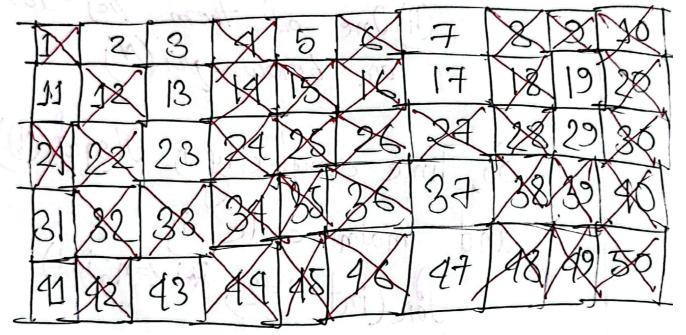# Sieve of Prestosthenes

* **Preprocessing** Time : $O(N \log(\log N))$

  Answer query : $O(1)$

  Extra space : $O(N)$

Algorithm : Sieve of Prestonthenes

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	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

and so on until N

⊠ = Composite ; for code = 0

☐ = Prime ; for code = 1

* Multiple of prime number numbers cannot be prime. number. Like 2 is are a prime number but its multiple 4,6,8, 10 etc are not prime numbe and so on.

* The number that has to between run is 1 to sqrt(N) and apply the above rule. So, the loop for above rule will be

1 to sqrt(N),