# INF10025 Data Management and Analytics

Tutorial 2 – Discussion Questions for Week 2

1. Primary and Foreign Keys
   a) What is a Primary Key?
   b) Does every table require a Primary Key?
   c) How many Primary Keys can a table have?
   d) What is a Foreign Key?
   e) Does every table require a Foreign Key?
   f) How many Foreign Keys can a table have?
   g) Can a Primary Key have a Null value?
   h) Can a Foreign Key have a Null value?
   i) What happens when you add a record to a table where the Foreign Key value does not match a Primary Key value in the related table?

2. Consider the following Relationship Diagram:
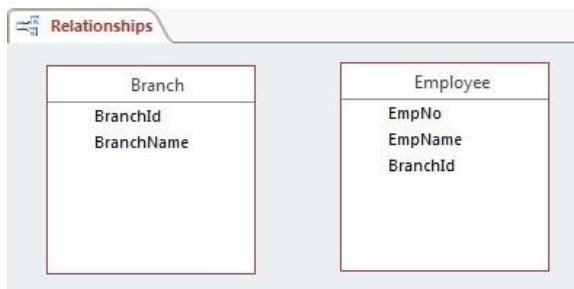
   a) Which field(s) should be a Primary Key?
   b) Which field(s) should be a Foreign Key?
   c) Which table will be at the ONE end of the M:1 relationship?
   d) Which table will be at the MANY end of the M:1 relationship?
   e) True or False?
      i.   ONE employee may belong to MANY branches
      ii. ONE branch may have MANY employees

3. Suppose that you want to add the following data to the above tables
   Employee: EmpNo: 1   EmpName: Emma   BranchId: 101
   Branch: BranchID: 101   BranchName: Hawthorn
   Select the most correct answer.
   a) The employee data **must** be added to the employee table before the branch data is added to the branch table.
   b) The branch data **must** be added to the branch table before the employee data is added to the employee table.

   c) It does **not** matter which sequence the data is added to these tables.

4. Referential Integrity

Lecture 2 contained a slide with a screenshot similar to this **Edit Relationships** dialog box.

a. Is 1 (RATINGCODE of left of screen) a PK or a FK?
b. Is 2 (RATINGCODE of right of screen) a PK or a FK?
c. The Enforce Referential Integrity option should always be checked 3. What is Referential Integrity?
d. Provide an example of RATINGCODE data that would fail the Referential Integrity test?

5. Queries

Two tables have been created named Branch and Employee

BranchId	BranchName
101	Hawthorn
102	Camberwell
106	Box Hill

| EmpNo	EmpName	BranchId
1	Emma	101
3	Sue	101
2	Todd	102

A query has been created based on these two tables

When the query is run, the following data appears:

a) Is the output what you would expect? (Hint: No).
b) Why does the output show Emma (and every other employee) belonging to 3 branches?
c) What is the name of this problem / phenomenon?
d) What can be done to overcome this problem?

EmpNo	EmpName	BranchId	BranchName
1	Emma	101	Hawthorn
1	Emma	101	Camberwell
1	Emma	101	Box Hill
2	Todd	102	Hawthorn
2	Todd	102	Camberwell
2	Todd	102	Box Hill
3	Sue	101	Hawthorn
3	Sue	101	Camberwell
3	Sue	101	Box Hill

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6. Movies relationships

Consider the following Relationship Diagram.
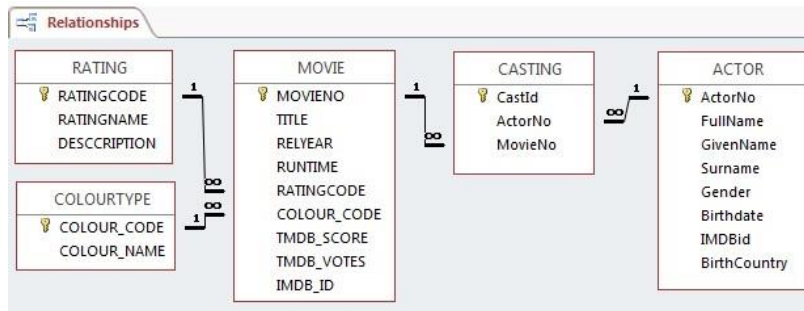
True or False?

i.   The Rating table has ONE foreign key
ii.   The ColourType table has ONE foreign key
iii. The Casting table has TWO foreign keys
iv.   ONE Actor may have MANY Casting records
v.   ONE Casting record may refer to MANY movies
vi.   ONE Movie may have MANY ratings
vii. ONE Casting record may only refer to ONE actor

7. Movies data

Consider the following information:

MOVIENO	TITLE	RELYEAR	RUNTIME	RATINGCODE	COLOUR_CODE	TMDB_SCORE	TMDB_VOTES	IMDB_ID
286217	The Martian	2015	141	M	C	7.6	3717	tt3659388
324668	Jason Bourne	2016	123	M	C	7.2	121	tt4196776

ActorNo	FullName	GivenName	Surname	Gender	Birthdate	IMDBid	BirthCountr
1892	Matt Damon	Matt	Damon	M	8/10/1970	nm0000354	USA
0							

CASTING

Field Name	Data Type
CastId	AutoNumber
ActorNo	Number
MovieNo	Number

We need to add the information that Matt Damon was cast into the movies "The Martian" and "Jason Bourne" in the database.

a) How many new rows have to be added to the database to make this occur?
b) In which table(s) would this data be added to?
c) What values would be entered into the row(s)? Provide actual values.

8. Queries with totals

The following Query is based on the Movie table in the Movie database:

Field:	RATINGCODE	RATINGCODE
Table:	MOVIE	MOVIE
Total:	Group By	Count
Sort:		
Show:	✓	✓
Criteria:		

Assume that the only the following records exist in the movie table.

MOVIENO	TITLE	RELYEAR	RUNTIME	RATINGCODE	COLOUR_CODE	TMDB_SCORE
881	A Few Good Men	1992	138	M	C	6.7
8699	Anchorman: The Legend of Ron Burgundy	2004	94	M	C	6.6
11287	A League of Their Own	1992	128	PG	C	6.4
16614	Adventureland	2009	107	M	C	6.2
68734	Argo	2012	120	M	C	6.7
241259	Alice Through the Looking Glass	2016	118	PG	C	6.6

a) How many columns will be displayed?

b) How many rows will be displayed?

c) What are the values displayed in each row?

9. Queries with totals

Based on the above movie data

a) How many rows are displayed by this query?

b) What values are displayed in Row 1 of the query results?

Field:	RATINGCODE	TMDB_SCORE	TMDB_SCORE
Table:	MOVIE	MOVIE	MOVIE
Total:	Group By	Group By	Count
Sort:	Ascending		
Show:	✓	✓	✓
Criteria:			
or:			

10. Indexes

1. What is an Index?

2. What sort of information is stored in an Index?

3. Can you view the contents of an index?

4. Can an index allow duplicate values? Why is this so?

5. How can an index be added to a table?

6. How can an index improve the performance of a database?

7. How can index be detrimental to the performance of a database system?

11. Forms

List at least 4 benefits of using a form instead of using a grid view to add / modify data.
(Hint: Perhaps try to think from an end user's perspective rather than a database developer)