

# **DATABASE SYSTEMS COURSE 2021/2022**

**SESSION 10**

# SESSION 10

- **SUBQUERIES**
- CASE CLAUSE
- ROWS OUTPUT LIMITS

## Subquery in FROM clause

### MySQL/Oracle

```
SELECT ...  
FROM table1 AliasTable1 JOINTYPE JOIN  
  (SELECT Field1, Field2 AS AliasField2  
    FROM Table2  
    WHERE Field1 = ...) AliasTable2  
ON (AliasTable2.AliasField2 = AliasTable1.Field1)  
WHERE AliasTable1.Field3 = ...  
      AliasTable2.Field1 = ...
```

## Subquery in FROM clause example

### MySQL/Oracle

```
SELECT *  
FROM city INNER JOIN  
(SELECT * FROM country WHERE continent = 'Europe') country  
ON city.countrycode = country.code;
```

ID	NAME	COUNTRYCODE	DISTRICT	POPULATION	CODE	NAME_1	CONTINENT	REGION
456	London	GBR	England	7285000	GBR	United Kingdom	Europe	British Islands
457	Birmingham	GBR	England	1013000	GBR	United Kingdom	Europe	British Islands
458	Glasgow	GBR	Scotland	619680	GBR	United Kingdom	Europe	British Islands
459	Liverpool	GBR	England	461000	GBR	United Kingdom	Europe	British Islands

## Subquery in WHERE conditions

### MySQL/Oracle

```
SELECT ...  
FROM table1 JOINTYPE JOIN table2  
ON (table1.Field1 = table2.Field1)  
WHERE (Field1,Field2) IN (SELECT Field1,Field2 FROM ... WHERE ...)  
      AND (Field1,Field2) NOT IN (SELECT Field1,Field2 FROM ... WHERE ...)  
      AND EXISTS (SELECT .. FROM ... WHERE ...)  
      AND NOT EXISTS (SELECT .. FROM ... WHERE ...)
```

## Subquery in WHERE conditions example

### MySQL/Oracle

```
SELECT * FROM city
INNER JOIN country ON city.countrycode = country.code
WHERE country.region NOT IN (SELECT DISTINCT region
                              FROM country
                              WHERE UPPER(region) LIKE '%AMERICA')
```

ID *	Name *	CountryCode *	District *	Population *	Code *	Name1 *	Continent *	Region *
129	Oranjestad	ABW	—	29034	ABW	Aruba	North America	Caribbean
1	Kabul	AFG	Kabul	1780000	AFG	Afghanistan	Asia	Southern and Central Asia
2	Qandahar	AFG	Qandahar	237500	AFG	Afghanistan	Asia	Southern and Central Asia
3	Herat	AFG	Herat	186800	AFG	Afghanistan	Asia	Southern and Central Asia
4	Mazar-e-Sharif	AFG	Balkh	127800	AFG	Afghanistan	Asia	Southern and Central Asia
56	Luanda	AGO	Luanda	2022000	AGO	Angola	Africa	Central Africa
57	Huambo	AGO	Huambo	163100	AGO	Angola	Africa	Central Africa
58	Lobito	AGO	Benguela	130000	AGO	Angola	Africa	Central Africa
59	Benguela	AGO	Benguela	128300	AGO	Angola	Africa	Central Africa

## Subquery in WHERE conditions example

### MySQL/Oracle

```
SELECT * FROM city
INNER JOIN country ON city.countrycode = country.code
WHERE country.region IN (SELECT DISTINCT region
                        FROM country
                        WHERE UPPER(region) LIKE '%AFRICA')
```

ID *	Name *	CountryCode *	District *	Population *	Code *	Name1 *	Continent *	Region *	SurfaceArea *
56	Luanda	AGO	Luanda	2022000	AGO	Angola	Africa	Central Africa	1246700
57	Huambo	AGO	Huambo	163100	AGO	Angola	Africa	Central Africa	1246700
58	Lobito	AGO	Benguela	130000	AGO	Angola	Africa	Central Africa	1246700
59	Benguela	AGO	Benguela	128300	AGO	Angola	Africa	Central Africa	1246700
60	Namibe	AGO	Namibe	118200	AGO	Angola	Africa	Central Africa	1246700
552	Bujumbura	BDI	Bujumbura	300000	BDI	Burundi	Africa	Eastern Africa	27834
186	Cotonou	BEN	Atlantique	536827	BEN	Benin	Africa	Western Africa	112622
187	Porto-Novo	BEN	Ouémé	194000	BEN	Benin	Africa	Western Africa	112622
188	Djougou	BEN	Atacora	134099	BEN	Benin	Africa	Western Africa	112622

## Subquery in WHERE conditions example

### MySQL/Oracle

```
SELECT aliascountry.name AS countryname, city.name AS cityname,  
aliascountry.governmentform  
FROM city INNER JOIN country aliascountry ON city.countrycode = aliascountry.code  
WHERE EXISTS (SELECT name FROM country  
               WHERE governmentform = 'Republic'  
               AND aliascountry.code=code)
```

countryname *	cityname *	governmentform *
Angola	Luanda	Republic
Angola	Huambo	Republic
Angola	Lobito	Republic
Angola	Benguela	Republic
Angola	Namibe	Republic
Albania	Tirana	Republic
Armenia	Yerevan	Republic
Armenia	Gjumri	Republic
Armenia	Vanadzor	Republic
Burundi	Bujumbura	Republic



## Subquery in WHERE conditions example

### MySQL/Oracle

```
SELECT aliascountry.name AS countryname, city.name AS cityname,  
aliascountry.governmentform  
FROM city INNER JOIN country aliascountry ON city.countrycode = aliascountry.code  
WHERE NOT EXISTS (SELECT name FROM country  
                    WHERE UPPER (governmentform) LIKE '%MONARCHY%'  
                    AND aliascountry.code=code)
```

countryname *	cityname *	governmentform *
Aruba	Oranjestad	Nonmetropolitan Territory of The Netherlands
Afghanistan	Kabul	Islamic Emirate
Afghanistan	Qandahar	Islamic Emirate
Afghanistan	Herat	Islamic Emirate
Afghanistan	Mazar-e-Sharif	Islamic Emirate
Angola	Luanda	Republic
Angola	Huambo	Republic
Angola	Lobito	Republic
Angola	Benguela	Republic
Angola	Namibe	Republic

## CASE Syntax

### MySQL/Oracle

```
SELECT Field1,  
CASE  
    WHEN Field1 >= Value1 THEN NewValueCase1  
    WHEN Field1 > Value2 AND Field1 < Value1 THEN NewValueCase2  
    ELSE NewValueCase3  
END NewField1  
FROM table
```

### MySQL/Oracle

```
SELECT Field1,  
CASE Field1  
    WHEN Value1 THEN NewValueCase1  
    WHEN Value2 THEN NewValueCase2  
    ELSE NewValueCase3  
END NewField1  
FROM table
```

# SESSION 10

- SUBQUERIES
- **CASE CLAUSE**
- ROWS OUTPUT LIMITS

## CASE Example

### MySQL/Oracle

```
SELECT  
name, population, gnp ,  
CASE  
    WHEN gnp > 500000 THEN 'High'  
    WHEN gnp BETWEEN 500000 AND 100000 THEN 'Medium'  
    ELSE 'Low'  
END gnpcategory  
FROM country;
```

name *	population *	gnp	gnpCategory
Bolivia	8329000	8571	Low
Brazil	170115000	776739	High
Barbados	270000	2223	Low
Brunei	328000	11705	Low
Bhutan	2124000	372	Low
Bouvet Island	0	0	Low
Botswana	1622000	4834	Low
Central African Republic	3615000	1054	Low
Canada	31147000	598862	High
Cocos (Keeling) Islands	600	0	Low

## CASE Example

### MySQL/Oracle

```
SELECT  
name, governmentform,  
CASE governmentform  
    WHEN 'Parlementary Monarchy' THEN 'Monarchy'  
    WHEN 'Constitutional Monarchy' THEN 'Monarchy'  
    WHEN 'Monarchy' THEN 'Monarchy'  
    ELSE governmentform  
END newgovernmentform  
FROM country;
```

NAME	GOVERNMENTFORM	NEWGOVERNMENTFORM
Lebanon	Republic	Republic
Liberia	Republic	Republic
Libyan Arab Jamahiriya	Socialistic State	Socialistic State
Saint Lucia	Constitutional Monarchy	Monarchy
Liechtenstein	Constitutional Monarchy	Monarchy
Sri Lanka	Republic	Republic
Lesotho	Constitutional Monarchy	Monarchy

# SESSION 10

- SUBQUERIES
- CASE CLAUSE
- **ROWS OUTPUT LIMITS**

# ROWS OUTPUT LIMITS

## Limits function Syntax

### MySQL

```
SELECT ...  
FROM ...  
WHERE ...  
ORDER BY ...  
LIMIT OffSetRows, FetchRows
```

### Oracle

```
SELECT ...  
FROM ...  
WHERE ...  
ORDER BY ...  
OFFSET OffSetRows ROWS  
FETCH NEXT FetchRows ROWS ONLY
```

### MySQL

```
SELECT ...  
FROM ...  
WHERE ...  
ORDER BY ...  
LIMIT FetchRows
```

### Oracle

```
SELECT ...  
FROM (SELECT ...  
      FROM ...  
      WHERE ...  
      ORDER BY ...)  
AND ROWNUM <= FetchRows
```

# ROWS OUTPUT LIMITS

## Limits function Example

### MySQL

```
SELECT title, revenue
FROM moviebig
ORDER BY revenue DESC
LIMIT 5,5;
```

title	revenue
Avengers: Age of Ultron	1405403694
Frozen	1274219009
Iron Man 3	1215439994
Minions	1156730962
Captain America: Civil War	1153304495

### Oracle

```
SELECT title, revenue
FROM moviebig
ORDER BY revenue DESC
OFFSET 5 ROWS
FETCH NEXT 5 ROWS ONLY;
```

⚡ TITLE	⚡ REVENUE
Avengers: Age of Ultron	1405403694
Frozen	1274219009
Iron Man 3	1215439994
Minions	1156730962
Captain America: Civil War	1153304495