



# HD EDUCATION

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## FIT2094

TUTOR:Joey

HD@東  
12993





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## 关于 **HD EDUCATION**

HD · EDUCATION (简称HD·EDU) 成立于2018年1月，拥有学业辅导和职业规划两大核心业务。从创办伊始就秉承着“让年轻人成为知识的生产者、传播者、受惠者”的使命，坚持从留学生的角度出发，为他们量身制定属于他们的课程。“成为最受年轻人喜爱的教育品牌”一直是我们的不懈追求。

截止2020年，我们的Tutor人数已达1300人，业务范围涵盖了澳大利亚、新西兰、美国、英国4个国家的40多所高校，为15万留学生提供了优质的学习辅导服务，成为澳大利亚华人留学生覆盖人数最多的在线教育学习平台。

### **HD·EDU的成长有你陪伴**

课后，如果您有任何建议和意见，我们都非常欢迎您联系小助手分享您的想法，给予我们改进和提高的机会！

感谢您参与HD Education的辅导课程！

# TUTOR

## Self-Introduction

### 自我介绍

#

1. 🎓 Monash University
2. 📄 Bachelor of Computer Science in Data Science  
Master of Information Technology
3. 📚 三年数据库相关教学经验
4. 🧑 从学生角度出发讲解，耐心负责
5. ❤️ 吸猫 乐高 旅游
6. 💻 目前在某互联网大厂任数据工程师

TUTOR: Joey



同学们  
有问题  
怎么办?

方法一：  
举手

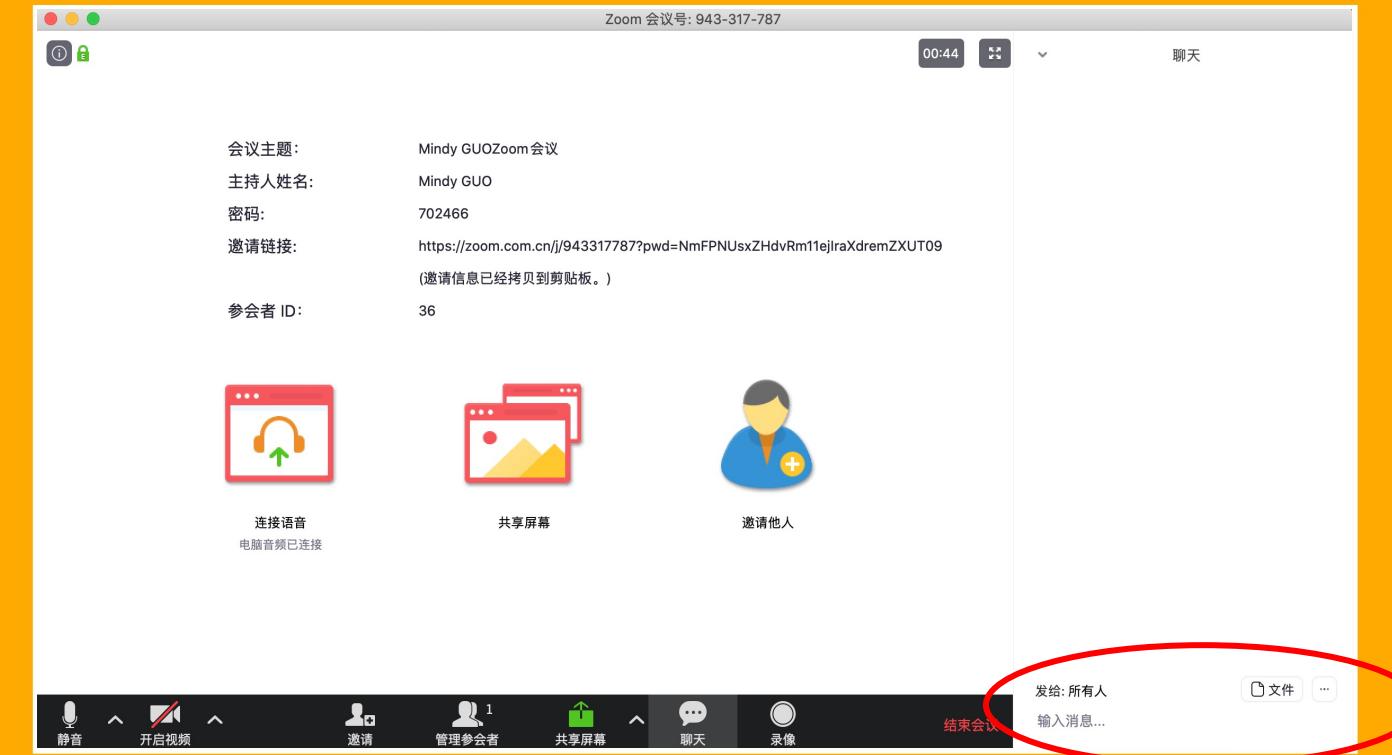


1. 点【参会者】
2. 点【举手】即可与老师实时互动
3. 问题被解答了还可以【手放下】

同学们  
有问题  
怎么办?

方法二：  
文字提问

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红圈处输入问题提问

同学们  
有问题  
怎么办?

直播平台

互动方法

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直播平台：举手+聊天室提问



点【参会者】再点【举手】，即可与老师实时互动！在此输入你想问的问题

问题被解答了还可以【手放下】

# CONTENT

## 课程目录

- 1 What is Database? Database Element
- 2 Database Design I (Conceptual Model)
- 3 Relational Model (Relational Algebra)
- 4 Normalisation
- 5 Database Design II (Logical Model)
- 6 Basic SQL & Transaction Management
- 7 SQL & Advanced SQL
- 8 NoSQL

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# Assessment

- **In-Semester Assessment (50%)**
  - ✓ Assignment 1A – 10% Conceptual model (WEEK 5)
  - ✓ Assignment 1B -- 25% Logical model, normalisation (WEEK 8)
  - ✓ Assignment 2 – 25% SQL (WEEK 11)
- **Final Exam**
  - ✓ 40% (6 Questions)

# 学科特点及学习方法

**学科特点:**

1. 考试题量大，题目长
2. 知识点清晰，相互关联性大
3. 注重细节

**学习方法:**

1. 养成计时答题的习惯
2. 充分利用学校tutorial资料

**备考方法 & Tips:**

1. 多读材料，养成能快速在材料定位关键信息的能力
2. 多练代码，保持手感
3. 做题一定要计时！！！

# 本章节知识点

**知识点1 Introduction to Database**

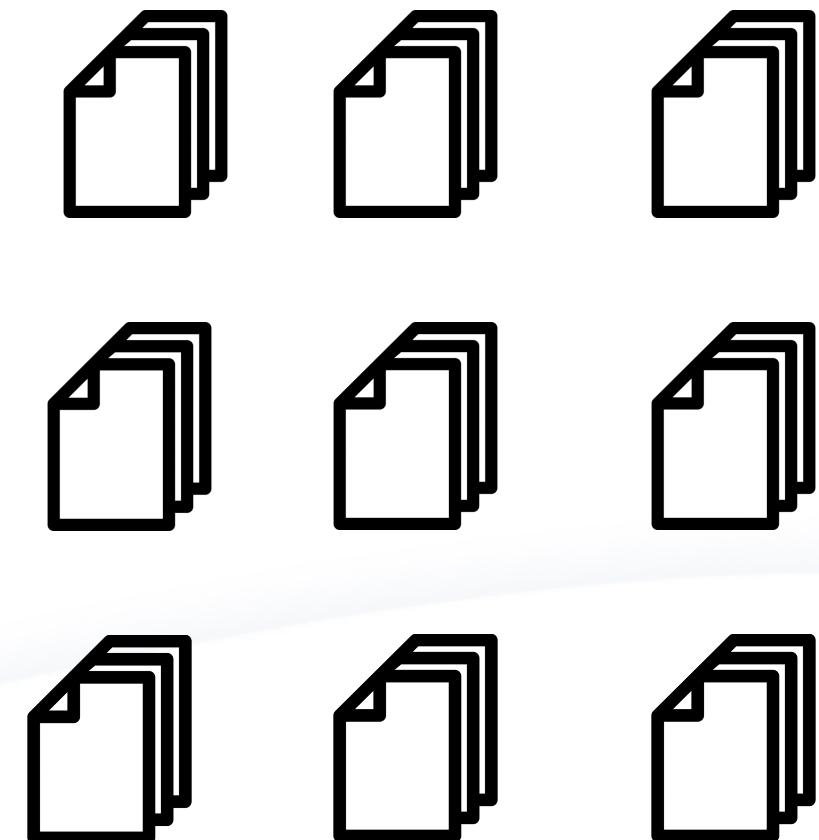
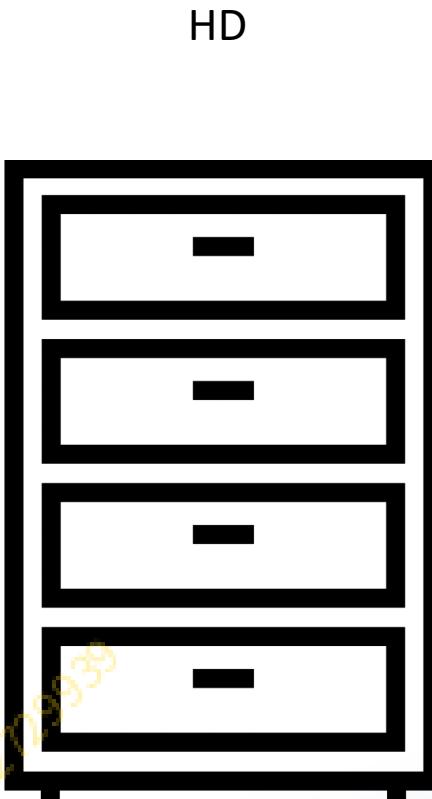
**知识点2 Database Element**



# 知识点讲解

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# Database?

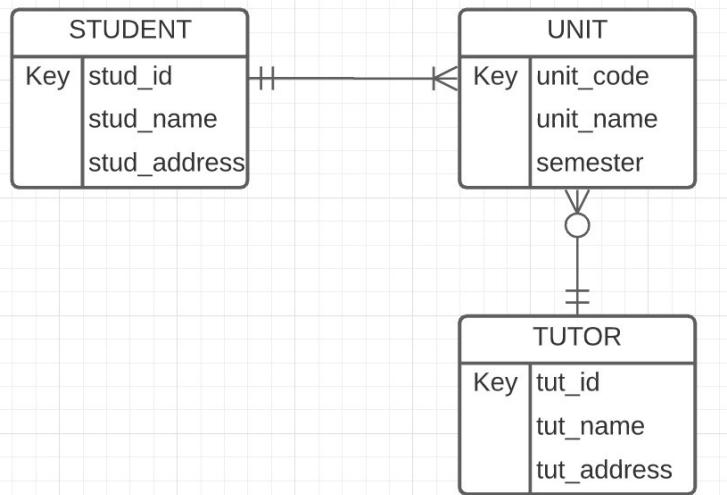


student

unit

tutor

# Relational Database?



Stud_ID	Stud_name	Address
1000	John	xxx
1001	David	yyy

Unit_code	Unit_name	Semester
FIT9132	Databases	1
FIT2004	Algorithm	1

Tut_ID	Tut_name	Address
2000	Julian	Monash U
2001	Amy	Monash U



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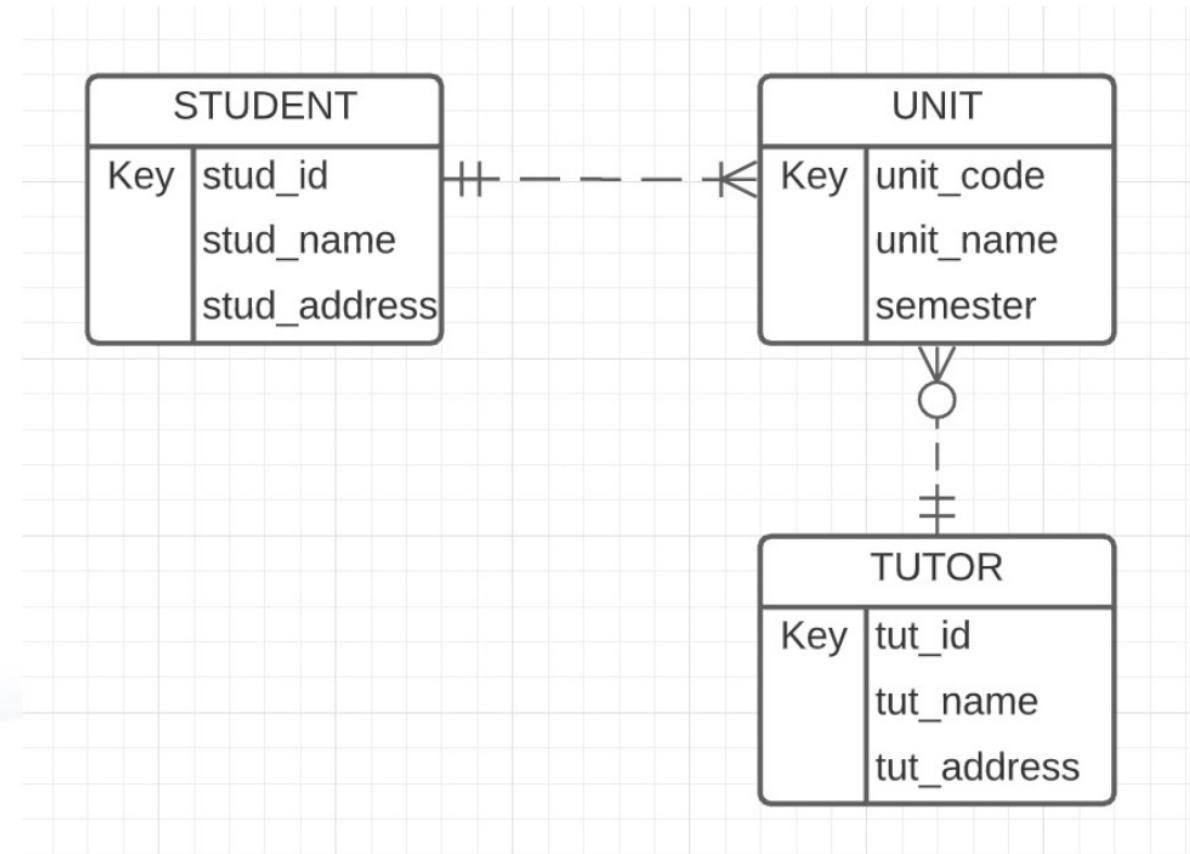
# 考点1. Element of Databases

重要程度: ★★★  
难易程度: ★★

**Entity**

**Attribute**

**Relationship**



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# 考点1. Element of Databases -- Entity

重要程度: ★★★  
难易程度: ★★

- 模型中的数据对象 · 某类事物的集合 · 表格的名字 (**STUDENT, STAFF, COURSE...**)

## ❖ Strong Entity vs Weak Entity

### • Strong Entity

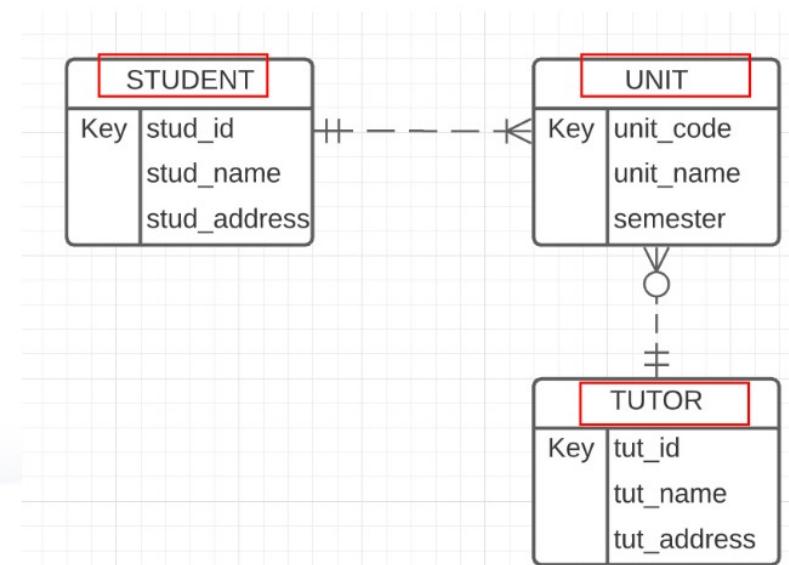
Has a key which may be defined without reference to other entities  
 某个entity里所有的key都来源于自己，不需要从别的entity中得到 (conceptual 中的key)

### • Weak Entity

Has a key which requires the existence of one or more other entities

Key: 数据库表中对储存数据对象予以唯一和完整标识

某个entity的key是从其他entity中得到 (conceptual 中的key)



# 考点1. Element of Databases -- Attribute

重要程度: ★★★★  
难易程度: ★★

一个entity里的属性，如STUDENT里的studID, studname ...

## ❖ Types of Attributes

- Simple

Cannot be subdivided 不能被进一步细分  
e.g. age, gender...

- Composite

Can be subdivided into additional attributes 可以进一步细分  
e.g. address → street, city, state, country (常见)  
Name → firstname, lastname (常见)

- Single-valued

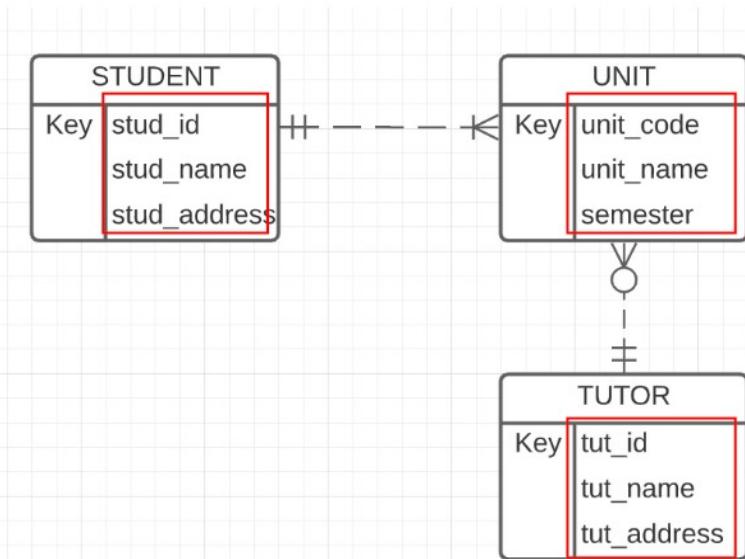
Can have only one value  
Each product has one serial number 序列号  
Single-valued NOT EQUAL TO simple attributes (But 可以并存)  
e.g. serial number(composite & single-valued): CN-001-02-1234 (can be subdivided to each part)

- Multi-valued

Can have many values  
e.g. degree (a person may have more than one degree)

- Derived

Can be derived with algorithm  
e.g. age can be calculated by dob



# 考点1. Element of Databases -- Relationship

重要程度: ★★★  
难易程度: ★★

- Entity 和 Entity 之间的关系

## ❖ Identifying Relationship vs Non-Identifying Relationship

### • Identifying Relationship

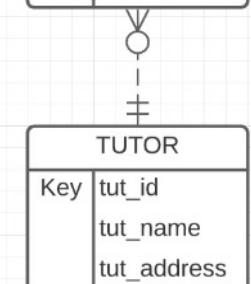
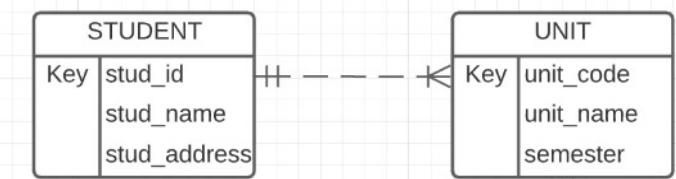
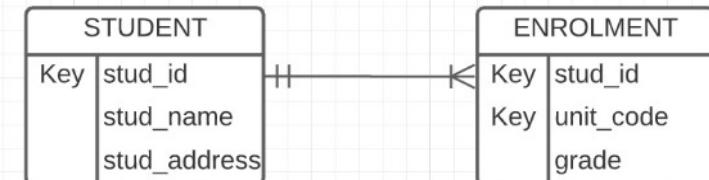


- An Entity(A) supports another entity(B)
- Use solid line (实线)
- ENROLMENT 依赖于 STUDENT & UNIT 存在

### • Non-Identifying Relationship



- An Entity does not support another entity
- Use broken line(虚线)
- UNIT, STUDENT, TUTOR 分别独立存在, 不需要依赖对方



重要程度: ★★★★  
难易程度: ★★★★☆

# 考点1. Element of Databases -- Relationship

## ❖ Relationship Connectivity

| : one

< : many

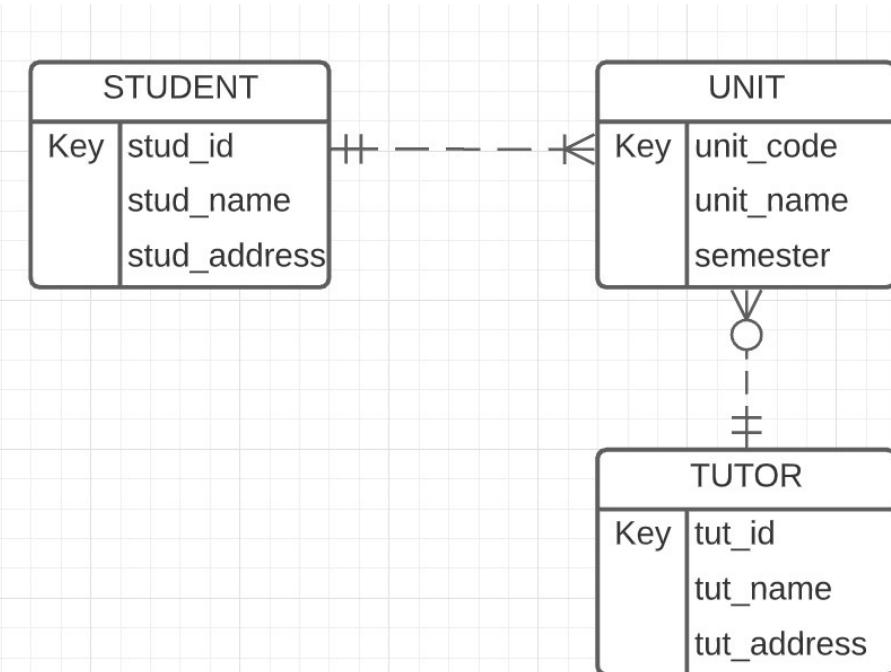
O: zero

||: one and ONLY one

|< : one to many (mandatory)

O|: zero or one (optional)

O< : zero to many (optional)

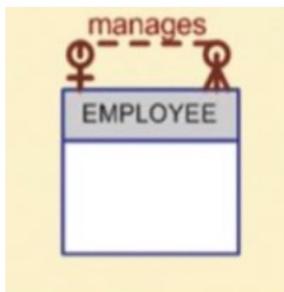


重要程度: ★★★★  
难易程度: ★★★★☆

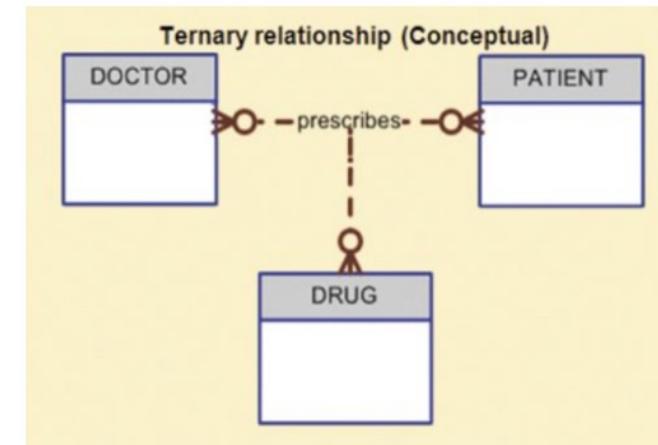
# 考点1. Element of Databases -- Relationship

## ❖ Relationship Degree (多少个entity参与了这段关系)

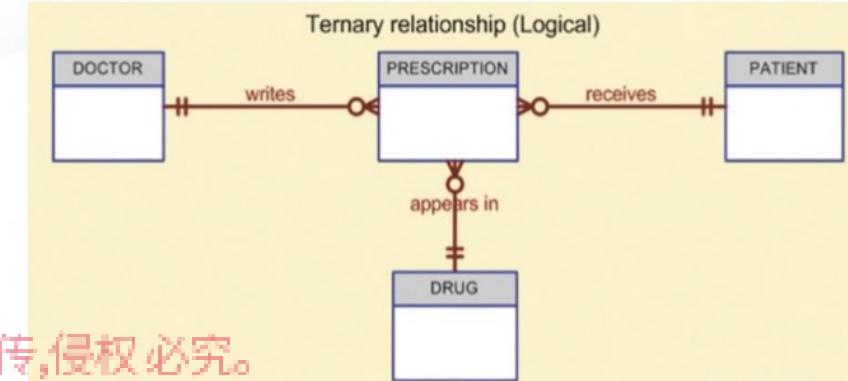
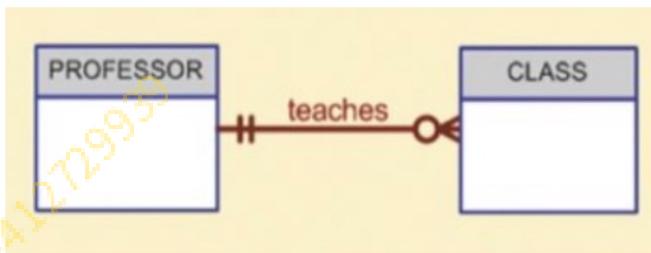
- Unary (only one entity involved)



- Ternary (Three entity involved)

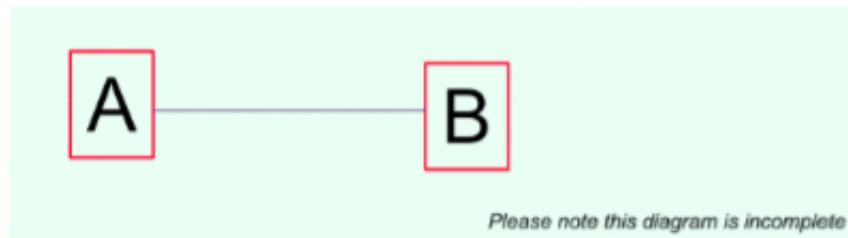


- Binary (Two entity involved)



# 考点1. Element of Databases -- Relationship

重要程度: ★★★★  
难易程度: ★★★★☆



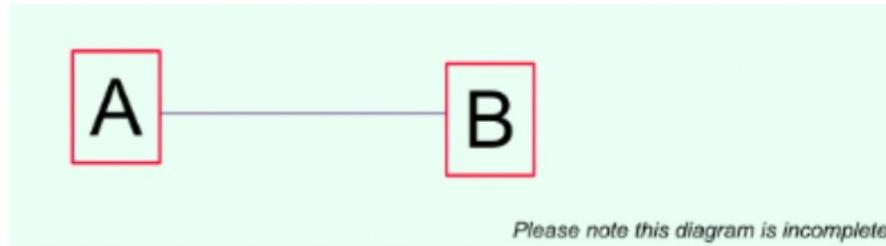
Q1. How many relationships are there in the above diagram?

What is the degree of the relationship/s (the number of entities participating in the relationship/s)?

- 2, binary
- 1, binary
- 3, ternary
- 1, Unary

# 考点1. Element of Databases -- Relationship

重要程度: ★★★★  
难易程度: ★★★★☆



Q1. How many relationships are there in the above diagram?

What is the degree of the relationship/s (the number of entities participating in the relationship/s)?

2, binary

1, binary

3, ternary

1, Unary

## Question 5

Answer saved

Marked out of  
1.00 Flag question

A \_\_\_\_\_ attribute is one that cannot be subdivided.

Select one:

- a. single-valued
- b. simple
- c. composite
- d. multivalued

[Clear my choice](#)

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**Question 8**

Answer saved

Marked out of  
1.00

Flag question



According to the above diagram, a new department may NOT have a manager yet. True or False?

Select one:

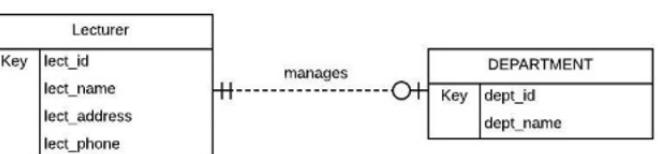
- True
- False

**Question 14**

Answer saved

Marked out of  
1.00

Flag question



According to the above diagram, how many department may be managed by a lecturer?

Select one or more:

- a. one
- b. many
- c. zero

**Question 10**

Answer saved

Marked out of  
1.00 Flag question

A \_\_\_\_\_ attribute can be further subdivided to yield additional attributes.

Select one:

- a. simple
- b. single-valued
- c. multivalued
- d. composite

**Question 6**

Answer saved

Marked out of  
1.00 Flag question

A \_\_\_\_\_ relationship exists when an association is maintained within a single entity.

Select one:

- a. unary
- b. ternary
- c. weak
- d. strong

[Clear my choice](#)

**Question 7**

Answer saved

Marked out of  
1.00

Flag question

Lecturer	
Key	lect_id
	lect_name
	lect_address
	lect_phone

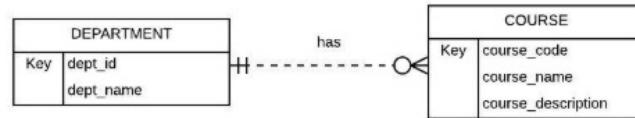
According to the above diagram, which attribute(s) could be the composite attribute(s)?

**Question 15**

Answer saved

Marked out of  
1.00

Flag question



According to the above diagram, a COURSE belongs to \_\_\_\_ DEPARTMENT(s)

Select one:

- a. many
- b. one
- c. one or many
- d. zero or one

# 重难点总结

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# 重难点总结

重要程度: ★★★★  
难易程度: ★★★★★

- Entity (Strong Entity vs. Weak Entity)
  - Strong Entity (key来源于自己)
  - Weak Entity (key从别的entity拿来的)
  
- Attribute
  - Simple (gender, height...)
  - Composite(address, fullname...)
  - Single-Value (id, unit code...)
  - Multi-Value(degree, skill, color...)
  - Derived (age, total price...)

- Relationship (number of Relationship vs. Relationship Degree)

- Number Of Relationship: entity之间存在多少个关系
- Relationship Degree: 有多少entity参与了某段关系

- Relationship Connectivity:

O: Zero

|: One

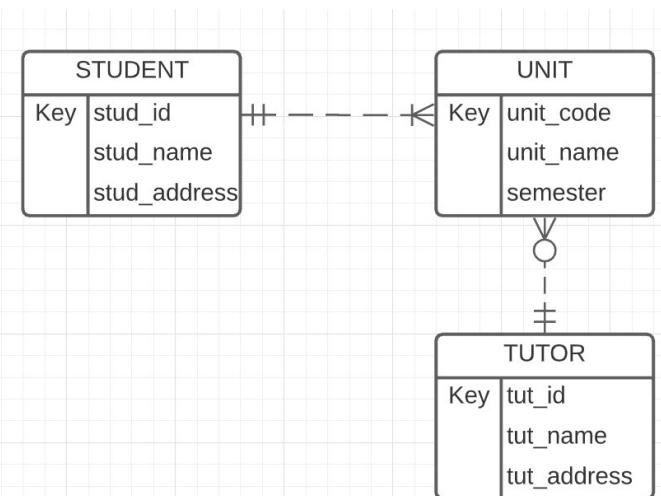
<: Many

O|: zero or one

O<: zero to many

|<: one to many

||: one and only one



# 下节课预告

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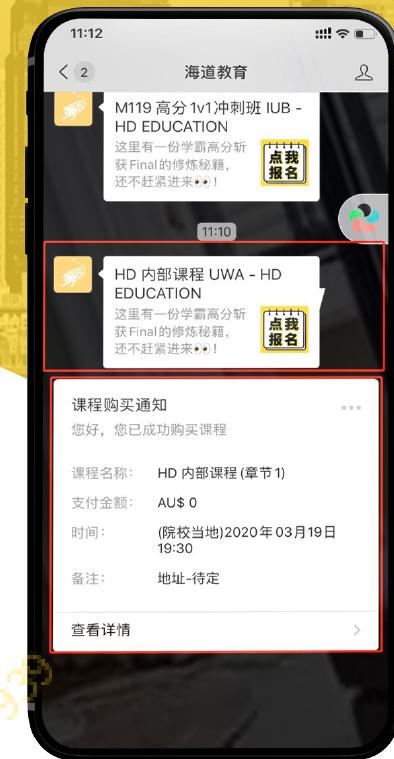
# 下节课预告

Conceptual Model

Relational Model (Relational Algebra)

课程结束后，如果您对课程或者服务的任何建议和意见  
请给予我们提高和改进的机会，感谢您对 HD·EDUCATION 课程和服务的信任！

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