Tugas !!

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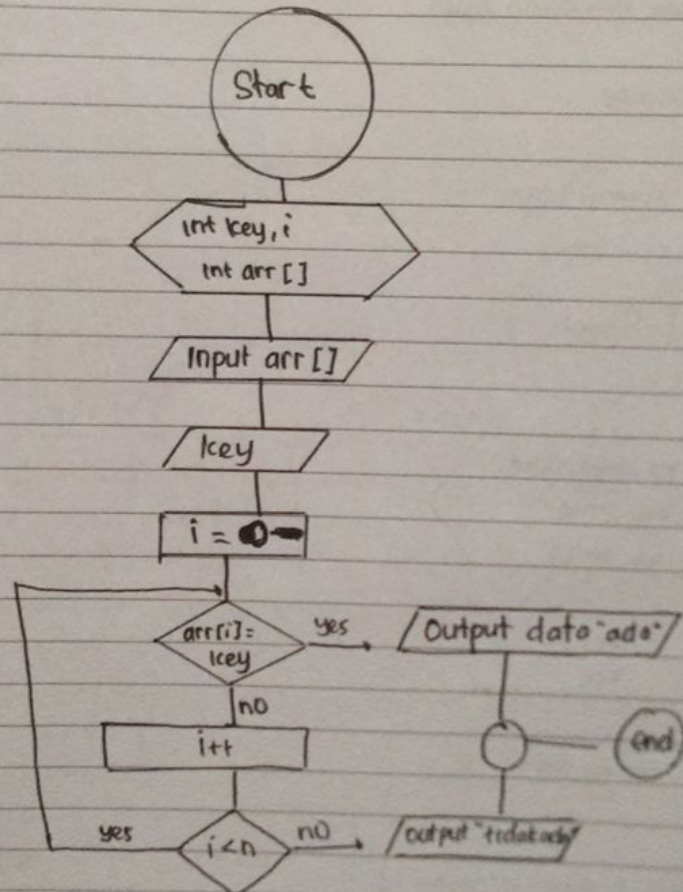
1. Flowchart binary search

```
          ╭───────────╮
         (    Start     )
          ╰───────────╯
                │
         ╱─────────────────╲
        │  int awal, akhir,  │
        │    key, mid        │
         ╲  int arr[]        ╱
          ╲─────────────────╱
                │
          ╱──────────╱
         │  arr[]     │
         │  key       │
        ╱──────────╱
                │
         ┌─────────────┐
         │ sorting data │
         └─────────────┘
                │
         ┌──────────────────────────┐
         │ awal = 0, akhir = arr.length - 1 │
         └──────────────────────────┘
                │
         ┌──────────────────────┐
         │ mid = (awal + akhir)/2 │◄─────────────────────┐
         └──────────────────────┘                       │
                │                                         │
           ◇ mid = key ◇──no──── ◇ mid > key ◇──── ┌──────────────┐
                │                      │            │ akhir = mid - 1 │
              yes                    yes            └──────────────┘
                │                      │
         ╱──────────╱         ┌──────────────┐
        │   key      │        │ awal = mid + 1 │
        ╱──────────╱          └──────────────┘
                │
          ╭──────────╮
         (    end     )
          ╰──────────╯
```
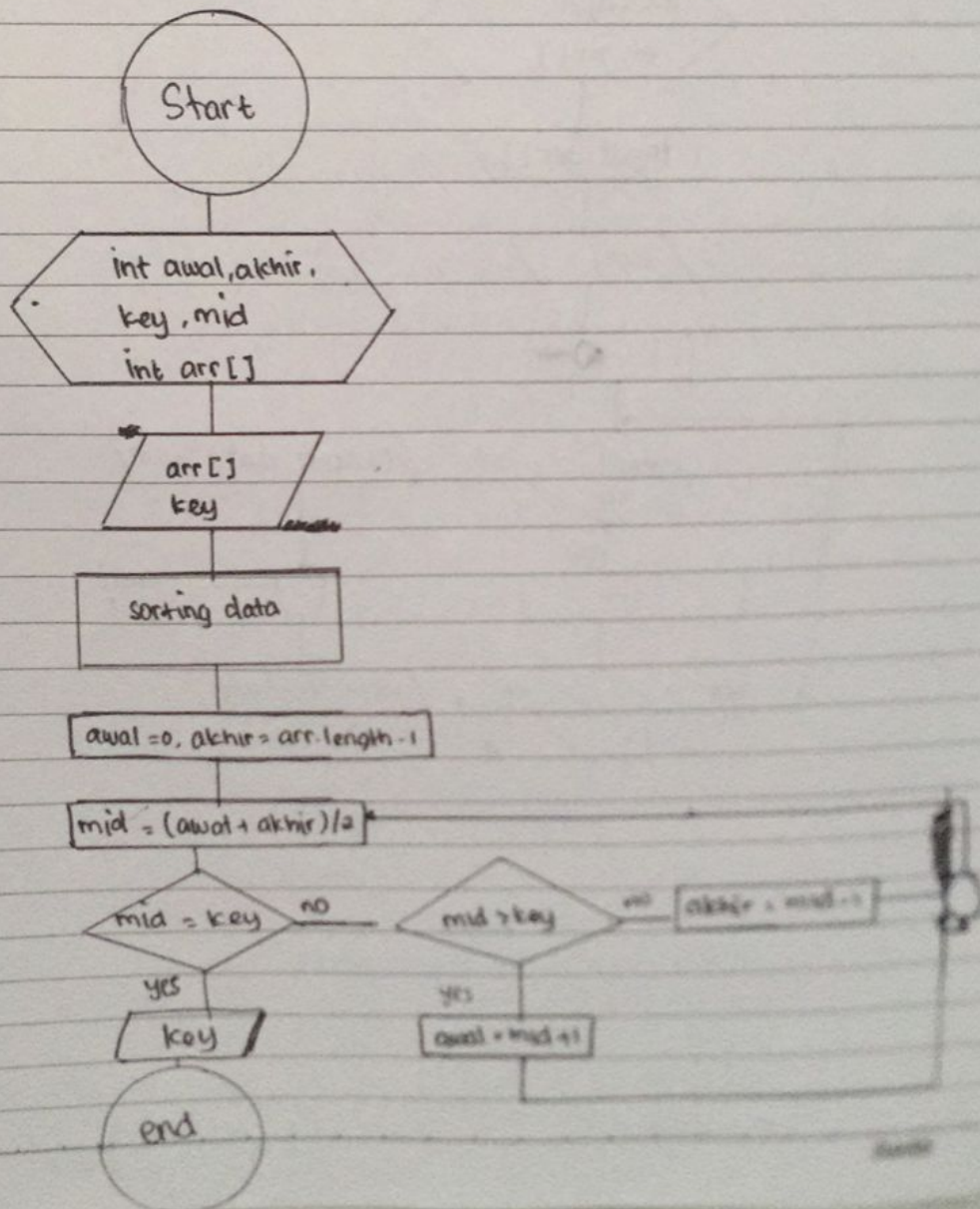
2. Flowchart Sequential search

```
        ( Start )
           |
     / int key, i \
     \ int arr [] /
           |
     / Input arr [] /
           |
        / key /
           |
      [ i = 0 ]
           |
      < arr[i]=  > --yes--> / Output data "ada" /
      <  key   >                      |
           |no                        |
      [ i++ ]              ( )---( end )
           |                    |
  yes-- < i<n > --no--> / output "tidak ada" /
```

3. {20, 35, 14, 7, 67, 89, 23, 46}

yang dicari "key" = 35

ⓐ Squential soarch.

0	1	2	3	4	5	6	7	Indeks
20	35	14	7	67	89	23	46	Data

key = 35

Iterasi dari indeks ke 0 — n

0	1	2	3	4	5	6	7	Indeks
20	35	14	7	67	89	23	46	Data

•) Indeks ke 0 ~~data~~ dengan data 20.

key = data dari indeks n

35 = 20 ? = Tidak

•) Indeks ke1 dengan data 35

35 = 35 Ya , data ditemukan

key ada pada indeks ke 1.

ⓑ Binary search.

Data awal

0	1	2	3	4	5	6	7	Indeks
20	35	14	7	67	89	23	46	Data

Sorting data.

Tahap 1 : { 20, 35, 14, 7, 67, 89, 23, 46}.

{20, 35, 14, 7, 67, 89, 23, 46}   20 < 35 no swap

{20, 14, 35, 7, 67, 89, 23, 46}   35 > 14 swap

{20, 14, 7, 35, 67, 89, 23, 46}   35 > 7 swap

{20, 14, 7, 35, 67, 89, 23, 46}   35 < 67 no swap

{20, 14, 7, 35, 67, 89, 23, 46}   67 < 89 no swap

{20, 14, 7, 35, 67, 23, 89, 46}   89 > 23 swap.

{20, 14, 7, 35, 67, 23, 46, 89}   89 > 46 swap.

{20, 14, 7, 35, 67, 23, 46, 89}   Hasil sementara

6. ~~Binary search~~
~~Sorting data dengan bubble short.~~
~~{20, 35, 14, 7, 67, 89, 23, 46}~~

20

Tahap 2
{20, 14, 7, 35, 67, 23, 46, 89} Data sementara setelah sorting tahap 1.
{14, 20, 7, 35, 67, 23, 46, 89} 20 > 14 swap
{14, 7, 20, 35, 67, 23, 46, 89} 20 > 7 Swap
{14, 7, 20, 35, 67, 23, 46, 89} 20 < 35 no swap.
{14, 7, 20, 35, 67, 23, 46, 89} 35 < 67 no swap
{14, 7, 20, 35, 23, 67, 46, 89} 67 > 23 swap
{14, 7, 20, 35, 23, 46, 67, 89} 67 > 46 Swap
{14, 7, 20, 35, 23, 46, 67, 89} 67 < 89 no swap {Hasil sementara}

Tahap 3.
{14, 7, 20, 35, 23, 46, 67, 89} Data setelah sorting tahap 2
{7, 14, 20, 35, 23, 46, 67, 89} 14 > 7 Swap.
{7, 14, 20, 35, 23, 46, 67, 89} 14 < 20 no swap
{7, 14, 20, 35, 23, 46, 67, 89} 20 < 35 no swap.
{7, 14, 20, 23, 35, 46, 67, 89} 35 > 23 swap
{7, 14, 20, 23, 35, 46, 67, 89} 35 < 46 no swap.
{7, 14, 20, 23, 35, 46, 67, 89} 46 < 67 no swap
{7, 14, 20, 23, 35, 46, 67, 89} 67 < 89 no swap.
{7, 14, 20, 23, 35, 46, 67, 89} Hasil akhir

Data setelah sorting.

0	1	2	3	4	5	6	7	Indeks
7	14	20	23	35	46	67	89	Data

i   m   j

Iterasi key = 35
$m = (0+7)/2 = 3$
$23 = 35$? Tidak.

$35 > 23$? ya, $i = m + 1$

$k = (4 + 7)/2 = 5$

$46 = 35$? Tidak

$35 < 46$? Ya,

$i = 4$ (tetap).

$j = k - 1, 4$

maka posisi tengah menjadi $(4 + 4)/2 = 4$.

$35 = 35$? Ya, data key ditemukan.