

+ Leadership MOMENT

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The screenshot shows the official website for the Sochi 2014 Winter Olympics. The header includes the 'sochi.ru 2014' logo, the event name 'XXII Olympic Winter Games', the slogan 'HOT. COOL. YOURS.', and the dates '7-23 February 2014'. Navigation links include 'FR', 'RU', 'Schedule and Results', 'Sport', 'Medals', 'Athletes', 'Countries', 'For Spectators', 'Support Team', 'News', 'Photos', 'Videos', and a search bar. Social media links for Facebook, Twitter, YouTube, and Google+ are also present, along with a '#SOCHI2014' hashtag and a 'LIKE. SHARE. COMMENT.' prompt.

The main content area displays the date '13 February' and a list of events. The 'Ice Hockey' section is highlighted, showing the 'Today, 13 February, 12:00' results for the 'Men's Prelim. Round - Group C, CZE - SWE' match. The results table shows the following scores:

Rank	Team	Goals For	Goals Against	Points	Total Points
1	GER	6	1	1	8
2	CAN	4	4	2	10
3	NOR	4	3	5	12
4	NED	4	2	4	10
5	USA	3	1	5	9

Below the table, the 'Last gold medal' section highlights the USA's victory in the Snowboard event, specifically the Ladies' Halfpipe Finals, with a score of 91.75. The winner is listed as Kaitlyn FARRINGTON. A 'Medals Today' link is also provided.



Objectives & Reminders

Objectives for today

I. Data Management

I. Data Management

II. ERD

III. Exercises

IV. KS

Reminders:

- Market basket – individual submission
- Kickstarter (5) – group submission
- Lab Feb 13
- Market Basket due by Feb 14th @ 23:55
- Midterm – Feb 27th @ 6:30
- Lab Mar 6
- Lab Mar 13
- Quiz Mar 31
- FINAL project Update due by Mar 6th @ 23:55
- FINAL Project due by Apr 7 @ 23:55
- Final Presentations Apr 7 & 9
- FINAL exam – Wed, April 23 @ 12-3



DATA MANAGEMENT

HASKAYNE
School of Business



UNIVERSITY OF
CALGARY

Management Information Systems

+ Data-Information-Knowledge..

4



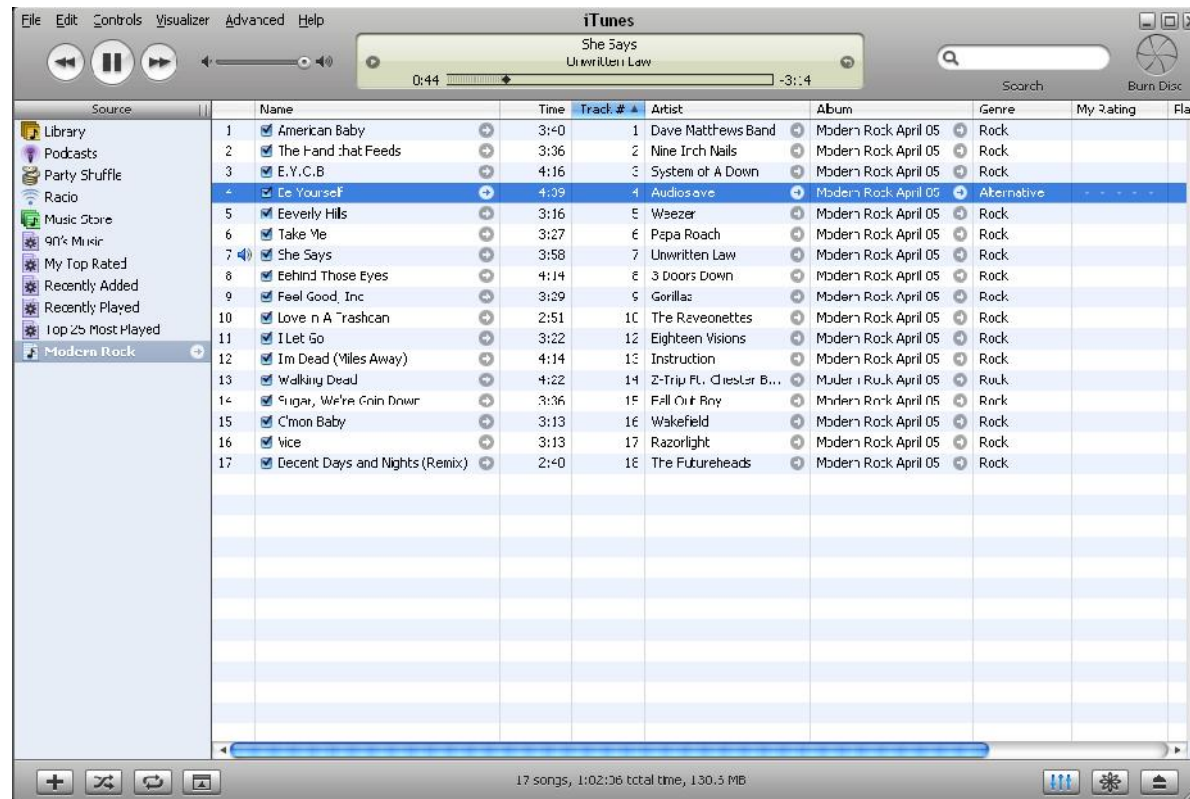
+ Data-Information-Knowledge..

■ Data

Be Yourself	Audioslave	Modern Rock	April 05	8628409	279	4	2005	12/22/2005
13:06	44100	MPEG audio file	04-audioslave-be_yourself.mp3					
Feel Good, Inc	Gorillaz	Modern Rock	April 05	7069242	209	9	2005	12/22/2005
13:07	44100	MPEG audio file	09-gorillaz-feel_good_inc.mp3					
The Hand that Feeds	Nine Inch Nails	Modern Rock	April 05	7472338	216	2	2005	
12/22/2005 13:06	44100	MPEG audio file	02-nine_inch_nails-the_hand_that_feeds.mp3					
American Baby	Dave Matthews Band	Modern Rock	April 05	7699278	220	1	2005	
12/22/2005 13:06	44100	MPEG audio file	01-dave_matthews_band-american_baby.mp3					
She Says	Unwritten Law	Modern Rock	April 05	8232575	238	7	2005	12/22/2005
13:07	44100	MPEG audio file	07-unwritten_law-she_says.mp3					
Walking Dead	Z-Trip	Modern Rock	April 05	8840935	262	14	2005	12/22/2005 13:07
44100		MPEG audio file	14-z-trip_ft._chester_bennington-walking_dead.mp3					
Beverly Hills	Weezer	Modern Rock	April 05	7259345	196	5	2005	12/22/2005 13:06
44100		MPEG audio file	05-weezer-beverly_hills.mp3					
Vice	Razorlight	Modern Rock	April 05	7303290	193	17	2005	12/22/2005 13:08
44100		MPEG audio file	17-razorlight-vice.mp3					
I Let Go	Eighteen Visions	Modern Rock	April 05	7634642	202	12	2005	
12/22/2005 13:07	44100	MPEG audio file	12-eighteen_visions-i_let_go.mp3					
Behind Those Eyes	3 Doors Down	Modern Rock	April 05	9188346	254	8	2005	
12/22/2005 13:07	44100	MPEG audio file	08-3_doors_down-behind_those_eyes.mp3					
Sugar, We're Goin Down	Fall Out Boy	Modern Rock	April 05	8154006	216	15	2005	
12/22/2005 13:07	44100	MPEG audio file	15-fall_out_boy-sugar_were_goin_down.mp3					
C'mon Baby	Wakefield	Modern Rock	April 05	7600662	193	16	2005	12/22/2005
13:08	44100	MPEG audio file	16-wakefield-cmon_baby.mp3					
I'm Dead (Miles Away)	Instruction	Modern Rock	April 05	9376614	254	13	2005	
12/22/2005 13:07	44100	MPEG audio file	13-instruction-im_dead_(miles_away).mp3					
Love in A Trashcan	The Raveonettes	Modern Rock	April 05	7012882	171	10	2005	
12/22/2005 13:07	44100	MPEG audio file	10-the_raveonettes-love_in_a_trashcan.mp3					
Decent Days and Nights	The Futureheads	Modern Rock	April 05	6877287	160	18	2005	
12/22/2005 13:08	44100	MPEG audio file	18-the_futureheads-decent_days_and_nights_(remix).mp3					
Take Me Papa Roach		Modern Rock	April 05	8320832	207	6	2005	12/22/2005 13:06
44100		MPEG audio file	06-papa_roach-take_me.mp3					
B.Y.O.B System of A Down		Modern Rock	April 05	10247955		256	3	2005
12/22/2005 13:06	44100	MPEG audio file	03-system_of_a_down-b.y.o.b.mp3					

+ Data-Information-Knowledge..

■ Information



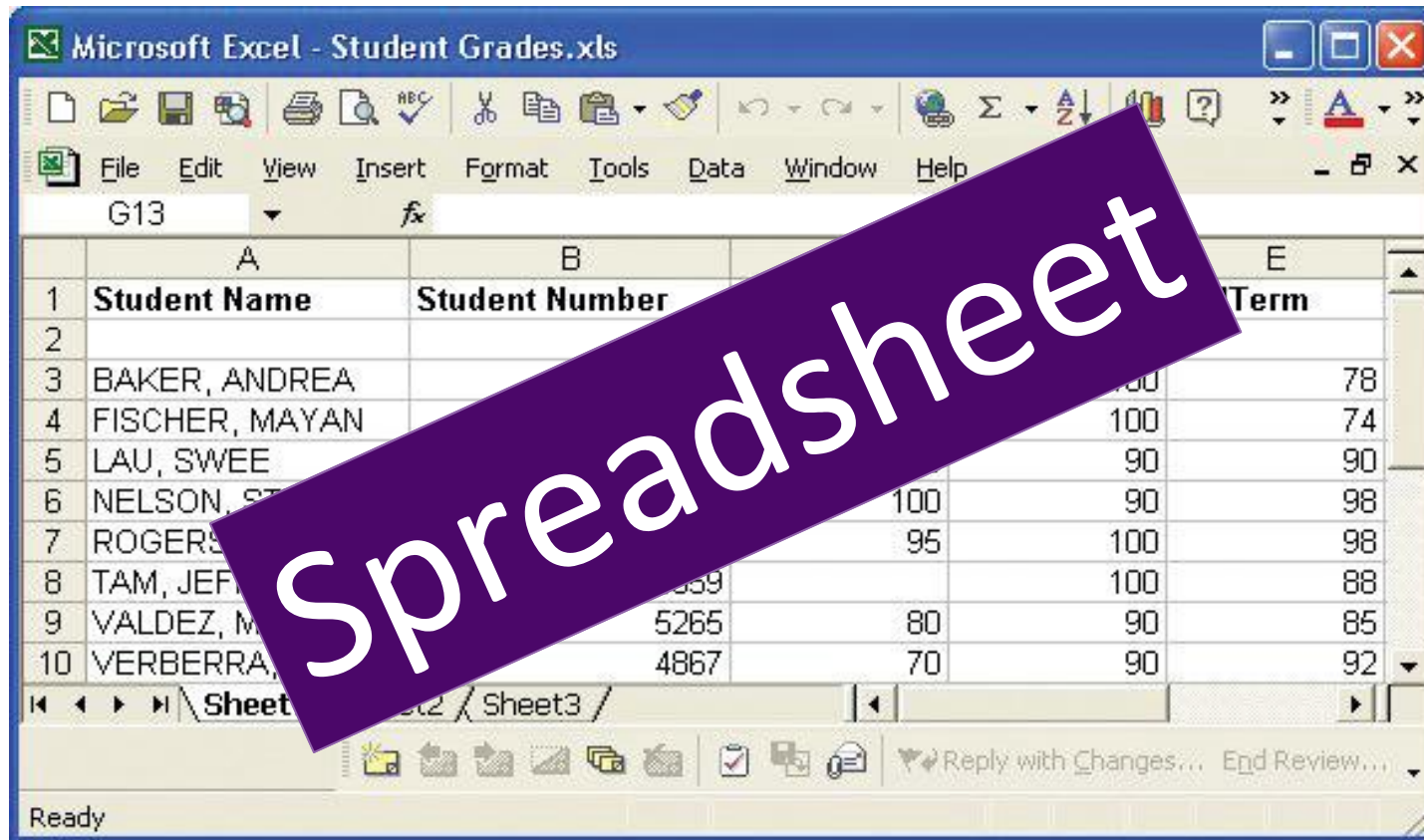
+ Data-Information-Knowledge..

■ Knowledge



+ Database..

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Microsoft Excel - Student Grades.xls

	A	B		E
1	Student Name	Student Number		Term
2				
3	BAKER, ANDREA		100	78
4	FISCHER, MAYAN		100	74
5	LAU, SWEE		90	90
6	NELSON, ST	100	90	98
7	ROGERS	95	100	98
8	TAM, JEFF	539	100	88
9	VALDEZ, M	5265	80	90
10	VERBERRA	4867	70	90

Ready

+ Database..

STUDENT

Student Name: BAKER, ANDREA

Student Number: 1325

HW1: 88

HW2: 100

MidTerm: 78

EMAIL

Date	
2/1/2004	For homework 1, do you...
3/15/2004	My group consists...
*	

Record: [Navigation Buttons]

OFFICE VISITS

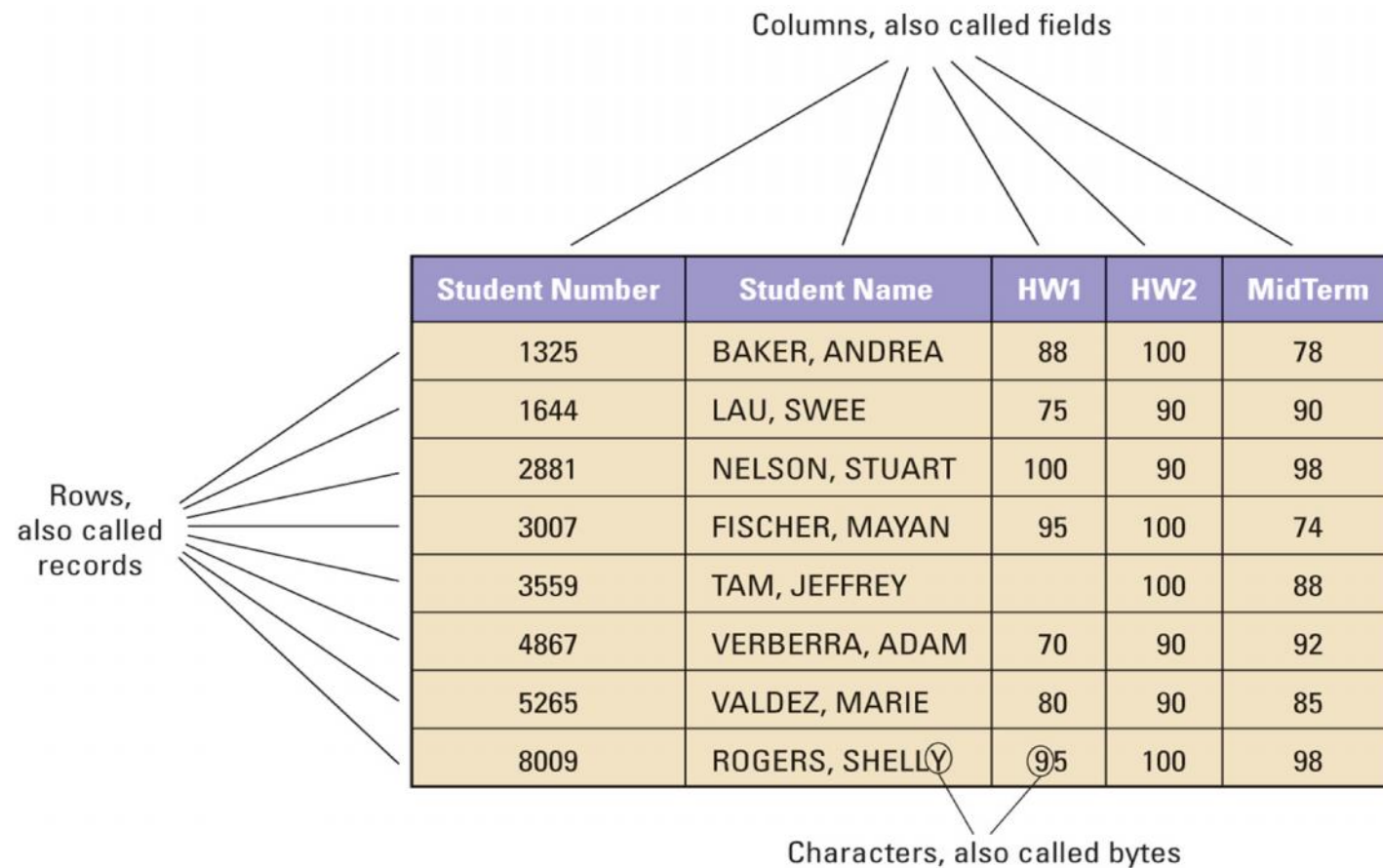
Date	Notes
2/13/2004	Andrea... about using IS for raising barriers to entry.
*	

Record: [Navigation Buttons] 1 of 1

Record: [Navigation Buttons] 1 of 8

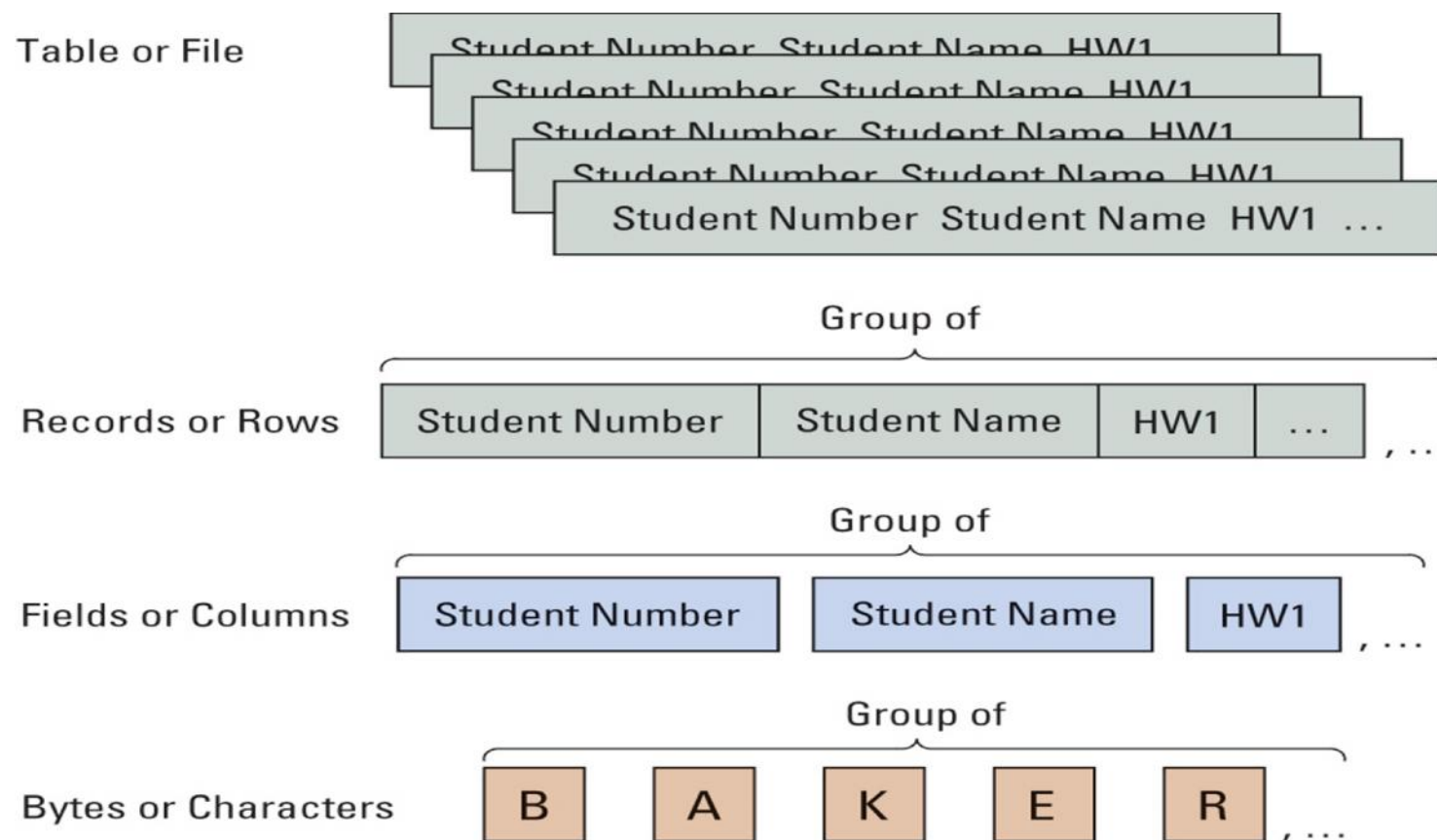
+ Database..

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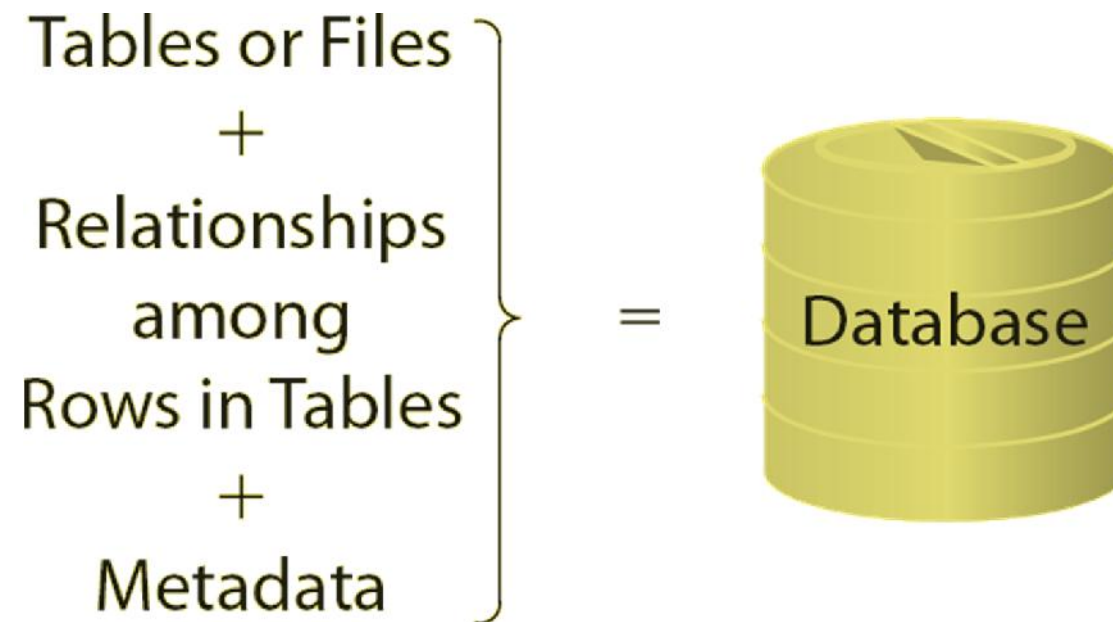


+ Database..

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+ Database..



Relationships: Values in one table may relate rows to those in other tables

+ Relationship..

Email Table

EmailNum	Date	Message	Student Number
1	2/1/2007	For homework 1, do you want us to provide notes on our references?	1325
2	3/15/2007	My group consists of Swee Lau and Stuart Nelson.	1325
3	3/15/2007	Could you please assign me to a group?	1644

Student Table

Student Number	Student Name	HW1	HW2	MidTerm
1325	BAKER, ANDREA	88	100	78
1644	LAU, SWEE	75	90	90
2881	NELSON, STUART	100	90	98
3007	FISCHER, MAYAN	95	100	74
3559	TAM, JEFFREY		100	88
4867	VERBERRA, ADAM	70	90	92
5265	VALDEZ, MARIE	80	90	85
8009	ROGERS, SHELLY	95	100	98

Office_Visit Table

VisitID	Date	Notes	Student Number
2	2/13/2007	Andrea had questions about using IS for raising barriers to entry.	1325
3	2/17/2007	Jeffrey is considering an IS major. Wanted to talk about career opportunities.	3559
4	2/17/2007	Will miss class Friday due to job conflict.	4867

+ Relationship..

- Relational databases store data in tables that represent relationships using primary key and foreign key
- Primary Key
 - Column (or group of columns) that makes each row unique in a table
 - e.g. “student number” can be the primary of the “student” table
 - * Composite primary keys if a group of columns are primary key
- Foreign Key
 - non-key column or field in one table that links to a primary key in another table
 - e.g., “student number” in “email” and “office visit” tables

+ Metadata..

Data Item		Length	Value		Description
Name	Type		Min	Max	
Course	Alphanumeric	30			Course ID and name
Section	Integer	1	1	9	Section number
Semester	Alphanumeric	10			Semester and year
Name	Alphanumeric	30			Student name
ID	Integer	9			Student ID (SSN)
Major	Alphanumeric	4			Student major
GPA	Decimal	3	0.0	4.0	Student grade point average

+ Metadata..

- Data that describe data
 - contains description of its content
- Make database more useful and easier to use
 - helps prevent guessing about what is recorded in a database

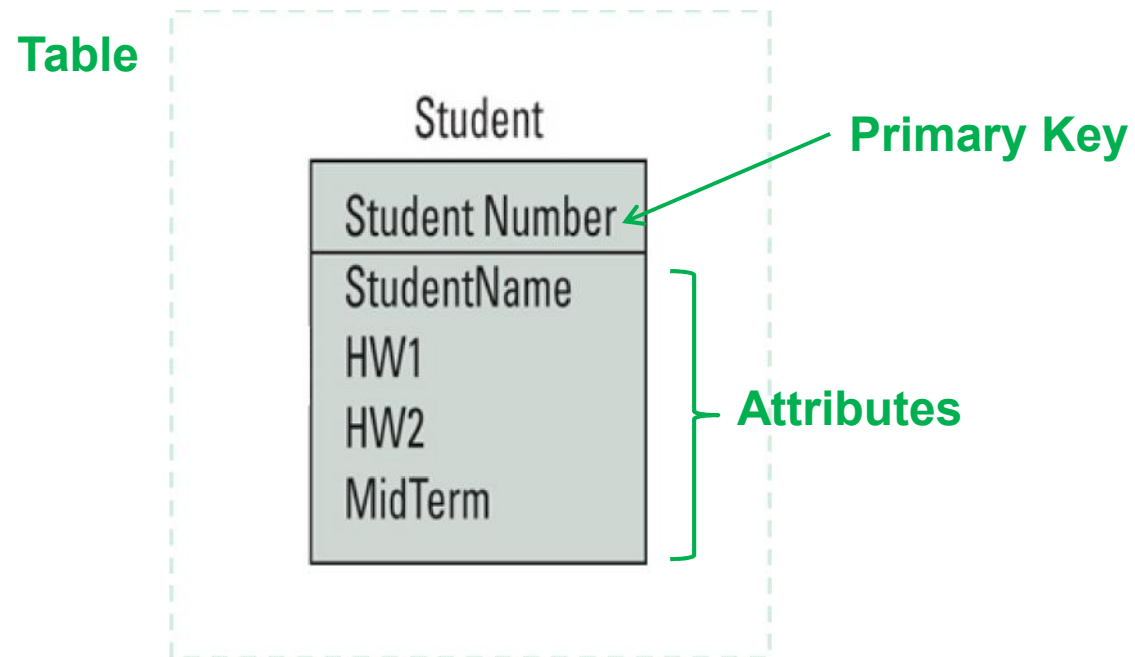
+ Database..

- Preserves data integrity
 - Assures that data is consistent, correct, and accessible
- Eliminate data redundancy
 - Unnecessary repetition of data that slows data processing
- Limits data views (query and report)
 - Users only see what they need to see, as cleanly and clearly as possible

+ Database Management Systems..

- Database Management Systems (DBMS) is a licensed software that contain database
 - e.g. MS Access, SQL Server, DB2, Oracle, MySQL, etc.
- It performs 4 functions
 - Create
 - Process
 - Administer
 - Maintain

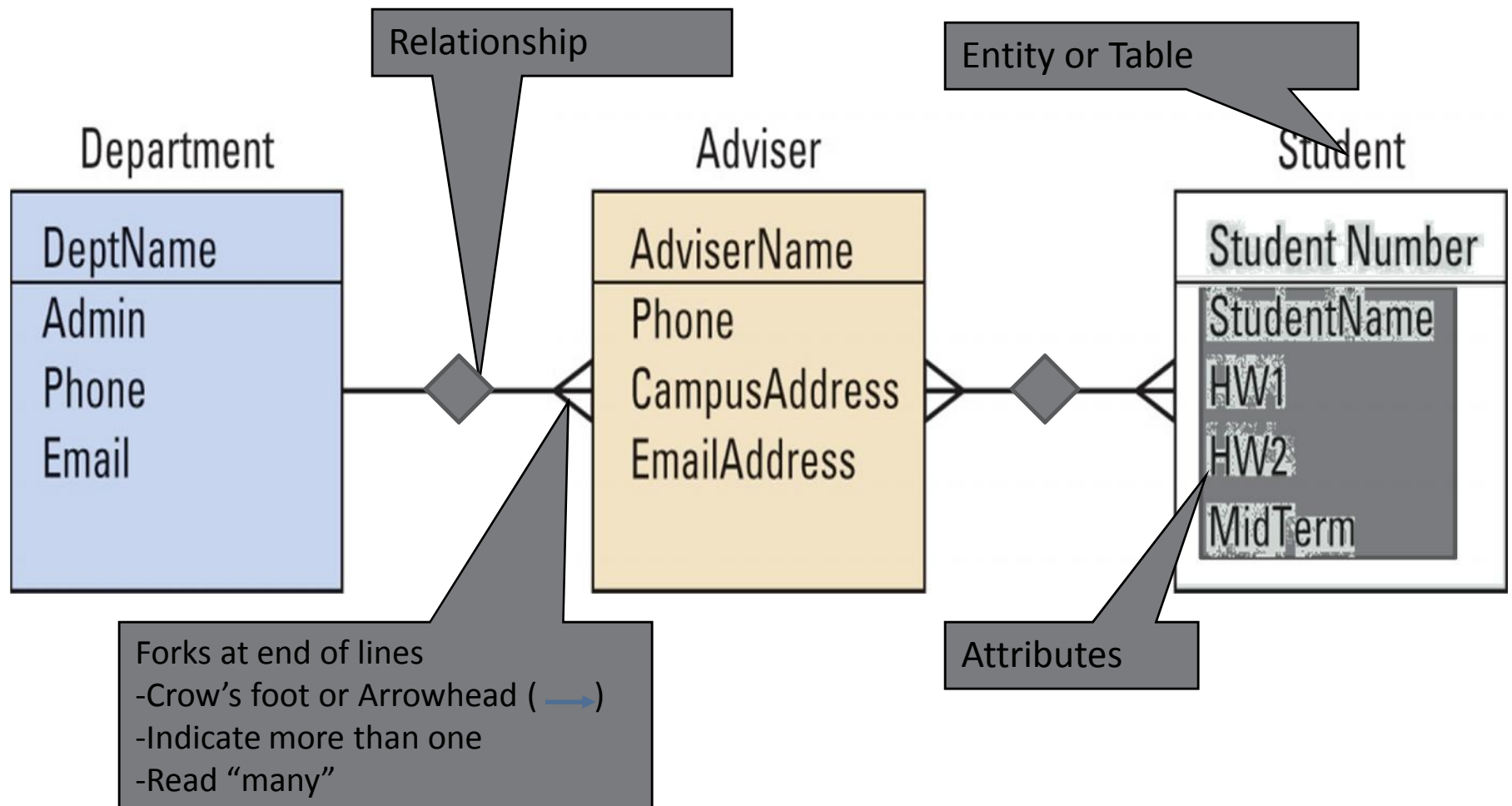
+ ERD or E-R Diagram..



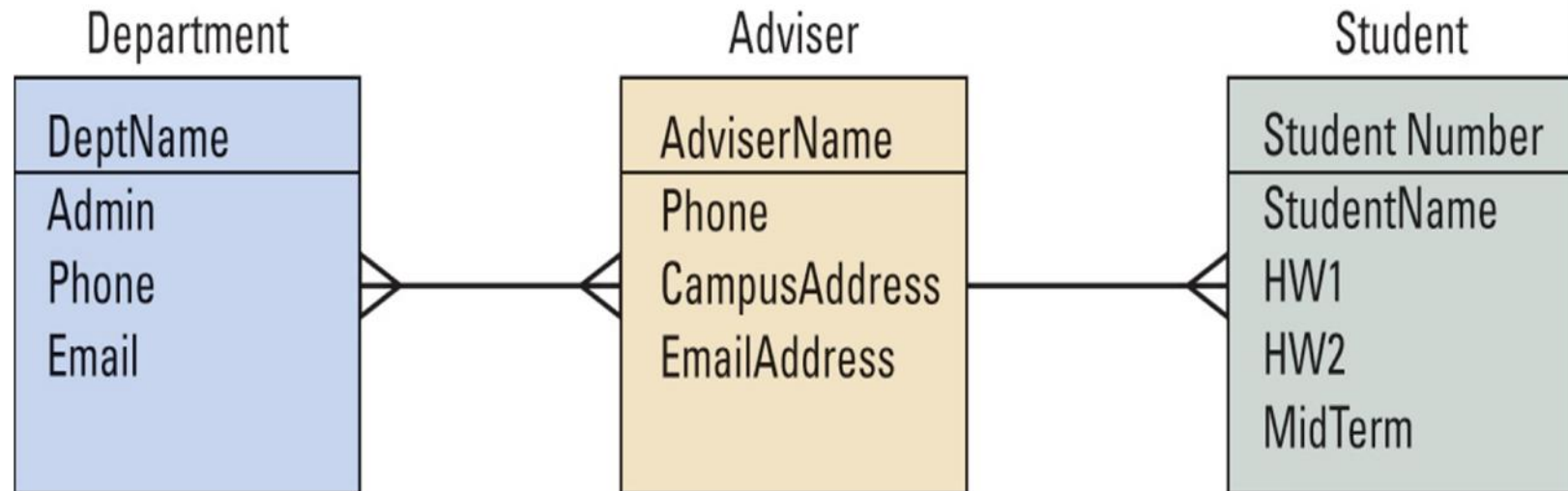
+ Q & A

- MySQL is a type of a ?
- DBMS

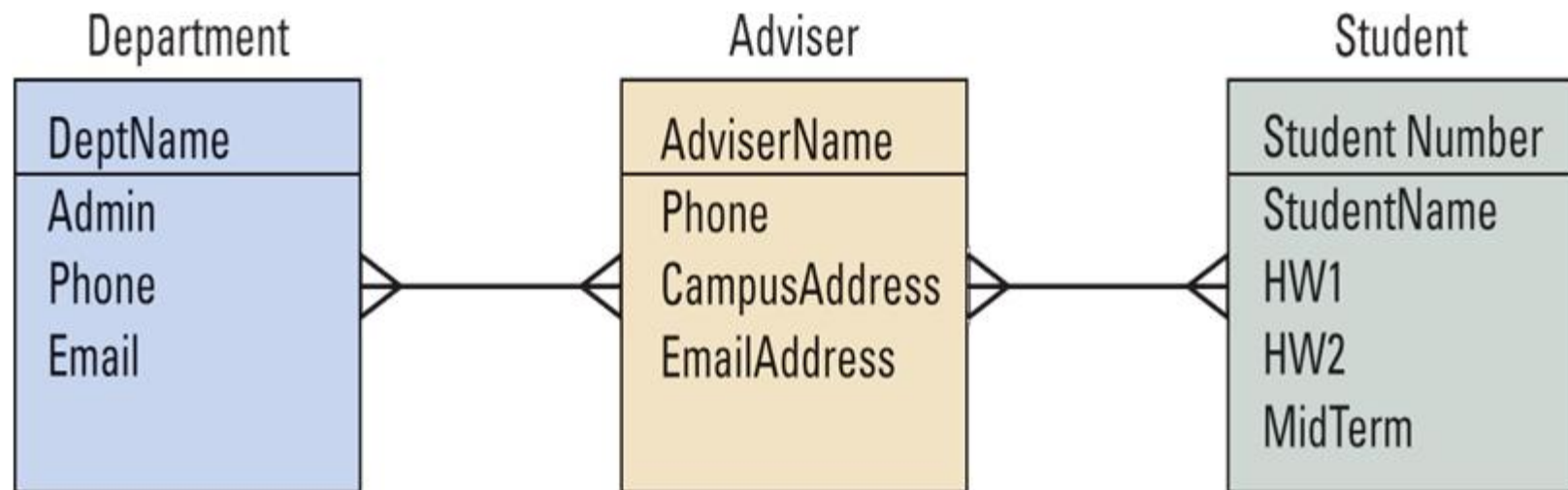
+ ERD or E-R Diagram



+ ERD or E-R Diagram..



+ ERD or E-R Diagram..



What's the difference from the previous one?

Who defines the relationships?

+ ERD or E-R Diagram..

- Relationship between two entities

- 1 to 1 (1:1)

- 1 to Many (1:N)

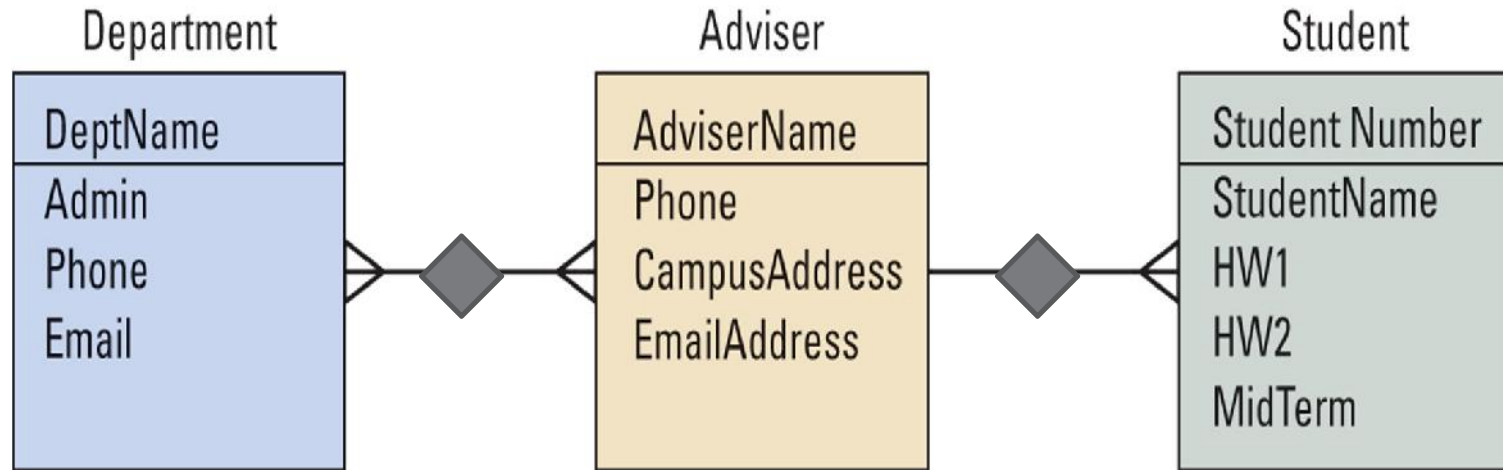
- Many to Many (N:M)

- Many to Many is not allowed

converts “Many to Many” to “1 to Many” and “Many to 1”

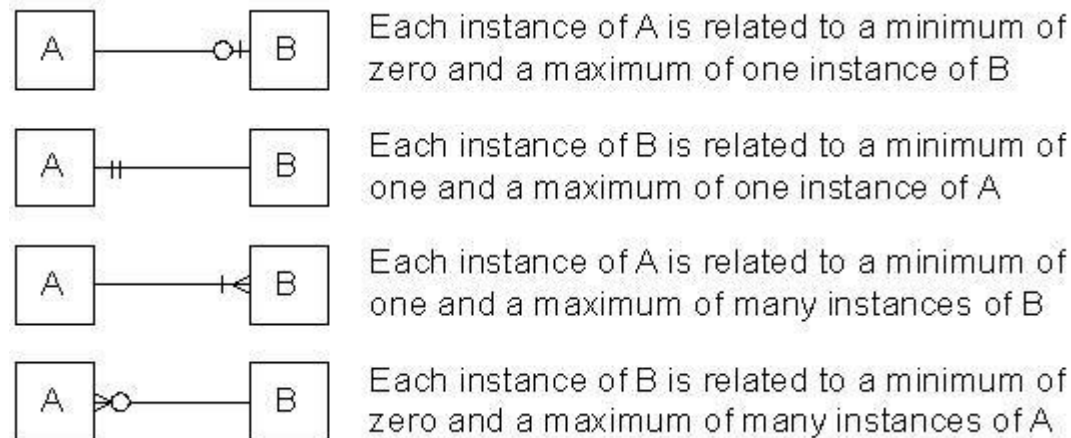
+ ERD Example

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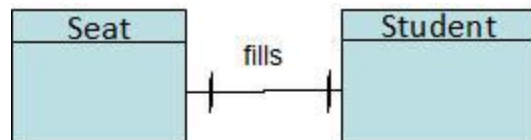


+ Cardinality

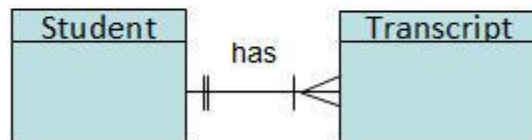
26



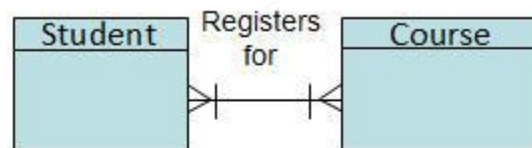
+ More examples



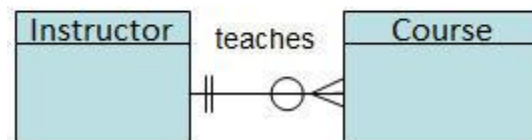
Left to right: a seat is filled by exactly one student
Right to left: a student fills exactly one seat



Left to right: a student has one or more transcripts
Right to left: a transcript has one student



Left to right: a student registers for one or more courses
Right to left: a course is registered by one or more students



Left to right: an instructor teaches zero to many courses
Right to left: a course is taught by exactly one instructor

+ Q & A

- Relational databases store data in tables that represent relationships _____
- using primary key and foreign key



Developing an E-R Diagram - Scenario #1

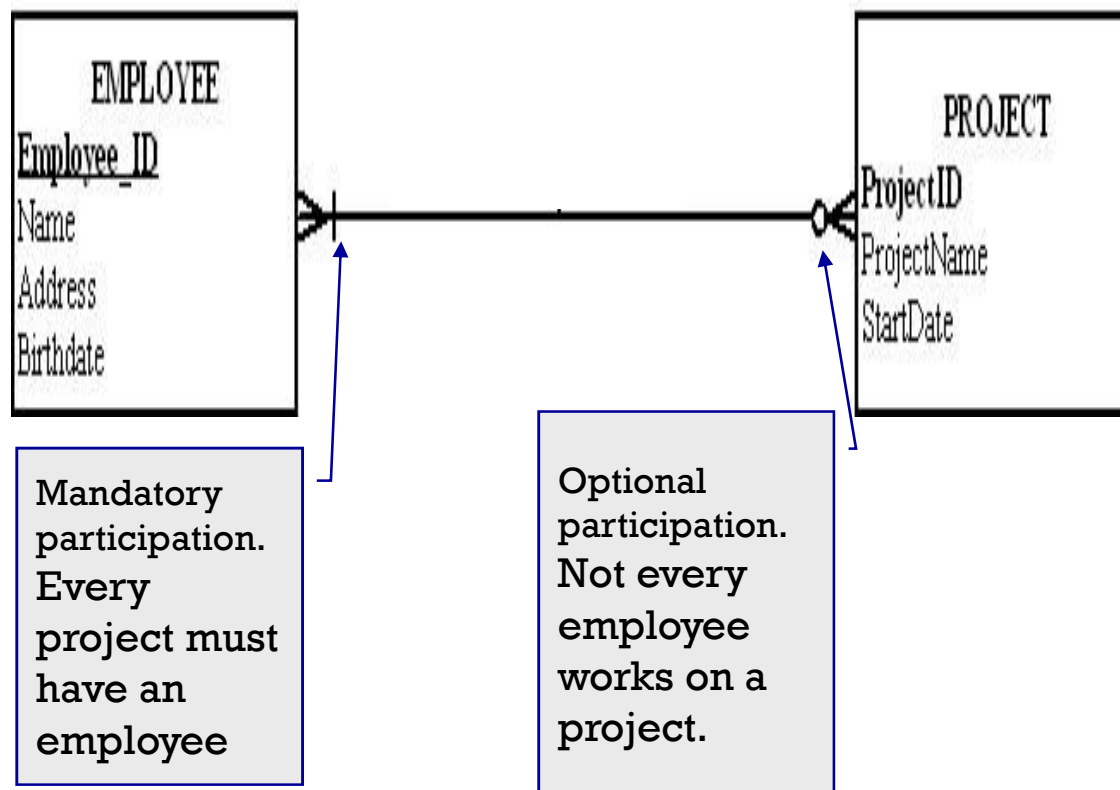


Group exercise

- A company has a number of employees. The attributes of EMPLOYEE include Emp_ID (identifier), Name, Address, and Birthdate.
- The company also has several projects. Attributes of PROJECT include Proj_ID (identifier), Proj_Name, and Start_Date.
- Each employee may be assigned to one or more projects, or may not be assigned to any project.
- A project must have at least one employee assigned to it, and may have any number of employees assigned to it.



ERD For Scenario #1





Developing an E-R Diagram

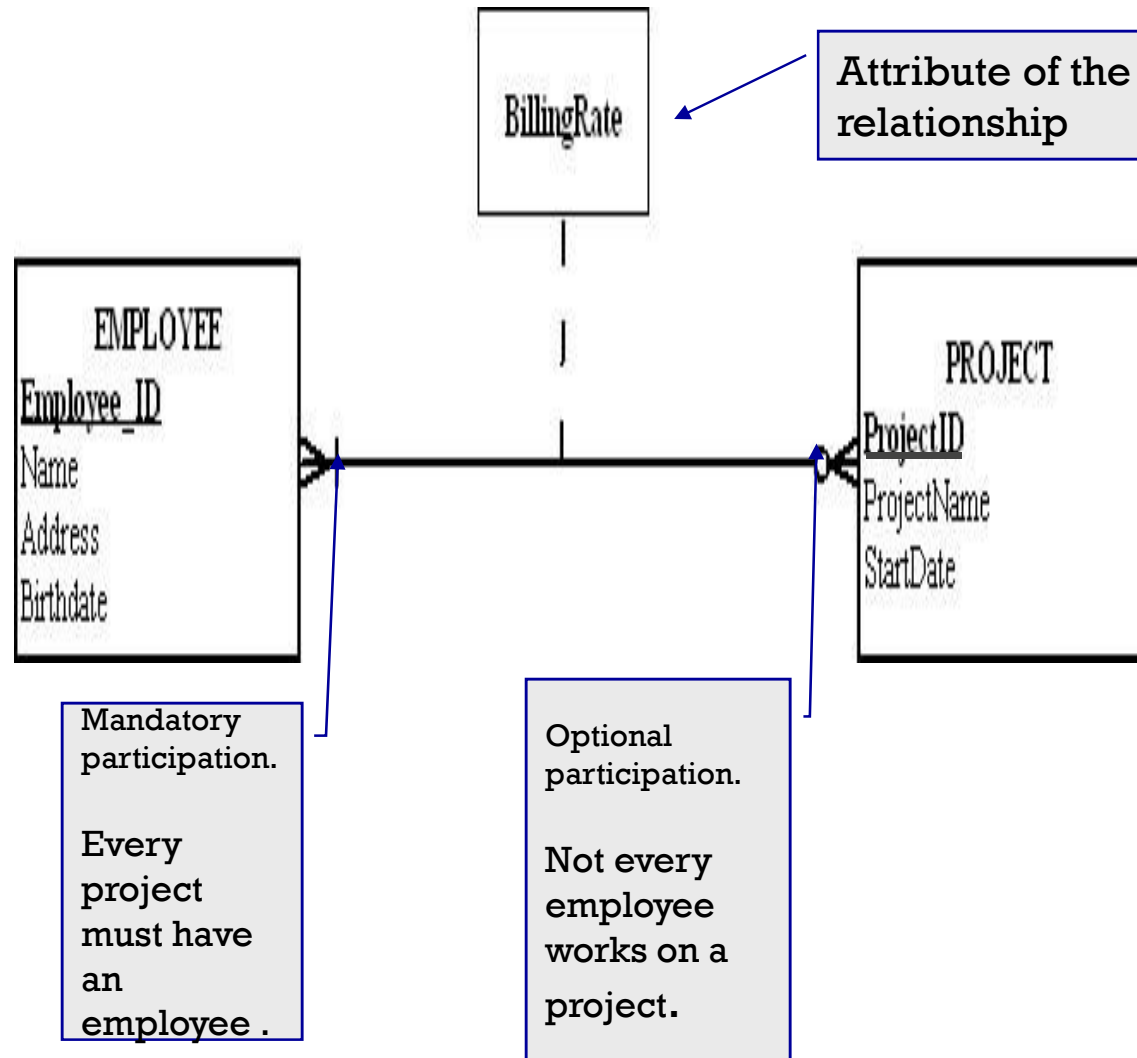


Scenario #2

- A company has a number of employees. The attributes of EMPLOYEE include Emp_ID (identifier), Name, Address, and Birthdate.
- The company also has several projects. Attributes of PROJECT include Proj_ID (identifier), Proj_Name, and Start_Date.
- Each employee may be assigned to one or more projects, or may not be assigned to any project.
- A project must have at least one employee assigned to it, and may have any number of employees assigned to it.
- An employee's billing rate may vary by project, and the company wishes to record the applicable billing rate (Billing_Rate) for each employee when assigned to a particular project.



ERD For Scenario #2



+ Exercise



- For each of the following pairs of rules, identify two entity types and one relationship. State the cardinality and existence of the relationship in each case. If you don't think enough information is available to define either of these, then state an assumption that makes it clear. Draw the ER diagram.
- A department employs many persons. A person is employed by, at most, one department.
- A manager manages, at most, one department. A department is managed by, at most, one manager.
- An author may write many books. A book may be written by many authors.
- A team consists of many players. A player plays for only one team.
- A lecturer teaches, at most, one course. A course is taught by exactly one lecturer.
- A flight-leg connects two airports. An airport is used by many flight-legs.
- A purchase order may be for many products. A product may appear on many purchase orders.
- A customer may submit many orders. An order is for exactly one customer.

+ References

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- Intro to D/B



Thank You