHEMA.triggers t where t.EVENT\_OBJECT\_SCHEMA = database() ; |

# Databases (i.e. Schemas)

## Crete

## Drop

## Use Database

## Show Current Database

# NULLS

## Empty String IS NOT NULL

## IFNULL (i.e. NVL)

# DUAL (i.e. One Row SQL)

# INSERT

## INSERT Multiple Inserts

|  |
| --- |
| INSERT INTO cats(name, breed, age)  VALUES ('Ringo', 'Tabby', 4),  ('Cindy', 'Maine Coon', 10),  ('Dumbledore', 'Maine Coon', 11),  ('Egg', 'Persian', 4),  ('Misty', 'Tabby', 13),  ('George Michael', 'Ragdoll', 9),  ('Jackson', 'Sphynx', 7); |

## INSERT SET

## INSERT IGNORE

<https://dev.mysql.com/doc/refman/8.0/en/sql-mode.html#ignore-effect-on-execution>

With IGNORE, the row containing the duplicate key still is not inserted, but a warning occurs instead of an error

|  |
| --- |
| mysql> select \* from cats;  +--------+----------------+------------+------+  | cat\_id | name | breed | age |  +--------+----------------+------------+------+  | 1 | Ringo | Tabby | 4 |  | 2 | Cindy | Maine Coon | 10 |  | 3 | Dumbledore | Maine Coon | 11 |  | 4 | Egg | Persian | 4 |  | 5 | Misty | Tabby | 13 |  | 6 | George Michael | Ragdoll | 9 |  | 7 | Jackson | Sphynx | 7 |  | 8 | Pussy | New | NULL |  +--------+----------------+------------+------+  8 rows in set (0.00 sec)  mysql> INSERT INTO cats(cat\_id, name, breed, age) VALUES (1, 'Ringo', 'Tabby', 4);  ERROR 1062 (23000): Duplicate entry '1' for key 'cats.PRIMARY'  mysql>  mysql> INSERT IGNORE INTO cats(cat\_id, name, breed, age) VALUES (1, 'Ringo', 'Tabby', 4);show warnings;  Query OK, 0 rows affected, 1 warning (0.00 sec)  +---------+------+--------------------------------------------+  | Level | Code | Message |  +---------+------+--------------------------------------------+  | Warning | 1062 | Duplicate entry '1' for key 'cats.PRIMARY' |  +---------+------+--------------------------------------------+  1 row in set (0.00 sec)  mysql> select \* from cats;  +--------+----------------+------------+------+  | cat\_id | name | breed | age |  +--------+----------------+------------+------+  | 1 | Ringo | Tabby | 4 |  | 2 | Cindy | Maine Coon | 10 |  | 3 | Dumbledore | Maine Coon | 11 |  | 4 | Egg | Persian | 4 |  | 5 | Misty | Tabby | 13 |  | 6 | George Michael | Ragdoll | 9 |  | 7 | Jackson | Sphynx | 7 |  | 8 | Pussy | New | NULL |  +--------+----------------+------------+------+  8 rows in set (0.00 sec) |

# Aggregate Functions

# AUTO INCREMENT (i.e. Sequences )

# Primary/Unique Keys on Strings

# Boolean

Boolean expressions

# Dates

## Datatypes

## Functions

## Sysdate() VS. NOW()

## Casting

## Date Math

# Strings

Case Insensitive Comparison

## Strings Datatypes

## Strings Functions

# Compound Statements (i.e. PL/SQL)

Compound statements provide a procedural language somewhat similar to PL/SQL

## Key Limitations:

* No packages and package variables
* No DBMS\_OUTPUT equivalent
* No anonymous PL/SQL Blocks
* Signal Message cannot be an expression ( must be either variable or coenstant)

## SQLSTATE (i.e. SQLCODE)

SQLSTATE [VALUE] ***sqlstate\_value***: A 5-character string literal indicating an SQLSTATE value.

Similar to use to Oracle SQLCODE

## Signal and Resignal (i.e. RAISE and RAISE\_APPLICATION\_ERROR)

### Custom errors i.e. RAISE\_APPLICATION\_ERROR

Custom errors must use sqlstate '45000'

|  |
| --- |
| declare err\_msg varchar(255);  -- new trigger  if new.email like '%@hotmail.com' then  set err\_msg := concat('E-mail ', new.email, ' cannot be registred because it belongs to hotmail.com domain');  signal sqlstate '45000'  set message\_text = err\_msg;  … |

## Declare Inside

DECLARE commands are INSIDE begin… end

## Value Assignment

To assign value use

SET var1 := expression

## Exception handling

More info here:

<https://dev.mysql.com/doc/refman/8.0/en/declare-handler.html>

Exceptions are handled in declared handlers i.e.

|  |
| --- |
| DECLARE *handler\_action* HANDLER  FOR *condition\_value* [, *condition\_value*] ...  *statement*  *handler\_action*: {  CONTINUE  | EXIT  | UNDO  }  *condition\_value*: {  *mysql\_error\_code*  | SQLSTATE [VALUE] *sqlstate\_value*  | *condition\_name*  | SQLWARNING  | NOT FOUND  | SQLEXCEPTION  } |

For example:

## Triggers

This is an example of Before Insert trigger that raises custom error

|  |
| --- |
| delimiter //  drop trigger if exists trg\_users\_bi  //  create trigger trg\_users\_bi  before insert on join\_us.users for each row  begin  declare err\_msg varchar(255);  -- new trigger  if new.email like '%@hotmail.com' then  set err\_msg := concat('E-mail ', new.email, ' cannot be registred because it belongs to hotmail.com domain');  signal sqlstate '45000'  set message\_text = err\_msg;  end if;  end;  //  delimiter ; |