

## 資料庫期末專題

- 系統架構與環境
  1. 安裝電腦作為 Mysql server
  2. 以 eclipse 開啟 java 專案並 import mysql-connector-java.jar 檔
  3. 在 java 程式中連至 localhost，並以 root 登入
- 介面說明
  - 上方 menu 能選擇使用功能。
  - 左方是查詢需要的輸入，不同的查詢會有不同的介面。
  - 左下方按鈕送出查詢。
  - 右方會以 table 方式成查詢結果。

The screenshot shows a web application titled "Crystal University" with a MySQL database connection. The interface has a menu bar with options: MySQL, Search, Enroll/Drop, Update, Command class, and Command dorm. The "Search" menu is currently selected, displaying a dropdown list with options: student, class, classroom, dorm, and department. The "student" option is selected, and the form below it is populated with "grade" in the first dropdown, "3" in the second input field, "major, department\_name" in the third dropdown, and "Accountancy" in the fourth input field. A "student" button is at the bottom left. On the right, a table displays the search results:

student_id	student_na...	sex	grade
C1001	Harold Smi...	M	3
C1002	Jamie	M	3

- 功能介紹
  - 所有 menu item

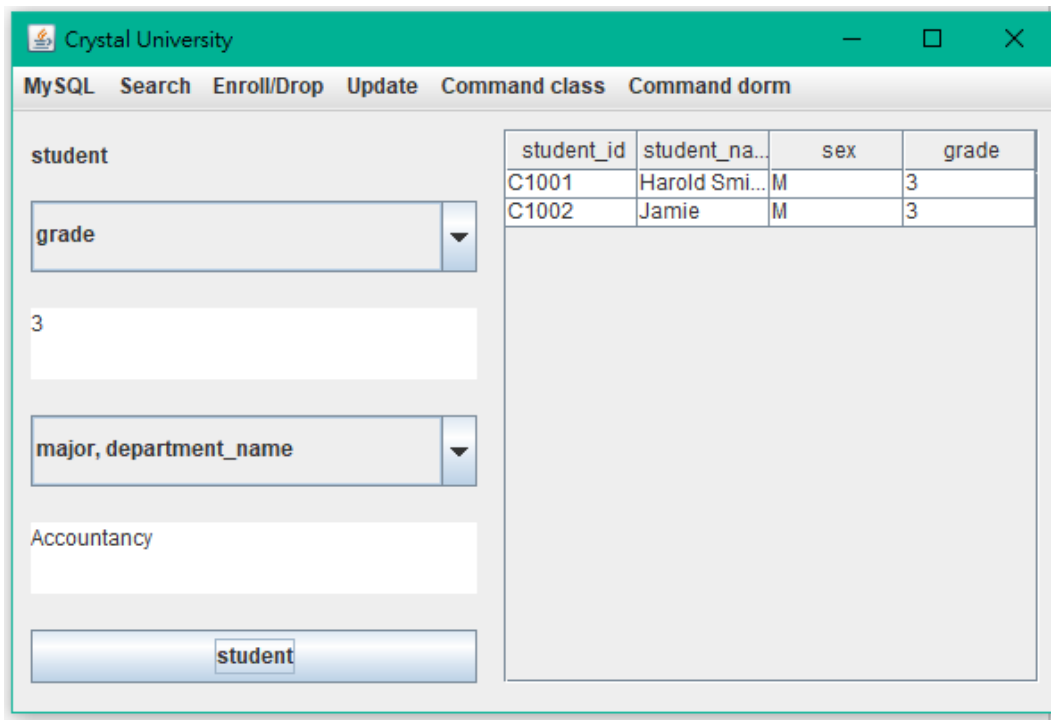
The diagram illustrates the layout of the menu items, organized into five columns:

- Search**: student, class, classroom, dorm, department
- Enroll/Drop**: enroll, drop
- Update**: change student data
- Command class**: time, popular
- Command dorm**: distance

## ■ Search

查詢每個 **entity** 的資料，或者/以及和其他表格的關係。

Ex: 查詢 **student** 中 **grade** 是 3 並且主修 **Accountancy** 的學生資料



Crystal University

MySQL Search Enroll/Drop Update Command class Command dorm

student

grade

3

major, department\_name

Accountancy

student

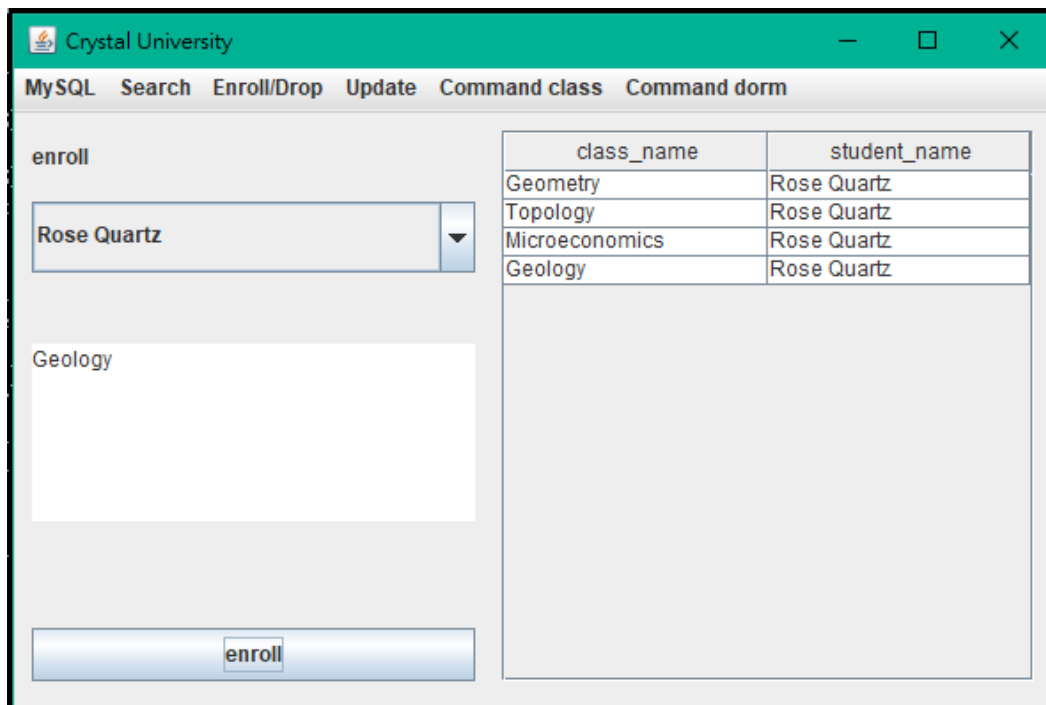
student_id	student_na...	sex	grade
C1001	Harold Smi...	M	3
C1002	Jamie	M	3

## ■ Enroll/Drop

◆ Enroll: 加選某一課程，並會檢查是否有開這個課程以及此學生是否已經選擇這個課程，最後以 **table** 表現此學生的課程。

◆ Drop: 退選某一課程

Ex: Rose Quartz 加選了 Geology



Crystal University

MySQL Search Enroll/Drop Update Command class Command dorm

enroll

Rose Quartz

Geology

enroll

class_name	student_name
Geometry	Rose Quartz
Topology	Rose Quartz
Microeconomics	Rose Quartz
Geology	Rose Quartz

- Update  
更改學生資料

Crystal University

MySQL Search Enroll/Drop Update Command class Command dorm

change student data

student\_id student\_n... sex grade

A1001

sex

F

change student data

A1001	Rose Qua...	F	3
A1002	Pearl	F	2
A1003	Amethyst	F	1
A2001	Ruby	F	3
A2002	Sapphire	F	2
A2003	Peridot	F	1
A2004	Lapis Lazuli	F	1
A3002	Andy DeM...	M	2
A3003	Barbara M...	F	1
A3101	Steven Un...	M	3
A4001	Bill Dewey	M	3
A4002	Buck Dewey	M	2
A4003	Buddy Bu...	M	1
B1001	Connie M...	F	3
B1002	Doug Mah...	M	2
B1003	Greg Univ...	M	1
C1001	Harold S...	M	3
C1002	Jamie	M	3

- Command class
  - ◆ Time: 查詢某時間開/不是某時間開的課程

Crystal University

MySQL Search Enroll/Drop Update Command class Command dorm

time

in

Fri Wed

time

class_id	departm...	classroo...	class_ti...	class_n...
A11	A1	A1301	Wed	Accounti...
E11	E1	E1201	Fri	Geology
E22	E2	E1101	Fri	Trade P...
M11	M1	M1101	Wed	Linear A...
M12	M1	M1102	Wed	Geometry
N11	N1	N1101	Fri	biology
P12	P1	P1201	Wed	CALCU...
P21	P2	P2201	Wed	Social P...
P22	P2	P2202	Wed	General ...
S11	S1	S1101	Wed	Probabil...

- ◆ Popular: 查詢某個系所開的所有課的修課人數，或查詢某部門最多人修的課

Crystal University

MySQL Search Enroll/Drop Update Command class Command dorn

popular

Accountancy

all

popular

class_id	teacher	student_num
A11	Wang, Tse-Shih	4
A12	Wang, Tse-Shih	3

Crystal University

MySQL Search Enroll/Drop Update Command class Command dorn

popular

Accountancy

popular

popular

class_id	teacher	max(student_n...
A11	Wang, Tse-Shih	4

## ■ Command dorm

計算距離所有輸入教室的距離平均/總和，或查詢距離最短的，或所有小於某值的。

Crystal University

MySQL Search Enroll/Drop Update Command class Command dorm

distance

avg

A1301 E1101

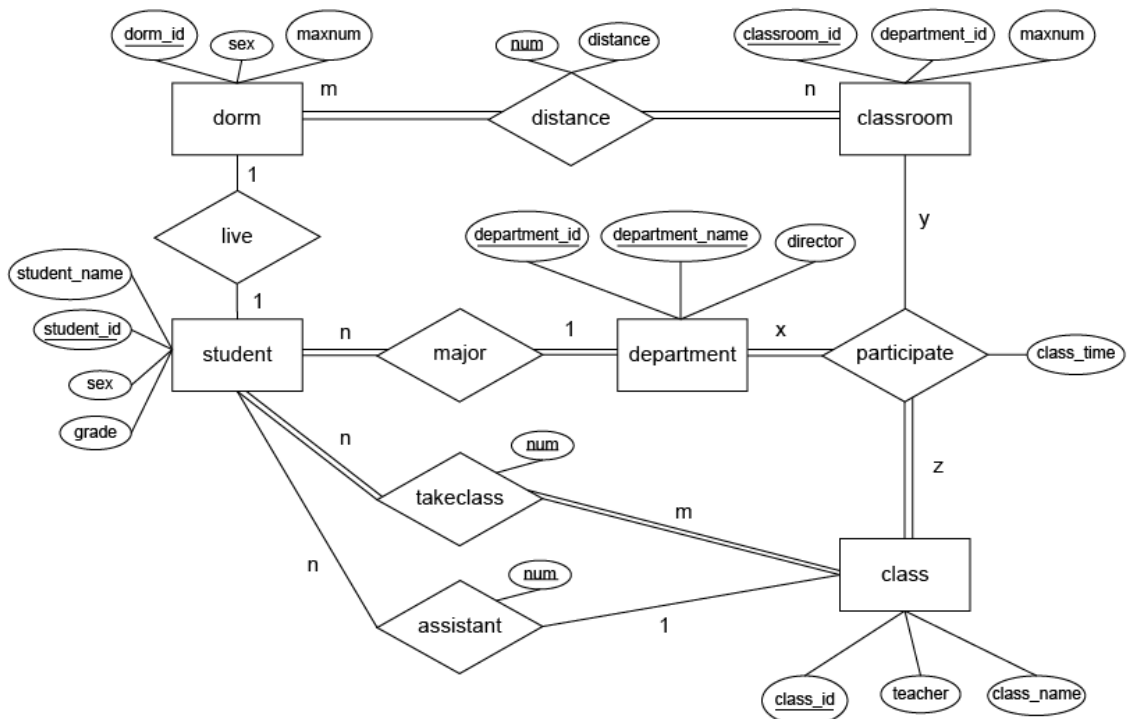
all

all  
min  
less than

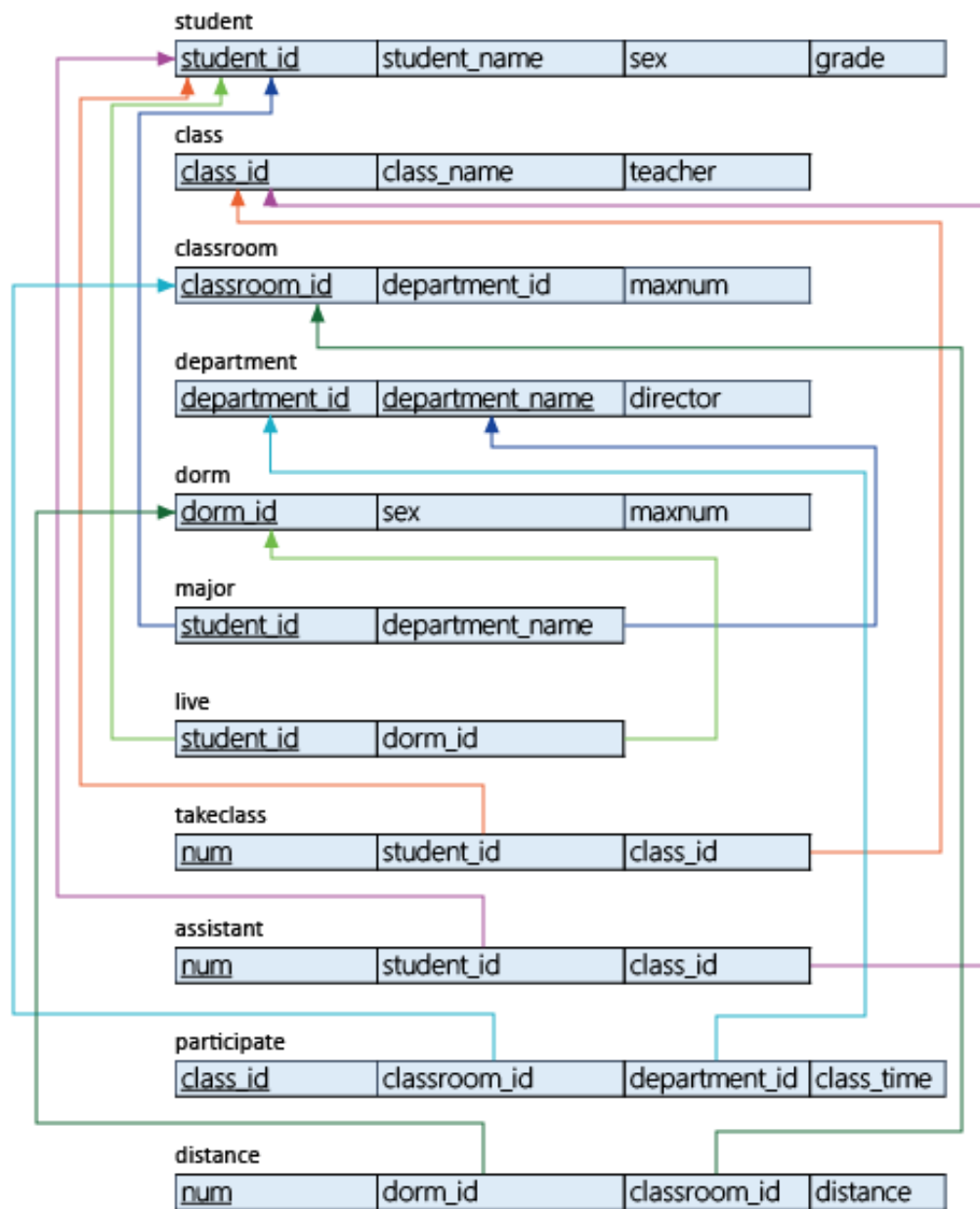
distance

dorm_id	distance
A01	600.0000
A02	600.0000
B01	500.0000
B02	400.0000
B03	850.0000
C01	900.0000
C02	650.0000
D01	500.0000
D02	700.0000
E02	300.0000

## ● ER diagram



- Relation Schema



\*當開一門課的時候，有時會使用其他 department 的教室

## entity

- tudent 學生資料
  - student\_id 學生編號
  - student\_name 學生姓名
  - sex 學生性別
  - grade 學生年級
- class 課資料
  - class\_id 課編號
  - class\_name 課名稱
  - teacher 指導老師
- classroom 教室
  - classroom\_id 教室編號
  - department\_id 管理系所
  - maxnum 最多容納人數
- department 系所
  - department\_id 系所編號
  - department\_name 系所名稱
  - director 系所領導人
- dorm 宿舍
  - dorm\_id 宿舍編號
  - sex 住宿性別需求
  - maxnum 最多住宿人數

## relation

- major 主修
  - student\_id 學生
  - department\_name 主修系所
- live 住宿
  - student\_id 學生
  - dorm\_id 住宿宿舍
- takeclass 修課
  - num 編號
  - student\_id 修課學生
  - class\_id 課程
- assistant 擔任助教
  - num 編號
  - student\_id 擔任助教的學生
  - class\_id 課程
- participate 參與開一堂課
  - class\_id 課程
  - classroom\_id 使用教室
  - department\_id 開課系所
  - class\_time 上課時間
- distance 宿舍與教室距離
  - num 編號
  - dorm\_id 宿舍
  - classroom\_id 教室
  - distance 宿舍與教室距離