

Department of Software Engineering
Mehran University of Engineering and Technology, Jamshoro

Course: SWE324 - Data Warehousing and Data Mining

Instructor	Rabeea Jaffari	Practical/Lab No.	02
Date	09 April 2019	CLOs	CLO-4: P3 & P4
Signature		Assessment Score	1 Marks

Topic **To become Familiar with OLTP System Design**

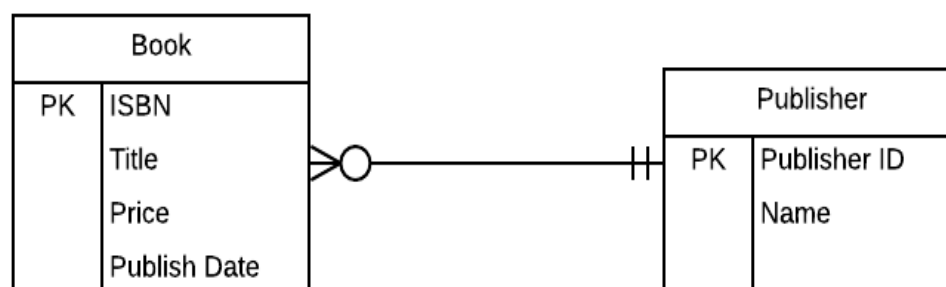
Objectives - To learn conceptual and logical Transactional Database Design

Lab Discussion: Theoretical concepts and Procedural steps

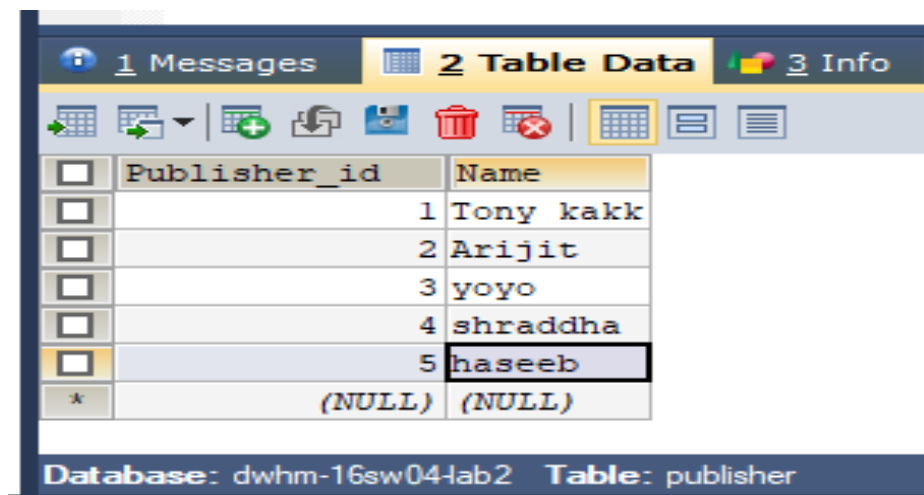
Lab Tasks

Submission Date: 16-04-19

1. For each of the descriptions below, perform the following tasks:
 - i. Physically implement the systems in any suitable OLTP product with proper keys, data types and relationships.
 - ii. Insert dummy data up to 5 rows.
- a. **A book is identified by its ISBN number, and it has a title, a price, and a date of publication. It is published by a publisher, which has its own ID number and a name. Each book has exactly one publisher, but one publisher typically publishes multiple books over time.**
 - This relationship is a degree of 2 (binary).
 - This relationship is one-to-many from Publisher to Book.



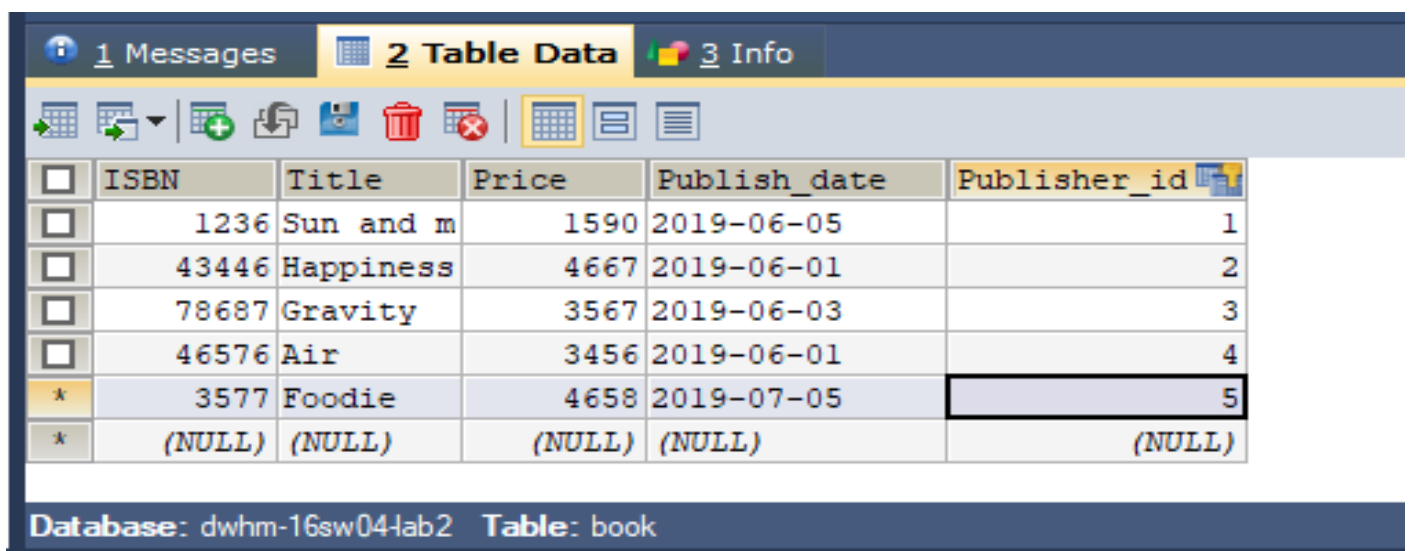
Publisher:



Publisher_id	Name
1	Tony kakk
2	Arijit
3	yoyo
4	shraddha
5	haseeb
*	(NULL)

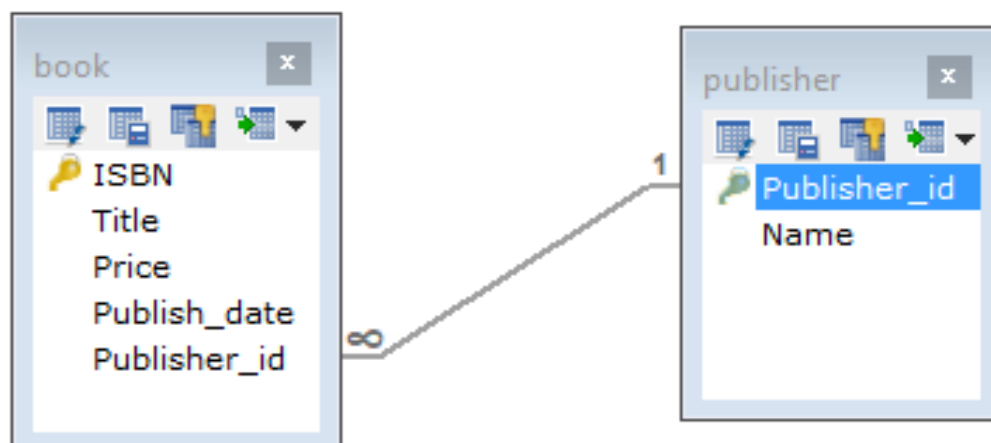
Database: dwhm-16sw04-lab2 Table: publisher

Book:



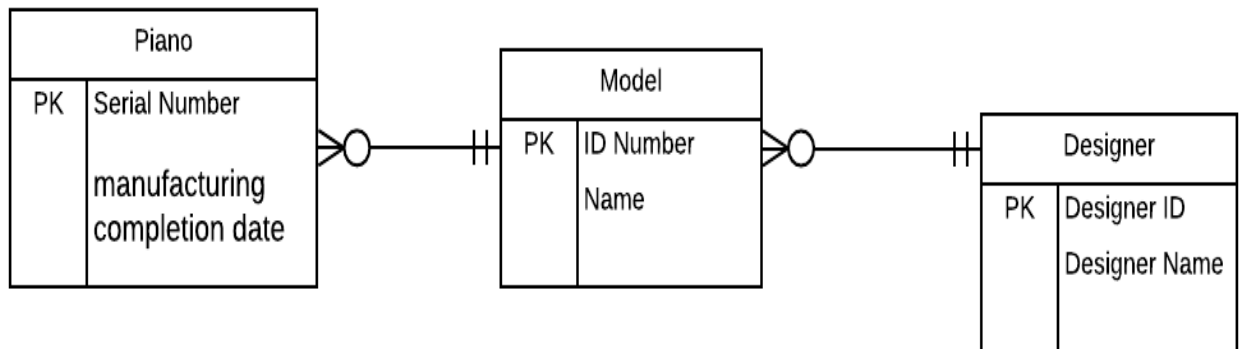
ISBN	Title	Price	Publish_date	Publisher_id
1236	Sun and m	1590	2019-06-05	1
43446	Happiness	4667	2019-06-01	2
78687	Gravity	3567	2019-06-03	3
46576	Air	3456	2019-06-01	4
3577	Foodie	4658	2019-07-05	5
*	(NULL)	(NULL)	(NULL)	(NULL)

Database: dwhm-16sw04-lab2 Table: book



- b. A piano manufacturer wants to keep track of all the pianos it makes individually. Each piano has an identifying serial number and a manufacturing completion date. Each instrument represents exactly one piano model, all of which have an identification number and a name. In addition, the company wants to maintain information about the designer of the model. Over time, the company often manufactures thousands of pianos of a certain model, and the model design is specified before any single piano exists.

- These relationships have a degree of 2 (binary).
- These relationships are one-to-many.



Designer:

1 Messages		
2 Table Data		
3 Info		
Designer_id	Designer_name	
1	Jawaria	
2	Areeba	
3	Haseeb	
4	Areasha	
5	Hashir	
*	(NULL)	

Database: dwhm-16sw04lab2 Table: designer

Model:

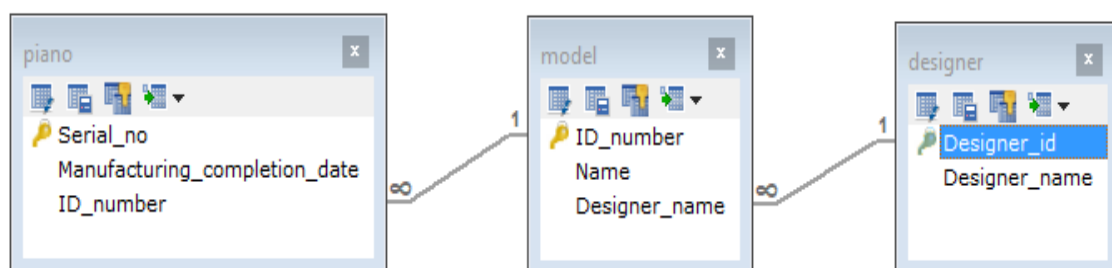
1 Messages 2 Table Data 3 Info			
ID_number	Name	Designer_id	
1	A16SW04	1	
2	B16SW04	3	
3	C16SW04	2	
4	D16SW04	4	
5	E16SW04	5	
(NULL)	(NULL)	(NULL)	

Database: dwhm-16sw04-lab2 Table: model

Piano:

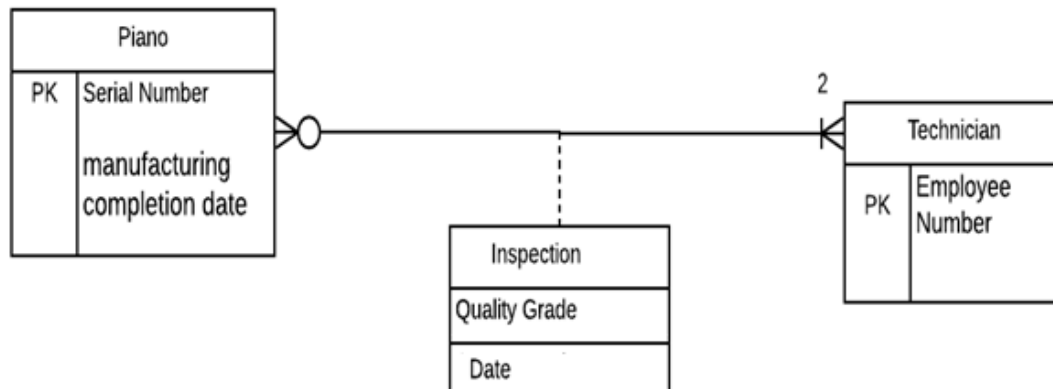
1 Messages 2 Table Data 3 Info			
Serial_no	Manufacturing_completion_date	ID_number	
11	2019-06-01	1	
22	2019-06-07	2	
33	2019-06-08	3	
44	2019-05-30	4	
55	2019-05-02	5	
(NULL)	(NULL)	(NULL)	

Database: dwhm-16sw04-lab2 Table: piano



- c. A piano manufacturer (see above) employs piano technicians who are responsible for inspecting the instruments before they are shipped to the customers. Each piano is inspected by at least two technicians (identified by their employee number). For each separate inspection, the company needs to record its date and a quality evaluation grade.

- This relationship is a degree of 2 (binary).
- This relationship is many-to-many.



Inspection:

1 Messages 2 Table Data 3 Info			
Inspection_id	Quality_grade	Date	
1	A	2019-06-13	
2	D	2019-06-07	
3	B	2019-06-03	
4	A	2019-06-01	
5	F	(NULL)	
(NULL)	(NULL)	(NULL)	

Database: dwhm-16sw04-lab2 Table: inspection

Technician:

1 Messages 2 Table Data 3 Info		
Employee_no	Inspection_id	
11	1	
22	2	
33	3	
44	4	
(NULL)	(NULL)	

Database: dwhm-16sw04-lab2 Table: technician

Bridge Table:

The screenshot shows the Oracle SQL Developer interface. At the top, there are three tabs: '1 Messages', '2 Table Data' (which is active), and '3 Info'. Below the tabs is a toolbar with various icons for table operations. The main area displays a table with the following data:

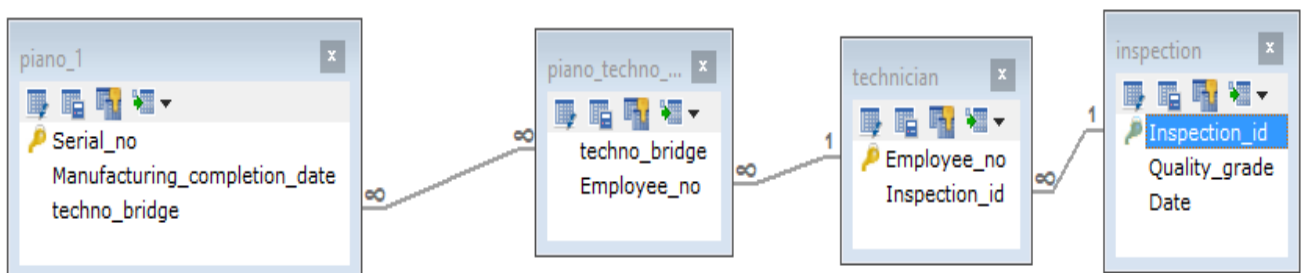
<input type="checkbox"/>	techno_bridge	Employee_no
<input type="checkbox"/>	1	11
<input type="checkbox"/>	2	22
<input type="checkbox"/>	3	33
<input type="checkbox"/>	4	44
<input type="checkbox"/>	5	(NULL)
<input type="checkbox"/>	(NULL)	(NULL)

At the bottom of the screenshot, the 'Database' is identified as 'dwhm-16sw04-lab2' and the 'Table' as 'piano_techno_bridge'.

Piano:

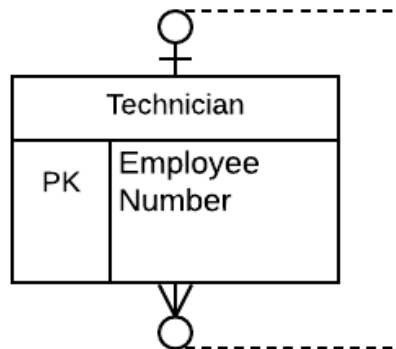
Database: dwhm-16sw04-lab2 **Table:** piano_1

	Serial_no	Manufacturing_completion_date	techno_bridge
<input type="checkbox"/>	11	2019-06-01	1
<input type="checkbox"/>	22	2019-06-07	2
<input type="checkbox"/>	33	2019-06-08	3
<input type="checkbox"/>	44	2019-05-30	4
<input checked="" type="checkbox"/>	55	2019-05-02	5
*	(NULL)	(NULL)	(NULL)



d. The piano technicians (see above) have a hierarchy of reporting relationships: Some of them have supervisory responsibilities in addition to their inspection role and have multiple other technicians report to them. The supervisors themselves report to the chief technician of the company.

- This relationship is a degree of 1 (unary).
- This relationship is one-to-many.

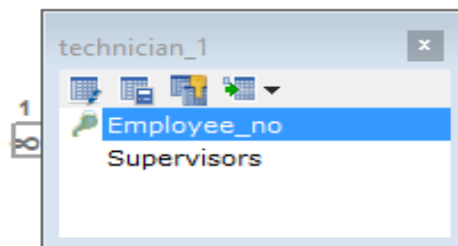


Technician:

A screenshot of a database table viewer showing the 'technician_1' table. The table has two columns: 'Employee_no' and 'Supervisors'. The data is as follows:

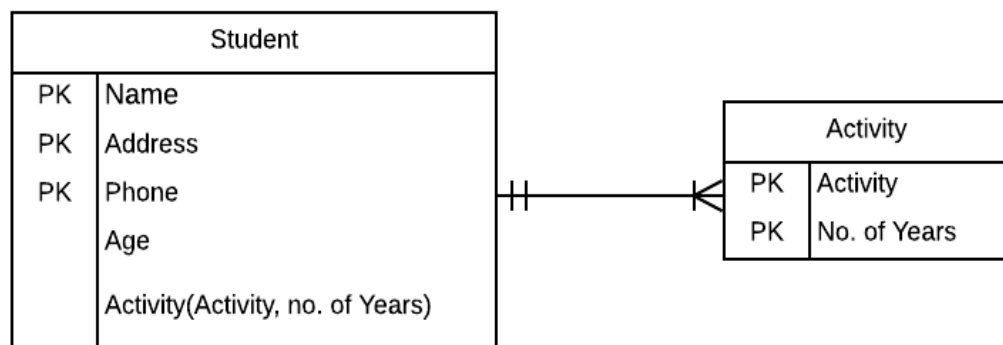
Employee_no	Supervisors
11	22
22	11
33	44
44	22
(NULL)	(NULL)

The database is 'dwhm-16sw04-lab2' and the table is 'technician_1'.



e. The entity type STUDENT has the following attributes: Student Name, Address, Phone, Age, Activity, and No of Years. Activity represents some campus-based student activity, and No of Years represents the number of years the student has engaged in this activity. A given student may engage in more than one activity. Draw a logical ERD for this situation. What attribute or attributes did you designate as the identifier for the STUDENT entity? Why?

- This relationship is a degree of 2 (binary).
- This relationship is one-to-many.
- Name, Address and Phone are designated as the identifier for the student. Since, many students can have same name. In addition with name, address and phone are also designated as identifier for the student.



Activity:

1 Messages		
2 Table Data		
3 Info		
	Activity_no	no_of_years
<input type="checkbox"/>	11	1
<input type="checkbox"/>	22	2
<input type="checkbox"/>	33	4
<input type="checkbox"/>	44	5
<input type="checkbox"/>	55	6
*	(NULL)	(NULL)

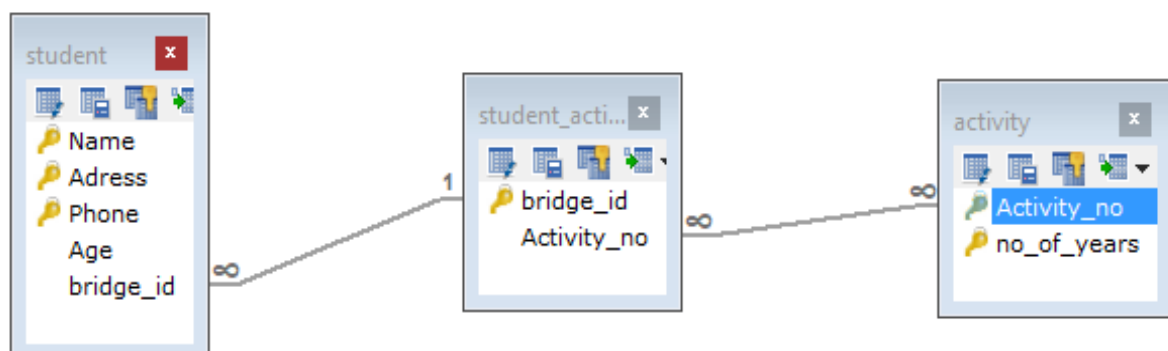
Database: dwhm-16sw04-lab2 Table: activity

Bridge Table:

1 Messages			2 Table Data		3 Info	
<input type="checkbox"/>	bridge_id	Activity_no				
<input type="checkbox"/>	1	11				
<input type="checkbox"/>	2	22				
<input type="checkbox"/>	3	33				
<input type="checkbox"/>	4	44				
*	5	55				
*	(NULL)	(NULL)				
Database: dwhm-16sw04-lab2 Table: student_activity_bridge						

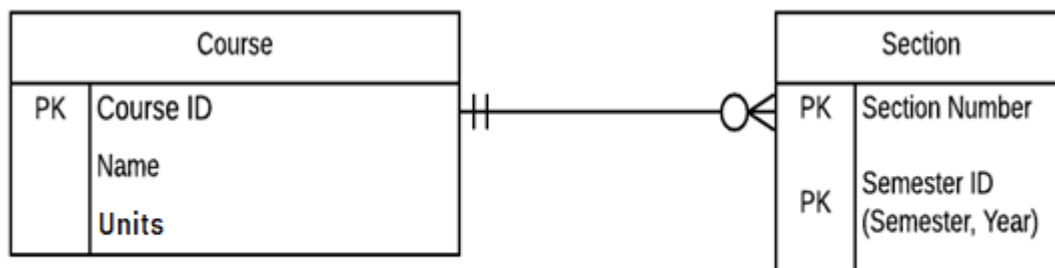
Student:

1 Messages		2 Table Data			3 Info	
<input type="checkbox"/>	Name	Adress	Phone	Age	bridge_id	
<input type="checkbox"/>	Areeba	Matiari	2345	14	2	
<input type="checkbox"/>	Areesha	Matiari	3533	10	4	
<input type="checkbox"/>	Haseeb	Matiari	3534	13	3	
<input type="checkbox"/>	Jawaria	Matiari	2222	20	1	
*	(NULL)	(NULL)	(NULL)	(NULL)	(NULL)	
Database: dwhm-16sw04-lab2 Table: student						



- f. A college course may have one or more scheduled sections or may not have a scheduled section. Attributes of COURSE include Course ID, Course Name, and Units. Attributes of SECTION include Section Number and Semester ID. Semester ID is composed of two parts: Semester and Year. Section Number is an integer (such as 1 or 2) that distinguishes one section from another for the same course but does not uniquely identify a section. How did you model SECTION? Why did you choose this way versus alternative ways to model SECTION?

- This relationship is a degree of 2 (binary).
- This relationship is one-to-many.
- Since, section is modeled as a weak entity. Therefore, Section number and Semester ID are used as identifiers to uniquely identify a section.



Course:

1 Messages			
2 Table Data			
3 In			
	Course_id	Name	units
	1	DW	11
	2	DC	34
	3	STQA	56
	4	MPT	33
	5	MP	44
*	(NULL)	(NULL)	(NULL)

Database: dwhm-16sw04lab2 Table: course

Section:

1 Messages			
2 Table Data			
3 Info			
Section_id	Course_id	Semester_id	
33	2	2434	
22	3	23532	
44	4	2323	
55	5	234	
11	1	345	
(NULL)	(NULL)	(NULL)	

Database: dwhm-16sw04-lab2 Table: section

