



# Advanced Database Project

## Phase#1

### Team 16

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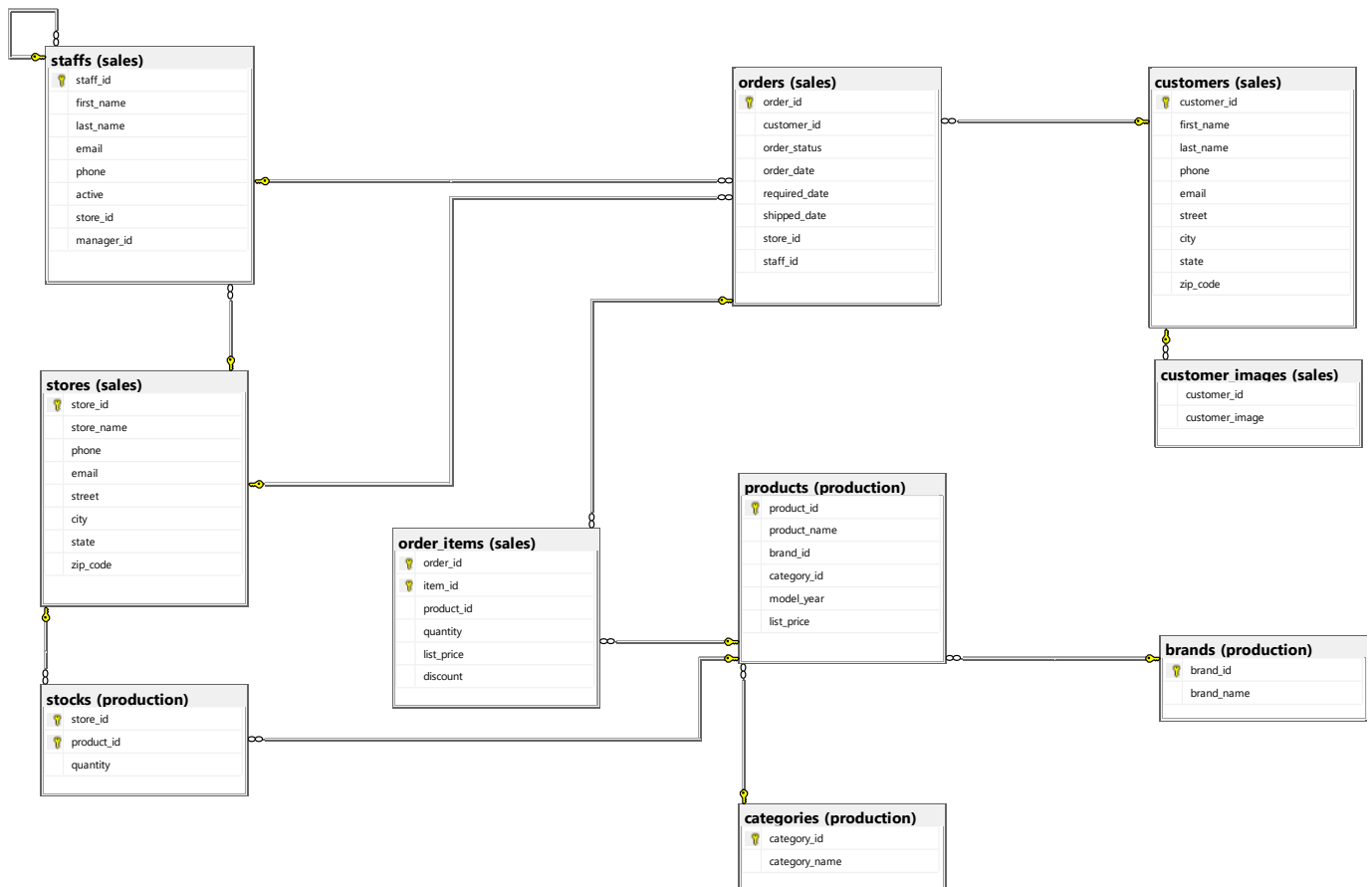
### Submitted to:

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# System characteristics

Operating System	Windows 10 Pro 64-bit
Processor	Intel®Core™ i7-6500U CPU @ 2.50 GHZ
Ram	8 GB
Disk	500GB

## ER Diagram



# Tables Analysis


Table Name	# Records	Reserved (KB)	Data (KB)	Indexes (KB)	Unused (KB)
production.brands	1,250,000	80,984	30,048	136	50,800
production.categories	1,250,000	80,984	29,800	136	51,048
production.products	1,750,000	114,512	80,664	320	33,528
production.stocks	1,750,000	113,288	56,912	152	56,224
sales.customer_images	1,250,000	10,041,008	10,040,872	24	112
sales.customers	2,000,000	525,712	457,816	1,720	66,176
sales.order_items	1,750,000	128,200	100,624	480	27,096
sales.orders	1,750,000	113,880	60,608	248	53,024
sales.staffs	1,250,000	297,376	115,192	92,616	89,568
sales.stores	978,151	256,976	214,872	816	41,288

[production].[brands]

### Properties

Property	Value
Collation	Arabic_CI_AS
Row Count (~)	1250000

### Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability	Identity
	brand_id	int	4	NOT NULL	1 - 1
	brand_name	varchar(255)	255	NOT NULL	

### Indexes


Key	Name	Key Columns	Unique
	PK_brands_5E5A8E278ADE00C2	brand_id	True

## [production].[categories]

### Properties

Property	Value
Collation	Arabic_CI_AS
Row Count (~)	1250000

### Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability	Identity
	category_id	int	4	NOT NULL	1 - 1
	category_name	varchar(255)	255	NOT NULL	

### Indexes




Key	Name	Key Columns	Unique
	PK_categori_D54EE9B49FF1769E	category_id	True

## [production].[products]

### Properties

Property	Value
Collation	Arabic_CI_AS
Row Count (~)	1750000

### Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability	Identity
	product_id	int	4	NOT NULL	1 - 1
	product_name	varchar(255)	255	NOT NULL	
	brand_id	int	4	NOT NULL	
	category_id	int	4	NOT NULL	
	model_year	smallint	2	NOT NULL	
	list_price	decimal(10,2)	9	NOT NULL	

### Indexes

Key	Name	Key Columns	Unique
	PK_products_47027DF5B1341017	product_id	True

### Foreign Keys





Name	Update	Delete	Columns
FK_products_brand__3C69FB99	Cascade	Cascade	brand_id->[production].[brands].[brand_id]
FK_products_catego_3B75D760	Cascade	Cascade	category_id->[production].[categories].[category_id]

## [production].[stocks]

### Properties

Property	Value
Row Count (~)	1750000

### Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability
 	store_id	int	4	NOT NULL
 	product_id	int	4	NOT NULL
	quantity	int	4	NULL allowed

### Indexes

Key	Name	Key Columns	Unique
 	PK_stocks_E68284D397FD072E	store_id, product_id	True

### Foreign Keys


Name	Update	Delete	Columns
FK_stocks_product__52593CB8	Cascade	Cascade	product_id->[production].[products].[product_id]
FK_stocks_store_id_5165187F	Cascade	Cascade	store_id->[sales].[stores].[store_id]

[sales].[customer\_images]

#### Properties

Property	Value
Heap	True
Row Count (~)	1250000

#### Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability
 FK	customer_id	int	4	NULL allowed
	customer_image	image	max	NOT NULL

#### Foreign Keys

Name	Update	Delete	Columns
FK_customer__custo_5441852 A	Cascade	Cascade	customer_id->[sales].[customers].[customer_id]




[sales].[customers]

## Properties

Property	Value
Collation	Arabic_CI_AS
Row Count (~)	2000000

## Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability	Identity
	customer_id	int	4	NOT NULL	1 - 1
	first_name	varchar(255)	255	NOT NULL	
	last_name	varchar(255)	255	NOT NULL	
	phone	varchar(25)	25	NULL allowed	
	email	varchar(255)	255	NOT NULL	
	street	varchar(255)	255	NULL allowed	
	city	varchar(50)	50	NULL allowed	
	state	varchar(25)	25	NULL allowed	
	zip_code	varchar(5)	5	NULL allowed	

## Indexes




Key	Name	Key Columns	Unique
	PK_customer_CD65CB8567E6237E	customer_id	True

## [sales].[order\_items]

### Properties

Property	Value
Row Count (~)	1750000

### Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability	Default
	order_id	int	4	NOT NULL	
	item_id	int	4	NOT NULL	
	product_id	int	4	NOT NULL	
	quantity	int	4	NOT NULL	
	list_price	decimal(10,2)	9	NOT NULL	
	discount	decimal(4,2)	5	NOT NULL	((0))

### Indexes

Key	Name	Key Columns	Unique
	PK_order_it_837942D42157409F	order_id, item_id	True

### Foreign Keys





Name	Update	Delete	Columns
FK_order_ite_produ_4E88ABD4	Cascade	Cascade	product_id->[production].[products].[product_id]
FK_order_ite_order_4D94879B	Cascade	Cascade	order_id->[sales].[orders].[order_id]

## [sales].[orders]

### Properties

Property	Value
Row Count (~)	1750000

### Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability	Identity
	order_id	int	4	NOT NULL	1 - 1
	customer_id	int	4	NULL allowed	
	order_status	tinyint	1	NOT NULL	
	order_date	date	3	NOT NULL	
	required_date	date	3	NOT NULL	
	shipped_date	date	3	NULL allowed	
	store_id	int	4	NOT NULL	
	staff_id	int	4	NOT NULL	

### Indexes

Key	Name	Key Columns	Unique
	PK_orders_4659622960E1F0CB	order_id	True

### Foreign Keys





Name	Update	Delete	Columns
FK_orders_customer_47DBAE45	Cascade	Cascade	customer_id->[sales].[customers].[customer_id]
FK_orders_staff_id_49C3F6B7			staff_id->[sales].[staffs].[staff_id]
FK_orders_store_id_48CFD27E	Cascade	Cascade	store_id->[sales].[stores].[store_id]

## [sales].[staffs]


### Properties

Property	Value
Collation	Arabic_CI_AS
Row Count (~)	1250000

### Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability	Identity
	staff_id	int	4	NOT NULL	1 - 1
	first_name	varchar(50)	50	NOT NULL	
	last_name	varchar(50)	50	NOT NULL	
	email	varchar(255)	255	NOT NULL	
	phone	varchar(25)	25	NULL allowed	
	active	tinyint	1	NOT NULL	
	store_id	int	4	NOT NULL	
	manager_id	int	4	NULL allowed	

### Indexes

Key	Name	Key Columns	Unique
	PK_staffs_1963DD9C7A4A3C86	staff_id	True
	UQ_staffs_AB6E616435CD763B	email	True

### Foreign Keys


Name	Update	Delete	Columns
FK_staffs_manager__44FF419A			manager_id->[sales].[staffs].[staff_id]
FK_staffs_store_id_440B1D61	Cascade	Cascade	store_id->[sales].[stores].[store_id]

[sales].[stores]

## Properties

Property	Value
Collation	Arabic_CI_AS
Row Count (~)	978151

## Columns

Key	Name	Data Type	Max Length (Bytes)	Nullability	Identity
	store_id	int	4	NOT NULL	1 - 1
	store_name	varchar(255)	255	NOT NULL	
	phone	varchar(25)	25	NULL allowed	
	email	varchar(255)	255	NULL allowed	
	street	varchar(255)	255	NULL allowed	
	city	varchar(255)	255	NULL allowed	
	state	varchar(10)	10	NULL allowed	
	zip_code	varchar(5)	5	NULL allowed	

## Indexes

Key	Name	Key Columns	Unique
	PK_stores_A2F2A30CB0EFA412	store_id	True

# MongoDB Schema

Production.brands	{ "_id" : ObjectId("5dec9fd6d280a41fa875be63"), "brand_id" : 2, "brand_name" : "Dennis91" }
Production.categories	{ "_id" : ObjectId("5dec9fbbd280a41fa86261be"), "category_id" : 1, "category_name" : "Confections" }
Production.products	{ "_id" : ObjectId("5dec9f80d280a41fa846ff96"), "product_id" : 1, "product_name" : "Thrubanower", "brand_id" : 727, "category_id" : 727, "model_year" : 1989, "list_price" : 2661.48 }
Production.stocks	{ "_id" : ObjectId("5dec9f56d280a41fa82b9d6e"), "store_id" : 1, "product_id" : 1, "quantity" : 8285 }
Sales.customers	{ "_id" : ObjectId("5dec9ec9d280a41fa80a5f46"), "customer_id" : 1, "first_name" : "Jeanine", "last_name" : "Abbott", "phone" : "060-357-0479", "email" : "hjgqk.xthwdgqbuw@qyzcwfj.wtwdul.net", "street" : "L2G2A7K041MTRCP7HEQS75FZU864J8E", "city" : "Jersey", "state" : "Hawaii", "zip_code" : "41049" }
Sales.customer_images	{ "_id" : ObjectId("5dec9ed5d280a41fa80e9c6e"), "customer_id" : 62927, "customer_image" : new BinData(0, " QgAAAAAAAAAA") }

<b>Sales.orders</b>	<pre>{   "_id" : ObjectId("5dec9e6fd280a41fa8d6229e"),   "order_id" : 1,   "customer_id" : 818,   "order_status" : 132,   "order_date" : ISODate("1955-07-09T21:00:00Z"),   "required_date" : ISODate("1989-12-30T22:00:00Z"),   "shipped_date" : ISODate("1958-06-24T21:00:00Z"),   "store_id" : 727,   "staff_id" : 717834 }</pre>
<b>Sales.order_items</b>	<pre>{   "_id" : ObjectId("5dec9e79d280a41fa8d8bbda"),   "order_id" : 1,   "item_id" : 836,   "product_id" : 1,   "quantity" : 2594,   "list_price" : 87992.8800000000005,   "discount" : 50.039999999999999 }</pre>
<b>Sales.stores</b>	<pre>{   "_id" : ObjectId("5dec9e40d280a41fa8b6148f"),   "store_id" : 1,   "store_name" : "Kathy38",   "phone" : "500-093-0513",   "email" : "vthl4@ewfr-m.org",   "street" : "4FIWH2LEWTQ1CG6QUXC8B5QYPYQ51ZJ4D",   "city" : "New York",   "state" : "Nebraska",   "zip_code" : "05125" }</pre>
<b>Sales.staffs</b>	<pre>{   "_id" : ObjectId("5dec9e3cd280a41fa8b52903"),   "staff_id" : 1,   "first_name" : "Keri",   "last_name" : "Moody",   "email" : "nprequulk.yhkavqseju@qoxsbvd.vcffj.org",   "phone" : "6691292949",   "active" : 11,   "store_id" : 727,   "manager_id" : 1 }</pre>