DATABASE DESIGN & APPLICATIONS

Overview
This event recognizes FBLA members who demonstrate that they have acquired entry level skills for understanding database usage and development in business.

This event consists of two parts: an objective test taken at the NLC and a skills production test that must be received the second Friday of May to the national center.

This is an individual event.

Competencies and Task Lists
http://www.fbla-pbl.org/docs/ct/FBLA/databasedesignandapplication.pdf

Website Resources
- Database Design
  http://databases.about.com/od/specificproducts/Database_Design.htm
- Datapig Access Tutorials
  http://www.datapigtechnologies.com/AccessMain.htm
- Function X Access 2007 Tutorial--Very Thorough
  http://www.functionx.com/access/
- Microsoft Access Tutorial
  http://www.quackit.com/microsoft_access/tutorial/

DATABASE DESIGN & APPLICATIONS SAMPLE QUESTIONS

1. Which contains data about one entity or activity?
   a. query
   b. criteria
   c. record
   d. table

   Competency: Data Definitions/Functions

2. Which command allows you to build a table?
   a. USE
   b. ALTER
   c. CREATE
   d. SELECT

   Competency: Data Definitions/Functions

3. What command is used to retrieve specific information from a database?
   a. FETCH
   b. SELECT
   c. GET
   d. USE

   Competency: Data Definitions/Functions

4. Which command allows you to modify information contained within a table?
    a. USE
    b. ALTER
    c. SELECT
    d. UPDATE

    Competency: Data Definitions/Functions

5. What command lets you take two tables and match records by common field(s)?
    a. CREATE
    b. ALTER
    c. USE
    d. JOIN

    Competency: Data Definitions/Functions

6. When you have a nested SQL query and the inner and outer queries reference the same table, this is known as what type of JOIN?
    a. SELF
    b. OUTER
    c. RECURSIVE
    d. INNER

    Competency: Data Definitions/Functions

7. The Access query wizard allows you to create queries without using which one of the following?
    a. objects
    b. SQL
    c. templates
    d. DBMS

    Competency: Query Development

8. You have a SQL database with a single table called 'countries'. There are columns for name, area, population, and gdp. What SQL query would show the per capita gdp (gdp/population) for each country where the area is over 5,000,000 km?
    a. SELECT * FROM countries WHERE area > 5000000
    b. SELECT name, population FROM countries WHERE area > 5000000
    c. SELECT name, gdp/population FROM countries WHERE area > 5000000
    d. SELECT name, gdp FROM countries WHERE area > 5000000

    Competency: Query Development

9. You have a SQL database with a single table called 'countries'. What SQL query would show the names of countries which have both a population greater than 1000000 as well as a gdp greater than 2000000?
    a. SELECT name FROM countries WHERE population > 1000000 OR gdp > 2000000
    b. SELECT name FROM countries WHERE population > 1000000 AND gdp > 2000000
    c. SELECT name FROM countries WHERE population < 1000000 OR gdp < 2000000
    d. SELECT name FROM countries WHERE population < 1000000 AND gdp < 2000000

    Competency: Query Development

10. You have a SQL database with a single table called 'countries'. There are columns for name, area, region, population, and gdp. What SQL query would show each region only once?
    a. SELECT DISTINCT region FROM countries
    b. SELECT SINGLE region FROM countries
    c. SELECT 1 region FROM countries
    d. SELECT region FROM countries (MAX=1)

    Competency: Query Development

11. You have a SQL database with two tables, one is called 'countries' and the other is called 'winners'. The countries table has two columns, ID and name. The ID is a country code which is referenced from the winners table. The winners table has three columns: year, name, and country. What SQL query would show the names of the countries that each winner was from?
    a. SELECT name, country.name FROM winners JOIN countries ON (countries.country=winners.id)
    b. SELECT name, country.name FROM winners JOIN countries ON (winners.country=countries.id)
    c. SELECT name, country.name FROM country JOIN id ON (winners.id=countries.country)
    d. SELECT name, country.name FROM country JOIN id ON (winners.country=countries.id)

    Competency: Query Development

12. A(n)_____ query removes records from a table based on the criteria within a query.
    a. make
    b. update
    c. delete
    d. append

    Competency: Query Development

13. Allowing a database to automatically handle records linked via referential integrity rules is established by selecting:
    a. update and delete
    b. alter and drop
    c. alter and delete
    d. cascading update and cascading delete

    Competency: Query Development

14. Which JOIN is the most common and can be regarded as the default JOIN type?
    a. SELF
    b. NATURAL
    c. INNER
    d. OUTER

    Competency: Table Relationship

15. Which type of JOIN retains each record even if **no** matching record exists?
    a. natural
    b. inner
    c. equi
    d. outer

    Competency: Table Relationship

16. Referential integrity is imposed by adding referential _____ to table and column definitions.
    a. cells
    b. keywords
    c. keys
    d. constraints

    Competency: Table Relationship

17. What clause in the CREATE TABLE or ALTER TABLE statement will establish a referential constraint?
    a. FOREIGN KEY
    b. CONSTRAIN
    c. PRIMARY KEY
    d. ALTER

    Competency: Table Relationship

18. A(n) ____ is an indirect method of referencing a table, nickname, or view so that an SQL statement can be independent of the qualified name of that table or view.
    a. alias
    b. shortcut
    c. link
    d. crossjoin

    Competency: Table Relationship

19. To create a report in Access you create a new object based on a:
    a. cell
    b. table
    c. row
    d. column

    Competency: Reports and Forms

20. A _____ organizes or categorizes the records by a particular field in a report.
    a. interval
    b. footer
    c. group
    d. header

    Competency: Reports and Forms

21. The report page _____ section prints at the top of every page.
    a. header
    b. title
    c. info
    d. topper

    Competency: Reports and Forms

22. The _____ prints at the top of every page.
    a. detail section
    b. report header
    c. page header
    d. group header

    Competency: Reports and Forms

23. The _____ prints at the start of each group.
    a. detail section
    b. report header
    c. group header
    d. page header

    Competency: Reports and Forms

24. You can create simple reports by using the report:
    a. wizard
    b. assistant
    c. template
    d. easycreator

    Competency: Reports and Forms

25. To use Autoform in Access 2007, select _____ from the ribbon with your table highlighted.
    a. autoform
    b. split form
    c. Form
    d. Form design

    Competency: Form Development

26. _____ in a multiple-table query are linked by common fields.
    a. Primary keys
    b. Tables
    c. Reports
    d. Forms

    Competency: Form Development

27. You can resize a _____ in a form header or form footer by repositioning the selection handles.
    a. summary
    b. group
    c. label
    d. record

    Competency: Form Development

28. To begin using the form you create, you must switch to _____ view.
    a. layout
    b. datasheet
    c. design
    d. form

    Competency: Form Development

29. The _____ allows you to easily position items on the form.
    a. ruler
    b. alignment
    c. auto add
    d. snap to grid

    Competency: Form Development

30. A(n) _____ is a form that is inserted into another form.
    a. subform
    b. child form
    c. form include
    d. embedded form

    Competency: Form Development

DATABASE DESIGN & APPLICATIONS SAMPLE PRODUCTION TEST

General Information
You have been asked to create a database for a company that tracks Academy Awards, *The We Track Movies Corporation.* The company has the movie title, actor, year, score, and votes tallied for many movies stored in their database.

JOB 1: Create a Database from Design

You are to create a database for *The We Track Movies Corporation* based on the information provided below:

1. Decide on the design of each of the tables so that you produce a proper design that will reduce data redundancy. Choose an appropriate primary key field for each table. If a primary key field is **not** readily apparent from the information provided, you should create an appropriate primary key field.
2. Relationships should ensure referential integrity through cascading rules.
3. The data should be formatted appropriately to where it is displayed as below and there is **no** data loss.
4. Create your tables from the data below.

Movie Title	Actor	Year	Score	Votes
Almost Famous	Kate Hudson	2000	8.6	3639
Almost Famous	Billy Crudup	2000	8.6	3639
Almost Famous	Anna Paquin	2000	8.6	3639
American Beauty	Scott Bakula	1999	8.8	32547
American Beauty	Kevin Spacey	1999	8.8	32547
American Beauty	Annette Bening	1999	8.8	32547
American Beauty	Allison Janney	1999	8.8	32547
Pulp Fiction	Samuel L. Jackson	1994	8.6	43993
Pulp Fiction	Bruce Willis	1994	8.6	43993
Pulp Fiction	Amanda Plummer	1994	8.6	43993
Pulp Fiction	Christopher Walken	1994	8.6	43993
Pulp Fiction	John Travolta	1994	8.6	43993
Pulp Fiction	Harvey Keitel	1994	8.6	43993
Pulp Fiction	Eric Stoltz	1994	8.6	43993
Schindler's List	Liam Neeson	1993	8.8	34251
Shawshank Redemption, The	Bob Gunton	1994	9	44974
Shawshank Redemption, The	Mark Rolston	1994	9	44974
Shawshank Redemption, The	Morgan Freeman	1994	9	44974
Usual Suspects, The	Chazz Palminteri	1995	8.7	35027
Usual Suspects, The	Kevin Spacey	1995	8.7	35027
Usual Suspects, The	Benicio Del Toro	1995	8.7	35027

Print Job 1: Table definition for each table—movies, actors, casting

JOB 2: Populate Database with Data

The data shown in Job 1 should be entered into each of the tables created in Job 2.

Print Job 2-A: Movies Table
Print Job 2-B: Actors Table

JOB 3: Design Database for New Requirements

Create a new table named VoteScore which displays the number of votes that a movie got as a ratio to the number of actors who won in the format votes/number of actors.

Print Job 3: VoteScore Table

JOB 4: Database Relationships
Create all appropriate relationships and enforce referential integrity.

Print Job 4: Database relationships

JOB 5: Simple Query

Create and save a query that shows the title of each movie, and the year it was released.

Print Job 5: Query definition or SQL syntax

JOB 6: Criteria-based Query

Create and save a query that shows only movies released in 1994.

Print Job 6-A: Query definition or SQL syntax
Print Job 6-B: Query results

JOB 7: Multi-table Query

Create and save a query that shows the title of each movie, the actors, the year, and score of the movie.

Print Job 7-A: Query definition or SQL syntax
Print Job 7-B: Query results

JOB 8: Calculating Query

Create a query which shows a list of movies which have a vote/score ratio of at least 1000.

Print Job 8-A: Query definition or SQL syntax
Print Job 8-B: Query results

JOB 9: Multi-table Calculating Query

Create a query which shows a list of actors who have had at least two awards.

Print Job 9: Calculating Query

JOB 10: Report Building

Create and save a report from the query results in Job 9. Name the report Gold Star Actors. List the actor name, the movie, and the year released.

Print Job 10: Criteria-based report

Database Design & Applications Answer Key

1) C	11) B	21) A
2) C	12) C	22) C
3) B	13) D	23) C
4) D	14) C	24) A
5) D	15) D	25) C
6) A	16) D	26) B
7) B	17) A	27) C
8) C	18) A	28) D
9) B	19) B	29) D
10) A	20) C	30) A

Desktop Publishing Answer Key

1) B	11) D	21) A
2) C	12) B	22) C
3) B	13) A	23) B
4) B	14) D	24) B
5) D	15) D	25) C
6) A	16) C	26) A
7) A	17) D	27) B
8) A	18) C	28) A
9) A	19) D	29) D
10) B	20) B	30) D

Economics Answer Key

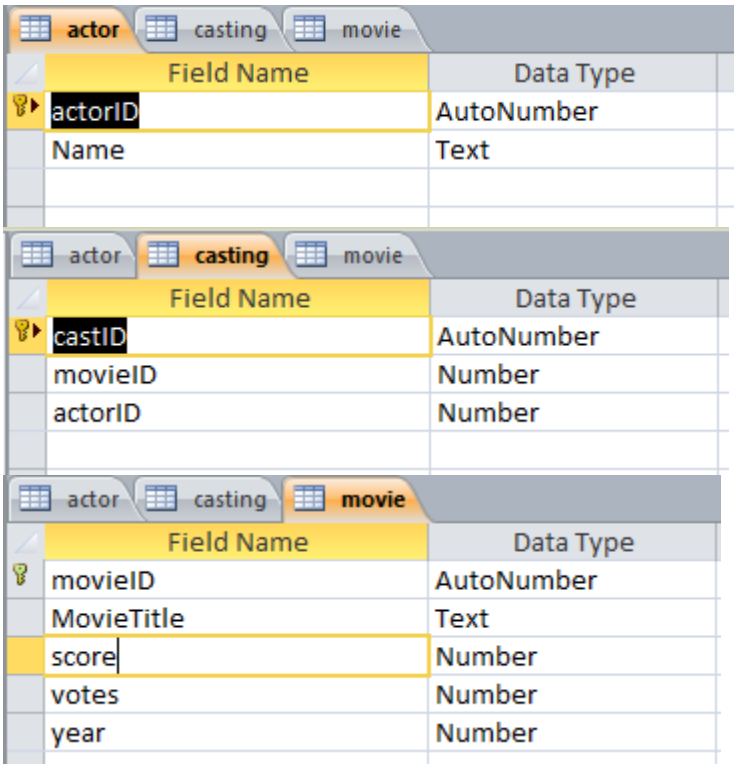
1) A	11) C	21) A
2) C	12) C	22) A
3) A	13) D	23) D
4) A	14) B	24) C
5) B	15) A	25) A
6) B	16) A	26) A
7) C	17) D	27) B
8) B	18) C	28) B
9) A	19) A	29) A
10) C	20) A	30) C

Entrepreneurship Answer Key

1) D	11) D	21) D
2) C	12) D	22) A
3) A	13) C	23) D
4) A	14) D	24) A
5) D	15) B	25) C
6) A	16) B	26) D
7) D	17) D	27) A
8) A	18) B	28) C
9) B	19) D	29) B
10) D	20) A	30) A

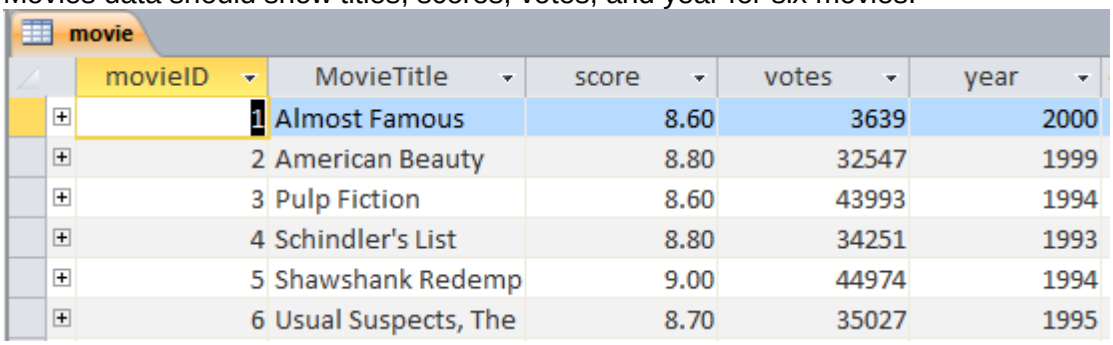
JOB 1: Create a Database from Design

Recommended Answer JOB 1: There should be three tables. The example answer below has tables for movie, actor, and casting which are expected though there may be some variation in how students name tables and fields.



JOB 2: Populate Database with Data

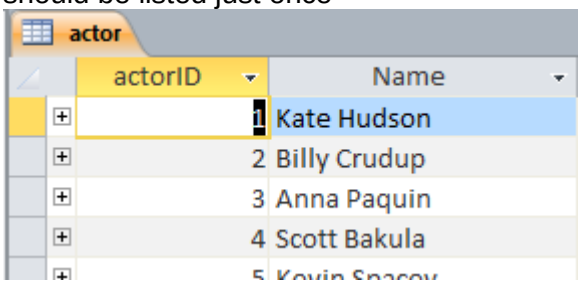
Movies data should show titles, scores, votes, and year for six movies.



movie

movieID	MovieTitle	score	votes	year
1	Almost Famous	8.60	3639	2000
2	American Beauty	8.80	32547	1999
3	Pulp Fiction	8.60	43993	1994
4	Schindler's List	8.80	34251	1993
5	Shawshank Redemp	9.00	44974	1994
6	Usual Suspects, The	8.70	35027	1995

Actors data should show names for 20 actors (something like the example); Kevin Spacey should be listed just once

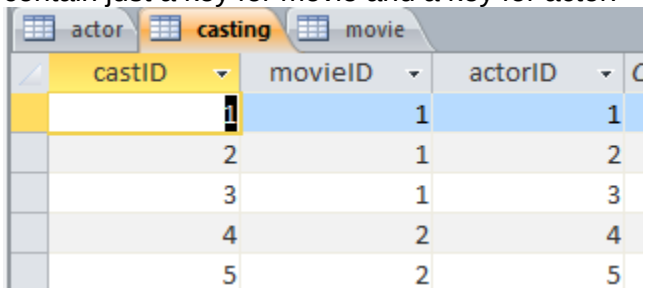


actor

actorID	Name
1	Kate Hudson
2	Billy Crudup
3	Anna Paquin
4	Scott Bakula
5	Kevin Spacey

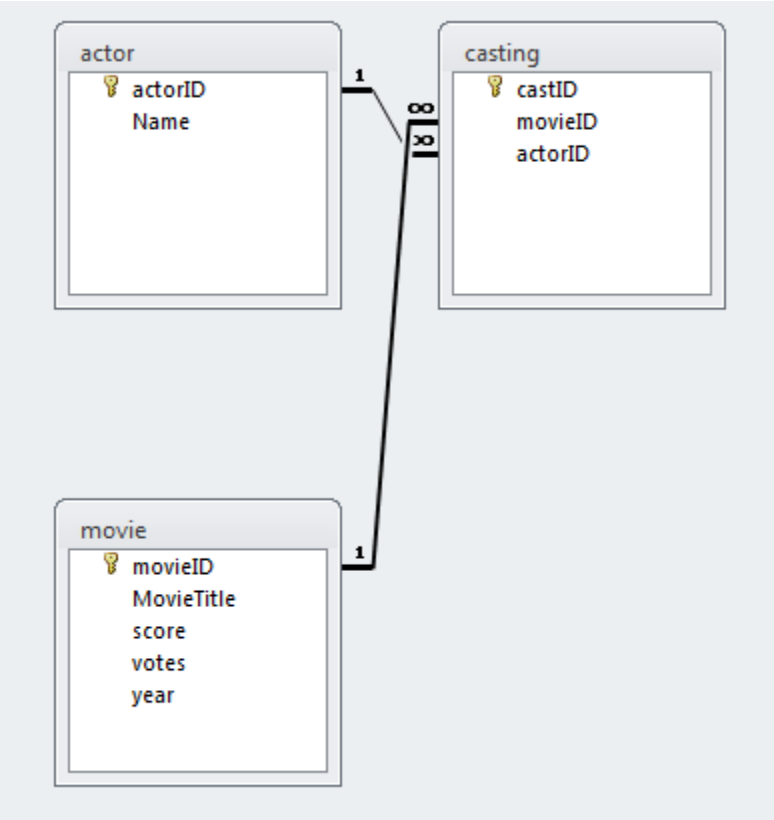
JOB 3: Vote Score Table & Database Requirements

Casting data should show 21 castings (something like the example) but each casting should contain just a key for movie and a key for actor.

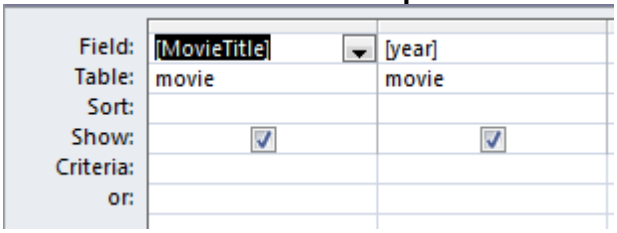


actor | casting | movie

castID	movieID	actorID
1	1	1
2	1	2
3	1	3
4	2	4
5	2	5



JOB 4: Database Relationships



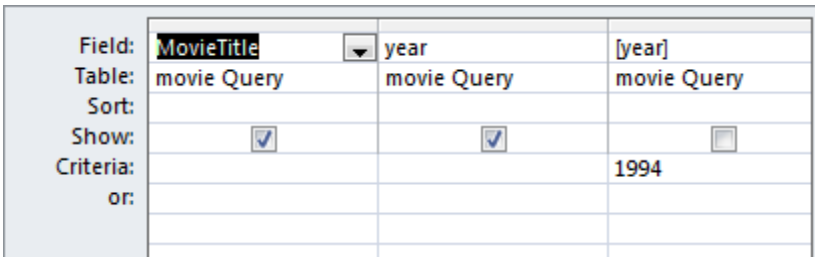
JOB 5: Query Movie and Year Released

```
SELECT movie.[MovieTitle], movie.[year]
FROM movie;
```

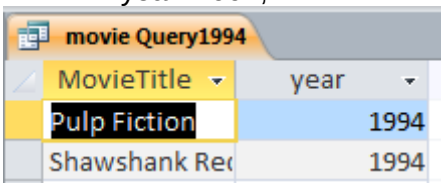
movie Query

MovieTitle	year
Almost Famous	2000
American Beauty	1999
Pulp Fiction	1994
Schindler's List	1993
Shawshank Redemption, The	1994
Usual Suspects, The	1995

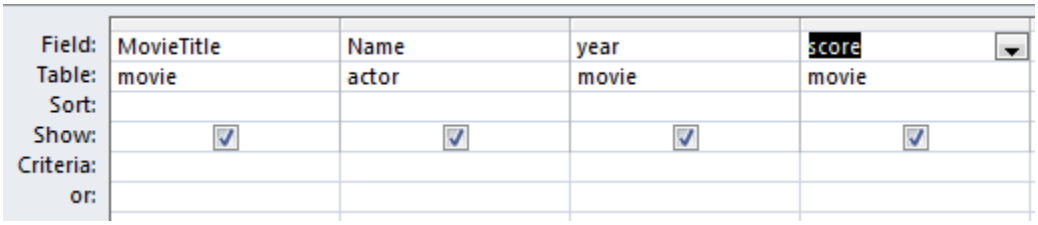
JOB 6: Simple Query—Movies Released in 1994




```
SELECT [movie Query].[MovieTitle], [movie Query].[year]
FROM [movie Query]
WHERE year=1994;
```



JOB 7: Criteria-based Query

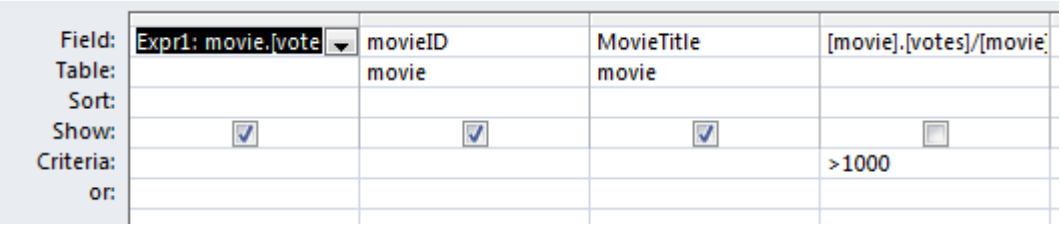


Field:	MovieTitle	Name	year	score
Table:	movie	actor	movie	movie
Sort:				
Show:	☑	☑	☑	☑
Criteria:				
or:				

SELECT movie.MovieTitle, actor.Name, movie.year, movie.score
FROM movie INNER JOIN (actor INNER JOIN casting ON actor.actorID = casting.actorID) ON movie.movieID = casting.movieID;

MovieTitle	Name	year	score
Almost Famous	Kate Hudson	2000	8.60
Almost Famous	Billy Crudup	2000	8.60
Almost Famous	Anna Paquin	2000	8.60
American Beauty	Scott Bakula	1999	8.80
American Beauty	Kevin Spacey	1999	8.80
American Beauty	Annette Bening	1999	8.80
American Beauty	Allison Janney	1999	8.80
Pulp Fiction	Samuel L. Jackson	1994	8.60
Pulp Fiction	Bruce Willis	1994	8.60
Pulp Fiction	Amanda Plummer	1994	8.60
Pulp Fiction	Christopher Walkin	1994	8.60
Pulp Fiction	John Travolta	1994	8.60
Pulp Fiction	Harvey Keitel	1994	8.60
Pulp Fiction	Eric Stoltz	1994	8.60
Schindler's List	Liam Neeson	1993	8.80
Shawshank Redemption, The	Bob Gunton	1994	9.00
Shawshank Redemption, The	Mark Rolston	1994	9.00
Shawshank Redemption, The	Morgan Freeman	1994	9.00
Usual Suspects, The	Chazz Palminteri	1995	8.70
Usual Suspects, The	Kevin Spacey	1995	8.70
Usual Suspects, The	Benicio Del Toro	1995	8.70
*			

JOB 8: Multi-table Query



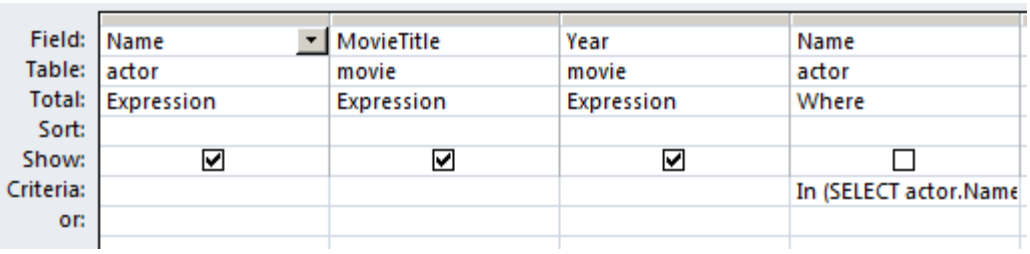
Field:	Expr1: movie.[vote	movieID	MovieTitle	[movie].[votes]/[movie
Table:		movie	movie	
Sort:				
Show:	☑	☑	☑	☐
Criteria:				>1000
or:				

```
SELECT movie.[votes]/movie.[score] AS Expr1, movie.movieID, movie.MovieTitle
FROM movie
WHERE (((movie].[votes]/[movie].[score])>1000));
```

Relationships | Job 8 Query

Expr1000	movieID	MovieTitle
3698.52272727273	2	American Beauty
5115.46511627907	3	Pulp Fiction
3892.15909090909	4	Schindler's List
4997.11111111111	5	Shawshank Redemp
4026.09195402299	6	Usual Suspects, The

JOB 9: Calculating Query



Field:	Name	MovieTitle	Year	Name
Table:	actor	movie	movie	actor
Total:	Expression	Expression	Expression	Where
Sort:				
Show:	☑	☑	☑	☐
Criteria:				In (SELECT actor.Name
or:				

```
SELECT actor.Name, movie.MovieTitle, movie.Year
FROM movie INNER JOIN (actor INNER JOIN casting ON actor.actorID = casting.actorID) ON
movie.movieID = casting.movieID
WHERE actor.Name IN
(SELECT actor.Name
FROM actor INNER JOIN casting ON actor.actorID = casting.actorID
GROUP BY actor.Name
HAVING (((Count(actor.Name))>=2));)
```

movie Query

Name
Kevin Spacey

OR

Query1 | Job 9 Query

Name	MovieTitle	Year
Kevin Spacey	American Beau	1999
Kevin Spacey	Usual Suspects	1995

JOB 10: Multi-table Calculating Query

Simply an example … format may vary but details should be as follows.

Gold Star Actors

Name	MovieTitle	Year
Kevin Spacey	American Beauty	1999
Kevin Spacey	Usual Suspects, The	1995