Day 4: Task 2: SQL Practical

1. **Count Cities in USA:** *Scenario:* You've been tasked with conducting a demographic analysis of cities in the United States. Your first step is to determine the total number of cities within the country to provide a baseline for further analysis.

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| SELECT count(\*) FROM world.city  WHERE CountryCode = 'USA'; |

1. **Country with Highest Life Expectancy:** *Scenario:* As part of a global health initiative, you've been assigned to identify the country with the highest life expectancy. This information will be crucial for prioritising healthcare resources and interventions.

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| SELECT  Name AS Country,  LifeExpectancy  FROM  country  ORDER BY  LifeExpectancy DESC  LIMIT 1 |

1. **"New Year Promotion: Featuring Cities with 'New :** *Scenario:* In anticipation of the upcoming New Year, your travel agency is gearing up for a special promotion featuring cities with names including the word 'New'. You're tasked with swiftly compiling a list of all cities from around the world. This curated selection will be essential in creating promotional materials and enticing travellers with exciting destinations to kick off the New Year in style.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.Population  FROM  city ci  JOIN  country co ON ci.CountryCode = co.Code  WHERE  ci.Name LIKE '%New%'  ORDER BY  ci.Population DESC; |

1. **Display Columns with Limit (First 10 Rows):** *Scenario:* You're tasked with providing a brief overview of the most populous cities in the world. To keep the report concise, you're instructed to list only the first 10 cities by population from the database.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.Population  FROM  city ci  JOIN  country co ON ci.CountryCode = co.Code  ORDER BY  ci.Population DESC  LIMIT 10; |

1. **Cities with Population Larger than 2,000,000:** *Scenario:* A real estate developer is interested in cities with substantial population sizes for potential investment opportunities. You're tasked with identifying cities from the database with populations exceeding 2 million to focus their research efforts.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.Population  FROM  city ci  JOIN  country co ON ci.CountryCode = co.Code  WHERE  ci.Population > 2000000  ORDER BY  ci.Population DESC; |

1. **Cities Beginning with 'Be' Prefix:** *Scenario:* A travel blogger is planning a series of articles featuring cities with unique names. You're tasked with compiling a list of cities from the database that start with the prefix 'Be' to assist in the blogger's content creation process.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.Population  FROM  city ci  JOIN  country co ON ci.CountryCode = co.Code  WHERE  ci.Name LIKE 'Be%'  ORDER BY  ci.Name ASC; |

1. **Cities with Population Between 500,000-1,000,000:** *Scenario:* An urban planning committee needs to identify mid-sized cities suitable for infrastructure development projects. You're tasked with identifying cities with populations ranging between 500,000 and 1 million to inform their decision-making process.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.Population  FROM  city ci  JOIN  country co ON ci.CountryCode = co.Code  WHERE  ci.Population BETWEEN 500000 AND 1000000  ORDER BY  ci.Population ASC; |

1. **Display Cities Sorted by Name in Ascending Order:** *Scenario:* A geography teacher is preparing a lesson on alphabetical order using city names. You're tasked with providing a sorted list of cities from the database in ascending order by name to support the lesson plan.

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| SELECT  Name AS CityName,  CountryCode,  Population  FROM  city  ORDER BY  Name ASC; |

1. **Most Populated City:** *Scenario:* A real estate investment firm is interested in cities with significant population densities for potential development projects. You're tasked with identifying the most populated city from the database to guide their investment decisions and strategic planning.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.Population  FROM  city ci  JOIN  country co ON ci.CountryCode = co.Code  ORDER BY  ci.Population DESC  LIMIT 1; |

1. **City Name Frequency Analysis: Supporting Geography Education** *Scenario*: In a geography class, students are learning about the distribution of city names around the world. The teacher, in preparation for a lesson on city name frequencies, wants to provide students with a list of unique city names sorted alphabetically, along with their respective counts of occurrences in the database. You're tasked with this sorted list to support the geography teacher.

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| SELECT  Name AS CityName,  COUNT(\*) AS OccurrenceCount  FROM  city  GROUP BY  Name  ORDER BY  OccurrenceCount DESC; |

1. **City with the Lowest Population:** *Scenario:* A census bureau is conducting an analysis of urban population distribution. You're tasked with identifying the city with the lowest population from the database to provide a comprehensive overview of demographic trends.

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| SELECT  Name AS City,  CountryCode,  Population  FROM  city  ORDER BY  Population ASC  LIMIT 1; |

1. **Country with Largest Population:** *Scenario:* A global economic research institute requires data on countries with the largest populations for a comprehensive analysis. You're tasked with identifying the country with the highest population from the database to provide valuable insights into demographic trends.

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| SELECT  Name AS Country,  Population  FROM  country  ORDER BY  Population DESC  LIMIT 1; |

1. **Capital of Spain:** *Scenario:* A travel agency is organising tours across Europe and needs accurate information on capital cities. You're tasked with identifying the capital of Spain from the database to ensure itinerary accuracy and provide travellers with essential destination information.

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| SELECT  ci.Name AS CapitalCity,  co.Name AS Country  FROM  country co  JOIN  city ci ON co.Capital = ci.ID  WHERE  co.Name = 'Spain'; |

1. **Cities in Europe:** *Scenario:* A European cultural exchange program is seeking to connect students with cities across the continent. You're tasked with compiling a list of cities located in Europe from the database to facilitate program planning and student engagement.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.District,  ci.Population  FROM  world.city ci  JOIN  world.country co  ON  ci.CountryCode = co.Code  WHERE  co.Continent = 'Europe'  ORDER BY  co.Name, ci.Name; |

1. **Average Population by Country:** *Scenario:* A demographic research team is conducting a comparative analysis of population distributions across countries. You're tasked with calculating the average population for each country from the database to provide valuable insights into global population trends.

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| SELECT  Name,  AVG(Population) AS AverageCountryPopulation  FROM  country  Group By Name;    SELECT  c.Name AS Country,  COUNT(ci.ID) AS NumberOfCities,  AVG(ci.Population) AS AverageCityPopulation  FROM  country c  JOIN  city ci ON c.Code = ci.CountryCode  GROUP BY  c.Code, c.Name  ORDER BY  AverageCityPopulation DESC; |

1. **Capital Cities Population Comparison:** *Scenario:* A statistical analysis firm is examining population distributions between capital cities worldwide. You're tasked with comparing the populations of capital cities from different countries to identify trends and patterns in urban demographics.

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| SELECT  country.Name AS Country,  city.Name AS CapitalCity,  city.Population AS CapitalPopulation  FROM  country  JOIN  city ON country.Capital = city.ID  ORDER BY  city.Population DESC; |

1. **Countries with Low Population Density:** *Scenario:* An agricultural research institute is studying countries with low population densities for potential agricultural development projects. You're tasked with identifying countries with sparse populations from the database to support the institute's research efforts.

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| SELECT  Name AS Country,  Population,  SurfaceArea,  ROUND(Population / SurfaceArea, 2) AS PopulationDensity  FROM  country  ORDER BY  PopulationDensity  LIMIT 10; |

1. **Cities with High GDP per Capita:** *Scenario:* An economic consulting firm is analysing cities with high GDP per capita for investment opportunities. You're tasked with identifying cities with above-average GDP per capita from the database to assist the firm in identifying potential investment destinations.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.Population AS CityPopulation,  co.GNP AS CountryGNP,  co.Population AS CountryPopulation,  ROUND((co.GNP / co.Population) \* ci.Population / ci.Population, 2) AS GDPPerCapita  FROM  world.city ci  JOIN  country co ON ci.CountryCode = co.Code  WHERE  co.GNP IS NOT NULL AND co.Population > 0  AND ((co.GNP / co.Population) \* ci.Population / ci.Population) >  (  SELECT  AVG(co.GNP / co.Population)  FROM  country co  WHERE  co.GNP IS NOT NULL AND co.Population > 0  )  ORDER BY  GDPPerCapita DESC; |

1. **Display Columns with Limit (Rows 31-40):** *Scenario:* A market research firm requires detailed information on cities beyond the top rankings for a comprehensive analysis. You're tasked with providing data on cities ranked between 31st and 40th by population to ensure a thorough understanding of urban demographics.

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| SELECT  ci.Name AS City,  co.Name AS Country,  ci.Population  FROM  world.city ci  JOIN  world.country co  ON  ci.CountryCode = co.Code  ORDER BY  ci.Population  LIMIT 10 OFFSET 30 |