

N

for num 1 to N

~~fac~~ $\rightarrow 2 \text{ to } \sqrt{n}$
div $\rightarrow 2 \text{ to } n-1$

M1) fac $\rightarrow 1 \text{ to } n$

M2) fac $\rightarrow 2 \text{ to } n-1$

M3) fac $\rightarrow 2 \text{ to } n/2$

M4) fac $\rightarrow 2 \text{ to } \sqrt{n}$

$$1 \times 12 = 12$$

$$2 \times 6 = 12$$

$$3 \times 4 = 12$$

$$\sqrt{12} \times \sqrt{12}$$

$$4 \times 3 = 12$$

$$6 \times 2 = 12$$

$$12 \times 1 = 12$$

N=100

$$a \times b = b \times a$$

divisor \xrightarrow{Q} divided
R

num 1 | 2 | 3 | ... | 100

a

-

1/5

2

1/4

only -

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15
16	17	18	19	20
21	22	23	24	25

2, 3, 4, 5

$$x + x = 2x$$

$$3 + 3 = 6$$

$$6 + 3 = 9$$

$$\frac{n}{1} + \frac{n}{3} + \frac{n}{5} + \frac{n}{7} + \frac{n}{11} \dots \frac{n}{n}$$

$$\frac{n}{2} + \frac{n}{3} + \frac{n}{5} + \frac{n}{7} + \frac{n}{11} \dots + \frac{n}{k}$$

$$n \left(\frac{1}{2} + \frac{1}{3} \dots + \frac{1}{k} \right)$$

$$n \cdot \log(\log k)$$

$$n \cdot \log(k \log n)$$

2 x 2	3 x 2	5 x 2	7 x 2
2 x 3	3 x 3	5 x 3	7 x 3
2 x 4	3 x 4	5 x 4	7 x 4
2 x 5	⋮	5 x 5	7 x 5
⋮	⋮	⋮	7 x 6
2 x	3 x	5 x	7 x 7
			7 x 8
			⋮

$$O(n)$$

Story

str. char A +
 .length()
 .indexOf]
 last index)

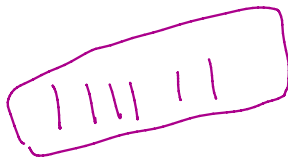
substring
 split

str	i	dp
" "	1	1
"1"	2	1+1
"12"	3	2+1
"123"	4	3+1
"1234"		
	n	n-1+1

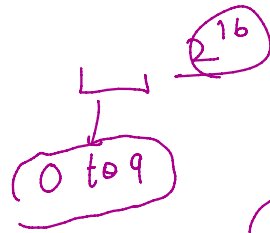
$$n \cdot (n+1)$$

2 2 2 2 2 2 2 2
 0 to 9

4 byte \rightarrow 20 byte.

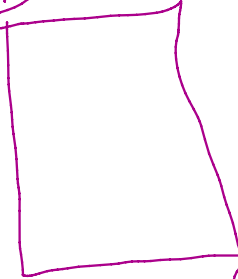


2 bytes \rightarrow 16 bits



2^{16}

Book



4 byte \rightarrow

$2^{31} - 1$

any length each word

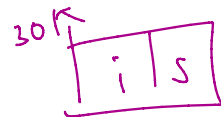
$$500 \times 4 \times 2 = 4K \text{ byte}$$

words on 1 page

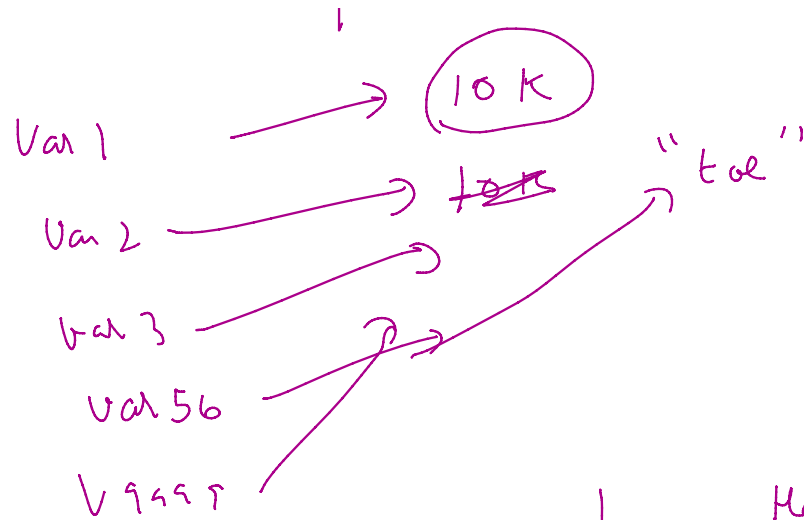
$$1 \text{ Book} = 4000 \times 500 = 2 \text{ MB}$$

"the sky is the blue is the"

{10K, 20K, 30K, 10K, 40K, 30K, 10K}



\rightarrow (10K)



String str1 = "hello"

String str2 = "hello"

String str3 = ~~"balus"~~

String str4 = new String("hello").

Heap

String Pool / Interned

10 K "hello"

20 "balus"

	String	StringBuilder
Create	String str = "hello"; String str = new String("hello")	String sb = new StringBuilder("hello");
Print	Syso(str)	Syso(sb)
Char at	str.charAt(index)	str.charAt(index)
SubString	str.substring(index);	str.substring(index); // return String
Add Intersect Update Remove	X	sb.append(""); sb.insert(index, ""); char or string sb.setCharAt(index, ""); sb.deleteCharAt(index); sb.delete(including, excluding); sb.toString(); // return to string