



Australian  
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# 程序代写代做 CS编程辅导

# Welcome to Relational Databases 2022!



COMP6240/COMP6240

WeChat: cstutorcs

Assignment Project Exam Help

Email: [tutorcs@163.com](mailto:tutorcs@163.com)

00:749389476

<https://tutorcs.com>





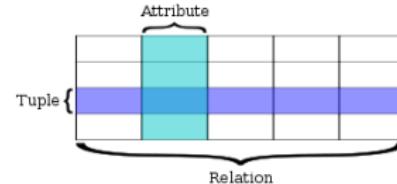
## 程序代写代做 CS编程辅导 Data & Databases

- Structured data

- have the same structure
- e.g., relational databases



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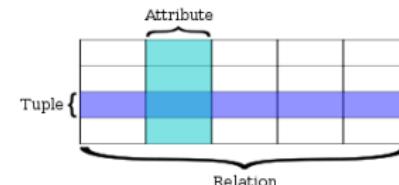
## Data & Databases



### ● Structured data

- have the same structure
- e.g., relational databases

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### ● Semi-structured data

- have certain structure
- but do not have an identical structure
- e.g., XML

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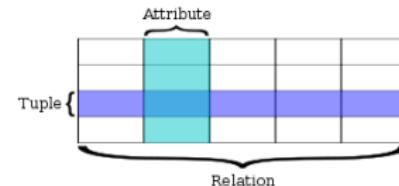
## Data & Databases



### ● Structured data

- have the same format
- e.g., relational databases

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### ● Semi-structured data

- have certain structure
- but do not have an identical structure
- e.g., XML

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### ● Unstructured data

- do not have any predefined format
- e.g., plain text



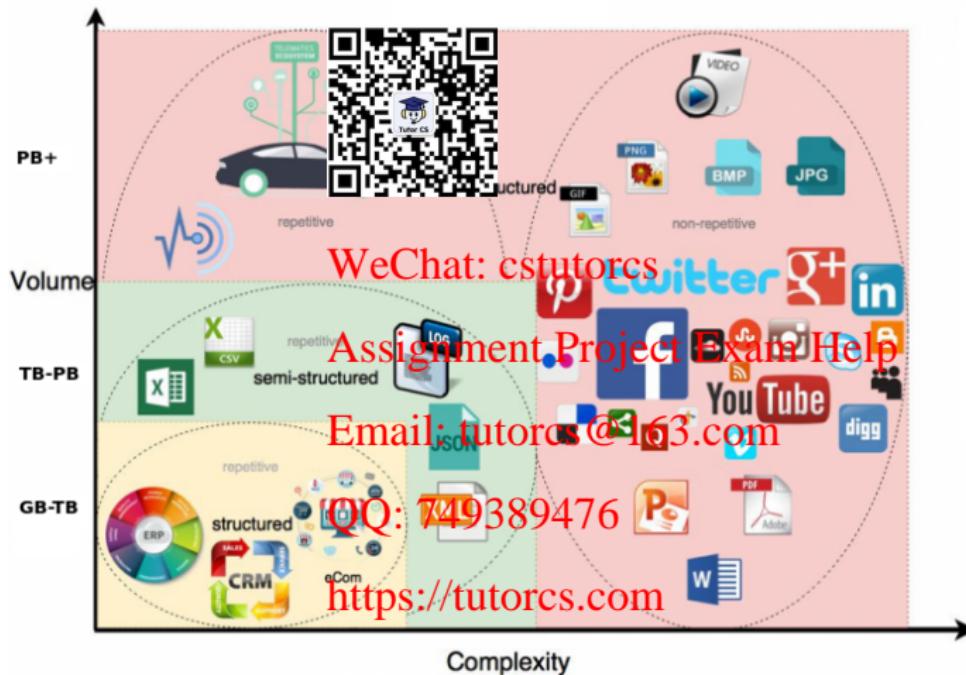
### TYPOGRAPHICAL ART.

We wish it to be distinctly understood that the letter-press department of this paper is not going to be trampled on by any tyrannical crowd of artists in existence. We mean to let the public see that we can lay out, in our own typographical line, all the cartoonists that ever walked. For fear of startling the public we will give only a small specimen of the artistic achievements within our grasp, by way of a first instalment. The following are from Studies in Passions and Emotions. No copyright.





# 程序代写代做 CS编程辅导





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## Motivations for Studying Databases



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## Motivations for Studying Databases



Current trends:

WeChat: cstutores

- “small data” ↔ “big data”

- “data” ↔ “knowledge”

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Email: [tutores@163.com](mailto:tutores@163.com) support:

- data management

QQ: 749389476

- data analysis

<https://tutores.com>

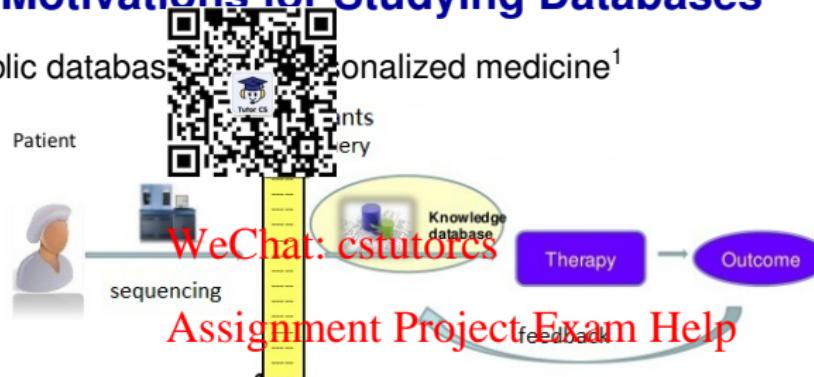




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## Motivations for Studying Databases

- Major public databases



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Personalized Medicine

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<https://tutorcs.com>



<sup>1</sup> <http://bioinfo.cipf.es>



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## Motivations for Studying Databases

- Google's knowledge



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Google Knowledge Graph

<https://tutorcs.com>

<sup>2</sup><https://www.google.com/insidesearch/features/search/knowledge.html>

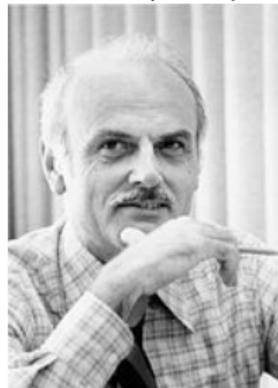


## 程序代写代做 CS编程辅导 Database research

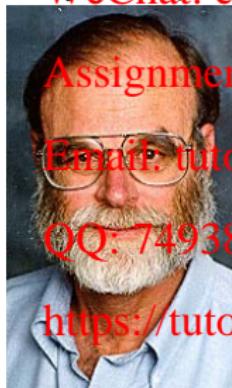


- Four database researchers received the ACM Turing Award (Nobel Prize of Computing).

Codd (1981)

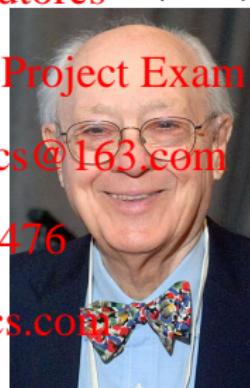


Gray (1998)

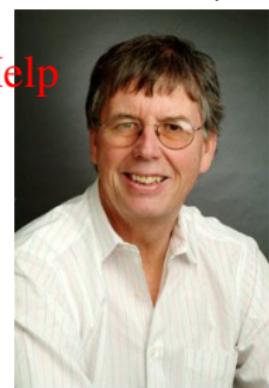


received the ACM Turing Award (Nobel Prize of Computing).

Bachman (2012)



Stonebraker (2014)



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## 程序代写代做 CS编程辅导

### What will you learn?



Week	Topics
1	Introduction to database systems
2	Relational data model and SQL (1)
3	Relational data model and SQL (2)
4	WeChat: <a href="#">tutors</a>
5	Entity relationship model
6	Functional dependencies
6	Assignment Project Exam Help
6	Normalisation
7	Email: <a href="mailto:tutors@163.com">tutors@163.com</a>
8	Relational algebra
8	Query processing and optimisation
9	Database security
10	Database transactions
11	NoSQL databases
12	Revision sessions

Both **theory** and **practice** are important!



## 程序代写代做 CS编程辅导 Course site

- **Wattle** (UID and pas



[wattle.anu.edu.au](https://wattle.anu.edu.au)

- Online lecture videos and slides
- Self-assessment quizzes (after watching online lectures)
- On-campus lecture recordings and slides
- Tutorial/lab exercises
- Assignment specifications, submissions and marks
- Supplementary reading materials
- Course news and discussion forum
- Useful links
- ...

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# 程序代写代做 CS编程辅导

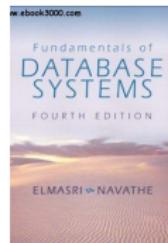
## Textbook

- Only recommended (Required)

- Fundamentals of Database Systems**, 7th Edition (Global Edition), R. Elmasri and S. Navathe, 2017

- Other editions (4th, 5th or 6th editions) are also fine.

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- Several copies [in the reserve section](https://tutorcs.com) of the Hancock library.
- Available at the Co-op bookshop.
- In this course, lecture slides and other course materials will be your best reference.



## 程序代写代做 CS编程辅导 Lab Environment



- We will use the open-source relational database management system Postgres.

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- The PostgreSQL documentation is recommended for additional reading. It includes an excellent SQL reference.

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<https://www.postgresql.org/docs/14/index.html>

- The PostgreSQL software and other resources is available from the PostgreSQL website.

<https://tutorcs.com>

<http://www.postgresql.org>



## 程序代写代做 CS编程辅导 How will you learn?



- **Online lectures** (pre-recorded): motivation and formal concepts
- **On-campus lectures** (Thu 3-5pm): practical examples and active communication

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- Thu 3-5 pm, at Manning Clark Hall at Kambri  
Recording available on Echo360 through Wattle

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- **Labs** practice by yourself and bridge your learning gaps

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- on campus, CS&IT or HN
- online live

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Note: Lab group registration → MyTimeTable

<https://tutorcs.com>

- **Wattle discussion forum**: ask questions, discuss with peers, etc.
- **Suggested readings**: textbook and supplementary materials.



## 程序代写代做 CS编程辅导

### Who are we?



#### Lecturers

- **Yu Lin** (Course Convener) [yu.lin@anu.edu.au](mailto:yu.lin@anu.edu.au)

**Drop-in Session:** Friday 1pm-2pm (Week 1 – Week 8, Week 12)  
**WeChat:** [ostudent](#)

- **Qing Wang** [qing.wang@anu.edu.au](mailto:qing.wang@anu.edu.au)

**Assignment Project Exam Help**  
**Drop-in Session:** Friday 1pm-2pm (Week 9 – Week 11)

**Email:** [tutorcs@163.com](mailto:tutorcs@163.com)

#### Drop-in Session:

- On-campus: R4.15, HN Building (# 145)
- Zoom Info: Meeting ID: 862 1344 4001, Password: 089213
- More ad-hoc on-campus or online drop-in sessions to better support our students (e.g., lab environment, assignment clarification, marking)



程序代写代做 CS编程辅导

## Who are the students?

- We have a wide range of students in the class.



- First year, later year, post-grad

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- Domestic and international students

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- Computing, engineering, science, information systems/technology, commerce, finance, arts, “unknown”

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- Varied computing and math skills

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<https://tutorcs.com>

- As of today, we have 500+ students in total!

程序代写代做 CS编程辅导  
**Who are the students?**

- We will cater for individual students in this course.



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<https://tutorcs.com>



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## Who are the students?

- We will cater for individual students in this course.

- For **new students**



**CS students**

- Lab 1 in Week 2 on lab environment (important)

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<https://tutorcs.com>



程序代写代做 CS编程辅导

## Who are the students?

- We will cater for individual students in this course.



- For new students

- Lab 1 in Week 2 on lab environment (important)

- For CS students

- Lab 8 in Week 10 on database programming (requested by previous CS students)

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QQ: 749389476

<https://tutorcs.com>



## 程序代写代做 CS编程辅导

### Who are the students?

- We will cater for individual students in this course.



- For **new students**  
**CS students**
  - Lab 1 in Week 2 on lab environment (important)
- For **CS students**  
**WeChat: cstutorcs**
  - Lab 8 in Week 10 on database programming (requested by previous CS students)
- For **postgraduate students**  
**Email: tutorcs@163.com**
  - Related research readings

**QQ: 749389476**

**<https://tutorcs.com>**



## 程序代写代做 CS编程辅导

### Who are the students?

- We will cater for individual students in this course.
  - For **new students**  
Lab 1 in Week 2 on lab environment (important)
  - For **CS students** WeChat: cstutorcs
    - Lab 8 in Week 10 on database programming (requested by previous CS students)
  - For **postgraduate students** Email: tutorcs@163.com
    - Related research readings
  - For **students who are struggling**
    - Most marks are for core material, you can ignore the advanced stuff and still pass



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Assignment Project Exam Help

Email: tutorcs@163.com

Related research readings

students who are struggling

Most marks are for core material, you can ignore the advanced stuff and still pass

<https://tutorcs.com>



## 程序代写代做 CS编程辅导

### Who are the students?



- We will cater for individual students in this course.
  - For **new students**  
• Lab 1 in Week 2 on lab environment (important)
  - For **CS students**  
• WeChat: cstutorcs  
• Lab 8 in Week 10 on database programming (requested by previous CS students)
  - For **postgraduate students**  
• Email: tutorcs@163.com  
• Related research readings
  - For **students who are struggling**  
• Most marks are for core material, you can ignore the advanced stuff and still pass  
<https://tutorcs.com>
  - For **students who are looking for challenges**  
• Some difficult questions to try on



## 程序代写代做 CS编程辅导

### Course Policy on Communication



- Each student is required to respect and comply with the following policy:
  - Students should post **course-related questions on Wattle** instead of emailing lecturers and tutors directly.
  - Our course lecturers and other tutors will be monitoring and answering Wattle questions.
  - Course-related questions which are directly sent to our lecturers and tutors may be redirected to Wattle so the answers can benefit the entire class.
  - Students **must not post any hints or solutions to assignments/quizzes/test** on the class discussion forum.  
**QQ: 749389476**  
**assignments/quizzes/test** on the class discussion forum.  
**https://tutorcs.com**
  - If you have questions regarding your specific personal circumstances, you can send your email to [yu.lin@anu.edu.au](mailto:yu.lin@anu.edu.au).



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## What are you expected to do?



- Watch **online lectures**, **complete quizzes** and provide **feedback**
- Attend **on-campus labs** for more running examples and explanations
- Engage in **labs** for more exercises
- Regularly check the **Wattle course site**  
**Assignment Project Exam Help**
- Submit **assignments** and **quiz/test** on or before the due dates
- Attend the **examinations**
- Complete the required **readings**
- Think critically and be **active!**

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<https://tutorcs.com>

If you are having any difficulty, talk to us!



## 程序代写代做 CS编程辅导

### How will our students be assessed?

- The assessment weightage is:



CMP2400/6240 students:

5% **Quizzes and labs**: Test 6 out of 10 quizzes ( $0.5\% \times 6 = 3\%$ ) and engaging 4 out of 8 labs ( $0.5\% \times 4 = 2\%$ , at your own choice).

WeChat: estutores

20% **Assessment**: Assignment Project Exam Help (Individual) Assessment on SQL.

15% **Assignment**: Email: [tutors@163.com](mailto:tutors@163.com) (Individual) Assignment on database theory.

5% **NoSQL test**: QQ: 749389476 A online test on Wattle about NoSQL databases.

55% **Final exam**: <https://tutors.com> A final exam will be held at the end of semester.

- Any appeals regarding an assessment must be submitted **in writing within two weeks** of the assessment results being released on Wattle.



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**How will you be assessed?**



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QQ: 749389476

<https://tutorcs.com>



## 程序代写代做 CS编程辅导 How will you be assessed?



- To pass the course,

●

- Obtain at least 40% in the final exam, i.e., 22 marks out of 55;  
**WeChat: cstutorcs**
- Obtain at least 50% as a combined total of quizzes, labs, assignments, test and exams  
**Assignment Project Exam Help**

Email: **tutorcs@163.com**

QQ: **749389476**

<https://tutorcs.com>



## 程序代写代做 CS编程辅导 How will you be assessed?



- To **pass the course**,

- Obtain at least 40% in the final exam, i.e., 22 marks out of 55;  
**WeChat: cstutorcs**
- Obtain at least 50% as a combined total of quizzes, labs, assignments, test and exams  
**Assignment Project Exam Help**

**Email: tutorcs@163.com**

- To **get a HD in this course**,

**QQ: 749389476**

- Obtain a final mark above 80.

**<https://tutorcs.com>**



## 程序代写代做 CS编程辅导 How will you be assessed?



- To **pass the course**,

- Obtain at least 40% in the final exam, i.e., 22 marks out of 55;  
**WeChat: cstutorcs**
- Obtain at least 50% as a combined total of quizzes, labs, assignments, test and exams.  
**Assignment Project Exam Help**

**Email: tutorcs@163.com**

- To **get a HD in this course**,

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- Obtain a final mark above 80.  
**<https://tutorcs.com>**
- Final marks may be scaled as a result of the moderation at the examiners' meeting.



## 程序代写代做 CS编程辅导

### Time Commitment



- You're expected to spend approximately 120 hours work on this course.

Activities	WeChat: cstutorcs	Hours
Online lecture/workshop/classroom		36
Lab engagement		16
Homework/readings		32
Assignments/Tests		36
Total		120

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- The amount of time you will need to spend on study also depends on other factors such as your prior knowledge and learning style.  
<https://tutorcs.com>
- These hours do not include the time you spend studying for your final exam.



## 程序代写代做 CS编程辅导 CECS Class Representatives



### Why become a class representative?

- **Develop skills sought by employers**, including interpersonal, dispute resolution, leadership, communication skills.
- **Become empowered**. Play an active role in determining the direction of your education.
- **Become more aware of issues influencing your University** and current issues in higher education.
- **Ensure students have a voice** to their course convener, lecturer, tutors, and college.
- **Course design and delivery** help shape the delivery of your current courses as well as future improvements for following years.
- Refer to more information on the Wattle site. Please nominate yourself by sending an email to [yu.lin@anu.edu.au](mailto:yu.lin@anu.edu.au) with the title “COMP2400/6240 Course Representative Nomination” by 8 August 2022.



## 程序代写代做 CS编程辅导 Student Feedback



- Your feedback on this **class** will be highly valued!

- Feel free to send your feedback to **Yu** and **Qing**.

- Feel free to send your feedback to **your tutor**.

- Feel free to contact **your class representative**.

- Feel free to provide your feedback in **online quizzes**.  
**Email:** [tutorcs@163.com](mailto:tutorcs@163.com)

- We will also have two **anonymous feedback surveys**:

**QQ: 749389476**

- ① **Anonymous Survey** on teaching pace, teaching material and tutors;  
<https://tutorcs.com>
- ② **Student Evaluations of Learning and Teaching** (SELT) survey at the end of the teaching on all issues of teaching and learning.



## 程序代写代做 CS编程辅导 Cooperation and Plagiarism



- The ANU has guidelines and policies on academic honesty which you must adhere to:

WeChat: <https://www.anu.edu.au/students/academic-skills/academic-integrity>.

### Assignment Project Exam Help

- Discussing the course content and activities with other students is a great way to learn, and we encourage it.
- However, **work you hand in for assessment must be your own.**  
**QQ: 749389476**
- Assignments submitted electronically, may be run through plagiarism detecting software, and tutors will be asked to look out for copied work.  
**https://tutorcs.com**
- Incidents of plagiarism will be taken seriously and can result in disciplinary action.



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**Manage your own learning**



- Always ask yourself “**What am I doing this?**”
- Test your understanding, try things out, do exercises.

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- If you don't get it, **do something about it.**

**Assignment Project Exam Help**

- Re-read the relevant lecture notes or sections of the textbook.

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- Post a message on the discussion forum on Wattle.

**QQ: 749389476**

- Find alternative sources in the library or on the internet.

**● Ask your classmates <https://tutorcs.com>**

- Talk to your tutor or the lecturers.



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## Tentative course schedule



Weeks	Lectures	Labs	Tasks
1	Introduction to Database Systems	No labs	-
2	Relational Data Model and SQL (1)	Lab 1: SQL Environment	-
3	Relational Data Model and SQL (2)	Lab 2: Basic SQL	-
4	Entity-Relationship Model	Lab 3: Advanced SQL	-
5	Functional Dependencies	Lab 4: The Relational Model	-
6	Normalisation	No labs	Assignment 1 due
Mid-semester Break			
7	Relational Algebra	Lab 5: Functional Dependencies	-
8	Query Processing and Optimization	Lab 6: Normalisation	-
9	Database Security	Lab 7: Relational Algebra and Query Optimization	-
10	Database Transactions	Lab 8: Database Programming	Assignment 2 due
11	NoSQL Databases	No labs	-
12	Revision sessions	No labs	NoSQL test due
Final Examination Period			

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Email: tutors@163.com

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<https://tutors.com>



## 程序代写代做 CS编程辅导

## Work to do in Weeks 1 and 2



### ● Week 1

- **Read** the course material (links available on the Wattle course site).
- **Watch** the online lectures (on general concepts and math concepts).
- **Choose** a lab group via MyTimeTable.
- **Attend/Watch** the on-campus lecture for an overview of this course.

### ● Week 2

## Assignment Project Exam Help

- **Watch** the online lectures and **complete** the quiz before Wednesday.
- **Attend** the on-campus lecture on Thursday.
- **Join** Lab 1 to get familiar with the lab environment, especially for students who are not familiar with Unix/Linux system. More information is available on Wattle.
- **Join** the drop-in session if you meet issue in setting up the lab environment or have any additional questions.

- **Contact** Yu Lin [yu.lin@anu.edu.au](mailto:yu.lin@anu.edu.au) if you need assistance in undertaking the course because of disability or other circumstances.



## 程序代写代做 CS编程辅导

### Lab 1: Lab Environment

- **Log in to STREAMS**  /cs.anu.edu.au/streams/ to activate your account in the CSIT environment. Log in with your ANU ID and password.

- **Option 1: Setting up a docker environment on your computer**

WeChat: cstutorcs

- Allow students to set up the lab environment locally on your own computer
- More instructions are available on Wattle for Windows and Mac users.

- **Option 2: Connecting to ANU CECS Ubuntu Virtual Desktop from your computer**

Email: tutorcs@163.com

- Students must first use GlobalProtect to enter the ANU VPN.
- Requiring a fast and stable internet connection to the ANU computing facilities.

QQ: 749389476  
<https://tutorcs.com>

- In addition to your lab in Week 2, you are very welcome to bring your questions to two drop-in sessions, Thu 5pm-7pm and Fri 10am-12pm, both via Zoom in Week 2.



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**Databases in Our Lives**



Name a business which uses databases:

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- What kind of data it needs to store?
- What kind of queries it needs to answer?
- What is the role of databases in it?
- Why do we need to organise data in databases?

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# 程序代写代做 CS编程辅导 Databases in Our Lives

Australian Bureau of Statistics



<sup>3</sup> <http://www.abs.gov.au/websitedbs/censushome.nsf/home/2016>



程序代写代做 CS编程辅导  
**Databases in Our Lives**

Australian Transaction Reports and Analysis Centre (AUSTRAC)<sup>4</sup>



QQ: 749389476

AUSTRAC receives and stores transaction reports from various reporting entities in Australia, including banks, casinos and superannuation funds, to help combat money-laundering and terrorism financing activities.

<sup>4</sup> <http://www.austrac.gov.au/>



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## 程序代写代做 CS编程辅导 **Databases vs. Spreadsheets**



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<https://tutorcs.com>



<http://liokumhang.blogspot.com/2012/04/spreadsheet-vs-database.html>



程序代写代做 CS编程辅导  
**Databases vs. Spreadsheet**

Storing all enrolment



ENROL				
StudentID	Name	Address	CourseNo	Semester
101	Bernard	25 Edinburgh Ave, Acton 2601	COMP1130	2018 S1
102	Teddy	10, Gould Street, Turner 2612	COMP1130	2018 S1
103	Elsie	9 Watkin Street, Bruce 2617	COMP2400	2018 S2
102	Teddy	10, Gould Street, Turner 2612	COMP2400	2018 S2
...	...	...	...	...
...	...	...	...	...

WeChat: estutorcs

Assignment Project Exam Help

Email: tutorcs@163.com

QQ: 749389476

<https://tutorcs.com>



程序代写代做 CS编程辅导  
**Databases vs. Spreadsheet**

Storing all enrolment information into a single spreadsheet



ENROL				
StudentID	Name	Address	CourseNo	Semester
101	Bernard	25 Edinburgh Ave, Acton 2601	COMP1130	2018 S1
102	Teddy	10, Gould Street, Turner 2612	COMP1130	2018 S1
103	Elsie	9 Watkin Street, Bruce 2617	COMP2400	2018 S2
102	Teddy	10, Gould Street, Turner 2612	COMP2400	2018 S2
...	...	...	...	...
...	...	...	...	...

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QQ: 749389476

**Question:** Can you identify any issues in doing this?

<https://tutorcs.com>



程序代写代做 CS编程辅导  
**Databases vs. Spreadsheet**

Storing all enrolment



information into a single spreadsheet

ENROL					
StudentID	Name	Address	CourseNo	Semester	
101	Bernard	25 Edinburgh Ave, Acton 2601	COMP1130	2018 S1	
102	Teddy	10, Gould Street, Turner 2612	COMP1130	2018 S1	
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...	...	...	...	...	...

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**Question 1:** How can we ensure that the same student does not enrol in the same course in the same semester twice?

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**Databases vs. Spreadsheet**

Storing all enrolment



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...	...	...	...	...	...

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**Question 1:** How can we ensure that the same student does not enrol in the same course in the same semester twice?

Please refer to the Relational Data Model in Week 2.



程序代写代做 CS编程辅导  
**Databases vs. Spreadsheet**

Storing all enrolment information into a single spreadsheet



ENROL				
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...	...	...	...	...
...	...	...	...	...

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**Question 2:** How can we print out all the courses in S2 2018 along with the number of enrolled students?

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**Databases vs. Spreadsheet**

Storing all enrolment



information into a single spreadsheet

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...	...	...	...	...
...	...	...	...	...

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**Question 2:** How can we print out all the courses in S2 2018 along with the number of enrolled students?

Please refer to SQL in Week 3.

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## 程序代写代做 CS编程辅导 Databases vs. Spreadsheet

Storing all enrolment



in into a single spreadsheet

ENROL				
StudentID	Name	WeChat: <a href="#">tutorcs</a>	Address	CourseNo
StudentID	Name	Address	CourseNo	Semester
101	Bernard	25 Edinburgh Ave, Acton 2601	COMP1130	2018 S1
...	...	Assignment Project Exam Help	...	...



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QQ: 749389476

**Question 3:** How can we model students and courses as well as the relationship between them?

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## 程序代写代做 CS编程辅导 Databases vs. Spreadsheet

Storing all enrolment



in into a single spreadsheet

ENROL				
StudentID	Name	WeChat: <a href="#">tutorcs</a>	Address	CourseNo
StudentID	Name	Assignment	Project	Exam
101	Bernard	25 Edinburgh Ave, Acton 2601	COMP1130	2018 S1
...	...	Assignment	Project	Exam



Email: [tutorcs@163.com](mailto:tutorcs@163.com)

QQ: 749389476

**Question 3:** How can we model students and courses as well as the relationship between them?

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Please refer to Entity-Relationship Model in Week 4.



程序代写代做 CS编程辅导  
**Databases vs. Spreadsheet**

Storing all enrolment information into a single spreadsheet



ENROL

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**Question 4:** Would “Name” and “Address” be redundant information in the above table with respect to “StudentID”?

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程序代写代做 CS编程辅导  
**Databases vs. Spreadsheet**

Storing all enrolment



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...	...	...	...	...	
...	...	...	...	...	

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**Question 4:** Would “Name” and “Address” be redundant information in the above table with respect to “StudentID”?

Please refer to Functional Dependencies in Week 5.



## 程序代写代做 CS编程辅导 Databases vs. Spreadsheet

Storing all enrolment



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...	...	...	...	...

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**Question 5:** Should we split the above table into multiple smaller ones to reduce the redundancy?

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程序代写代做 CS编程辅导  
**Databases vs. Spreadsheet**

Storing all enrolment



information into a single spreadsheet

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...	...	...	...	...

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**Question 5:** Should we split the above table into multiple smaller ones to reduce the redundancy?

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Please refer to Normalisation in Week 6.



## 程序代写代做 CS编程辅导 Databases w.r.t. Mathematics



Toh, T.L., Lim, Y.C., Chua, J., Heng, J. (2007a).  
Mathematics matters: Textbook for  
Normal (Technical), Book 1.

**Question 6:** What is a computer's point of view on creating, querying and updating databases?



## 程序代写代做 CS编程辅导 Databases w.r.t. Mathematics



Toh, T.L., Lim, Y.C., Chua, J., Heng, J. (2007a).  
Mathematics matters: Textbook for  
Normal (Technical), Book 1.

**Question 6:** What is a computer's point of view on creating, querying and updating databases?  
Please refer to Relational Algebra in Week 7.



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**Databases w.r.t. Computers**



**Question 7:** How will a computer process and execute your input command?

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## 程序代写代做 CS编程辅导 Databases w.r.t. Computers



**Question 7:** How will a computer process and execute your input command?

Please refer to Query Processing and Optimisation in Week 8.



## 程序代写代做 CS编程辅导 Databases Security



“Somebody broke into your computer, but it looks like the work of an inexperienced hacker.”

**Question 8:** How can we protect the databases from hackers?



## 程序代写代做 CS编程辅导 Databases Security



“Somebody broke into your computer, but it looks like the work of an inexperienced hacker.”

**Question 8:** How can we protect the databases from hackers?

Please refer to Databases Security in Week 9.



## 程序代写代做 CS编程辅导 Databases Transactions



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The diagram shows two tables representing a database. The first table has two rows:

Alice	\$100
Bob	\$5

The second table also has two rows:

Alice	\$80
Bob	\$25

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<https://www.eadan.net/posts/crypto4/>

**Question 9:** How can we keep a database consistent even in cases of system failure?  
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程序代写代做 CS编程辅导  
**Databases Transactions**



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A diagram illustrating a database transaction. On the left, a 2x2 grid shows initial values: Alice has \$100 and Bob has \$5. An arrow labeled '\$20' points from Alice's row to Bob's row. In the middle, a 2x2 grid shows the state after the transfer: Alice has \$80 and Bob has \$25. On the right, a URL is provided.

Alice	\$100	Assignment Project Exam Help	Alice	\$80
Bob	\$5	Email: tutorcs@163.com	Bob	\$25

<https://www.eadan.net/posts/crypto4/>

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**Question 9:** How can we keep a database consistent even in cases of system failure?  
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Please refer to Databases Transactions in Week 10.



程序代写代做 CS编程辅导

## Relational Databases vs. NoSQL Databases



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<https://www.fullstackacademy.com/tech-talks/sql-vs-nosql>



**Question 10:** What are the opportunities and challenges of databases in the big data era?  
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## Relational Databases vs. NoSQL Databases



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<https://www.fullstackacademy.com/tech-talks/sql-vs-nosql>



**Question 10:** What are the opportunities and challenges of databases in the big data era?  
<https://tutorcs.com>

Please refer to NoSQL Databases in Week 11.



## 程序代写代做 CS编程辅导

(credit cookie) Set Notation and Russell's Paradox

### ● Two ways of specifying sets

- ①  $\{x_1, \dots, x_n\}$  (i.e., list the elements in a set)

- $S = \{1, 2, 3, 4, 5\}$
- $1 \in S, 2 \in S, 3 \in S, 4 \notin S, \{4, 5\} \in S$

- ②  $\{x | \varphi\}$  (i.e., describe the elements that satisfy a property  $\varphi$ )

- $\{\text{students} \mid \text{currently enrolled in COMP6240}\}$
- $\{x | x \in \mathbb{N}\}$ , i.e., the set of natural numbers.

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## 程序代写代做 CS编程辅导

(credit cookie) Set Notation and Russell's Paradox

### • Two ways of specifying sets

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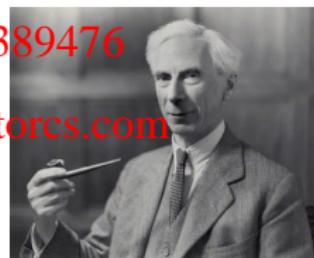
- $\{\text{students} \mid \text{currently enrolled in COMP6240}\}$
- $\{x | x \in \mathbb{N}\}$ , i.e., the set of natural numbers.
- $\{x | x \notin x\}$

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<https://tutorcs.com>



By Bassano (Public domain), via Wikimedia Commons  
Bertrand Russell, looking serious



## 程序代写代做 CS编程辅导

(credit cookie) Set Notation and Russell's Paradox



Bertrand Russell  
1872-1970



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- Let  $R = \{x | x \notin x\}$ , i.e., the set of all sets that do not contain themselves as members.

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# 程序代写代做 CS编程辅导

(credit cookie) Set Notation and Russell's Paradox



Bertrand Russell  
1872-1970



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- $R \in R$

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## 程序代写代做 CS编程辅导

(credit cookie) Set Notation and Russell's Paradox



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1872-1970



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- $R \in R \implies R$  contains itself as its members

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## 程序代写代做 CS编程辅导

(credit cookie) Set Notation and Russell's Paradox



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1872-1970



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(credit cookie) Set Notation and Russell's Paradox



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1872-1970



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**Email:** [tutorcs@163.com](mailto:tutorcs@163.com)  
**QQ:** 749389476
- $R \in R \implies R$  contains itself as its members  $\implies R \notin R$
- $R \notin R$   
<https://tutorcs.com>



## 程序代写代做 CS编程辅导

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Bertrand Russell  
1872-1970



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- QQ: 749389476**
- $R \in R \implies R$  contains itself as its members  $\implies R \notin R$
- $R \notin R \implies R$  does not contain itself as its members



## 程序代写代做 CS编程辅导

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Bertrand Russell  
1872-1970



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1872-1970



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- $R \in R \implies R$  contains itself as its members  $\implies R \notin R$
- $R \notin R \implies R$  does not contain itself as its members  $\implies R \in R$
- The barber is the “one who shaves all those, and those only, who do not shave themselves”. The question is, does the barber shave himself?



## 程序代写代做 CS编程辅导

(credit cookie) Set Notation and Russell's Paradox



Bertrand Russell  
1872-1970



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- $R \in R \implies R$  contains itself as its members  $\implies R \notin R$
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- The barber is the “one who shaves all those, and those only, who do not shave themselves”. The question is, does the barber shave himself?
- Bertrand Russell was awarded the Nobel Prize for Literature in 1950.