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① Diketahui sebuah distribusi array seperti pada gambar di bawah.

key : 0 1 2 3 4 5 6 7 8 9
elements : 4 5 6 8 9 10 11 14 20

Buatkan Interpolation search.

Arr (arr) = {4, 5, 6, 8, 9, 10, 11, 14, 20}

X = 14

Array = 9

l.low = 0

l.high = 8.

$$\text{Pos} : \text{low} \left[\frac{(\text{key} - \text{arr}[\text{low}] \times (\text{high} - \text{low}))}{(\text{arr}[\text{high}] - \text{arr}[\text{low}])} \right]$$

→ Iterasi 1

low = 0 (nilai arr[0] = 4)

high = 8 (nilai arr[8] = 20)

X = 14

$$\text{Pos} = 0 + \left[\frac{(14 - 4) \times (8 - 0)}{(20 - 4)} \right]$$

$$\text{Pos} = 0 \left[\frac{10 \times 8}{16} \right]$$

$$pos = 0 + \left\lceil \frac{80 \times}{15} \right\rceil$$

$$pos = 0 + 5$$

$$pos = 5$$

Cek :

$$\rightarrow \text{nilai arr}[5] = 10$$

$$\rightarrow 10 \neq 14 \text{ (tidak sama)}$$

$$\rightarrow \text{low baru} += 1$$

$$\rightarrow \text{low} = 5 + 1 = 6$$

Iterasi 2.

$$\text{low} = 6 \text{ (arr}[6] = 11)$$

$$\text{high} = 8 \text{ (nilai arr}[8] = 20)$$

$$x = 14$$

Pos Baru :

$$pos = 5 + \left\lfloor \frac{(14-11) \times (8-5)}{(20-11)} \right\rfloor$$

$$pos = 5 + \left\lfloor \frac{3 \times 3}{9} \right\rfloor$$

$$pos = 5 + \left\lfloor \frac{3}{3} \right\rfloor$$

$$pos = 6.$$

Pengecekan:

$$\rightarrow arr[5] = 11$$

$$\rightarrow 11 \neq 14$$

$$\rightarrow 11 < 14$$

$$\rightarrow low \neq pos + 1$$

$$\rightarrow low = 5 + 1 = 7$$

Ulangi 3:

$$low : 7 (arr[7] = 14)$$

$$high : 8 (nilai arr[8] = 20)$$

$$x = 14$$

posisi baru.

$$pos : 7 + \left[\frac{(11 + 14) \times (8 - 7)}{(20 - 14)} \right]$$

$$pos = 7 + \left[\frac{0 \times 1}{6} \right]$$

$$pos = 7 + [0]$$

$$pos = 7$$

Pengecekan:

$$\rightarrow \text{nilai arr}[7] = 14.$$

$$\rightarrow 14 == 14 \text{ (sama)}$$

$$\text{indeks} = 7 //$$

Fibonacci Search

→ array $n = 9$

→ Fibonacci (F_m)

→ Fibonacci $0, 1, 1, 2, 3, 5, \dots$

→ $F_1 = 13$ karena ≥ 9

→ ~~use~~ $m = 7$.

✗ inisialisasi

- $m = 7$

- offset $= -1$

- $x = 14$

$\#1 = 1$

$$i = \min(\text{offset} + f_{m-2}, n-1)$$

→ f_{m-2} adalah $F_{7-2} = F_5 = 5$

→ $n-1 = 9-1 = 8$

→ $i = \min(-1 + 5, 8) = (4, 8) = 4$.

Cek :

$$\text{arr}[u] = q$$

$$\rightarrow m > q \text{ (} u > \text{arr}[i] \text{)}$$

\rightarrow Geser ke kanan

• Buang F_{m-2} dari depan.

$$m = 1 = 7 - 1 = 6$$

$$\text{Offset} \rightarrow 1 = u$$

$$\underline{i = 2}$$

$$m = 6$$

$$\text{offset} = u$$

$$l = \min(\text{offset} + f_{m-2}, u-1)$$

$$\rightarrow F_{m-2} = F_{6-2} = F_4 = 3$$

$$\rightarrow u - 1 = 8$$

cek.

$$l = (\min(u+3, 8) = \min(7, 8) = 7$$

No. _____

Date _____

Cek.

$$arr[i] \rightarrow arr[7] = 14 //$$