

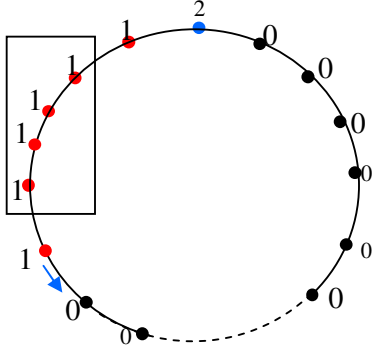
15.03.2012

Number of bracelets made with 1 blue, 6 identical red and n identical black beads.

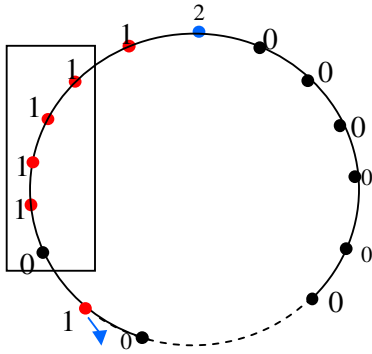
Teorem : 1 tane mavi, 6 tane özdeş kırmızı ve n tane özdeş siyah boncuklar ile yapılacak bilekliklerin sayısı $F(1,6,n)$ ise

$$F(1,5,n) = \frac{(n+4)(n+3)(n+2)(n+1)n}{120} + F(1,4,n) + F(1,6,n-2) \text{ dir.}$$

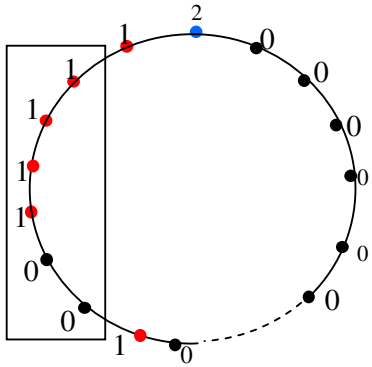
İSPAT :



1111 kendi arasındaki sıralaması $\binom{4}{4}$ tane durum vardır

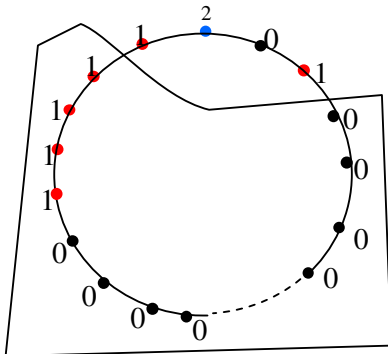


11110 kendi arasındaki sıralaması $\binom{5}{4}$ tane durum vardır.



111100 kendi arasındaki sıralaması $\binom{6}{4}$ tane durum vardır.

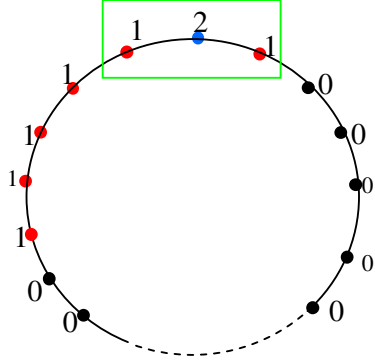
⋮



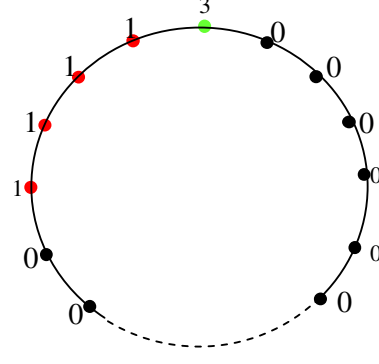
Benzer olarak devam edersek . 111100...0 kendi arasındaki sıralaması $\binom{n+3}{4}$ tane durum vardır.

Elde ettiğimiz bütün durumları toplarsak

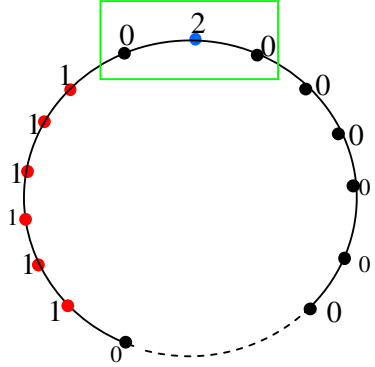
$$\binom{4}{4} + \binom{5}{4} + \binom{6}{4} + \dots + \binom{n+3}{4} = \binom{n+4}{5} = \frac{(n+4)(n+3)(n+2)(n+1).n}{120}$$



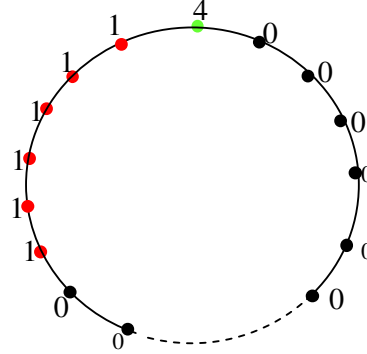
(121) → 3



$F(1,4,n)$ Tane durum vardır.



(121) → 4



$F(1,6,n-2)$ durum oluşur.

Oluşacak toplam durum sayısı:

$$F(1,6,n) = \frac{(n+4)(n+3)(n+2)(n+1).n}{120} + F(1,4,n) + F(1,6,n-2) \text{ ile ifade edebiliriz.}$$

$$F(1,4,1) = 3 \text{ dir. } F(1,4,2) = 9$$

$$F(1,6,1) = 4$$

$$F(1,6,2) = 16$$

$$F(1,6,3) = 44$$

$$F(1,6,4) = 110$$

$$F(1,6,5) = 236$$

$$F(1,6,6) = 472$$