**Nama : Muhammad Erril Putra Pratidina**

**Kelas : TI-1H**

**NIM : 2341720183**

**Tugas : Searching – Tugas, no. 3**

Diketahui sebuah data berupa Nim Anda masing-masing! Jika nilai yang dicari adalah **0**, maka:

* Gambarkan proses penyelesaian kasus pencarian dengan sequential search
* Gambarkan proses penyelesaian kasus pencarian dengan binary seach (urutkan dahulu array nya dengan algoritma sorting)!

**Jawaban**

NIM : 234 17 2018 3

* Proses penyelesaian kasus pencarian dengan sequential search.
* i = 0
  + Apakah 2 == 0? 2 != 0;
* I = 1
  + Apakah 3 == 0? 3 != 0;
* I = 2
  + Apakah 4 == 0? 4 != 0;
* I = 3
  + Apakah 1 == 0? 1 != 0;
* I = 4
  + Apakah 7 == 0? 7 != 0;
* I = 5
  + Apakah 2 == 0? 2 != 0;
* I = 6
  + Apakah 0 == 0? 0 == 0 TRUE; pencarian = I;
* I = 7
  + Apakah 1 == 0? 1 != 0;
* I = 8
  + Apakah 8 == 0? 8 != 0;
* I = 9
  + Apakah 3 == 0? 8 != 0;

Angka 0 terdapat pada indeks 6.

* Proses penyelesaian kasus pencarian dengan binary search.
* Data unsorted:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | 3 | 4 | 1 | 7 | 2 | 0 | 1 | 8 | 3 |

* Insertion sort.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | 3 | 4 | 1 | 7 | 2 | 0 | 1 | 8 | 3 |

**Tahap 1**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2** | 3 | 4 | 1 | 7 | 2 | 0 | 1 | 8 | 3 |

Indeks 0 dijadikan bagian sorted.

**Tahap 2**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2** | **3** | 4 | 1 | 7 | 2 | 0 | 1 | 8 | 3 |

Indeks 1 dijadikan bagian sorted.

**Tahap 3**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2** | **3** | **4** | 1 | 7 | 2 | 0 | 1 | 8 | 3 |

Indeks 2 dijadikan bagian sorted.

**Tahap 4**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **2** | **3** | **4** | **1** | 7 | 2 | 0 | 1 | 8 | 3 |

Indeks 3 dijadikan bagian sorted.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | 7 | 2 | 0 | 1 | 8 | 3 |

Indeks 3 digeser hingga menjadi indeks 0.

**Tahap 5**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **7** | 2 | 0 | 1 | 8 | 3 |

Indeks 4 dijadikan bagian sorted.

**Tahap 6**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **3** | **4** | **7** | **2** | 0 | 1 | 8 | 3 |

Indeks 5 dijadikan bagian sorted.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **2** | **3** | **4** | **7** | 0 | 1 | 8 | 3 |

Indeks 5 digeser hingga menjadi indeks 2.

**Tahap 7**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **1** | **2** | **2** | **3** | **4** | **7** | **0** | 1 | 8 | 3 |

Indeks 6 dijadikan bagian sorted.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | **1** | **2** | **2** | **3** | **4** | **7** | 1 | 8 | 3 |

Indeks 6 digeser hingga menjadi indeks 0.

**Tahap 8**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | **1** | **2** | **2** | **3** | **4** | **7** | **1** | 8 | 3 |

Indeks 7 dijadikan bagian sorted.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | **1** | **1** | **2** | **2** | **3** | **4** | **7** | 8 | 3 |

Indeks 7 digeser hingga menjadi indeks 2.

**Tahap 9**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | **1** | **1** | **2** | **2** | **3** | **4** | **7** | **8** | 3 |

Indeks 8 dijadikan bagian sorted.

**Tahap 10**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | **1** | **1** | **2** | **2** | **3** | **4** | **7** | **8** | **3** |

Indeks 9 dijadikan bagian sorted.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | **1** | **1** | **2** | **2** | **3** | **3** | **4** | **7** | **8** |

Indeks 9 digeser hingga menjadi indeks 6.

* Data sorted, akan mulai search:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **0** | **1** | **1** | **2** | **2** | **3** | **3** | **4** | **7** | **8** |

**Tahap 1**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Data** | **0** | **1** | **1** | **2** | **2** | **3** | **3** | **4** | **7** | **8** |
| **Indeks** | **0** | **1** | **2** | **3** | **4** | **5** | **6** | **7** | **8** | **9** |

0 == array[middle]? FALSE

0 < array[middle]? TRUE

**Tahap 2**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Data** | **0** | **1** | **1** | **2** | 2 | 3 | 3 | 4 | 7 | 8 |
| **Indeks** | **0** | **1** | **2** | **3** | 4 | 5 | 6 | 7 | 8 | 9 |

0 == array[middle]? FALSE

0 < array[middle]? TRUE

**Tahap 3**

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Data** | **0** | 1 | 1 | 2 | 2 | 3 | 3 | 4 | 7 | 8 |
| **Indeks** | **0** | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 |

0 == array[middle]? TRUE

Jadi angka 0 ada pada indeks 0.