Machine Learning Assignment 72

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Problem 3

(aa)

$$\frac{\binom{20}{4}\binom{30}{6}}{\binom{50}{10}}$$

(ab)

$$\frac{\binom{20}{2}\binom{30}{8} + \binom{20}{1}\binom{30}{9} + \binom{20}{0}\binom{30}{10}}{\binom{50}{10}} \approx 13\%$$

(ba)

$$P(\text{at least 2 born in same month}|k) = \begin{cases} 1 - \frac{12P_k}{12^k} & \text{for } k \leq 12\\ 1 & \text{otherwise} \end{cases}$$

P(at least 2 born in same month) = P(at least 2 born in same month|k=5)P(k=5) +

P(at least 2 born in same month|k=10)P(k=10)+

P(at least 2 born in same month|k=15)P(k=15)

$$\begin{split} &=\frac{1}{4}\left(1-\frac{_{12}P_5}{12^5}\right)+\frac{1}{4}\left(1-\frac{_{12}P_{10}}{12^{10}}\right)+\frac{1}{2}\\ &\approx 0.903 \end{split}$$

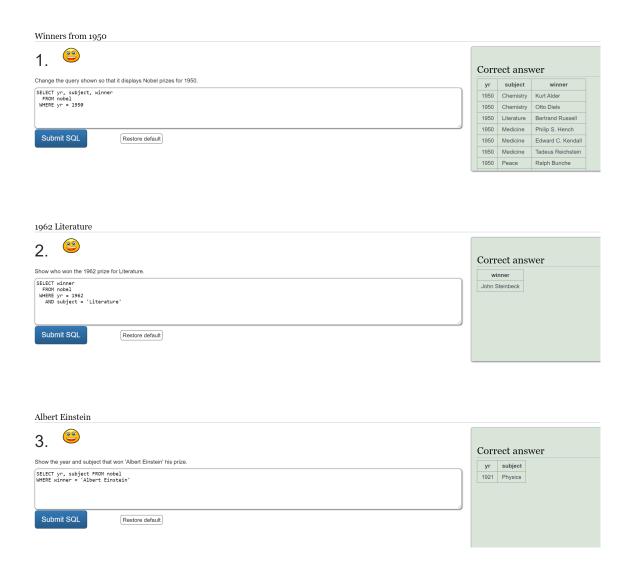
(bb)

P(k = 10|at least 2 born in same month) = P(at least 2 born in same month|k = 10)

$$*\frac{P(k=10)}{P(\text{at least 2 born in same month})}$$

$$\approx 0.996 \frac{\frac{1}{4}}{0.903}$$
$$\approx 0.276$$

Problem 4



Recent Peace Prizes





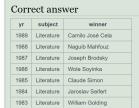
Literature in the 1980's





Show all details (yr, subject, winner) of the Literature prize winners for 1980 to 1989 inclusive





Correct answer

Leymah Gbowee Tawakel Karman

Tunisian National Dialogue Quartet Kailash Satyarthi Malala Yousafzai European Union Ellen Johnson Sirleaf

Only Presidents





Show all details of the presidential winners:

- Theodore Roosevelt
- Woodrow Wilson Jimmy Carter
- Barack Obama

Barack Obamma

SELECT * FROM nobel
MHERE winner IN ('Theodore Roosevelt',
Noodrow Wilson',
'Jimmy Carter',
'Barack Obama')

Correct answer





Chemistry and Physics from different years





Exclude Chemists and Medics



Submit SQL

Show the year, subject, and name of winners for 1980 excluding Chemistry and Medicine

SELECT * FROM nobel | WHERE yr = 1980 AND NOT subject IN ('Chemistry', 'Medicine')

Restore default

Submit SQL Restore default



Early Medicine, Late Literature

10. 🥯



Show year, subject, and name of people who won a 'Medicine' prize in an early year (before 1910, not including 1910) together with winners of a 'Literature' prize in a later year (after 2004, including 2004)

SELECT * FROM nobel | WHERE (subject = 'Medicine' AND 1910 > yr) OR (subject = 'Literature' AND yr >= 2004)

Restore default

Submit SQL



