

# Business Data Management [BDM]

Spring 2020

## Homework Assignment #5: Final Assignment

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## Part 1: Identify key components of the data model (60 points).

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### 1) Entities and attributes

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- arts: id, item\_code, title, type, size
- artists: artist\_id, name, date\_of\_birth, date\_of\_death
- artist\_art: artist\_id, art\_id
- museums: id, location\_in\_museum
- traveling\_shows: id, city, traveling\_show\_start\_date, traveling\_show\_end\_date
- another\_galleries: id, name, city, loan\_start\_date, loan\_end\_date
- art\_presence: id, art\_id, art\_presence( 'display\_at\_the\_museum', 'held\_in\_storage', 'traveling\_show', 'loan\_to\_another\_gallery' ), museum\_id, traveling\_show\_id, another\_gallery\_id

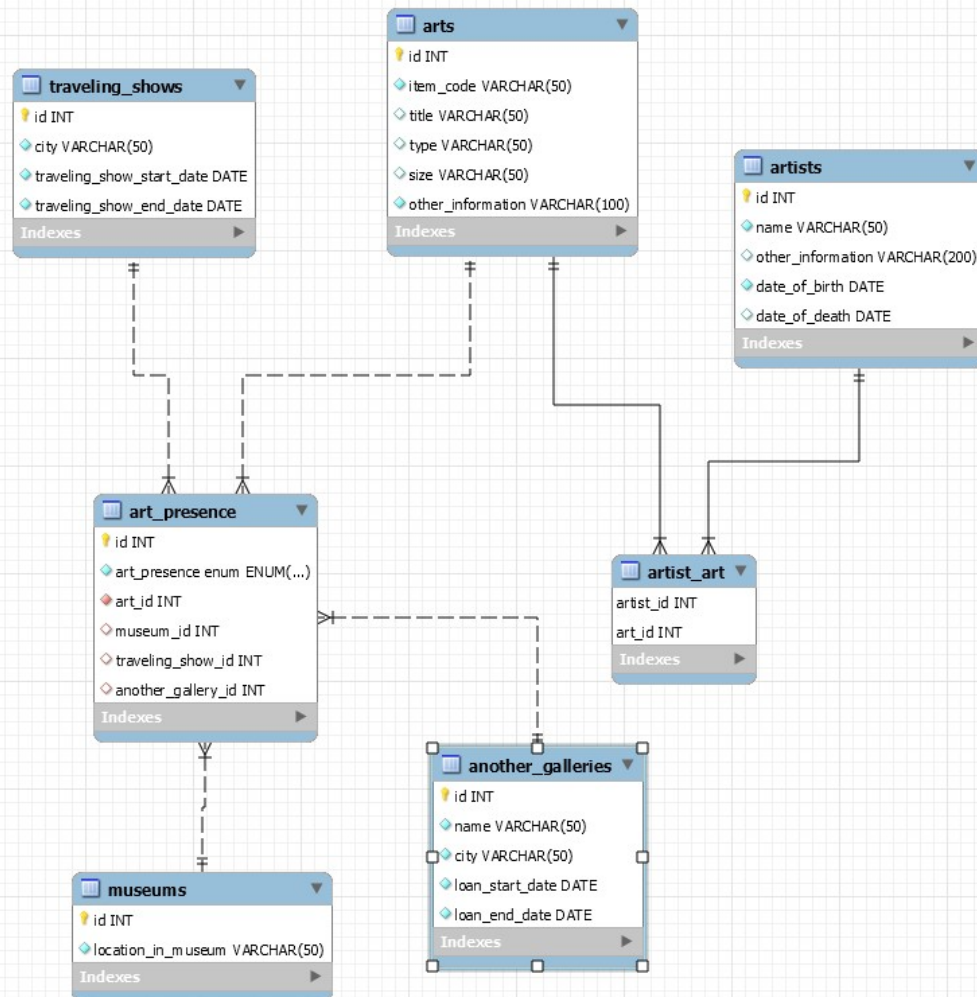
### 2) Identify relationships including the degree and cardinality of each relationship.

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a. arts & artists this relationship is a degree of 2 (binary). The cardinality is Many-to-Many between arts & artists . One arts can belongs to a artist and artist can have multiple art work. In some case, one cart could developed by list of artist. we use artist\_art pivot table

b. art\_presence, artists, museums, traveling\_shows, another\_galleries : this relationship is a degree of N-ary (n degree). The cardinality is (Mandatory)One-to-(Optional)One from arts to art\_presence. Others cardinalities are (Optional)One-to-(Optional)One from art\_presence to museums , traveling\_shows & another\_galleries .

## Part 2: Create a [logical] database schema based on your answers in Part 1 using MySQL Workbench (40 points).



## Part 3: Develop a [physical] database on your MySQL server based on the database schema created in Part 2, and then insert data into each table. (50%)

### arts Table

	id	item_code	title	type	size	other_information
▶	1	39473984	The Foetus in the Womb	Painting	50inch X 70inch	
	2	534534	Rembrandt – Self-Portrait with Two Circles	Painting	50inch X 70inch	
	3	345345345	Chauvet cave paintings	Painting	50inch X 70inch	
	4	3455345	One: Number	Painting	50inch X 70inch	
	5	533453	Las Meninas	Painting	50inch X 70inch	
	6	2334545	Guernica	Painting	50inch X 70inch	
	7	765765	Prisoners	Painting	50inch X 70inch	
	8	4564564	Parthenon Sculptures	Painting	50inch X 70inch	
	9	456645	Mont Sainte-Victoire	Painting	50inch X 70inch	
	10	5646543	Mona Lisa	Painting	50inch X 70inch	
	11	64534354	The Starry Night	Painting	50inch X 70inch	
	12	46346	The Scream	Painting	50inch X 70inch	
	13	346456	The Night Watch	Painting	50inch X 70inch	
	14	77745645	The Arnolfini Portrait	Painting	50inch X 70inch	
	15	45645453	The Girl With A Pearl Earring	Painting	50inch X 70inch	
	16	4564363	Impression, Sunrise	Painting	50inch X 70inch	
	17	46345634	The Creation Of Adam	Painting	50inch X 70inch	
	18	4643634	Luncheon Of The Boating Party	Painting	50inch X 70inch	
	19	364543	The Grand Odalisque	Painting	50inch X 70inch	
	20	436436	Napoleon Crossing The Alps	Painting	50inch X 70inch	
	21	4564536	The Birth Of Venus	Painting	50inch X 70inch	
	22	46435563	The Liberty Leading The People	Painting	50inch X 70inch	
*	NULL	NULL	NULL	NULL	NULL	NULL

### artists Table

	id	name	other_information	date_of_birth	date_of_dea
▶	1	John Smith	NULL	1950-05-10	NULL
	2	John doe	NULL	1960-05-10	NULL
	3	John man	NULL	1970-05-10	NULL
	4	Kabir Smith	NULL	1980-05-10	NULL
	5	jane Smith	NULL	1959-05-10	NULL
	6	Rabby Smith	NULL	1990-05-10	NULL
	7	Panseng Smith	NULL	1988-05-10	NULL
	8	Gadha Smith	NULL	1930-05-10	NULL
	9	bolod smith	NULL	1980-05-20	NULL

### artist\_art Table

	artist_id	art_id
▶	1	1
	1	2
	1	3
	1	4
	2	5
	1	6
	1	7
	2	8
	3	9
	1	10
	3	11
	1	12
	4	13
	1	14
	4	15

## museums Table

	id	location_in_museum
▶	1	2nd floor center
	2	1st floor center
	3	3rd floor center
	4	4th floor center
	5	5h floor center
	6	2nd floor left corner
	7	1st floor left corner
	8	3rd floor left corner
	9	4th floor left corner
	10	5h floor left corner
	11	2nd floor right corner
	12	1st floor right corner
	13	3rd floor right corner
	14	4th floor right corner
	15	5h floor right corner

## traveling\_shows Table

	id	city	traveling_show_start_date	traveling_show_end_date
▶	1	Seoul	2020-08-09	2020-12-30
	2	Busan	2020-08-09	2020-12-30
	3	Seoul	2020-08-09	2020-12-30
	4	Daegu	2020-08-09	2020-12-30
	5	Seoul	2020-08-09	2020-12-30

## another\_galleries Table

	id	name	city	loan_start_date	loan_end_date
▶	1	Gallery 1	Seoul	2020-08-09	2020-12-30
	2	Gallery 2	Busan	2020-08-09	2020-12-30
	3	Gallery 3	Seoul	2020-08-09	2020-12-30
	4	Gallery 4	Daegu	2020-08-09	2020-12-30
	5	Gallery 5	Seoul	2020-08-09	2020-12-30

## art\_presence Table

	id	art_presence	art_id	museum_id	traveling_show_id	another_gallery_id
▶	1	display_at_the_museum	1	1	NULL	NULL
	2	display_at_the_museum	2	2	NULL	NULL
	3	display_at_the_museum	3	3	NULL	NULL
	4	display_at_the_museum	4	4	NULL	NULL
	5	traveling_show	5	NULL	1	NULL
	6	traveling_show	6	NULL	2	NULL
	7	traveling_show	7	NULL	3	NULL
	8	loan_to_another_gallery	8	NULL	NULL	1
	9	loan_to_another_gallery	9	NULL	NULL	2
	10	loan_to_another_gallery	10	NULL	NULL	3

## Part 4: Prepare and run SELECT statements for the following queries (30%)

1) List titles and types of artworks that were developed by 'John Smith'.

Sql query

```
select arts.title as title, arts.type as type
from artist_art
```

```

join artists on artists.id = artist_art.artist_id
join arts on arts.id = artist_art.art_id
where artists.name = 'John Smith';

```

### Output Result

	title	type
▶	The Foetus in the Womb	Painting
	Rembrandt – Self-Portrait with Two Circles	Painting
	Chauvet cave paintings	Painting
	One: Number	Painting

## 2) List titles and types of artworks that were developed by ‘John Smith’ and participated in a show held in ‘Seoul’.

### Sql query

```

select arts.title as title, arts.type as type
from artist_art
join artists on artists.id = artist_art.artist_id
join arts on arts.id = artist_art.art_id
join art_presence on art_presence.art_id = artist_art.art_id
join traveling_shows on traveling_shows.id = art_presence.traveling_show_id
where (
    artists.name = 'John Smith' and
    traveling_shows.city = 'Seoul'
);

```

### Output Result

	title	type
▶	Prisoners	Painting

## 3) List artwork names and names of galleries where artworks developed by ‘John Smith’ are loaned.

### Sql query

```

select arts.title as artwork_name, another_galleries.name as gallery_name
from artist_art
join artists on artists.id = artist_art.artist_id
join arts on arts.id = artist_art.art_id
join art_presence on art_presence.art_id = artist_art.art_id
join another_galleries on another_galleries.id = art_presence.another_gallery_id
where
    artists.name = 'John Smith';

```

### Output Result

	artwork_name	gallery_name
▶	Mona Lisa	Gallery 3

## 4) Count the number of artworks developed by ‘John Smith’. (Note: use COUNT() to count rows.)

### Sql query

```

select artists.name as artist_name, count(artists.name) as number_of_art_work
from artist_art
join artists on artists.id = artist_art.artist_id
join arts on arts.id = artist_art.art_id
where artists.name = 'John Smith'
GROUP BY 1;

```

#### Output Result

	artist_name	number_of_art_work
▶	John Smith	9

### 5) List artist names and the number of artworks developed by each artist.

#### Sql query

```

select artists.name as artist_name, count(*) as number_of_art_work
from artist_art
join artists on artists.id = artist_art.artist_id
join arts on arts.id = artist_art.art_id
GROUP BY 1;

```

#### Output Result

	artist_name	number_of_art_work
▶	John Smith	9
	John doe	2
	John man	2
	Kabir Smith	2

### 6) Create your own query that involves the table(s) transformed from the entity or entities that you added in

#### Sql query

```

select
    arts.title as art_title,
    arts.type as art_type,
    artists.name as artist_name,
    art_presence.art_presence as art_presence
from artist_art
left join artists on artists.id = artist_art.artist_id
left join arts on arts.id = artist_art.art_id
left join art_presence on art_presence.art_id = artist_art.art_id
limit 10;

```

#### Output Result

	art_title	art_type	artist_name	art_presence
▶	The Foetus in the Womb	Painting	John Smith	display_at_the_museum
	Rembrandt – Self-Portrait with Two Circles	Painting	John Smith	display_at_the_museum
	Chauvet cave paintings	Painting	John Smith	display_at_the_museum
	One: Number	Painting	John Smith	display_at_the_museum
	Las Meninas	Painting	John doe	traveling_show
	Guernica	Painting	John Smith	traveling_show
	Prisoners	Painting	John Smith	traveling_show
	Parthenon Sculptures	Painting	John doe	loan_to_another_gallery
	Mont Sainte-Victoire	Painting	John man	loan_to_another_gallery
	Mona Lisa	Painting	John Smith	loan_to_another_gallery