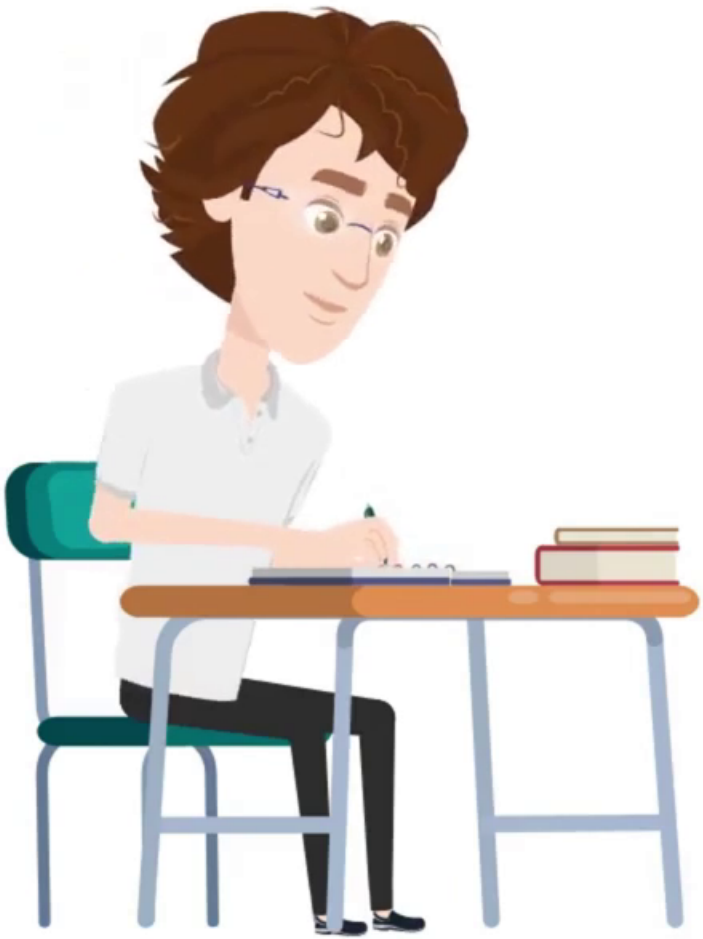
Sieve of Eratosthenes

Arabic Animated intuition



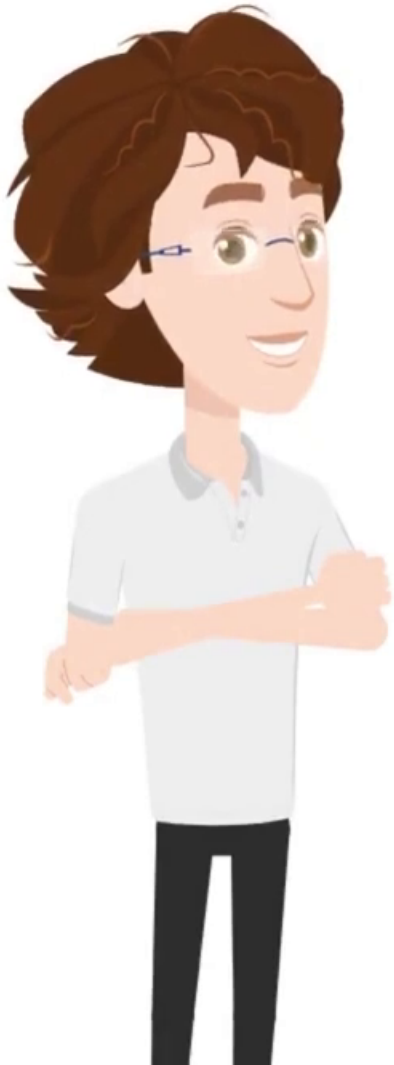
prior knowledge

factorizatoin

prime factorizatoin

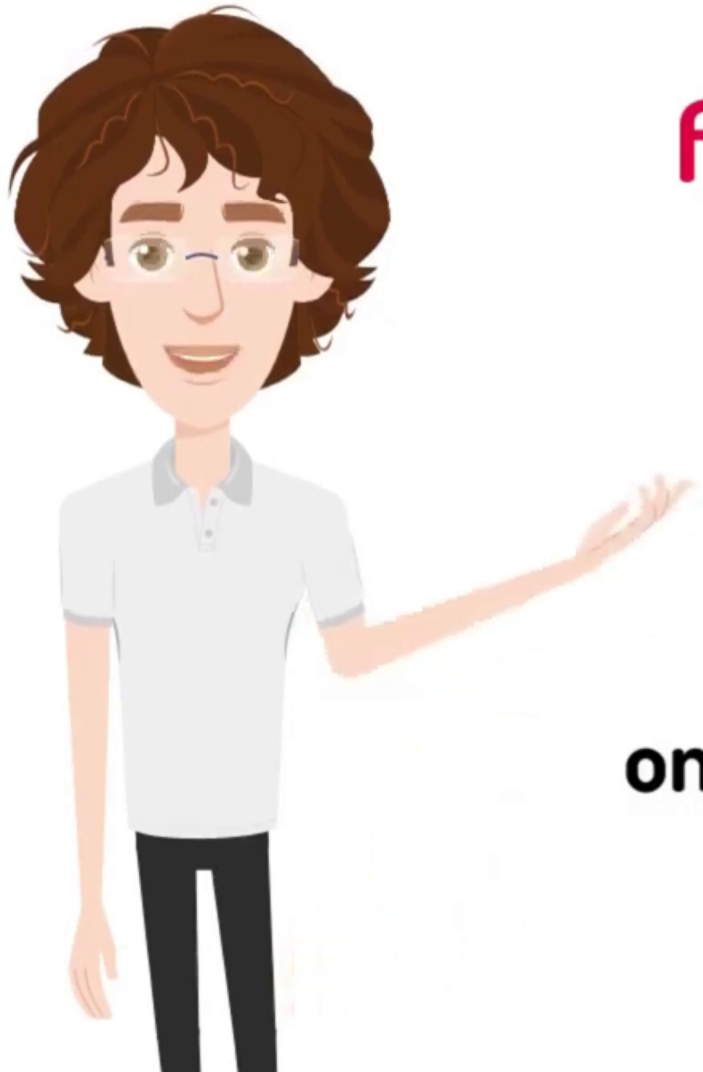
(i have videos for both)

sieve of Eratosthenes



what is the problem ?

we want to find
the prime numbers
from 1 to 120



find the primes from 1 to 120

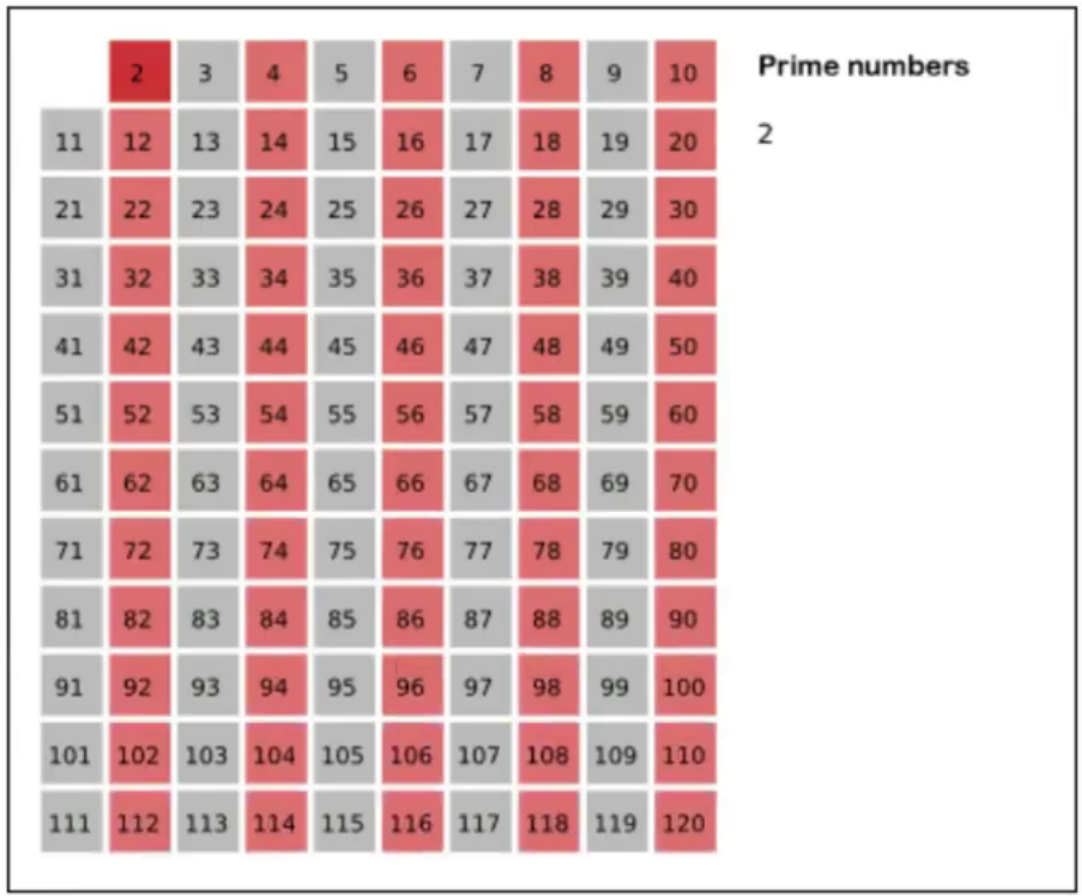
a prime number is
a number that has
only two divisors 1 and it self

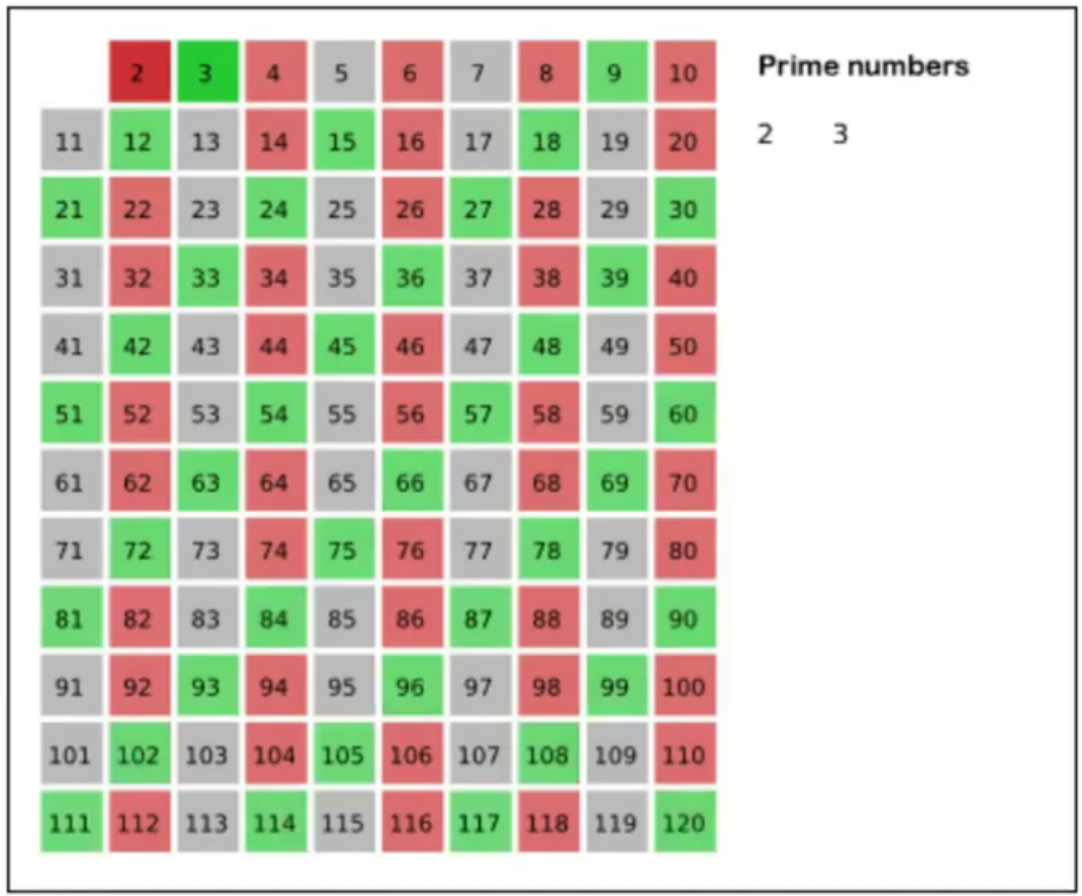
we can use factorization
for every number if
a number has two factors then
it's a prime a number

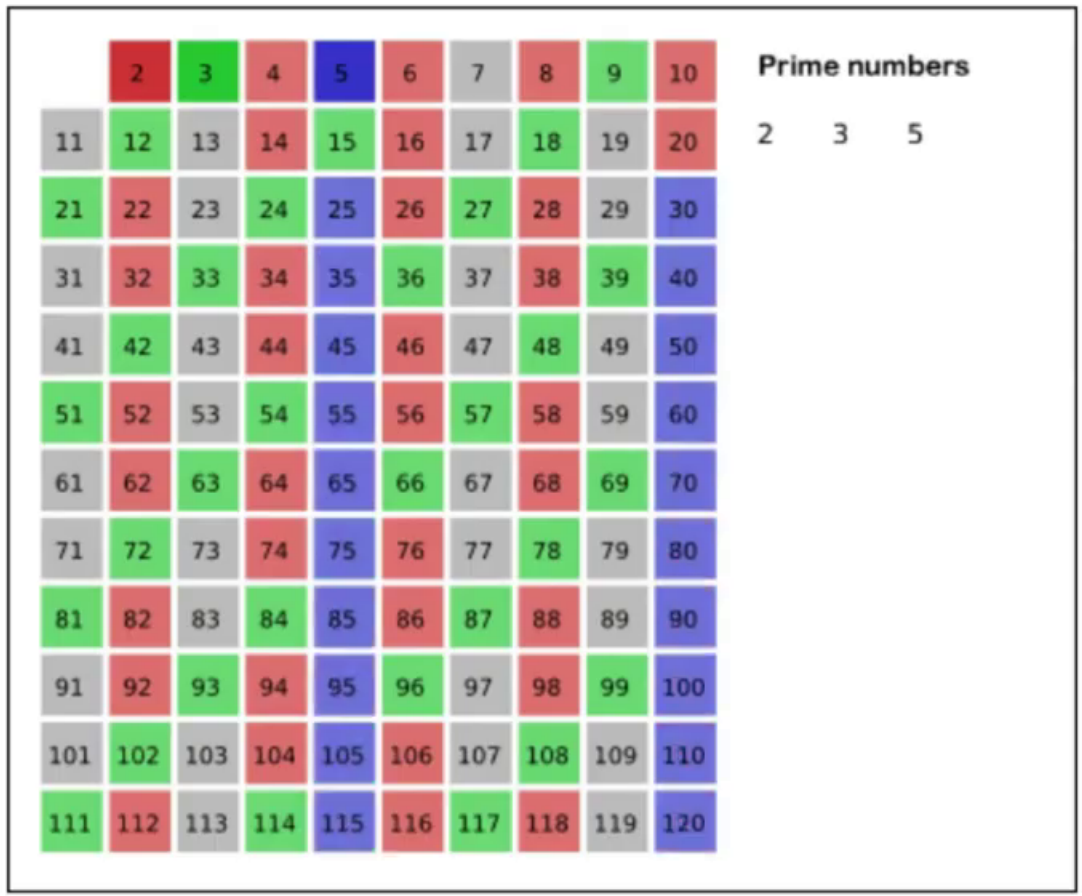
the time complexity will be
n*sqrt(n)

	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
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110
111	112	113	114	115	116	117	118	119	120

Prime numbers







every number consists of prime factors (prime factorization)

multiples of 2 and 3 are now all set to not prime so the first gray number I will encounter will be the next prime which is 5

time complexity will be n*log(n)