Combination Versus Permutation Encyclopedia Article

Combination Versus Permutation

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Combination Versus Permutation

Combination and permutation are terms that refer to the selection of a subset of objects from a larger set or pool of objects.

Combination refers to the selection process where the order of the selected objects is not important to the problem being addressed. An example of a combination is finding how many groups of four people can be formed from a population of fifteen people.

Permutation refers to the selection of a group of elements or objects from the total available number of elements or objects, and the arrangement of the selected items in a certain order. To follow the above example, if the groups of four people were sub-divided into president, vice-president, secretary and treasurer, then the order of those selected would be important and would need to be factored in when selecting the groups.

Statistical theory, in particular those concepts termed set theory, are important to computer related privacy and security issues. By use of programs that can rapidly project combinations and permutations of letters and symbols, hackers are often able to gain unauthorized **access** to programs and **data**. Such brute-force **hacking** often involves the generation of millions of expressions to be checked against the actual **password**. Although not elegant, programs without some non-randomized security element or key are often easily cracked by the high speed generation of combinations and permutations of symbols.