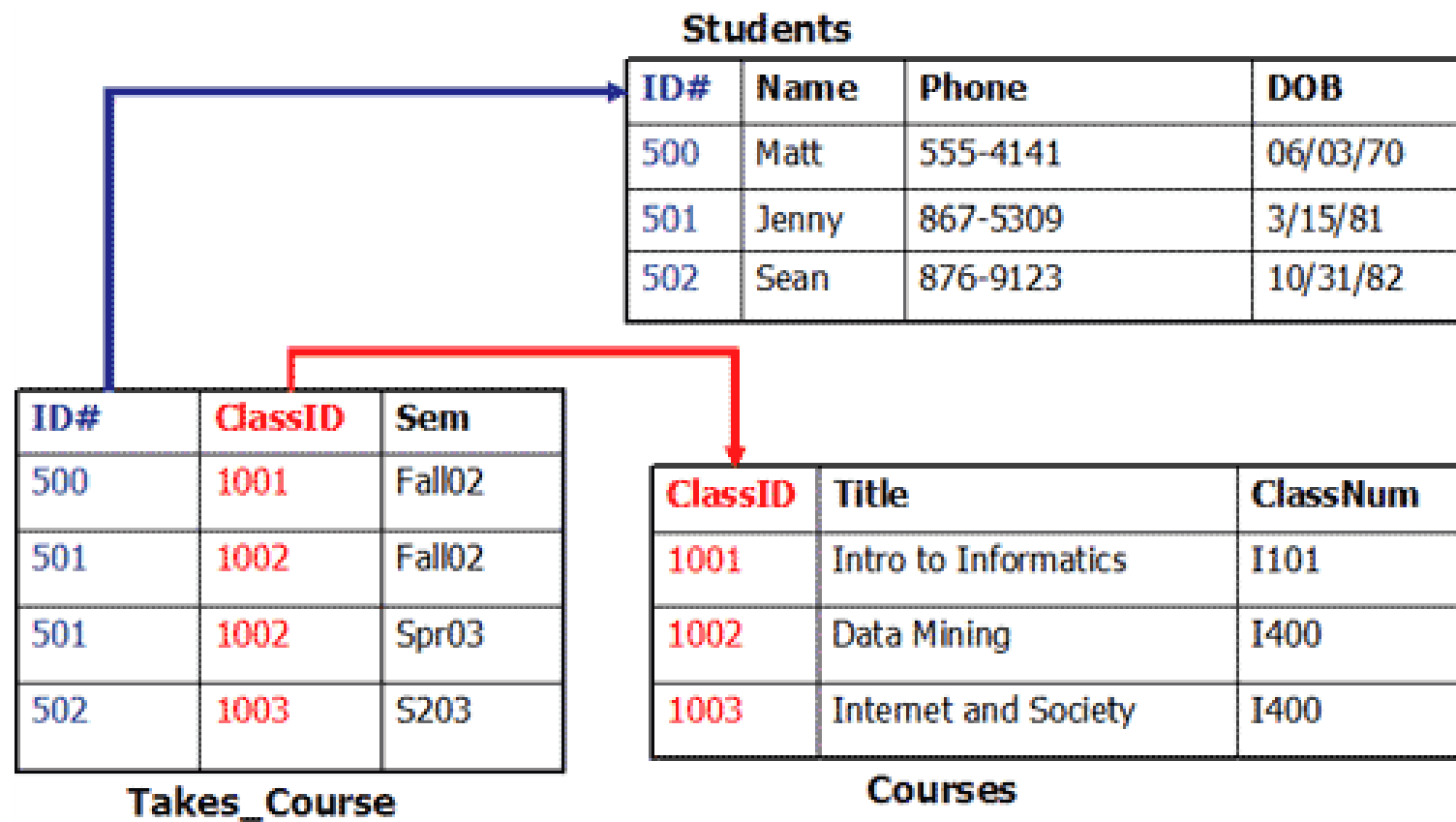❑ Every relational table has **ONE (1)** Primary Key **(PK)**.

❑ Its purpose is to ***uniquely identify each row*** in the database.

❑ **"NO TWO ROWS"** can have the same primary key value.

❑ The tables are then **related to one another** by using **Foreign Keys (FK)**.

❑ A foreign key is simply the **primary key in a different table**.

STUDENTS

STUDENT_ID	LAST_NAME	DATE_OF_BIRTH	ADDRESS	COURSE_ID

COURSES

COURSE_ID	COURSE_NAME	COURSE_DURATION

Basic on Primary Key Foreign Key Relational Databases

Example PK & FK

Students

ID#	Name	Phone	DOB
500	Matt	555-4141	06/03/70
501	Jenny	867-5309	3/15/81
502	Sean	876-9123	10/31/82

ID#	ClassID	Sem
500	1001	Fall02
501	1002	Fall02
501	1002	Spr03
502	1003	S203

Takes_Course

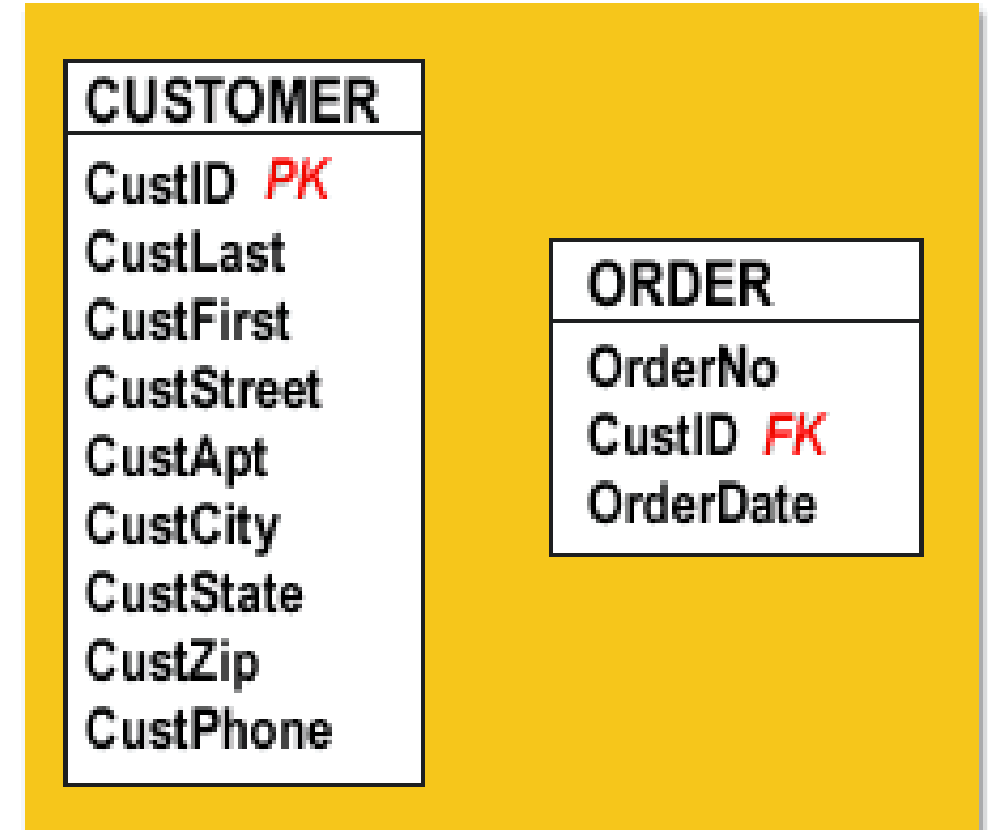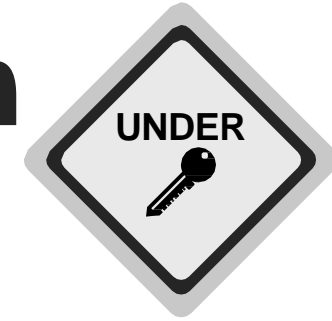| ClassID	Title	ClassNum
1001	Intro to Informatics	I101
1002	Data Mining	I400
1003	Internet and Society	I400

Courses

Relation Keys

- A DBMS key is an attribute or set of an attribute which helps **to identify a row (tuple) in a relation (table).**
- Allow to **find the relation** between two tables.
- Keys uniquely identify a row in a table by a combination of one or more columns in that table.

CUSTOMER
CustID PK
CustLast
CustFirst
CustStreet
CustApt
CustCity
CustState
CustZip
CustPhone

ORDER
OrderNo
CustID FK
OrderDate

Relation UNDER Keys

Primary Key – A primary is a column or set of columns in a table that uniquely identifies tuples (rows) in that table.

Super Key – A super key is a set of one of more columns (attributes) to uniquely identify rows in a table.

Candidate Key – A super key with no redundant attribute is known as candidate key

Composite Key – A key that consists of more than one attribute to uniquely identify rows (also known as records & tuples) in a table is called composite key.

Foreign Key – Foreign keys are the columns of a table that points to the primary key of another table. They act as a cross-reference between tables
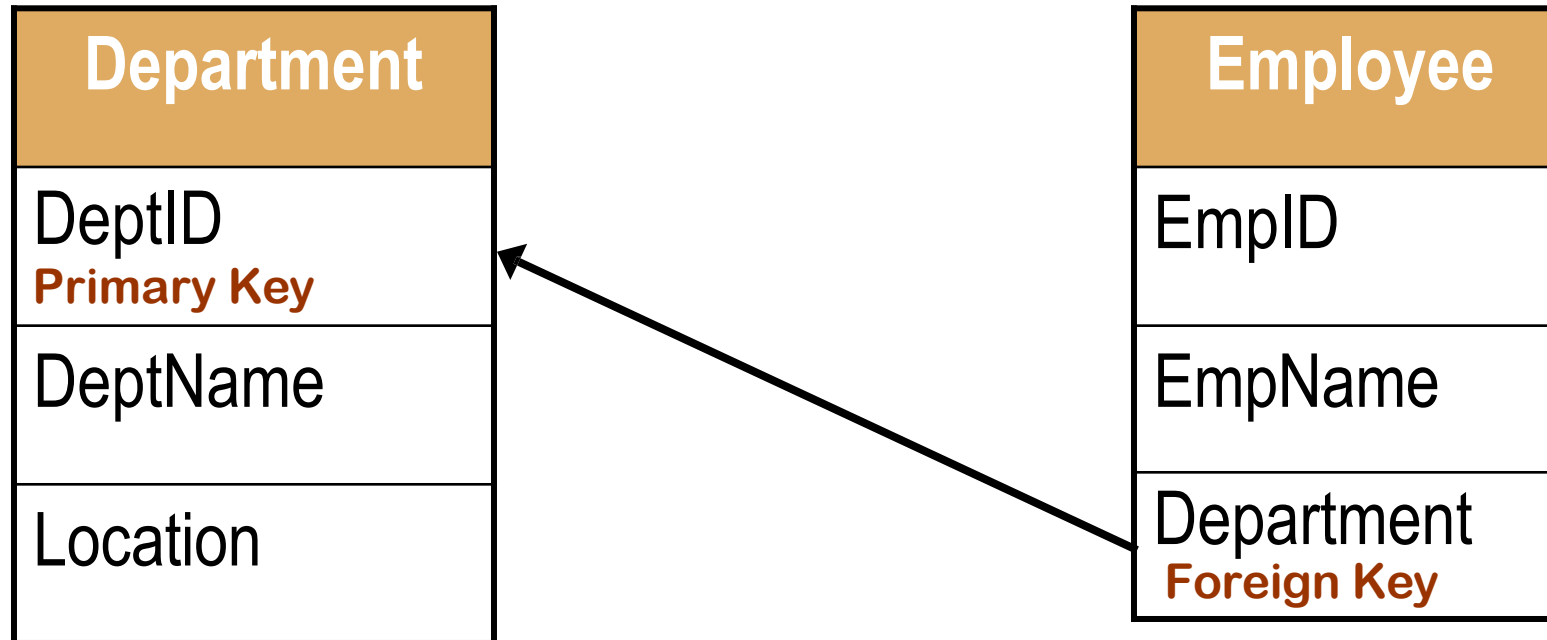
COMPOSITE KEY

Key that consists of two or more attributes that uniquely identify any record in a table is called **Composite key**. But the attributes which together form the **Composite key** are not a key independently or individually.

Composite Key

student_id	subject_id	marks	exam_name

Foreign Key

Department
DeptID **Primary Key**
DeptName
Location

Employee
EmpID
EmpName
Department **Foreign Key**

Primary Key and Foreign Key are of the same type (string, number, etc.) and length, but they do not necessarily have the same name.

FIGURE 3.2 An example of a simple relational database

Table name: PRODUCT   Database name: Ch03_SaleCo
Primary key: PROD_CODE
Foreign key: VEND_CODE

PROD_CODE	PROD_DESCRIPT	PROD_PRICE	PROD_ON_HAND	VEND_CODE
001278-AB	Claw hammer	$12.95	23	232
123-21UUY	Houselite chain saw, 16-in. bar	$189.99	4	235
QER-34256	Sledge hammer, 16-lb. head	$18.63	6	231
SRE-657UG	Rat-tail file	$2.99	15	232
ZZX/3245Q	Steel tape, 12-ft. length	$6.79	8	235

link

Table name: VENDOR
Primary key: VEND_CODE
Foreign key: none

VEND_CODE	VEND_CONTACT	VEND_AREACODE	VEND_PHONE
230	Shelly K. Smithson	608	555-1234
231	James Johnson	615	123-4536
232	Annelise Crystall	608	224-2134
233	Candice Wallace	904	342-6567
234	Arthur Jones	615	123-3324
235	Henry Ortozo	615	899-3425

FIGURE 3.3

The relational diagram for the Ch03_SaleCo database

VENDOR
- **VEND_CODE**
- VEND_CONTACT
- VEND_AREACODE
- VEND_PHONE

PRODUCT
- PROD_CODE
- PROD_DESCRIPT
- PROD_PRICE
- PROD_ON_HAND
- VEND_CODE