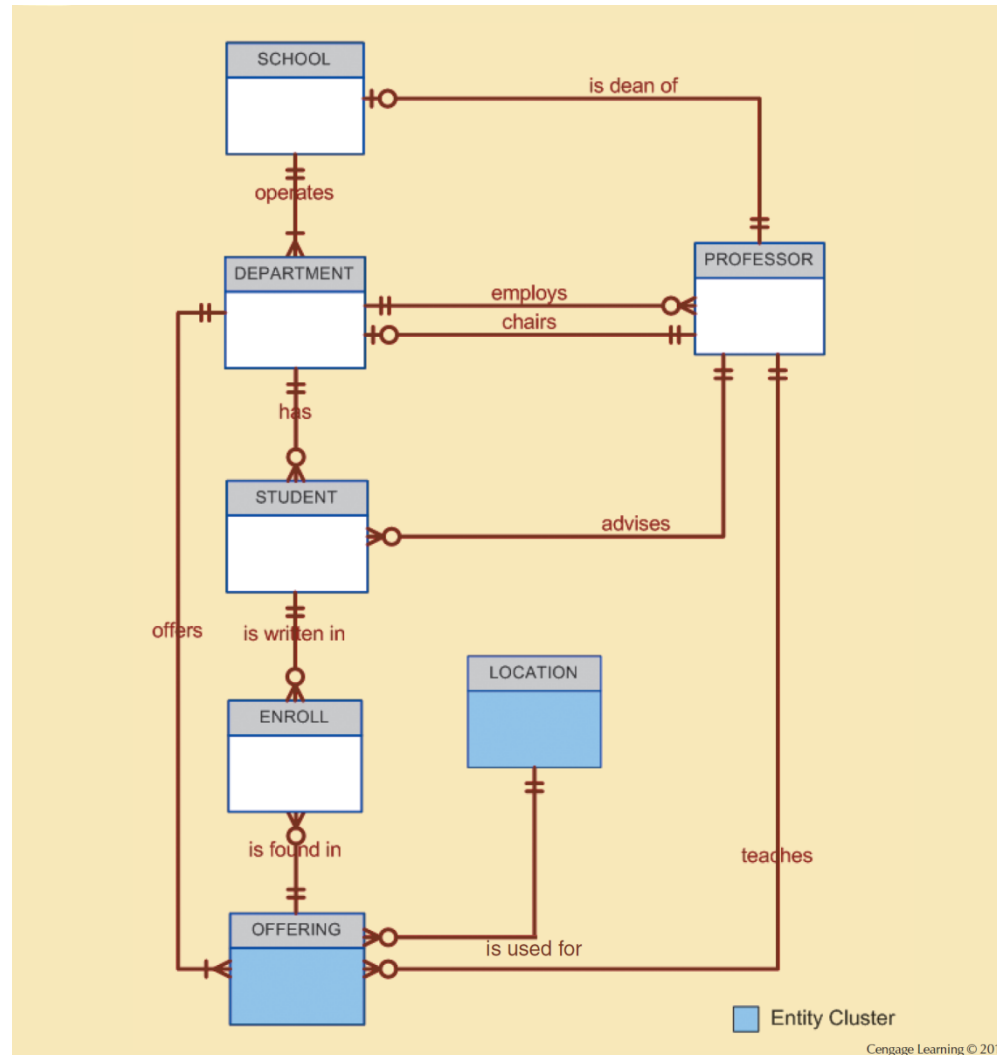


Tiny College ERD Using Entity Clusters



Desirable Primary Key Characteristics

Non intelligent

No change over time

Preferably single-attribute

Preferably numeric

Security-compliant

The M:N Relationship between STUDENT and CLASS

Database name: Ch05_Tinycollege

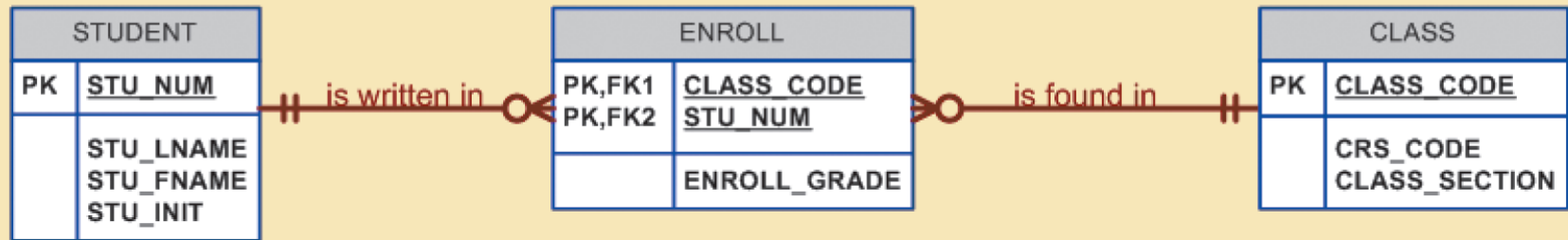


Table name: STUDENT
(first four fields)

STU_NUM	STU_LNAME	STU_FNAME	STU_INIT
321452	Bowser	William	C
324257	Smithson	Anne	K
324258	Brewer	Juliette	
324269	Oblonski	Walter	H
324273	Smith	John	D
324274	Katinga	Raphael	P
324291	Robertson	Gerald	T
324299	Smith	John	B

Table name: ENROLL

CLASS_CODE	STU_NUM	ENROLL_GRADE
10014	321452	C
10014	324257	B
10018	321452	A
10018	324257	B
10021	321452	C
10021	324257	C

Table name: CLASS
(first three fields)

CLASS_CODE	CRS_CODE	CLASS_SECTION
10012	ACCT-211	1
10013	ACCT-211	2
10014	ACCT-211	3
10015	ACCT-212	1
10016	ACCT-212	2
10017	CIS-220	1
10018	CIS-220	2
10019	CIS-220	3
10020	CIS-420	1
10021	QM-261	1
10022	QM-261	2
10023	QM-362	1
10024	QM-362	2
10025	MATH-243	1

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Data Used to Keep Track of Events

DATE	TIME_START	TIME_END	ROOM	EVENT_NAME	PARTY_OF
6/17/2014	11:00AM	2:00PM	Allure	Burton Wedding	60
6/17/2014	11:00AM	2:00PM	Bonanza	Adams Office	12
6/17/2014	3:00PM	5:30PM	Allure	Smith Family	15
6/17/2014	3:30PM	5:30PM	Bonanza	Adams Office	12
6/18/2014	1:00PM	3:00PM	Bonanza	Boy Scouts	33
6/18/2014	11:00AM	2:00PM	Allure	March of Dimes	25
6/18/2014	11:00AM	12:30PM	Bonanza	Smith Family	12

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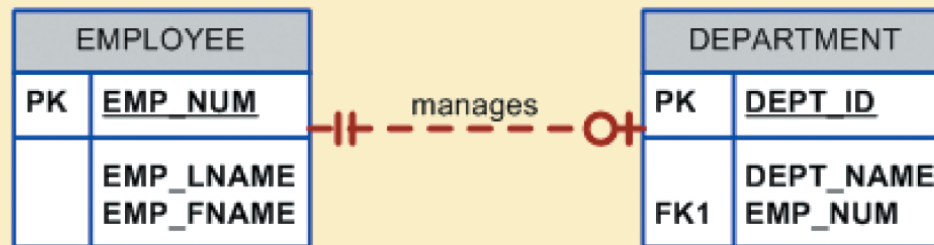
Selection of Foreign Key in a 1:1 Relationship

CASE	ER Relationship Constraint	Action
1	One side is mandatory and the other side is optional	Place the PK of the entity on the mandatory side in the entity of the optional side as a FK, and make the FK mandatory.
2	Both sides are optional.	Select the FK that causes the fewest NULLs, or place the FK in the entity in which the (relationship) role is played.
3	Both sides are mandatory.	See case 2, or consider revising your model to ensure that the two entities do not belong together in a single entity.

The 1:1 Relationship between Department and Employee

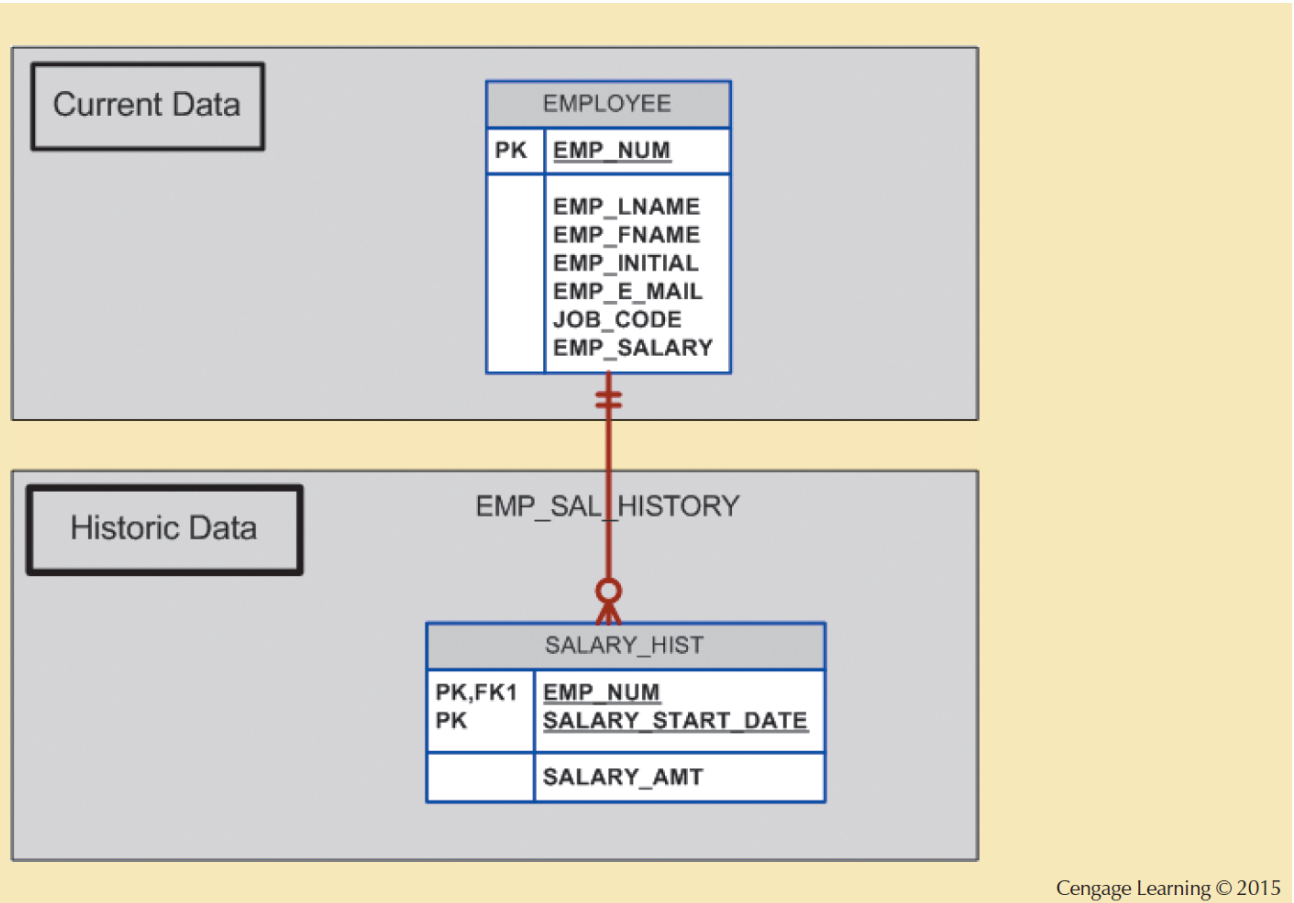
A One-to-One (1:1) Relationship:

An EMPLOYEE manages zero or one DEPARTMENT;
each DEPARTMENT is managed by one EMPLOYEE.



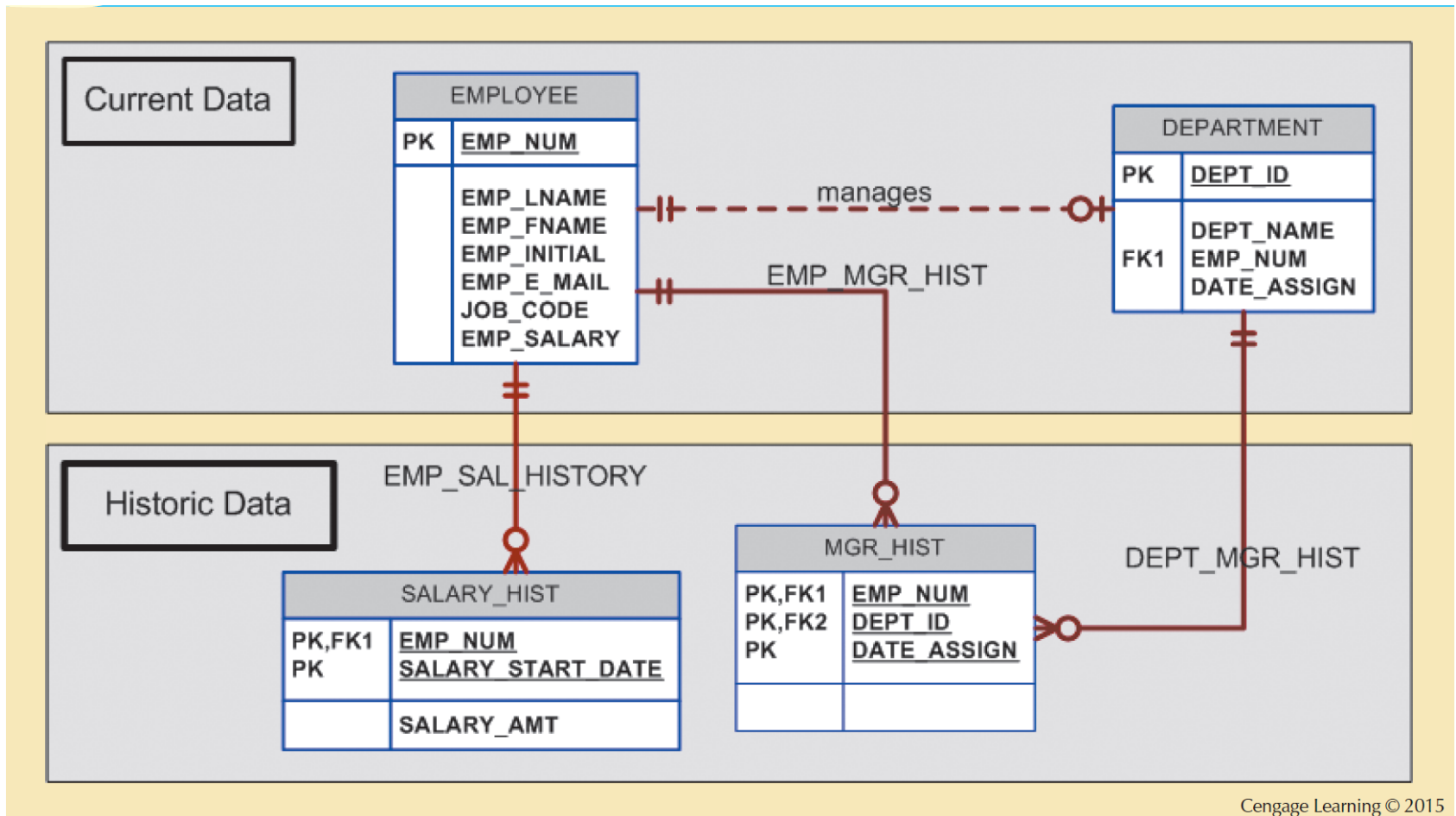
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Maintaining Salary History

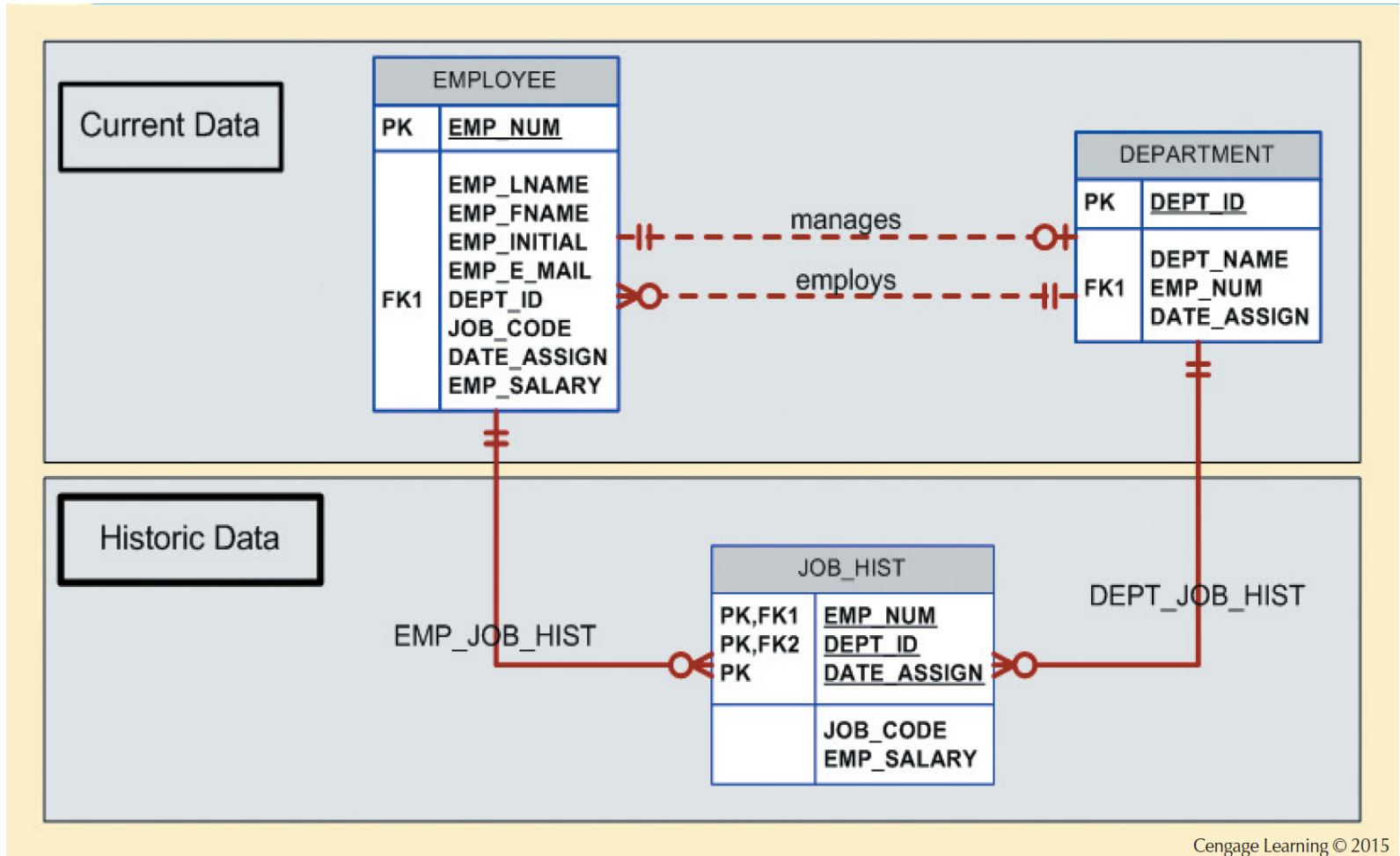


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Maintaining Manager History



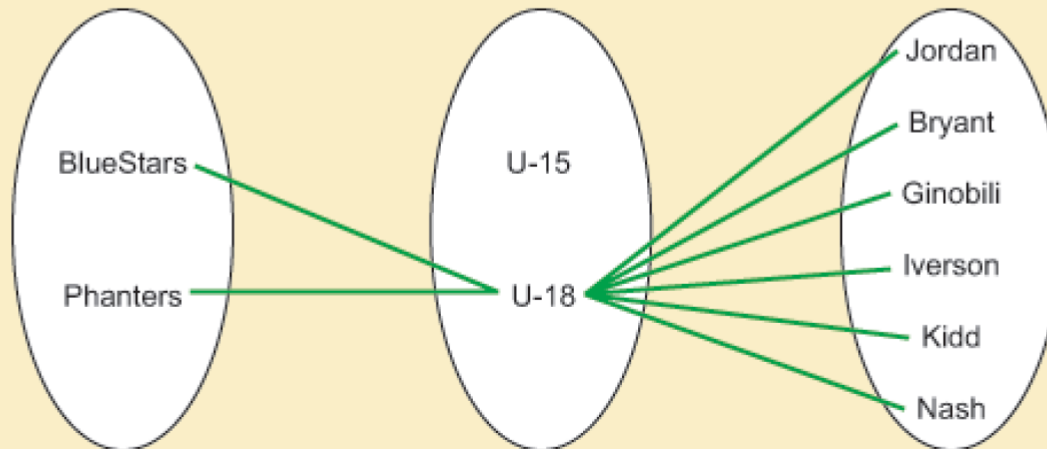
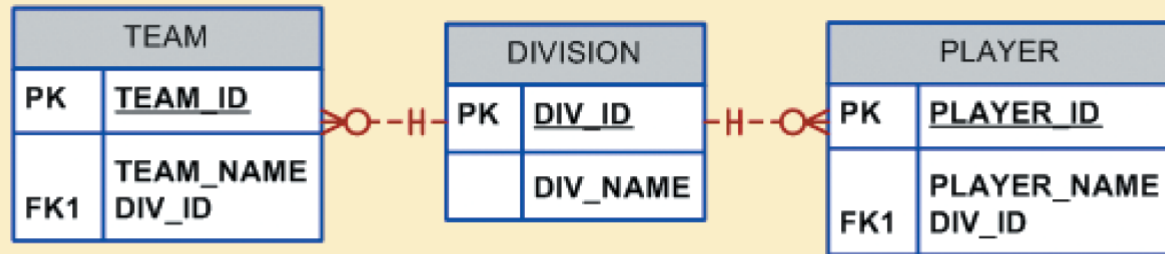
Maintaining Job History



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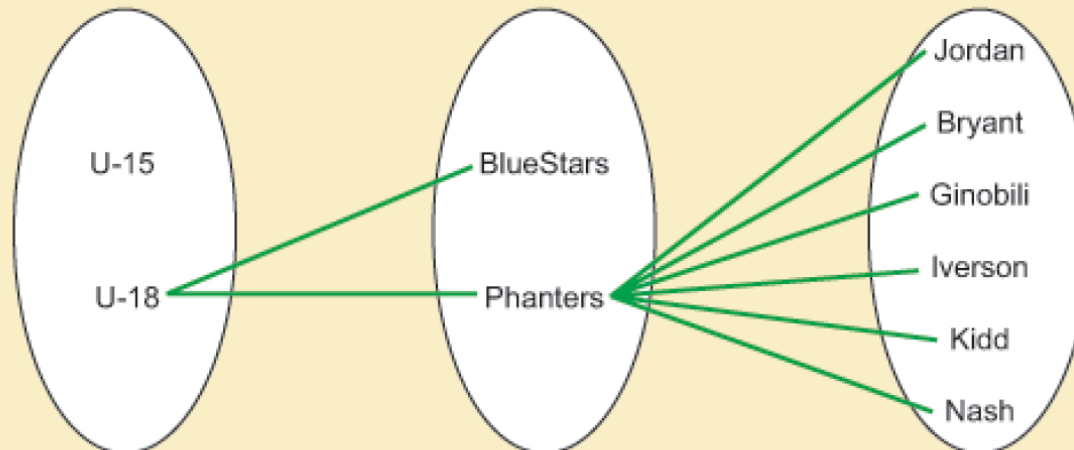
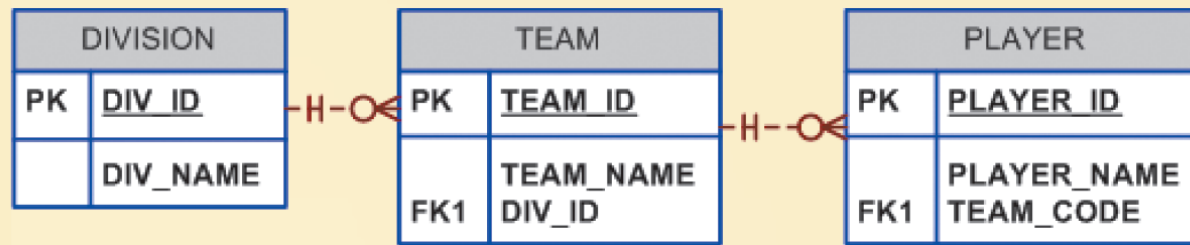
Incorrect ERD with Fan Trap Problem

Fan Trap Due to Misidentification of Relationships



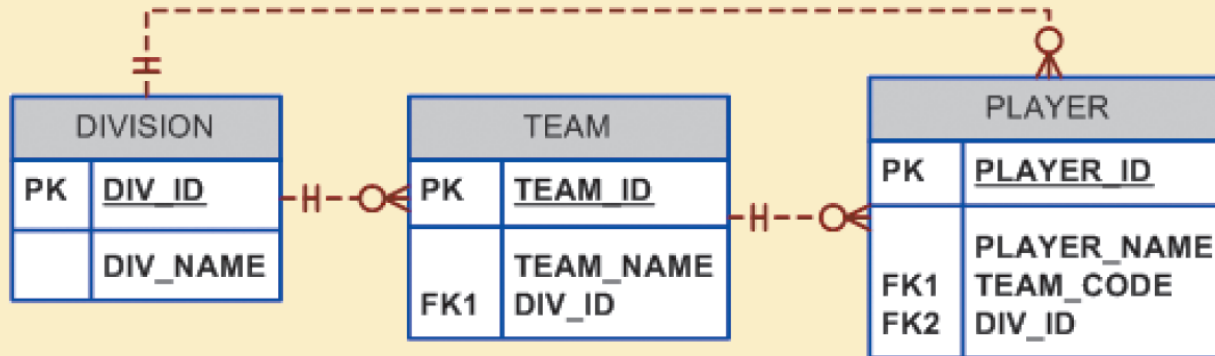
Corrected ERD After Removal of the Fan Trap

Fan Trap Eliminated by Proper Identification of Relationships



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A Redundant Relationship



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