

THE PIGEON HOLE PRINCIPLE

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Pigeon Hole

1. Overview

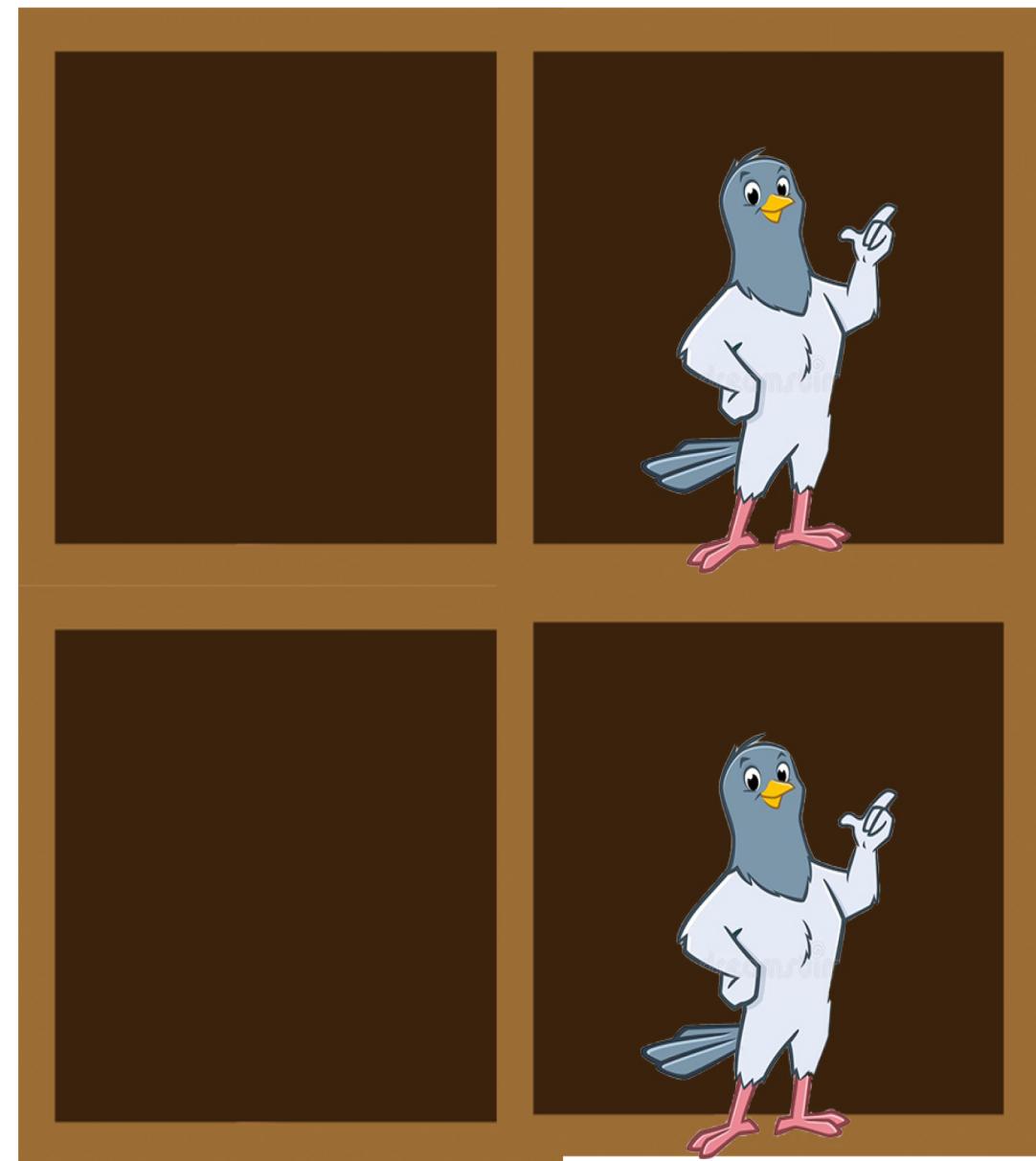
The pigeonhole principle (also sometimes called the Dirichlet drawer principle) is a simple yet powerful idea in mathematics that can be used to show some surprising things, as we'll see later. In this article, we'll first define what the pigeonhole principle is, followed by some examples to illustrate how it can be applied. Then we'll discuss the generalized version of the principle and give several examples that use the generalized version. Finally, we'll show some particularly clever applications that make use of the pigeonhole principle.

2. The Basic Pigeonhole Principle

In this section, we'll first define the basic pigeonhole principle and prove it. Then we'll show three examples that use this basic principle.. If n pigeonholes are occupied by $n+1$ or more pigeons, then at least one pigeonhole is occupied by greater than one pigeon. Generalized pigeonhole principle is: - If n pigeonholes are occupied by $kn+1$ or more pigeons, where k is a positive integer, then at least one pigeonhole is occupied by $k+1$ or more pigeons.

3. Some Examples of Pigeonhole

- *) Two or more people reading this blog will have the same birthday.
- *) If you pick five cards from a standard deck of 52 cards, then at least two will be of the same suit.
- *) Sorting the numbers using Pigeon-hole

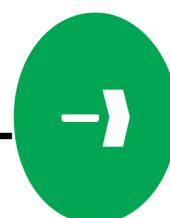


Implementation of pigeonhole principal through pigeonhole sorting

enter how many numbers: _____



enter number _____

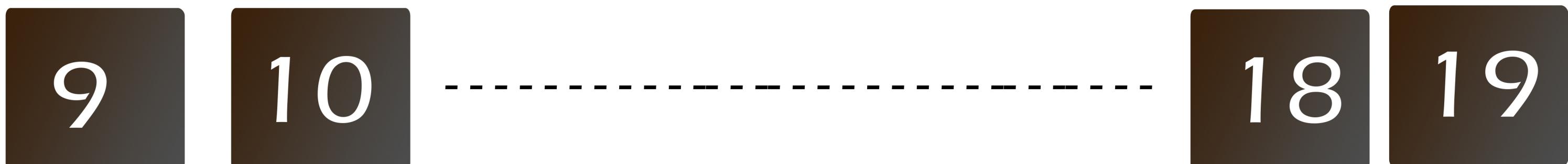


12	16	19	10	9
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Using searching algorithm we have the highest and lowest number in the array



create a bucket array of range 9 to 19



Pigeon hole sorting

