

Searching

1M

SQL

STUDENT

id	name	section	roll	phone
1	-	-	3	-
2	-	-	50	-
3	-	-	2	-
			14	
			35	

$$\frac{10^6}{10^8} \rightarrow 0.01s$$

$$1M \rightarrow 10^6$$

id	roll
3	2
1	3
4	14
5	35
2	50

20

1000

1s

(30-40)%

~~index~~

5 1 -10 2 95 7 3 10

n=8
v=7

```
for(int i=0; i<n; i++)
{
    if(arr[i]==v)
        return true;
}
```

O(n)

v=7
v=10
v=80

return false;

0 1 2 3 4 5 6 7
-10 1 2 3 5 7 10 95

$$\frac{4+7}{2} = \frac{11}{2} = 5$$

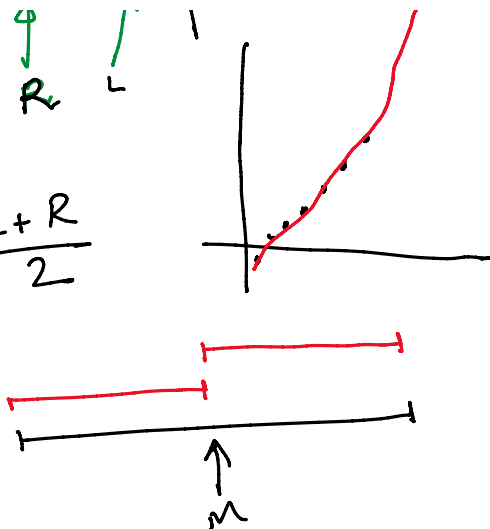
1 1 1 1 1 1 1 1

2 1 1

$$v = 80$$

while ($L \leq R$)

$$M = \frac{L+R}{2}$$



$$\begin{aligned} &\rightarrow \frac{N}{2^0} \quad (0) \\ &\rightarrow \frac{N}{2^1} \quad (1) \\ &\rightarrow \frac{N}{2^2} \quad (2) \\ &\rightarrow \frac{N}{2^3} \quad (3) \\ &\vdots \\ &\rightarrow \frac{N}{2^k} \quad (k) \end{aligned}$$

$$\left(\frac{N}{2^k} = 1 \right)$$

$$\begin{aligned} \frac{N}{2^k} = 1 &\Rightarrow N = 2^k \\ &\Rightarrow \log_2(N) = \log_2(2^k) \\ &= k \cdot \log_2 2 \\ \therefore \log_2(N) &= k \end{aligned}$$

$$\frac{10^9}{7}$$

$$\begin{aligned} 7 &\rightarrow O(\log_2 N) \sim 31 \\ 14 &\rightarrow \sim 31 \\ 21 &\rightarrow \\ \vdots & \\ 10^8 & \end{aligned}$$

$$30 \times 10^8 = 3 \times 10^9$$

1 5 12 13 20 21

25

- -

6 7 8 9 10 - - - - - 85

[6, 85]

$$1 \sim 85 \rightarrow \frac{85}{7} = 12$$

$$1 \sim 5 \rightarrow \frac{5}{7} = 0$$

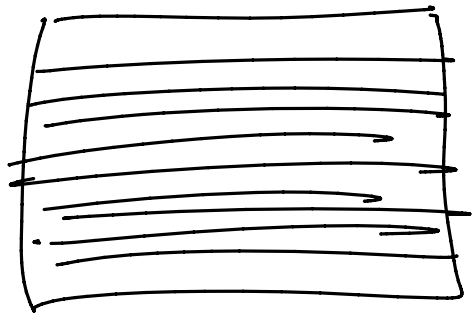
- o -

200M

(R) W

10 : 1

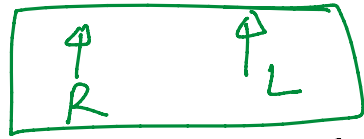
SQL



- ① NID
 - ② Passport
 - ③ BR
- } id-type
id-value

Ⓢ

1 3 10 15 16 100 120



[7, 20] → 3

while(L ≤ R)
{

}
L, R L = 2
 R =