



Week 1 - Introduction
Assignment Project Exam Help
FIT2094 Database

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Your FIT2094 Teaching Team - Clayton

Campus Lecturer

Chief Examiner



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Manoj Kathpalia

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Lindsay Smith

程序代写代做CS编程辅导 Overview

- Unit Guide
- Moodle
- Teaching Methods (Assignment, Project, Exam Help, Lecture)
- A summary of topics to be studied



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Teaching Method

- Your peers help you to understand concepts through discussion.



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- Lecture includes a series of discussions on concepts. Email: tutorcs@163.com

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- The lecturer guides the discussion.

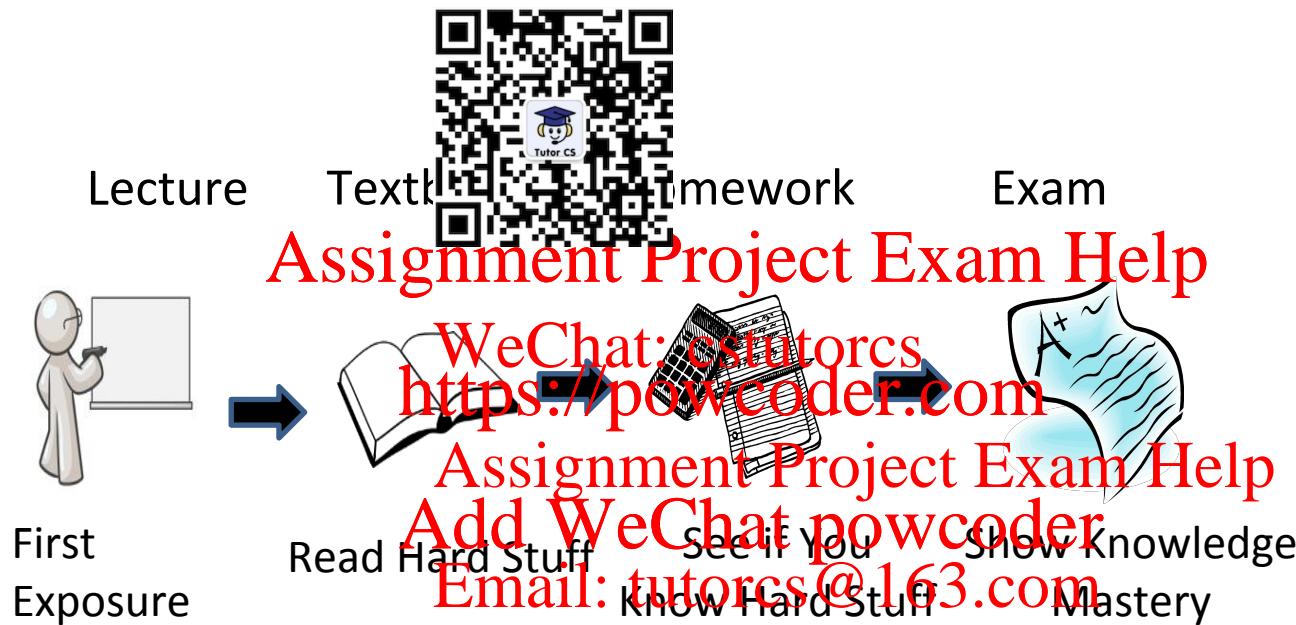
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Peer Instruction



Prof Eric Mazur, Harvard University

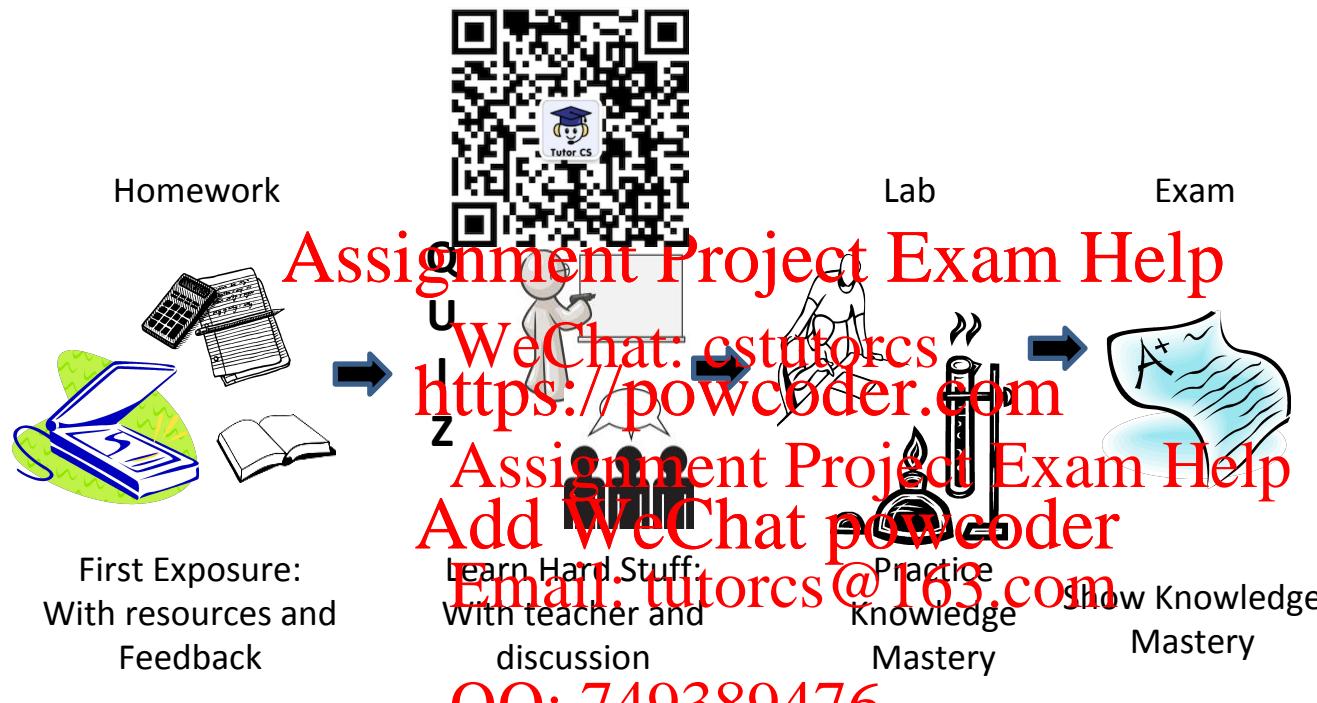
Traditional Teaching Method



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Peer Instruction—Full Picture



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Discussion Questions—Scenario

- Lecturer shows question.
- Student answers using the response system. (no discussion – individual vote).
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- If uncertainty
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 – Group discussion (2-3 students) – need to get a consensus.
 – Student answers using the response system (group vote – everyone in the group still needs to vote)
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 – Class wide discussion.

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Why The Scenario?

▪ Pose carefully and question

– Solo vote: Think and select answer

• Checks your understanding and create an opinion to base your discussion during the group discussion, if needed.

– If needed

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• Discuss: Analyze problem in teams of 2-3

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– Practice analyzing, talking about challenging concepts

– Reach consensus

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• Group vote: Everyone in group votes

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– You must all vote the same

– Convince your group or get convinced by your group.

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• Class wide discussion.



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Using FLUX



- Visit <https://flux.qa> presenter/dashboard on your internet enabled device
- Log in using your [Assignment Project Exam Help](https://powcoder.com) WeChat: cstutorcs
- Touch the + symbol
- Enter the code for your lecture
- Answer questions when they pop up.

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Multiple choice questions

Q1: $1 + 1 = ?$



Hint: There are 10 ~~t~~ people in this world. Those who understand binary and those who don't.

- a. 2
- b. 10
- c. 11
- d. Not sure

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Multiple choice questions



Q2: If the following statements are true,

$$5 + 3 = 2$$

$$9 + 1 = 810$$

$$8 + 6 = 214$$

$$5 + 4 = 19$$

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what is $3 + 2$? Add WeChat powcoder
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- a. 5
- b. 15
- c. 11
- d. 55

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Text-based poll

Q3: Write the name of your favourite fruit.



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Q4. What database management systems are you most familiar with?



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- a. Oracle WeChat: cstutorcs
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- b. MySQL Assignment Project Exam Help
- c. MS Access Add WeChat powcoder
- d. SQL Server Email: tutorcs@163.com
- e. others
- f. I am not familiar with any database management systems.

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Is it bad to g~~o~~ NG?

NO



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It is better to be WRONG and
understand why you are WRONG,
rather than getting the RIGHT
answer but NOT knowing WHY it is
the RIGHT answer!

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Why Peer Instruction?



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- Learn/practice hard concepts in class
- Build and test one's understanding in a supportive environment.
- Develop critical thinking, communication and reflection skills.
- Engage students to take ownership of their learning.

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Things are different... 程序代写代做 CS 编程辅导

- Pre-lecture activities are crucial.
 - Your lecture experience depend on your preparation.



- Attending lectures is very important

- My lecture slides are NOT your notes!

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– Create your own notes during pre-lecture reading.

– Annotate difficult concepts, revisit the annotation after lecture/tutorials.

– It is better not to take notes during lecture. You should be prepared

before the lecture, then think, discuss and ask questions during lectures.

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Study Program

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| Week | Activities | Assessment |
|------|--|--|
| 0 |  | No formal assessment or activities are undertaken in week 0 |
| 1 | PA Intro Model | |
| 2 | Re | |
| 3 | PART II: Database Design Conceptual model - E/R Diagram | Pre-lecture Quiz Questions due weekly prior to the lecture (Weeks 2 to 11) |
| 4 | Logical model - E/R transformation | |
| 5 | Normalisation | |
| 6 | Database Implementation (DDL) | Assignment 1 A due |
| 7 | PART III: The SQL Database Language SQL I | |
| 8 | Update, Delete and Transaction Management | Assignment 1 B due |
| 9 | SQL II | |
| 10 | SQL III | |
| 11 | PART IV: Web Database Implementation Database Connectivity and Web Technologies - Querying Data | Assignment 2 due |
| 12 | Web Technologies - Manipulating data | SQL Test |

5%

15%

10%

20%

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Teaching Team*

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Printable (3.0 MB)

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94 2018 S2

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Teaching Team

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Show only bookmarked modules

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3 Module 2: The Relational Data Model UG

4 Conceptual Modelling

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4.1 Using Tools to draw ERD

4.2 Building Conceptual Models

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5.1 Logical Modelling – Task B – Rental Model

5.2 SQL Developer Data Modeller Issues

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Overview

- An overview of relational database management systems (RDBMS)



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程序代写代做 CS编程辅导 Let's travel back to 1960s



- Relational databases do not exist yet
- Let's create a database to record the information on Monash students
 - What kind of approaches do we have?
 - What kinds of problems are involved?

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What is a database?

database
/ˈdeɪtəbeɪs/

noun
plural noun: databases



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How do we
structure/hold data?

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You can run various
queries/questions
without the need to
change the structure
of the database.

a structured set of data held in a computer, especially one that is accessible in various ways.

"a database covering nine million workers"

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How do we structure our data?



- How easy is it to answer a number of queries?
- What kind of guarantee do we have from the systems on data integrity after a modification
 - (eg deletion, update or insertion of one or more records to the system?)

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Data Redundancy - a student data spreadsheet

| STU_NBR | STU_LNAME | STU_FNAME | STU_ | UNIT_NAME | ENROL_YEAF | ENROL_SEM | MARK | GRADE | |
|----------|-----------|-----------|-----------|-------------|-------------|-----------|------|-------|---|
| 11111111 | Bloggs | Fred | 1 | Computer Pr | 2013 | 1 | 66 | C | |
| 11111111 | Bloggs | Fred | 1 | Database | 2013 | 1 | 80 | HD | |
| 11111112 | Nice | Nick | 10 | Computer Sy | 2013 | 1 | 80 | HD | |
| 11111112 | Nice | Nick | 10 | Computer Sy | 2012 | 1 | 35 | N | |
| 11111114 | Sheen | Cindy | 25-Dec-96 | FIT1001 | Computer Sy | 2012 | 1 | 78 | D |
| 11111114 | Sheen | Cindy | 25-Dec-96 | FIT1004 | Database | 2013 | 1 | 60 | C |
| 11111113 | Wheat | Wendy | 5-May-90 | FIT1004 | Computer Sy | 2012 | 2 | 65 | C |
| 11111113 | Wheat | Wendy | 5-May-90 | FIT1004 | Database | 2013 | 1 | 78 | D |



What would happen if we delete Fred's enrolment in FIT1002? What happens to the details of FIT1002 information such as its name?

How would you update the mark for Cindy's enrolment in FIT1001? (Imagine the spreadsheet contains thousands of students and each student has 12 enrolment entries).

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How would you introduce a new unit, eg FIT2133 Programming in Python into the spreadsheet when no student is enrolled to the unit yet?

Why do we have so many problems in the program's example?



- The structure of the data causes some data management problems or data anomalies.
- The software was not designed to deal with the type of reporting required.

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How do we solve it?

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Keep details of student, unit and enrolment separately, BUT keep the relationships among them in the system.

| STU_NBR | STU_LNAME | STU_FNAME | STU_DOB |
|----------|-----------|-----------|---------|
| 11111111 | Bloggs | Fred | 0 |
| 11111112 | Nice | Nick | 4 |
| 11111113 | Wheat | Wendy | 0 |
| 11111114 | Sheen | Cindy | 6 |



| UNIT_CODE | UNIT_NAME |
|-----------|----------------------|
| FIT1002 | Computer Programming |
| FIT1001 | Computer Systems |
| FIT1004 | Database |

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Relational Model

Relational Database

Relational Database

Management systems

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| STU_NBR | UNIT_CODE | ENROL_YEAR | ENR_M1_SEMESTER | MARK | GRADE |
|----------|-----------|------------|-----------------|------|-------|
| 11111114 | FIT1001 | 2012 1 | | 78 | D |
| 11111111 | FIT1002 | 2013 1 | | 60 | C |
| 11111111 | FIT1004 | 2013 1 | | 80 | HD |
| 11111112 | FIT1001 | 2012 1 | | 35 | N |
| 11111112 | FIT1001 | 2013 1 | | 80 | HD |
| 11111113 | FIT1001 | 2012 2 | | 65 | C |
| 11111113 | FIT1004 | 2013 1 | | 78 | D |
| 11111114 | FIT1004 | 2013 1 | | 60 | C |

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| STU_NBR | STU_LNAME | STU_FNAME | STU_DOB |
|----------|-----------|-----------|---------|
| 11111111 | Bloggs | Fred | 0 |
| 11111112 | Nice | Nick | 4 |
| 11111113 | Wheat | Wendy | 0 |
| 11111114 | Sheen | Cindy | 6 |



| UNIT_CODE | UNIT_NAME |
|-----------|----------------------|
| FIT1002 | Computer Programming |
| FIT1001 | Computer Systems |
| FIT1004 | Database |

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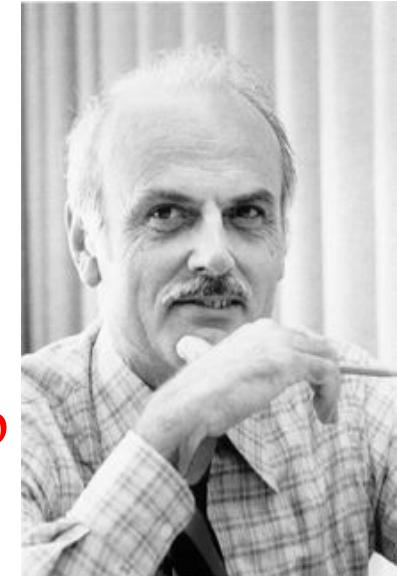
Entities/Tables

A collection of tables and their relationships is a DATABASE

| STU_NBR | UNIT_CODE | ENROL_YEAR | ENROL_SEMESTER | MARK | GRADE |
|----------|-----------|------------|----------------|------|-------|
| 11111114 | FIT1001 | 2012 | 1 | 78 | D |
| 11111111 | FIT1002 | 2013 | 1 | 60 | C |
| 11111111 | FIT1004 | 2013 | 1 | 80 | HD |
| 11111112 | FIT1001 | 2012 | 1 | 35 | N |
| 11111112 | FIT1001 | 2013 | 1 | 80 | HD |
| 11111113 | FIT1001 | 2012 | 2 | 65 | C |
| 11111113 | FIT1004 | 2013 | 1 | 78 | D |
| 11111114 | FIT1004 | 2013 | 1 | 60 | C |

程序代写代做 CS编程辅导 1970: Relational model

- An IBM scientist
- Proposed and developed the relational model
- Also proposed normalisation forms
- Resistance from IBM to implement his model
- Turing award (1981)
- Relational model in week 2
- Normalisation in week 5
- E. F. Codd, “A Relational Model of Data for Large Shared Data Banks”, Comm. Of ACM, 1970



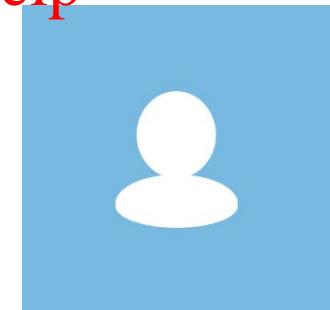
E. F. Codd
(1923-2003)

程序代写代做 CS 编程辅导 1974: SQL

- Developed at IBM
- Initially called SEQUEL (Structured English QUERy Language)
- Doesn't strictly follow Codd's theory
- Oracle: the first commercially available implementation of SQL in 1979
- SQL in weeks 7, 8, 9 & 10
- D Chamberlin, R Boyce, "SEQUEL: A structured English query language", ACM SIGFIDET, 1974



Donald Chamberlin (1944-)



Raymond Boyce
(unknown - 1974)

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1976: Conceptual model

- Proposed Entity-relationship Model (ER diagram)
- A systematic process to design a relational database
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- Database design process in week 3 & 4
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- Peter Chen, “The Entity-relationship model—toward a unified view of data”,
ACM TODS, 1976



Peter Chen (1947 -)

程序代写代做 CS编程辅导 1979: Oracle

- Inspired by Codd
- First commercial DBMS in 1979
- Most popular RDBMS
- Introduced PL/SQL in 1983
(Procedural Language/SQl)
- Oracle SQL in week 7, 8, 9 & 10



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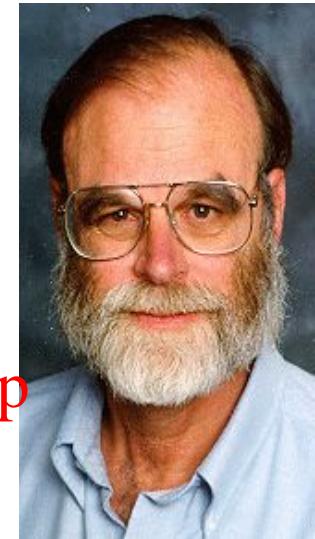


Larry Ellison (1944 -)

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程序代写代做 CS 编程辅导 1981: Transactions management

- Introduced transaction management
- Turing award (Assignment Project Exam Help WeChat: cstutorcs https://powcoder.com Assignment Project Exam Help Add WeChat powcoder8 Email: tutorcs@163.com)
- Transaction management in week 8
- Jim Gray, “The Transaction Concept: Virtues and Limitations”, VLDB, 1981



Jim Gray (1944 -)

Data Management Today

- Relational data are still very popular. But ...
 - Social Networks (Twitter, Foursquare etc.)
 - Multimedia data (Pinterest, Facebook etc.)
 - Data streams (Twitter, computer networks)
 - Spatial data (Road networks, Google Earth, Space etc.)
 - Textual data
 - Web data
 - Big Data
 - ...

<https://goo.gl/zMxG3b>



程序代写代做 CS 编程辅导 In Perspective ...



Early Computers

1950s



en
m/360

Project E
IMS DBMS

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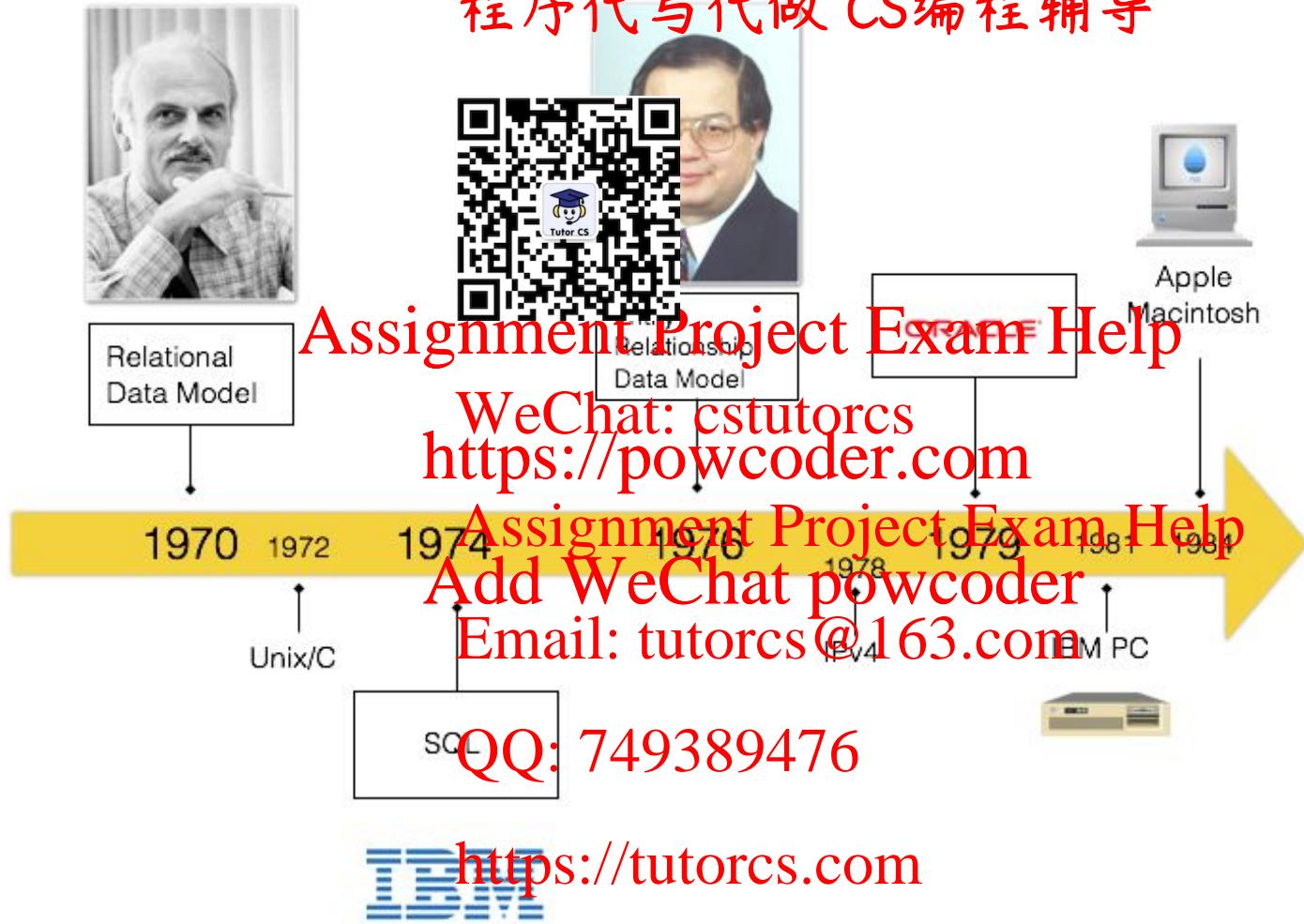
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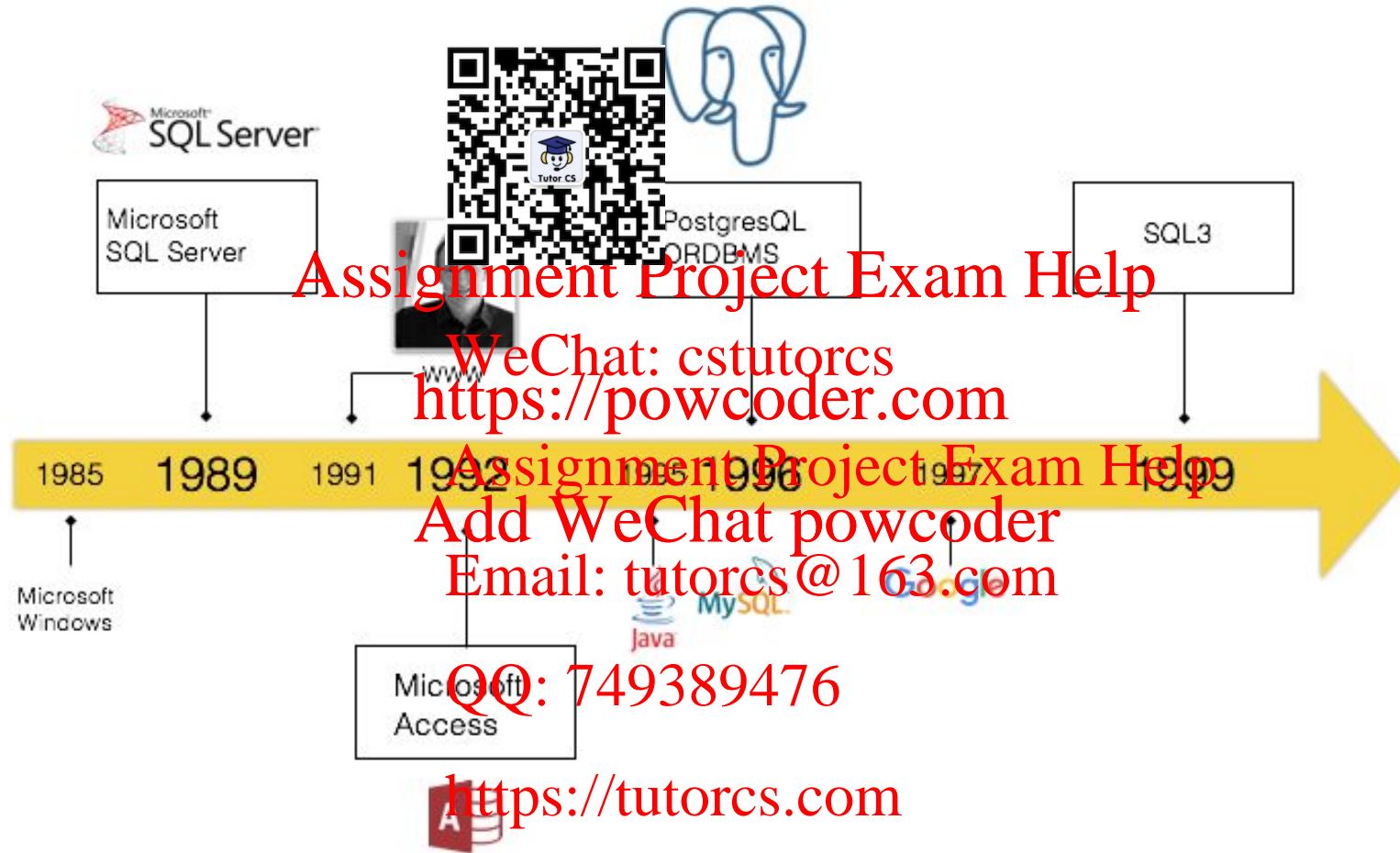
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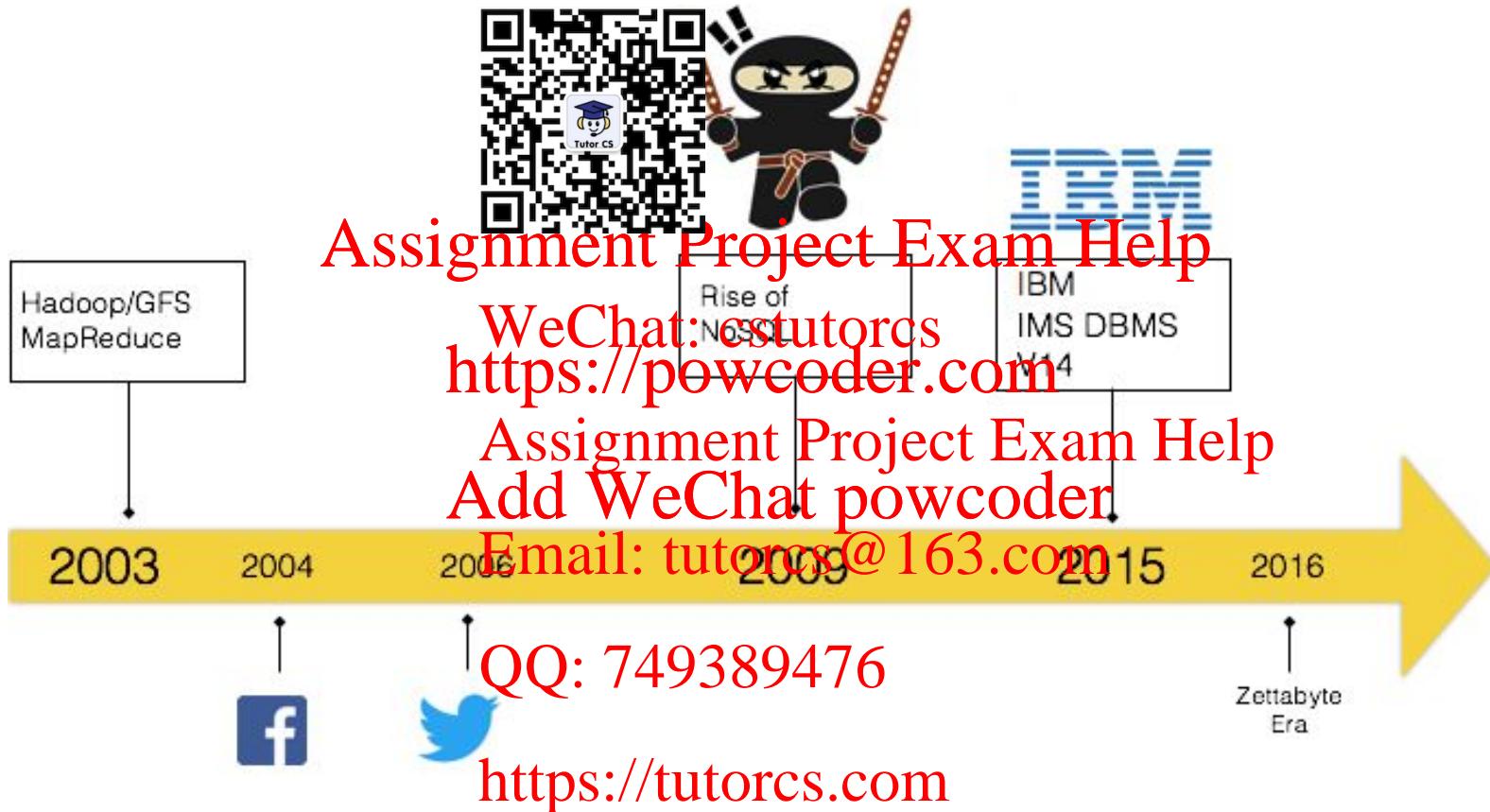
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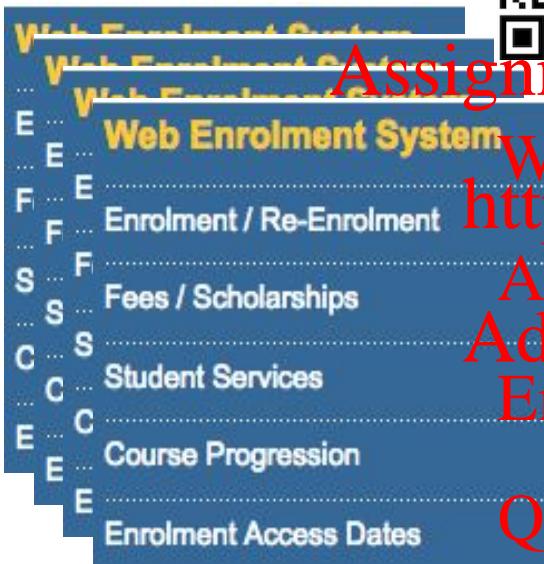
| RANK | DBMS | TYPE | INTRODUCED |
|------|--|--|------------|
| 1 |  ORACLE | Commercial, Relational DBMS  | 1979 |
| 2 |  MySQL | Open-source, Relational DBMS | 1995 |
| 3 |  Microsoft SQL Server | Commercial, Relational DBMS | 1989 |
| 4 |  PostgreSQL | Open-source, Relational DBMS | 1996 |
| 5 |  MongoDB | Open-Source, NoSQL - Document Store | 2009 |
| 6 |  IBM DB2 | Commercial, Relational DBMS | 1983 |

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July 2018

Relational database systems in action: End users' view



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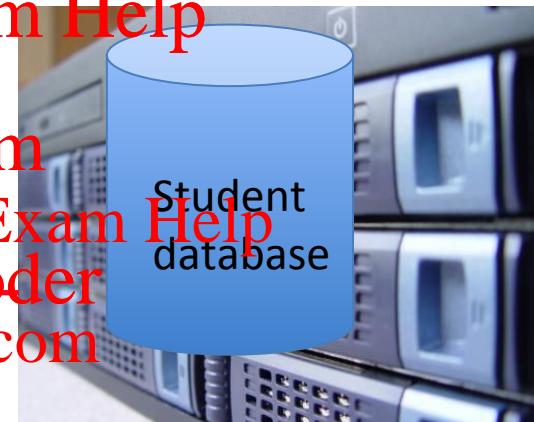
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Front end application
(client)

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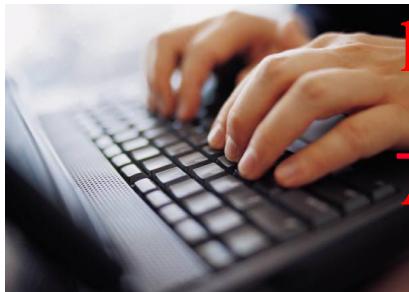
Student Database is
implemented in an
Oracle DBMS
(server)

Database Systems in Action

Developers' View



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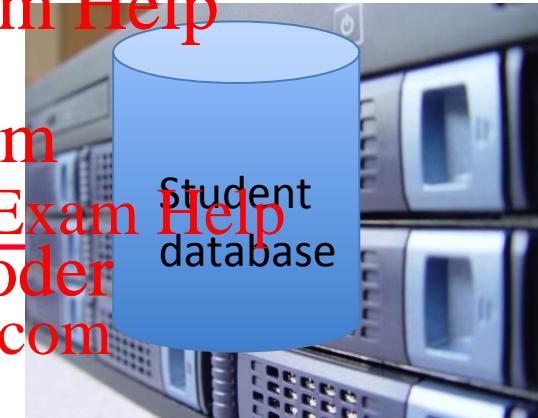


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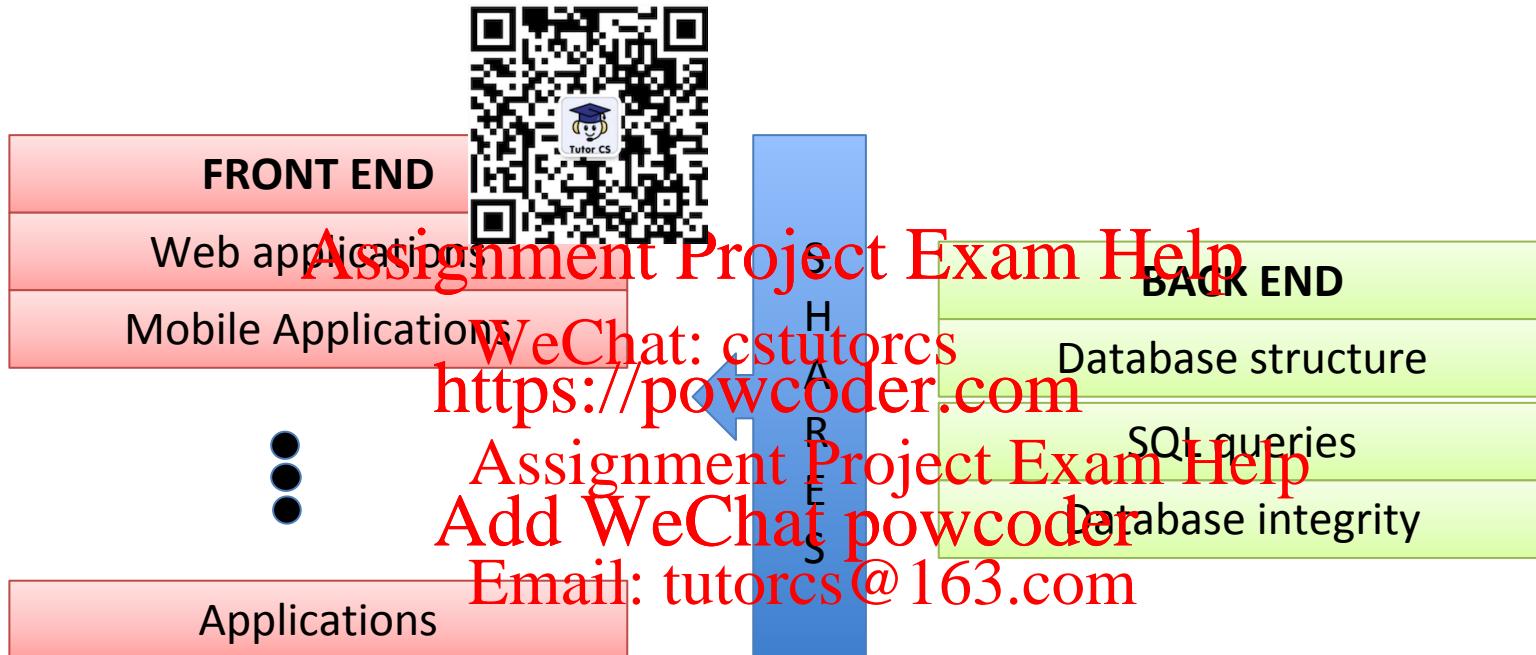
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Development environment (client, eg
SQL Developer, Integrated <https://tutorcs.com>
Development Environment for web
scripting)



Student Database
(server)

Developing Application with Database

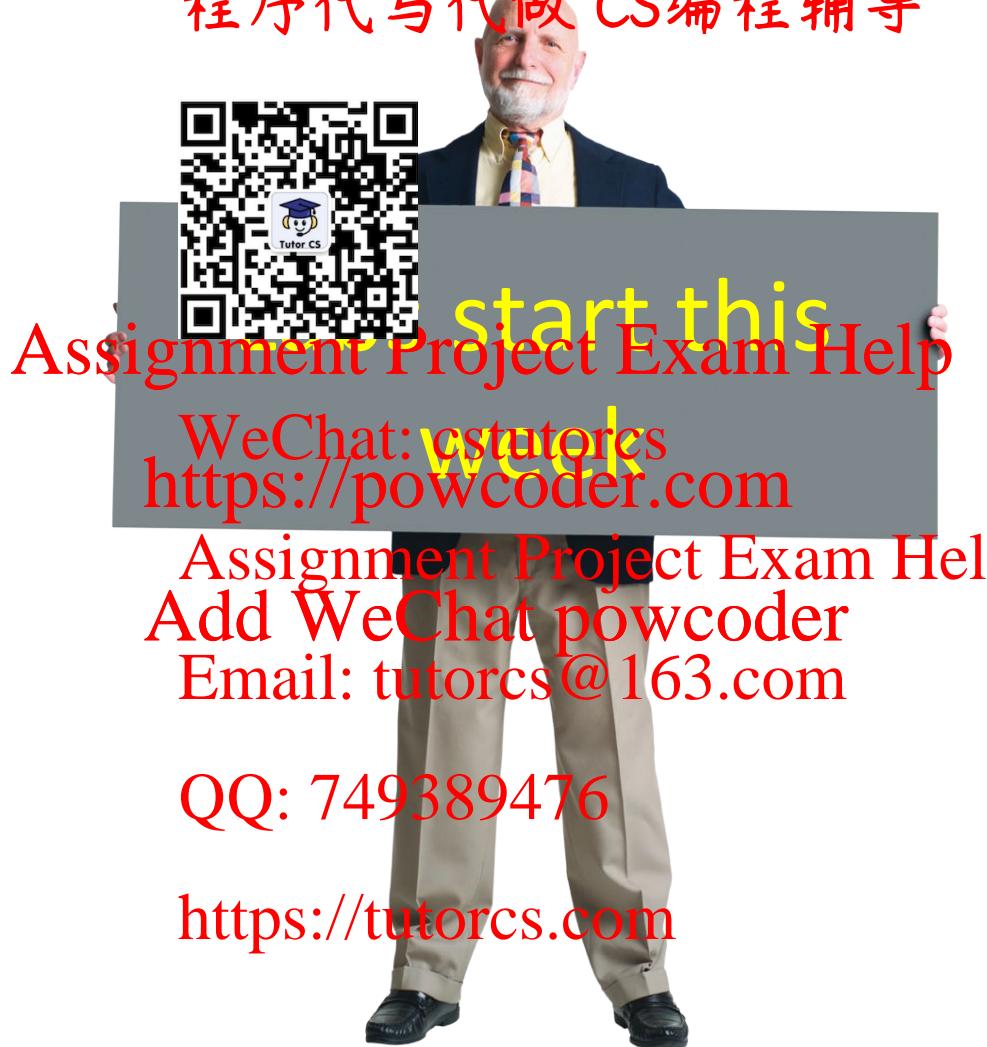


In this unit, we will concentrate on building the back end.
<https://tutorcs.com>
Database Designer.

Our Database Systems Environment



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