

## DBMS Assignment 1

### Explaining SQL Queries:

1.

- 1.1. This query fetches all customers living in Tel Aviv-Jaffa and counts from how many countries they have rented movies from.

Let's explain:

```
WHERE r.inventory_id = i.inventory_id  
AND i.store_id = s.store_id  
AND r.customer_id = c.customer_id
```

this links a specific rental, to a specific customer and store.

```
AND s.address_id = sa.address_id  
AND sa.city_id = sc.city_id  
AND sc.country_id = country.country_id
```

this links a stores address to it's country.

```
AND ca.address_id = c.address_id  
AND ca.city_id = cc.city_id  
AND cc.city = 'Tel Aviv-Jaffa'
```

this links a customer's address to their city, and only keeps those who live in Tel Aviv-Jaffa.

Lastly we group by a specific customer and count the distinct countries.

- 1.2. Let's break this down piece by piece:

```
WHERE r1.inventory_id = i1.inventory_id  
AND r2.inventory_id = i2.inventory_id  
AND r1.rental_id != r2.rental_id
```

this links 2 different rentals of the same movie.

```
AND YEAR(r1.rental_date) = '2005'  
AND YEAR(r2.rental_date) = '2005'
```

this picks only rentals that occurred in 2005.

```
AND f.film_id = i1.film_id  
AND f.film_id = fa.film_id  
AND fa.actor_id = a.actor_id  
AND a.first_name = 'TOM'
```

this filters all movies that doesn't have an actor whose first name is 'TOM'.

```
AND i1.film_id = i2.film_id
```

finally, this links it to the rentals. So we get: all pairs of different rentals of the same film that occurred in 2005 with an actor called 'TOM'.

Looking at the next piece we see that

```
WHERE f.film_id = i1.film_id  
AND f.film_id = i2.film_id  
AND f.film_id = i3.film_id  
AND i1.inventory_id != i2.inventory_id  
AND i1.inventory_id != i3.inventory_id  
AND i2.inventory_id != i3.inventory_id
```

picks all movies that have at least 3 rentals in the inventory. Using **EXCEPT** we essentially only choose movies with 2 rentals in inventory or less.

Now, when we **INTERSECT**, we are asking for those that appear in both tables.

So we are asking "Which films featuring an actor named Tom were rented at least twice in 2005, and have less than 3 inventory items?".

### Writing SQL Queries:

1. Since we were asked to avoid duplicates unless necessary, and by the wording of the assignment (“more than 50 films available”) I assumed we were to count DISTINCT films, and not just how many copies are available.

category	max_films
Sports	59
Animation	57

2. No assumptions were made.

fname	lname	film_count
CHRIS	BRIDGES	27
DUSTIN	TAUTOU	27
PENELOPE	MONROE	27
TOM	MIRANDA	27
AUDREY	BAILEY	27
WILLIAM	HACKMAN	27
KIRSTEN	PALTROW	27
GRETA	KEITEL	27
ALAN	DREYFUSS	27
FRED	COSTNER	27
MORGAN	HOPKINS	27
ANNE	CRONYN	27
MORGAN	WILLIAMS	27
GREG	CHAPLIN	27
JAYNE	SILVERSTONE	27
MEG	HAWKE	27
GENE	MCKELLEN	27
ELVIS	MARX	26
SEAN	WILLIAMS	26
SCARLETT	BENING	26

3. No assumptions were made.

fname	lname	num_categories
DARYL	WAHLBERG	16
EWAN	GOODING	16
GINA	DEGENERES	16
GROUCHO	DUNST	16
HARVEY	HOPE	16
IAN	TANDY	16
JUDY	DEAN	8
JULIA	FAWCETT	8
KEVIN	GARLAND	16
MICHAEL	BOLGER	16
REESE	WEST	16
SEAN	WILLIAMS	16
UMA	WOOD	16

4. “at least” was interpreted as  $\geq$  . “exceeding” was interpreted as  $>$  .

category	avg_rental_duration	film_count	num_customers
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Sports	5.1993	74	519
Foreign	5.0362	73	493
Family	5.0508	69	501
Documentary	5.0594	68	483
Animation	4.8821	66	500

5. I assumed that by “participated in the largest number of film that C has rented” meant DISTINCT films, meaning, if C rented a movie a thousand times, then it still counts as a single movie.

customer_fname	customer_lname	actor_fname	actor_lname	numrented
DARRYL	ASHCRAFT	KEVIN	GARLAND	4
ERIC	ROBERT	GREGORY	GOODING	3
FLORENCE	WOODS	GENE	MCKELLEN	3
JASON	MORRISSEY	CHRIS	DEPP	5
JORDAN	ARCHULETA	GREGORY	GOODING	3
JULIA	FLORES	JEFF	SILVERSTONE	3
KIMBERLY	LEE	RENEE	TRACY	4
LEONARD	SCHOFIELD	MERYL	GIBSON	4
LYDIA	BURKE	LAURENCE	BULLOCK	3
MICHEAL	FORMAN	MENA	HOPPER	3
PERRY	SWAFFORD	MARY	KEITEL	3
WILLIE	HOWELL	DAN	HARRIS	4
WILLIE	MARKHAM	THORA	TEMPLE	3

6. Even if no value for an actor who participated in the movie is available, the movie will be presented.

title	fname	lname
ACE GOLDFINGER	CHRIS	DEPP
AFRICAN EGG	THORA	TEMPLE
AMELIE		
HELLFIGHTERS	LAURA	BRODY
ANTHEM LUKE	OPRAH	KILMER
AUTUMN CROW	JAMES	PITT
BEAST HUNCHBACK	SUSAN	DAVIS
BEETHOVEN		
EXORCIST	BELA	WALKEN
BENEATH RUSH	VIVIEN	BASINGER
BIRD INDEPENDENCE	JAYNE	NOLTE
BIRDCAGE CASPER	RENEE	BALL
BRANNIGAN SUNRISE	KENNETH	HOFFMAN
BREAKING HOME	MORGAN	WILLIAMS
BRIGHT ENCOUNTERS	MERYL	ALLEN
BUGSY SONG	KIRSTEN	AKROYD
CARIBBEAN LIBERTY	LAURENCE	BULLOCK
CASPER DRAGONFLY	WALTER	TORN
CASUALTIES ENCINO	SUSAN	DAVIS
CHAMPION		
FLATLINERS	GENE	WILLIS
CHAPLIN LICENSE	MINNIE	KILMER
CHISUM BEHAVIOR	JULIA	FAWCETT