Higher
Computing Science

Database Design and Development

Implementation – Stored/Sub Queries

Name:_____

Contents

Stored/Sub Queries

Stored/Sub queries are used when you want to include the results of one query as part of another query.

e.g.

Imagine we want to find out how many pupils have achieved the same mark as the top student in a class test

We must first write a query to find the top mark in the class and save it.

We can then include the saved query in the FROM clause using the name of the query.

This allows us to use the top mark field in the stored query within the WHERE clause in our second query.

QUERY 1

SELECT MAX(MARK) AS **[TOP MARK]**

FROM assessments

QUERY 2

SELECT [Pupil Name], [Mark]

FROM marks, assessments, **[Query 1]**

WHERE marks = **[TOP MARK]**

Worked Examples – Stored/Sub Queries

Design a query to display the title and duration of all assessments that have a duration above the average assessment duration

Query 1 – Find Average Duration

Field(s) and calculation(s)	Average Duration = AVG(duration)
Table(s) and query	assessment
Search criteria	
Grouping	
Sort Order	

```
SELECT Avg(assessment.duration) AS [average duration]

FROM assessment;
```
                                        Save this query as 'Find Average Duration'

Query 2 – Display details of assessments lasting above average duration

Field(s) and calculation(s)	title, duration
Table(s) and query	Assessment, [Find Average Duration]
Search criteria	Duration > Average Duration
Grouping	
Sort Order	

```
SELECT Assessment.title, assessment.duration

FROM assessment, [Find Average Duration]

WHERE assessment.duration > [average duration];
```

Design a query to display the full name of all students who achieved the highest mark across all assessments

Query 1 – Find Highest Mark

Field(s) and calculation(s)	Highest Mark = MAX(mark)
Table(s) and query	result
Search criteria	
Grouping	
Sort Order	

```
SELECT Max(result.mark) AS [highest mark]

FROM result;
```
                                                    Save this query as 'Find Highest Mark'

Query 2 – Display details of assessments lasting above average duration

Field(s) and calculation(s)	forename, surname
Table(s) and query	Student, Result, [Find Highest Mark]
Search criteria	Mark = Highest Mark
Grouping	
Sort Order	

```
SELECT Student.Forename, Student.Surname

FROM student, result, [6bi Find Highest Mark]

WHERE student.studentno = result.studentno

AND result.mark = [Highest Mark]

GROUP BY Student.forename, student.surname;
```
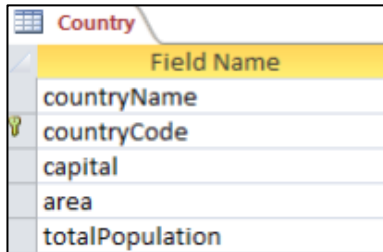
Practise Task – Stored/Sub Queries

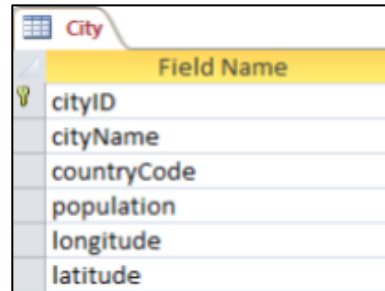Make a copy of the original database called Countries.

Make a copy of the original database called SimpleBreaks.

Task 1
Open the second copy of file called Countries Database. This database has two tables, City and Country.

Country
Field Name
countryName
countryCode
capital
area
totalPopulation

City
Field Name
cityID
cityName
countryCode
population
longitude
latitude

Create SQL queries to display the required details. An alias should be used to display a meaningful heading for any computed values displayed.

1. Display the name, capital city and total population of the country with the largest total population.

2. Display details the name, country and population of any city that has a population which is at least 5,000,000 more than the average population of all the cities.

3. Display the name of any city that is further north than Reykjavik (the latitude of these cities is greater than the latitude of Reykjavik). The query should show the name of each relevant city, its latitude and country name. The city that is furthest north should be listed first.

4. Display the name and population of any city in the United Kingdom that has a population which is more than the average population of all the cities in Bolivia. Arrange these details from smallest to largest population.

5. Display the total number of countries with an area less than 1% of that of the country with the largest area.

Task 2

Open the copy of file called SimpleBreaks Database. This database has two tables, Holiday and Hotel.

Holiday
Field Name
🔑 Title
Destination
Country
dateOfDeparture
Nights
hotelRef

Hotel
Field Name
🔑 hotelRef
hotelName
City
starRating
pricePerNight
kilometresFromAirport

Create SQL queries to display the required details. An alias should be used to display a meaningful heading for any computed values displayed.

1. Display the name, destination, country and distance from the airport of the hotel that is furthest from the airport.

2. Display the name and star rating of any hotel with a rating that is poorer that the average star rating of all the holidays that have the word 'Break' or 'Package' in their title. The hotel with the highest star rating should be listed first; hotels with the same star rating should be listed in alphabetical order of hotel name.

3. Display the name, city and price per night of any hotel which is dearer that the dearest hotel in Edinburgh. List the hotel details with the dearest hotel first; hotels with the same price should be listed in alphabetical order of city.

4. Display the number of holidays that have the same star rating as that of the 'Der Wald' hotel.

5. Display the title, city and distance from the airport of any holiday to Lisbon that is closer to the airport than the average distance from the airport of all the hotels in Spain.

6. Display the title, departure date and duration of any holiday that has the same duration as the longest holiday to a city with the letter 'o' as the second character of the city name. Arrange these details so that the most recent holiday is listed first.