6 Inclusion-Exclusion theorem and pigeonhole principle

6-4 pigeonhole principle

组合数学 Combinatorics

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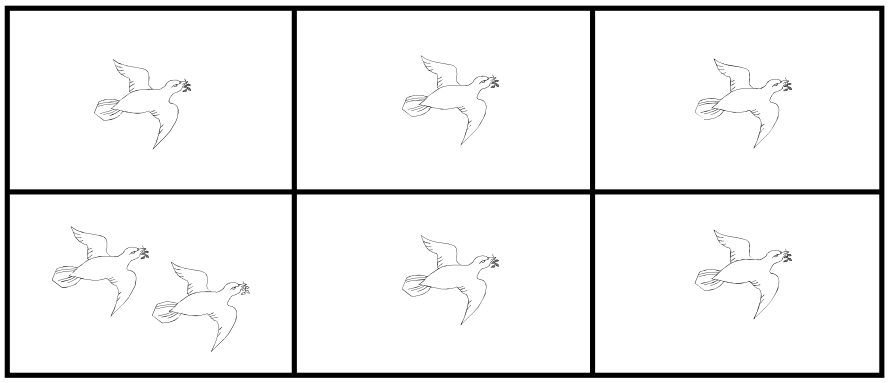
Pigeonhole Principle

pigeonhole principle is the simplest and most fundamental principle in combinatorics. It's also called the drawer principle. It is "If there's n-1 pigeonholes, n pigeons, so there's at least one pigeonhole which has at least 2 pigeons"



Dirichlet

- Dirichlet（1805～1859）
- German mathematician, founder of analytical number theory and he defined the modern function concept.
- Dirichlet is famous for proving the n=5 situation of Fermat's Last Theorem in 1825. In 1834, he raised pigeonhole principle, which is called the drawer principle at that time.
- Gauss died in 1855, University of Goettingen hired Dirichlet to inherit the position of Gauss.
- Berlin University starts its golden age from Dirichlet .
- Taken from: http://episte.math.ntu.edu.tw/people/p_dirichlet/

Pigeonhole Principle

Eg There are 30 people in a class, at least 3 are born in the same month.

Eg Conflicts in Hash tables are unavoidable as the number of keys are always larger than the number of indices.

quiz

Pigeonhole Principle

Eg 10 pairs of blue socks, 12 pairs of white socks, how many times do we need to pick randomly to get a pair.

What are the pigeon and pigeonholes here?