

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

**Course: SWE324 - Data Warehousing and Data Mining**

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

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

**Objectives** - To learn physical 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.

The screenshot shows a 'New Table' dialog box in a database management tool. The table is named 'Book' and is located in the 'task a' database. The columns are defined as follows:

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	Comment
ISBN	int	20		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	
Title	varchar	30		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
price	int	5		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
publish_date	date			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

Query History Book **New Table** +

Table Name:  Engine: [default] v

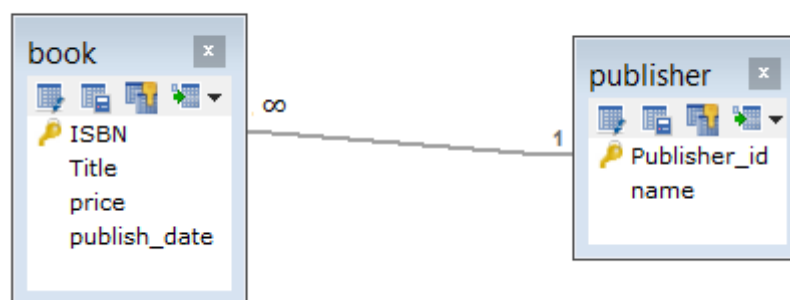
Database: task a v Character Set: [default] v

Collation: [default] v

1 Columns 2 Indexes 3 Foreign Keys 4 Advanced 5 SQL Preview

☐ Hide language options

<input type="checkbox"/>	Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	Comment
<input type="checkbox"/>	Publisher_id	int	20		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	name	varchar	30		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>					<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	



1 Messages 2 Table Data 3 Info

<input type="checkbox"/>	ISBN	Title	price	publish_date
<input type="checkbox"/>	1234	Basic Ele	1200	2019-04-01
<input type="checkbox"/>	2455	Neon	1400	2019-04-30
<input type="checkbox"/>	3456	Black Hol	2344	2019-04-08
<input type="checkbox"/>	4573	Star spla	4533	2019-04-09
<input checked="" type="checkbox"/>	8756	way to ha	900	2019-04-03
<input checked="" type="checkbox"/>	(NULL)	(NULL)	(NULL)	(NULL)

1 Messages 2 Table Data 3 Info

<input type="checkbox"/>	Publisher_id	Name
<input type="checkbox"/>	1	Llyod
<input type="checkbox"/>	2	Robert
<input type="checkbox"/>	3	Herry
<input type="checkbox"/>	4	Diana
<input checked="" type="checkbox"/>	5	Bruce
<input checked="" type="checkbox"/>	(NULL)	(NULL)

- 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.

Query History Book Publisher Schema Designer publishre Piano New Table +

Table Name:  Engine:   
 Database:  Character Set:   
 Collation:

1 Columns 2 Indexes 3 Foreign Keys 4 Advanced 5 SQL Preview

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	Comment
<input type="checkbox"/> id_np	int			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/> name	varchar			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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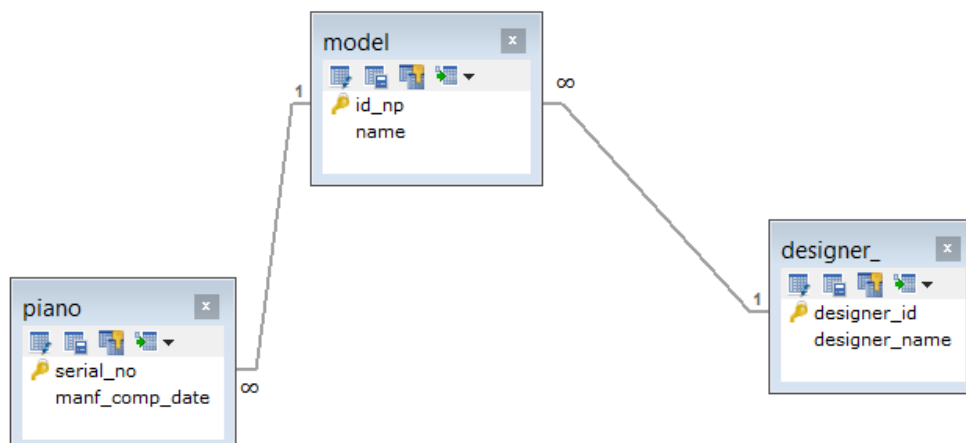
ry History Book Publisher Schema Designer publishre Piano Model New Table +

Table Name:  Engine:   
 Database:  Character Set:   
 Collation:

1 Columns 2 Indexes 3 Foreign Keys 4 Advanced 5 SQL Preview

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	Comment
<input type="checkbox"/> designer_id	int			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input checked="" type="checkbox"/> designer_name	varchar	50		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>				<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

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1 Messages	2 Table Data	3 Info
	serial_no	manf_compl_date
	1	2019-04-02
	2	2019-04-03
	3	2019-04-12
	4	2019-04-08
	5	2019-04-07
*	(NULL)	(NULL)

1 Messages	2 Table Data	3 Info
	designer_id	designer_name
	1	Salman
	2	Ismail
	3	rafay
	4	sultan
	5	hamza
*	(NULL)	(NULL)

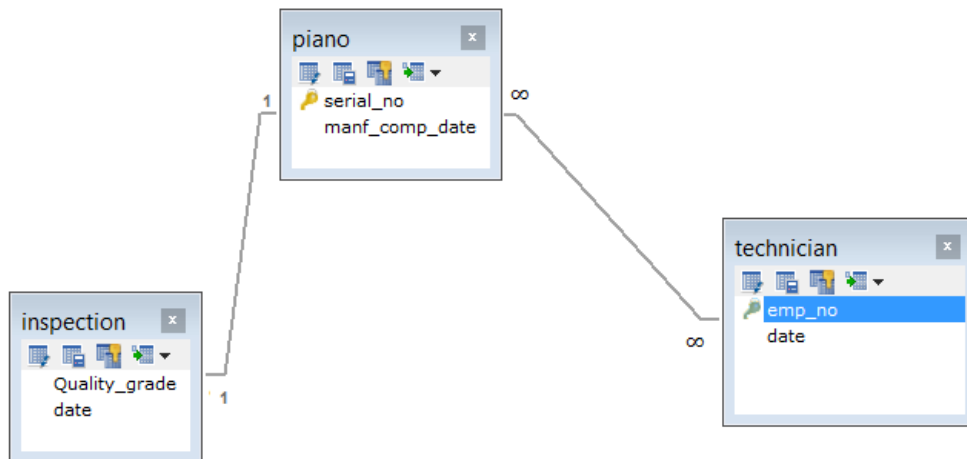
1 Messages	2 Table Data	3 Info
	id_no	name
	1	modelbef
	2	modelbeg
	3	modelbeh
	4	modelbei
	5	modelbej
*	(NULL)	(NULL)

- 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.

1 Messages	2 Table Data	3 Info
	serial_no	manf_compl_date
	1	2019-04-01
	2	2019-04-18
	3	2019-04-17
	4	2019-04-11
	5	2019-04-20
*	(NULL)	(NULL)

1 Messages	2 Table Data	3 Info
	Quality_grade	date
	A	2019-04-1
	B	2019-04-0
	C	2019-04-1
	D	2019-04-0
	E	2019-04-0
*	(NULL)	(NULL)

1 Messages	2 Table Data	3 Info
	emp_no	date
	034	2019-04-09
	12	2019-04-16
	34	2019-04-12
	45	2019-04-10
	343	2019-04-23
	345	2019-04-13
*	(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.

piania\_techn...

- emp\_no
- supervisory
- inspected\_role

Query History Schema Designer desi technician inspection piania\_technician\*

Table Name: piania\_technician Engine: InnoDB Database: task b Character Set: latin1 Collation: latin1\_swedish\_ci

1 Columns 2 Indexes 3 Foreign Keys 4 Advanced 5 SQL Preview

Column Name	Data Type	Length	Default	PK?	Not Null?	Unsigned?	Auto Incr?	Zerofill?	Comment
emp_no	int	11		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
supervisory	varchar	34		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
inspected_role	varchar	45		<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

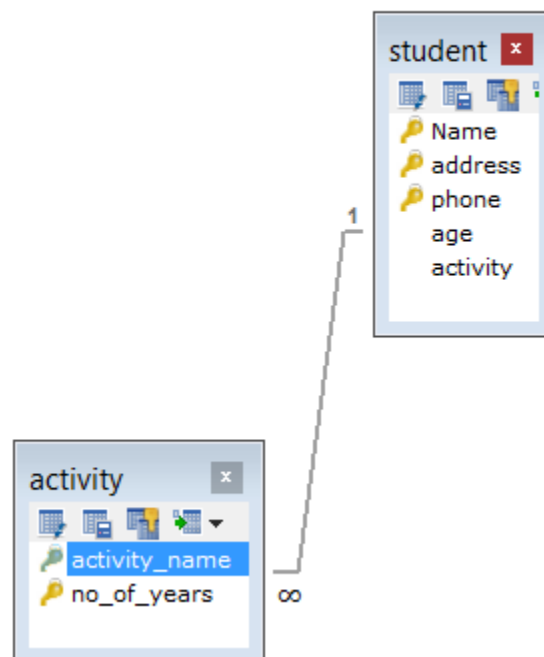
1 Messages 2 Table Data 3 Info

emp_no	supervisory	inspected_role
1	45	3
2	45	4
3	44	5
4	56	7
5	33	4
*	(NULL)	(NULL)

- 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?

activity_name	no_of_years
basketball	3
cricket	2
football	1
badminton	4
vollyball	5
(NULL)	1
(NULL)	(NULL)

Name	address	phone	age	activity
Areesha	hyd	566	10	vollyball
Areeba	Matlari	3453	15	basketball
Haseeb	hyd	4577	14	cricket
Jawaria	Matlari	34356	20	badminton
Mujeeb	karachi	3895	(NULL)	(NULL)
(NULL)	(NULL)	(NULL)	(NULL)	(NULL)



- 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?

course_id	course_name	units
1	tych	2
2	bhgbg	3
3	fbctn	5
4	dvdf	6
5	tyht	7
(NULL)	(NULL)	(NULL)

course_id	course_name	units
1	tych	2
2	bhgbg	3
3	fbctn	5
4	dvdf	6
5	tyht	7
(NULL)	(NULL)	(NULL)

