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Kelas : A

1.a

|  |  |  |
| --- | --- | --- |
| j | i | if a[i]<a[k] then |
| 1 | n-2 | n-1 |
|  | n-3 | n-1 |
| .  .  . | .  .  . |  |
| 2  .  .  . | n-1 | n-1 |
| n-1 | 1 |  |
| n-1 | Untuk setiap j, n-j | Untuk setiap i, n-1 |
|  |  |  |

|  |  |
| --- | --- |
| for j =1 to n-1 |  |
| k =j | n-1 |
| for i = j+1 to n |  |
| if a[i]<a[k] then | = |
| k =i | 1 |
| endif |  |
| endfor |  |
| tm = a[j] | n-1 |
| a[j]=a[k] | n-1 |
| a[k]=tm | n-1 |
| endfor |  |

T(n) = n-1++1+3\*(n-1)

=+4n-3

T(n) C f(n)

+4n-3 C

+ -3/ C

n0 =1 , C=1

n1, C1, kompleksitas O=O(n2)

1.b

|  |  |
| --- | --- |
| for i =0 to n-1 |  |
| for j = 0 to n-1 |  |
| c[i,j]=0 | n2 |
| for k = 0 to n-1 |  |
| cij=d[i,k] and b[k,j] | n3 |
| c[i,j]= c[i,j]or cij | n3 |
| endfor |  |
| endfor |  |
| endfor |  |

T(n) = n2+n3+n3

=2n3 +n2

T(n) C f(n)

2n3 +n2 C

C

n0 =1 , C=3

n1, C3, kompleksitas O=O(n3)

2.a

algoritma 2.a

|  |  |
| --- | --- |
| ada = 0; | 1 |
| kx =1; | 1 |
| Input br; |  |
| for(i =1,I < n+1, i++) |  |
| { if a[i] ==br&&(!ada)) | n+1 |
| { ada =1; | 1 |
| kx = I; | 1 |
| i=n+1; | 1 |
| } |  |
| } |  |

Kondisi di dalam IF hanya dijalankan sekali, dan dalam worst-casenya, FOR akan berhenti apabila kondisi IF terpenuhi. Worst-casenya adalah ketika setiap perbandingan nilainya selalu salah sampai akhirnya yang ditemukan ada pada posisi terujung.

T(n) = n+6

T(n) C f(n)

n+6C

C

n0 =1 , C=6

n1, C6, kompleksitas O=O(n)

algoritma 2.b

|  |  |
| --- | --- |
| L = 1; | 1 |
| R = n; | 1 |
| ada = 0; | 1 |
| input br; |  |
| while ((L<=R)&&(!ada)) |  |
| { m = (L+R)div/2; | log n |
| if (a[m]==br) | log n |
| ada =1 | 1 |
| else if (br<a[m]) | (log n -1) |
| R = m-1 |  |
| else | (log n -1) |
| L = m+1 |  |
| } |  |

|  |  |
| --- | --- |
| banyak langkah | Jumlah proses |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| .  .  . |  |
| k |  |

Apabila dalam worst case, maka akan dibagi sampai menyisakan 1. Sehingga dapat disimpulkan bahwa

n/2k =1

n=2k

log 2 n = k

T(n)= 4(log2⁡n)+2

T(n)≤c\*f(n)

4(log2⁡n)+2≤c\* log2⁡n

4+2/log2n ≤c (Misal n0=2)

4+2≤c

c≥6 ,Terbukti bahwa Kompleksitas O = O(log2⁡n),dengan c≥6 dan n0=2