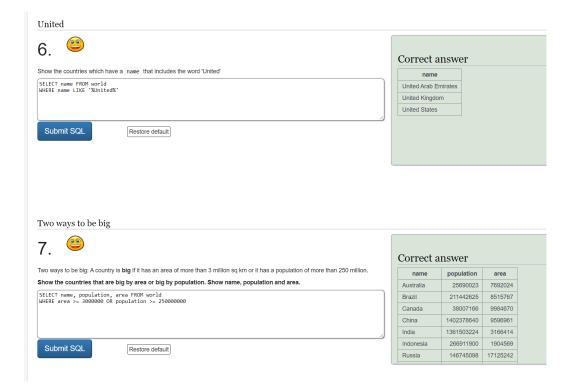
Machine Learning Assignment 71

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Problem 2



One or the other (but not both)

8.



Exclusive OR (XOR). Show the countries that are big by area (more than 3 million) or big by population (more than 250 million) but not both. Show name, population and area.

- Australia has a big area but a small population, it should be **included**.
- Indonesia has a big population but a small area, it should be **included**.
- \bullet China has a big population ${\bf and}$ big area, it should be ${\bf excluded}.$
- United Kingdom has a small population and a small area, it should be excluded.

SELECT name, population, area FROM world WHERE area >= 3000000 XOR population >= 250000000

WHERE area >= 3000000 XOR population >= 2500

Submit SQL

Restore default

Correct answer

name	population	area
Australia	25690023	7692024
Brazil	211442625	8515767
Canada	38007166	9984670
Indonesia	266911900	1904569
Russia	146745098	17125242

Rounding





Show the name and population in millions and the GDP in billions for the countries of the continent 'South America'. Use the ROUND function to show the values to two decimal places.

For South America show population in millions and GDP in billions both to 2 decimal places.

Millions and billions

SELECT name, ROUND(population/1000000, 2) as population, ROUND(GDP/1000000000, 2) as GDP FROM world WHERE continent = 'South America'

Submit SQL

Restore default

Correct answer

name	population	GDP
Argentina	44.94	637.49
Bolivia	11.47	37.51
Brazil	211.44	2055.51
Chile	19.11	277.08
Colombia	49.4	309.19
Ecuador	17.47	104.3
Guyana	0.78	3.09

Trillion dollar economies



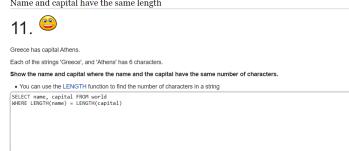
Show the name and per-capita GDP for those countries with a GDP of at least one trillion (100000000000; that is 12 zeros). Round

Show per-capita GDP for the trillion dollar countries to the nearest \$1000.



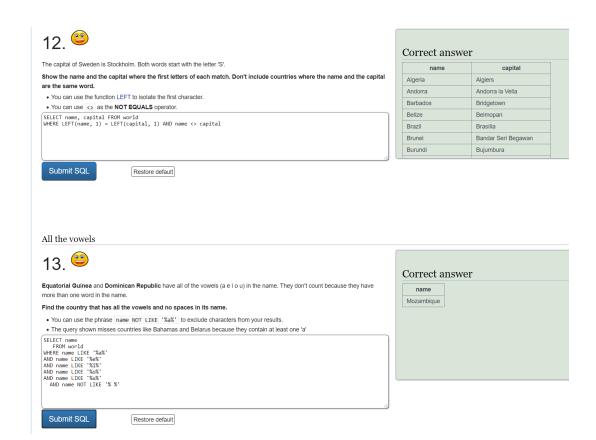
Correct answer		
name	ROUND(GDP/pop	
Australia	5500	
Brazil	1000	
Canada	4300	
China	900	
France	3900	
Germany	4400	
India	200	

Name and capital have the same length





Restore default



Problem 3

(aa)

$$P_X(k) = \begin{cases} \frac{1}{3} & \text{for } k = 3\\ \frac{1}{6} & \text{for } k = 2\\ \frac{1}{6} & \text{for } k = 1\\ \frac{1}{3} & \text{for } k = 0\\ 0 & \text{otherwise} \end{cases}$$

(ba)

$$P(X \le 2 \text{ and } Y \le 2) = \left(\frac{1}{4} + \frac{1}{8}\right) \left(\frac{1}{6} + \frac{1}{6}\right)$$
$$= \frac{1}{4}$$

(bb)

$$P(X > 2 \text{ or } Y > 2) = \left(\frac{1}{8} + \frac{1}{2}\right) + \left(\frac{1}{3} + \frac{1}{3}\right) - \left(\frac{1}{8} + \frac{1}{2}\right)\left(\frac{1}{3} + \frac{1}{3}\right)$$
$$= \frac{5}{8} + \frac{2}{3} - \frac{5}{12}$$
$$= \frac{7}{8}$$

(bc)

$$P(X > 2|Y > 2) = P(X > 2)$$

= $\frac{5}{8}$

(bd)

$$P(X < Y) = \frac{1}{3} * \frac{1}{2} + \frac{1}{3} * \frac{3}{8} + \frac{1}{6} * \frac{1}{4} + \frac{1}{6} * 0$$
$$= \frac{1}{3}$$

(c)

$$P(2 \text{ aces}|1 \text{ ace}) = \frac{P(2 \text{ aces and at least 1 ace})}{P(\text{at least 1 ace})}$$

$$= \frac{P(2 \text{ aces})}{P(\text{at least 1 ace})}$$

$$= \frac{10\frac{4}{52}\frac{3}{51}\frac{48}{50}\frac{47}{49}\frac{46}{48}}{1 - \frac{48}{52}\frac{47}{51}\frac{46}{50}\frac{45}{49}\frac{44}{48}}$$

$$= \frac{1081}{9236}$$