

Prime No. :-

2, 3, 5, 7, 11, 13, 17, 19, 23, 29, ...

is Prime (19)

① - 2 to $n-1 \Rightarrow \text{do}(n \% i == 0) = \text{not Prime}$
 $9871325 \Rightarrow 9871323 \times = n-2 = O(n)$

② - $n = 20$
 $\begin{bmatrix} 2 & 11 \\ 3 & 12 \\ 4 & 13 \\ 5 & 14 \\ 6 & 15 \\ 7 & 16 \\ 8 & 17 \\ 9 & 18 \\ 10 & 19 \\ 11 & 20 \end{bmatrix}$
 $\frac{20}{2} = 10$
 $\frac{20}{3} = 6$
 $\frac{20}{4} = 5$
 $\frac{20}{5} = 4$
 $\frac{20}{6} = 3$
 $\frac{20}{7} = 2$
 $\frac{20}{8} = 2$
 $\frac{20}{9} = 2$
 $\frac{20}{10} = 2$
 $\frac{20}{11} = 1$
 $\frac{20}{12} = 1$
 $\frac{20}{13} = 1$
 $\frac{20}{14} = 1$
 $\frac{20}{15} = 1$
 $\frac{20}{16} = 1$
 $\frac{20}{17} = 1$
 $\frac{20}{18} = 1$
 $\frac{20}{19} = 1$
 $\frac{20}{20} = 1$
 $\text{for } a, b = \frac{n^2 + n}{2} = O(n^2)$
 $\left(\frac{n}{2}\right) - 2$
 $T.C = O(n)$
 $i = 2 \text{ to } \left(\frac{n}{2}\right) - 1 \Rightarrow \text{do}(n \% i == 0) = \text{!Prime}$

③ $n = 20$
 $\sqrt{n} = 4$
 $T.C = O(\log_2(n))$

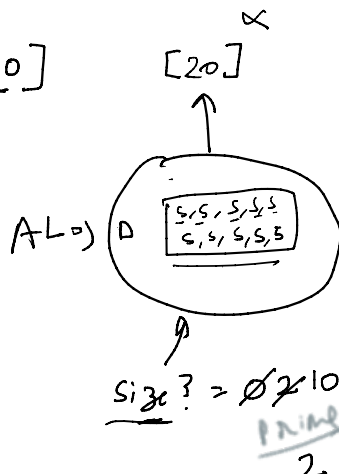
$(i = 2 \text{ to } \sqrt{n}) = (n \% i == 0) = \text{!Prime}$

$n = 3$
 $3^2 = 9$
 $n = 9$
 $\log_2(9) = 3$
 $\frac{n}{k} = n$
 $\log_2(n) = k$
 $3^3 = 27$
 $\log_2(27) = 3$

AL \Rightarrow Dynamic Array

$\text{int}[] a = \text{new int}[1000];$

AL
 $\hookrightarrow \text{Array} \Rightarrow \text{new int}[10]$
 $\text{size} = 0$



$\text{add}(5), \text{add}(6)$
 $\text{get}(0), \text{get}(1) \dots$

Size : $\neq 10$

PRIME

2

3

~~4~~

5

~~6~~

7

$$\sqrt{n}$$

$$\sqrt{50} = 7. \dots$$

SOE :- <https://www.geeksforgeeks.org/sieve-of-eratosthenes/>

	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50