Sieve of Eratosthenes

By Prince Agarwal

[“ Hello World ”]

Sieve of Eratosthenes

An algorithm for ,

Or method

To find all the prime numbers, smaller than or equal to n

It is one of the most efficient way to find all prime numbers smaller than 'n'

It can handle almost up to 10 Million

Algorithm

1. **Create array integers from 2 to *n*: (2, 3, 4, …, *n*).**

2. **Initially, let *p* equal 2, the first prime number.**

3. **Starting a loop from (*p=2 ; p*p <= n ; p++)***

4. **if (prime [p] == true)**

5. **For (i=p*p ; i<=n ;i=i+p)**
   prime[p]=false;

6. **and repeat from step 3.**

We create a list of all numbers from 2 to 50

	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

3. Starting a loop from (*p=2 ; p*p <= n ; p++)*

4 <= 50

p=2

	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

5. For (i=p*p ; i<=n ;i=i+p)
   prime[p]=false;

i=4

i=6

i=8

i=50

3. Starting a loop from (*p=2 ; p*p <= n ; p++)

9 <= 50

p=3

	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

5. For (i=p*p ; i<=n ;i=i+p)
   prime[p]=false;

i=9

i=12

i=15

i=18

3. Starting a loop from (*p=2 ; p*p <= n ; p++)*

16 <= 50

p=4

	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

5. For (i=p*p ; i<=n ;i=i+p)
   prime[p]=false;

i=16

i=20

i=24

i=28

3. Starting a loop from (*p=2 ; p*p <= n ; p++)*

49 <= 50

p=7

	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

i=49

5. **For (i=p*p ; i<=n ;i=i+p)**
   prime[p]=false;

Final result after functions.

	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

the prime numbers are the unmarked ones:
2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41, 43, 47.

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“ If you feel any problem then comments in my video
I will reply as soon as possible “

- Prince Agarwal