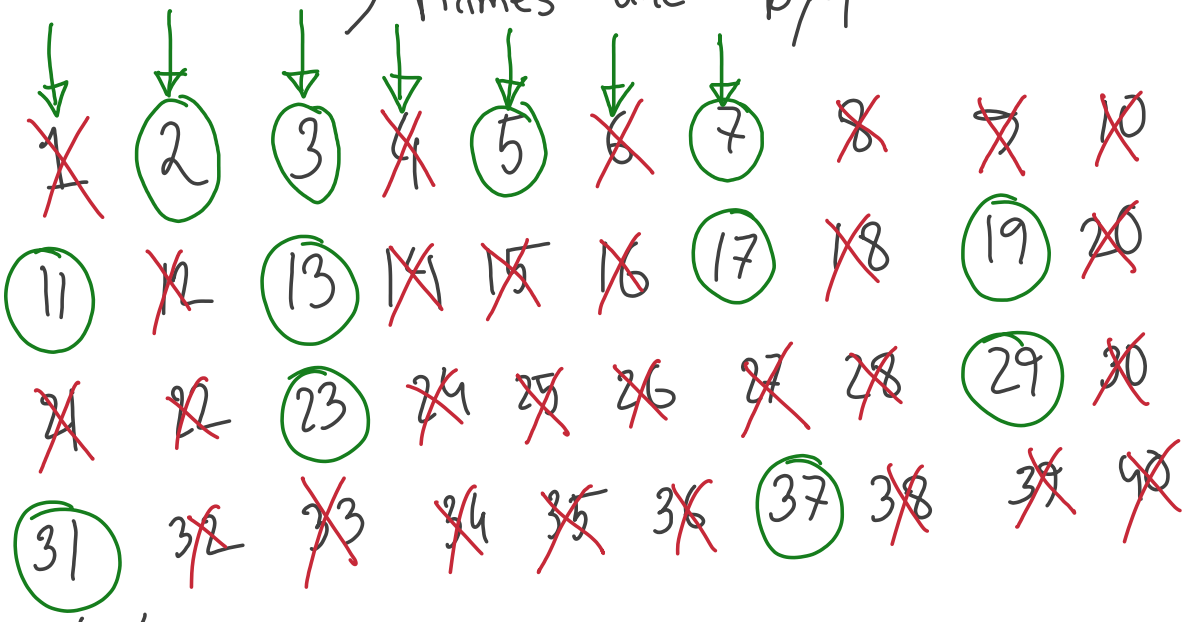
Class 12

Saturday, August 13, 2022 10:22 PM

1) Prime Generation

2) Primes are by-product

1 ~ N



bool

for(i = 2 ..... N)

$\log_2 n$;

$$\frac{N}{1} + \frac{N}{2} + \frac{N}{3} + \frac{N}{4} + \frac{N}{5} + \cdots$$

$$= N\left(1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \frac{1}{5} + \cdots\right)$$

$$= N \cdot \log_2 N \approx N \ln N$$

1	2	3	4	5	6	7	8	9	10
1	1	1	1	1	1	1	1	1	1
	2	3	2	5	2	7	2	3	2

4 3 4 9 5
6 8 10

$i = 1 \dots N$; $i++$

$j = i \dots N$; $j += i$

divs[j]. ← (i)

$N + \frac{N}{2} + \frac{N}{3} + \frac{N}{4} + \dots = N($

1, 20, 2, 10, 4, 5

$20 = 2 \times 2 \times 5 = 2^{2} \times 5^{1}$

$60 = 15 \times 4 = \left(\frac{2^4-1}{2-1}\right)$

$NOD(N) = (2+1)(1+1) = 3 \times 2 = 6$

$24 = 2^3$

$\left(\frac{r^{n+1}-1}{r-1}\right)$

$16 = 2^{4+1}$

$1+2+4+8+16 =$

$2^0 + 2^1 + 2^2 + 2^3 + 2^4 = 2^5 - 1$

(2^5-1)

1 2 4 8
3 6 12 24

4
1
2
4
8

$N = p_1^{\alpha_1} \times p_2^{\alpha_2} \times p_3^{\alpha_3} \times \dots \times p_K^{\alpha_K}$

$NOD(N) = \prod_{i=1}^{K} (\alpha_i + 1)$

$SOD(N) = \prod_{i=1}^{K} \frac{p_i^{\alpha_i+1} - 1}{p_i - 1}$

$\sum_{i=0}^{n} i^2$ → for

s =

$\prod_{i=0}^{n} i^2$