



درس: ساختمان داده

استاد : دکتر نجار

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تاریخ :۱۴۰۱/۰۷/۲۸

$$\sum_{i=1}^{n} (i) = 1 + 2 + 3 + \dots + n =$$

$$\sum_{i=1}^{n} i = 1 + 7 + ... + n = \frac{n(n+1)}{7} - \frac{1}{7} n^{7} = \theta(n^{7})$$

$$\sum_{i=1}^{n} (i^{2}) = 1^{2} + 2^{2} + 3^{2} + \dots + n^{2} =$$

$$r) \quad \sum_{i=1}^{n} i^{\mathsf{Y}} = \mathbf{1}^{\mathsf{Y}} + \mathbf{Y}^{\mathsf{Y}} + \ldots + n^{\mathsf{Y}} = \frac{n(n+1)(\mathsf{Y}n+1)}{\mathsf{F}} \sim \frac{1}{\mathsf{Y}} n^{\mathsf{Y}} = \theta(n^{\mathsf{Y}})$$

$$\sum_{i=1}^{n} (i^3) = 1^3 + 2^3 + 3^3 + \dots + n^3 =$$

$$\frac{n}{\sum_{i=1}^{n} (i^{n}) = 1 + 1 + 1 + \dots + n^{n} = \frac{1}{2} n^{n} = \frac{1}{2} \Theta(n^{2})}$$

$$\sum_{i=1}^{n} (i^{k}) = 1^{k} + 2^{k} + 3^{k} + \dots + n^{k} =$$

$$\sum_{i=1}^{n} i^k = 1^k + 1^k + \dots + n^k \sim \frac{1}{k+1} n^{k+1} = \theta(n^{k+1})$$
 عدد ثابت) عدد ثابت

$$\sum_{i=1}^{n} \frac{1}{2(i)} = \frac{1}{1+1+1} + \frac{1}{2} = n$$

$$\sum_{i=1}^{n} \left(\frac{1}{i}\right) = 1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{n} =$$

$$\sum_{i=1}^{n} \left(\frac{1}{i}\right) = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{3} + \frac{1}{n} = \sum_{i=1}^{n} \frac{1}{i} = 1 + \frac{1}{r} + \frac{1}{r} + \dots + \frac{1}{n} \sim Lnn = \theta(Lgn)$$

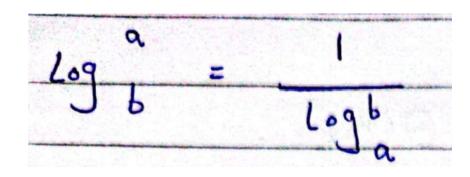
$$\sum_{i=m}^{n} (a) = \frac{\sum_{i\neq i}^{n} (a)_{i}}{\sum_{i\neq i}^{n} (a)_{i}} = \frac{\sum_{i\neq i}$$

$$\sum_{i=0}^{n} \left(a \times x^{i} \right) = \frac{\sum_{i=1}^{n} \left(a \times 2i \right) z \alpha \times 2i + \alpha \times 2i + \alpha \times 2i}{\sum_{i=1}^{n} \left(2i + 2i + \alpha \times 2i \right) = 2i}$$

$$\log_{b^n}(a^m)=$$

$$\frac{\log m}{\log n} = \frac{m \log n}{\log n}$$

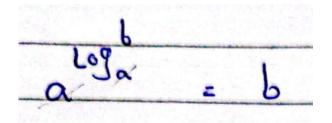
$$\log_c\left(\frac{a}{b}\right) =$$



$$a^{\log_c(b)} =$$

$$a^{Log_c^b} = b^{Log_c^a}$$

$$a^{\log_a(b)} =$$



```
for ( i = 0 to 10)

{

print("*")

for ( i = 0 to n)

{

print("*")

for ( i = 0 to n)

}

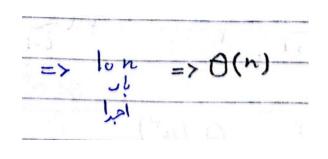
for ( i = 0 to n)

for ( i = 0 to n)

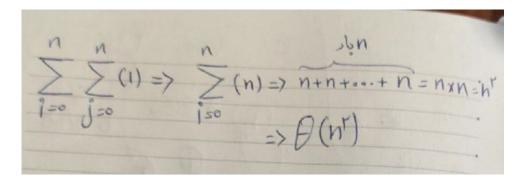
print("*")

print("*")

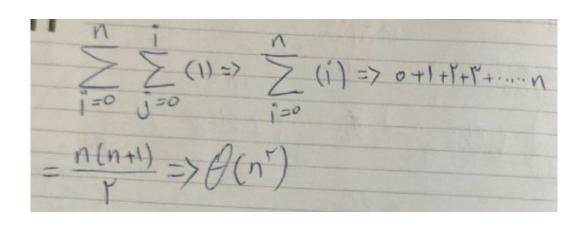
for ( i = 0 to n)
```



```
for ( i = 0 to n)
{
    for ( j = 0 to n)
    {
        print("*")
    }
}
```



```
for ( i = 0 to n )
{
    for ( j = 0 to i )
    {
       print("*")
    }
}
```



$$\sum_{j=0}^{n} \frac{j}{j} \sum_{k \neq 0}^{j} \frac{j}{j} \sum_{j \neq 0}^{n} \sum_{j \neq 0}^{n} \frac{j}{j} \sum_{j \neq 0}^{n} \sum_{j \neq 0}^{n} \frac{j}{j} \sum_{j \neq 0}^{n} \frac{$$