Module02_Day10_Combinatorics

December 16, 2022

Combinatorics

0! is 1

and: Multiply

or: Add

Permutation Arrangement of objects

$$n(n-1)(n-2)....(n-(r+1))$$

$$\frac{n(n-1)(n-2)....(n-(r+1)) \times (n-k)(n-k-1)(n-k-2)....1}{(n-k)(n-k-1)....1}$$

$$\frac{n!}{(n-r)!}$$

$$^nP_r = \frac{n!}{(n-r)!}$$

Combinations Selection of objects

Ways to arrange $ r $ is $ r! $o

$$^nC_r = \frac{^nP_r}{r!}$$

$$^nC_r = \frac{n!}{r!(n-r)!}$$

$$^nC_1 = n$$

$$^nC_0 = 1$$

$$^nP_0 = 1$$

$$^{n}C_{0} +^{n} C_{1} +^{n} C_{2} + ... = 2^{n}$$

$$^{n}C_{r} =^{n} C_{n-r}$$