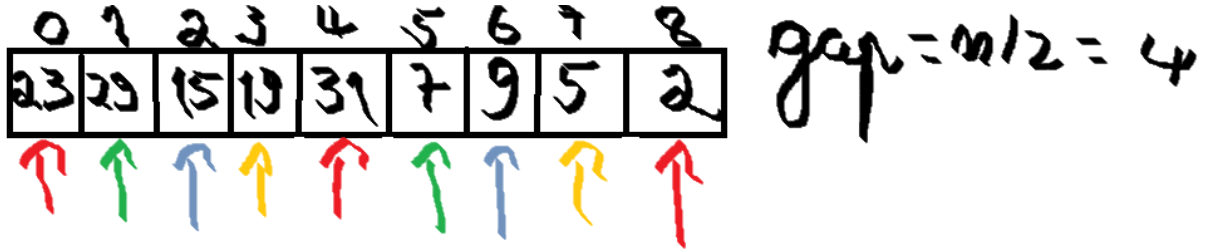
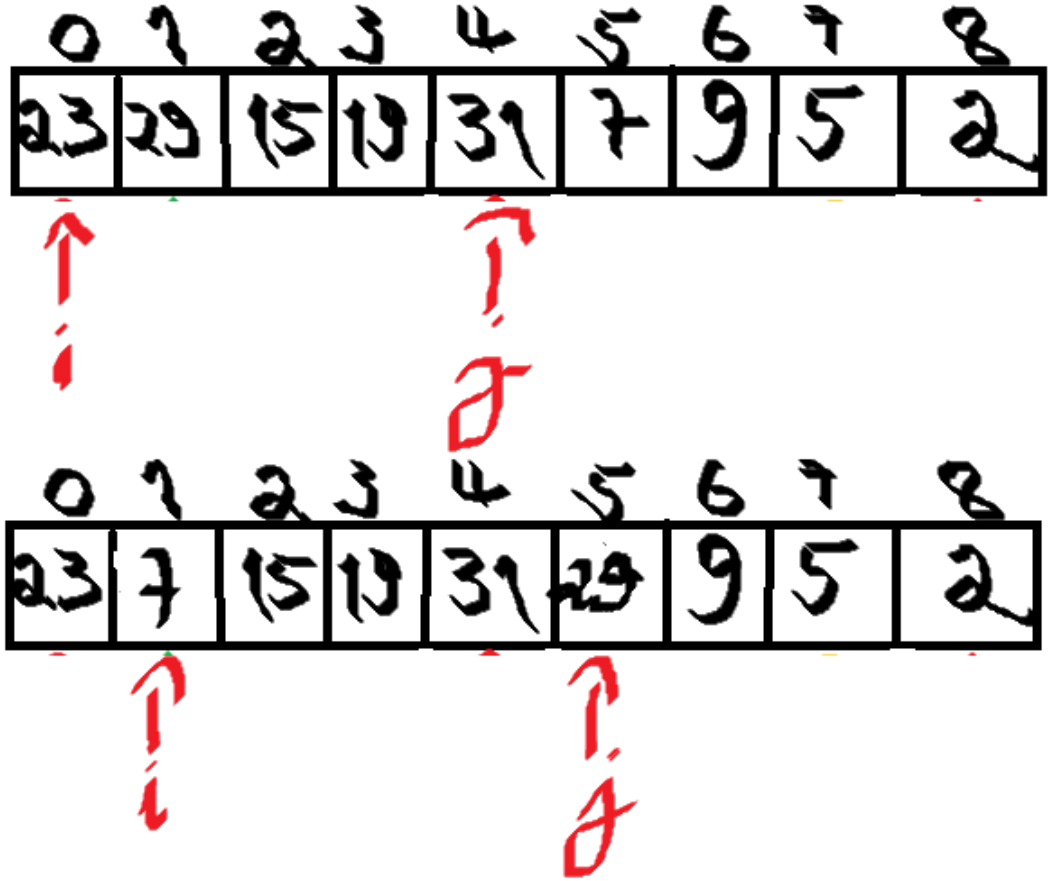
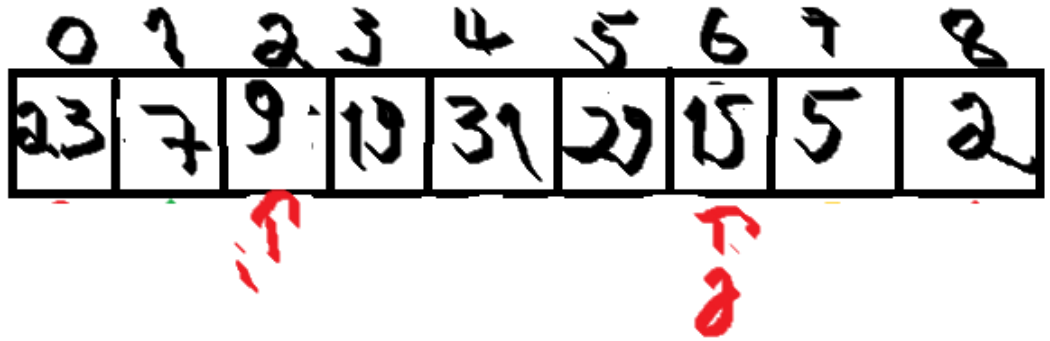
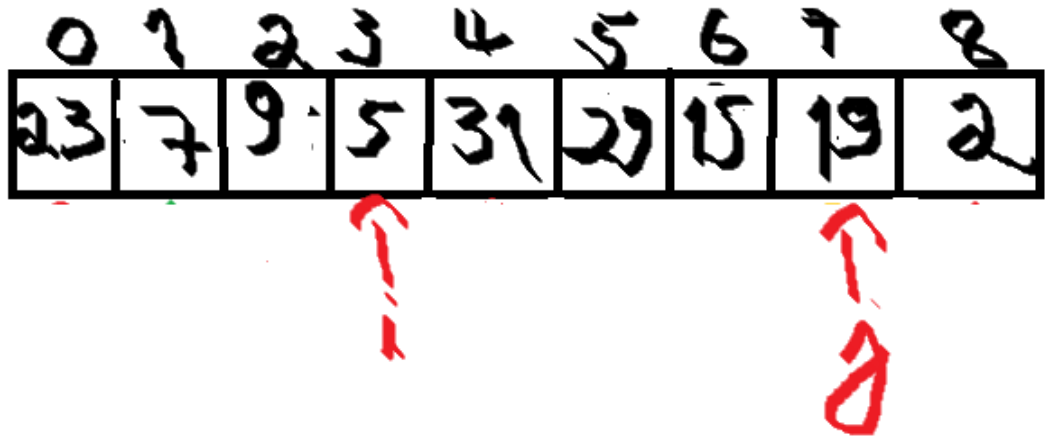
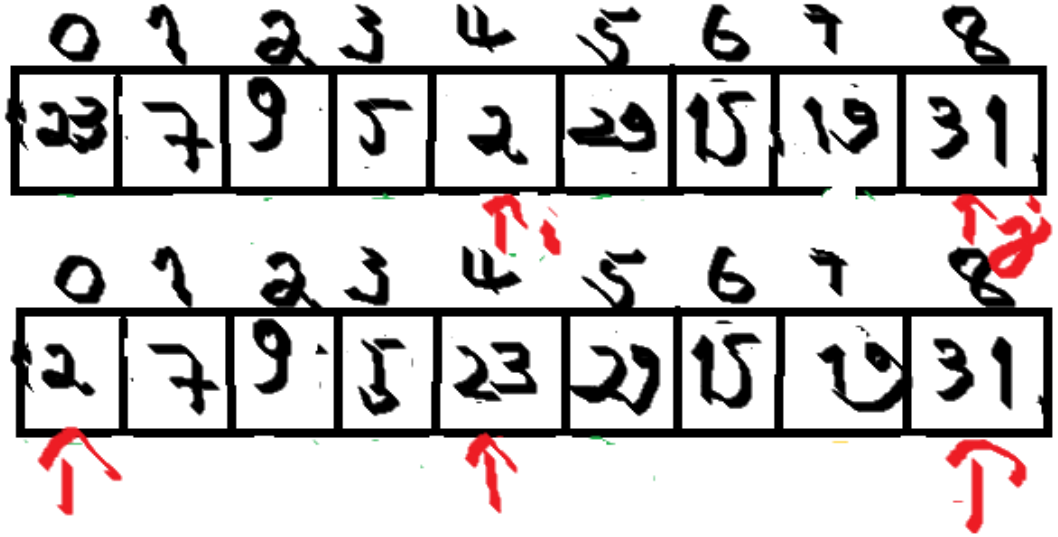
Shell sort

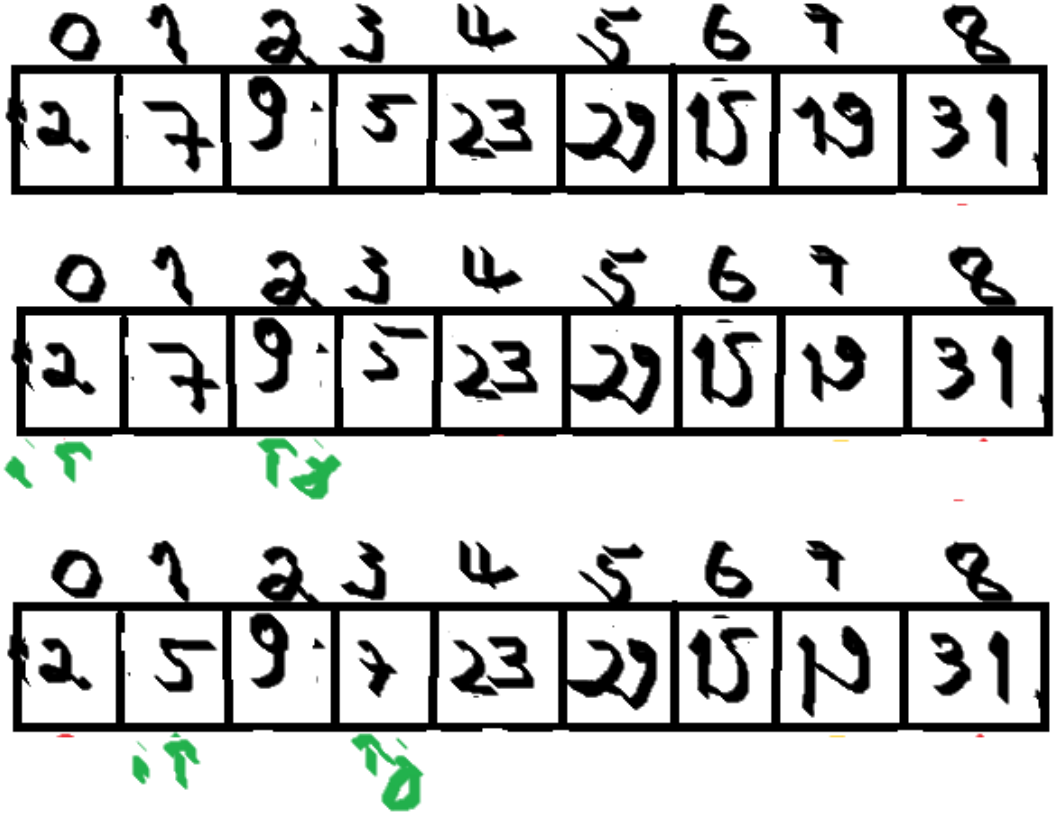


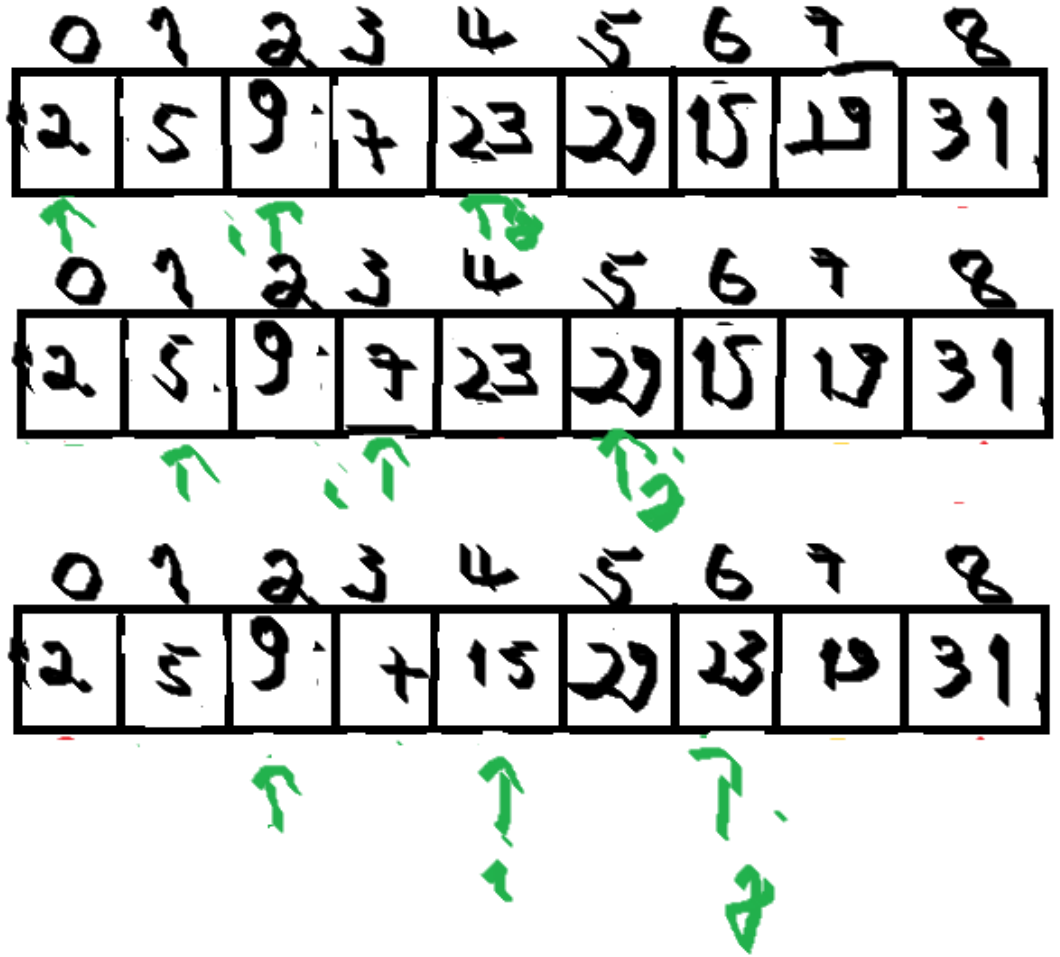

0 1 2 3 4 5 6 7 8
23 29 15 13 31 7 9 5 2
i
j
0 1 2 3 4 5 6 7 8
23 7 15 13 31 29 9 5 2
i
j

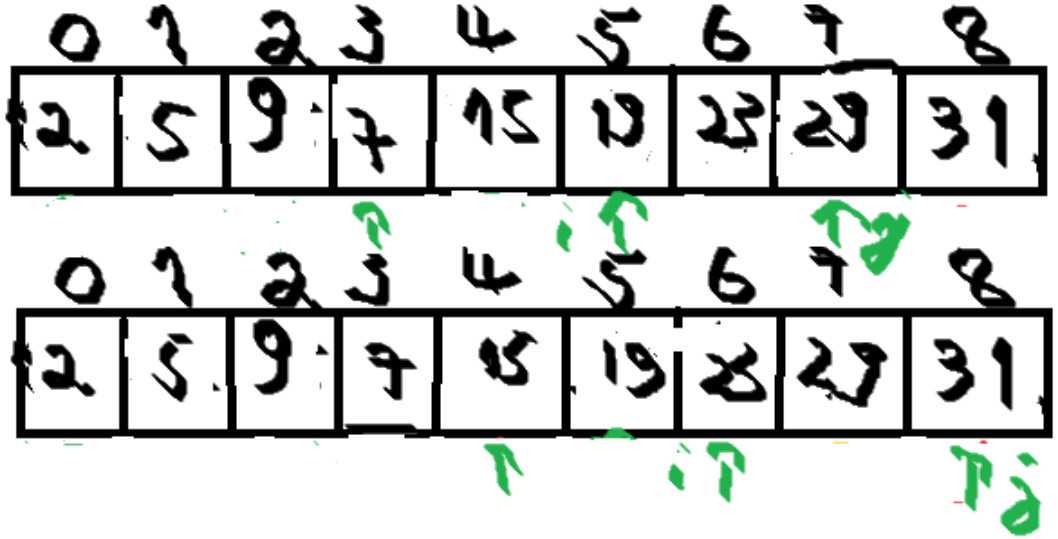

0 1 2 3 4 5 6 7 8
23 7 9 13 31 20 15 5 2

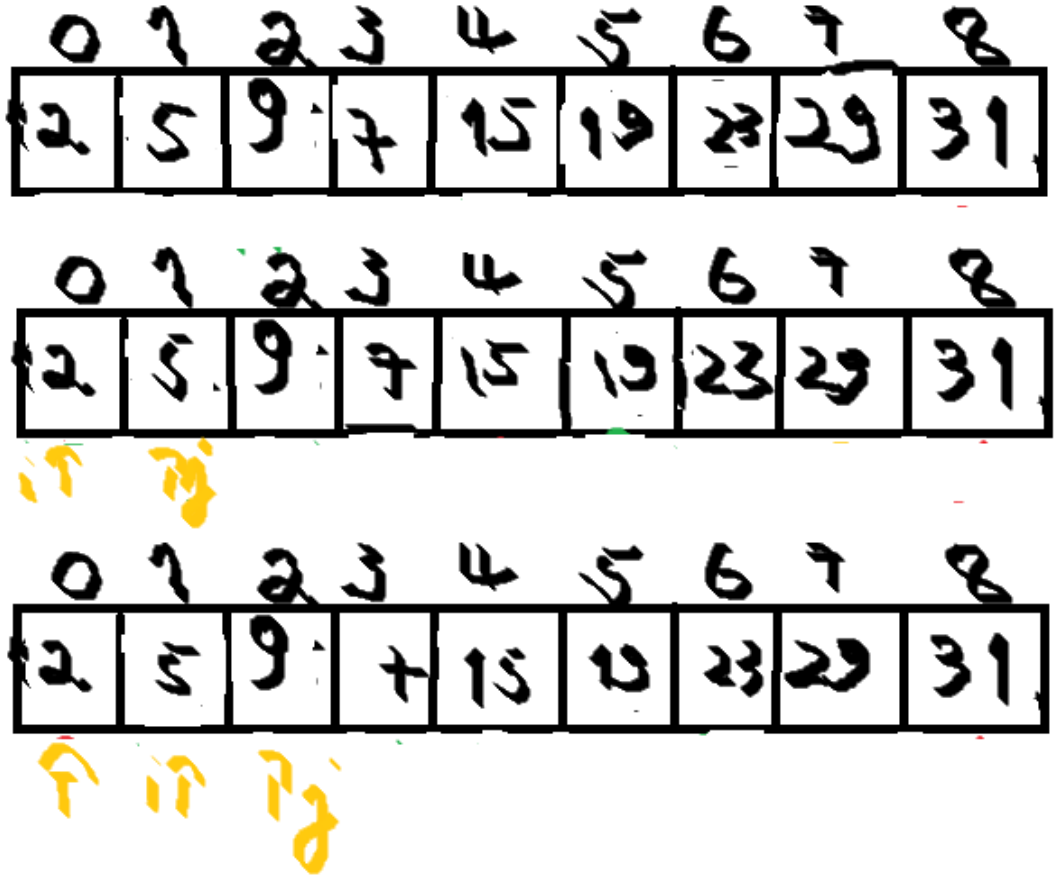

0 1 2 3 4 5 6 7 8
23 7 9 5 31 20 15 13 2

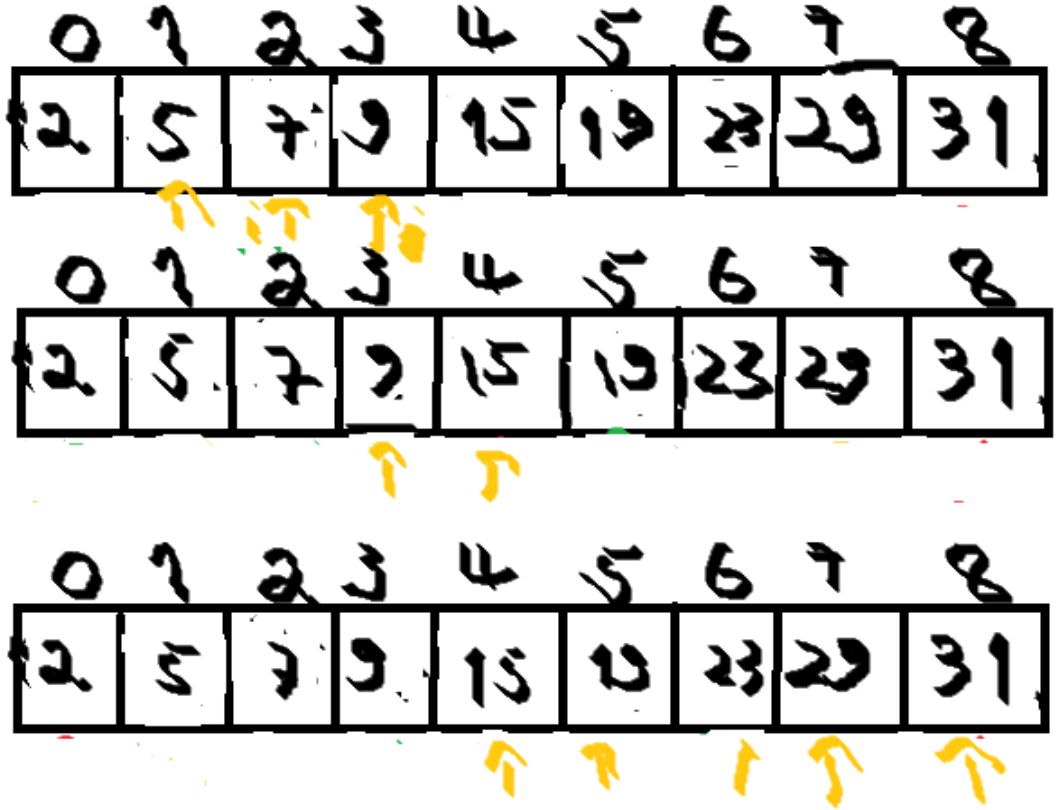

0 1 2 3 4 5 6 7 8
23 7 9 5 2 23 15 17 31
0 1 2 3 4 5 6 7 8
2 7 9 5 23 23 15 17 31


0 1 2 3 4 5 6 7 8
2 7 9 5 23 29 15 19 31
0 1 2 3 4 5 6 7 8
2 7 9 5 23 29 15 19 31
0 1 2 3 4 5 6 7 8
2 5 9 7 23 29 15 19 31


0 1 2 3 4 5 6 7 8
2 5 9 7 23 27 15 17 31
0 1 2 3 4 5 6 7 8
2 5 9 7 23 27 15 17 31
0 1 2 3 4 5 6 7 8
2 5 9 15 27 23 17 31


0 1 2 3 4 5 6 7 8
2 5 9 7 15 17 25 29 31
0 1 2 3 4 5 6 7 8
2 5 9 7 15 17 25 29 31




0 1 2 3 4 5 6 7 8
2 5 7 9 15 19 23 29 31
0 1 2 3 4 5 6 7 8
2 5 7 9 15 19 23 29 31
0 1 2 3 4 5 6 7 8
2 5 7 9 15 19 23 29 31

Complexitate

Worst Case Complexity

$O(n^2)$-atunci cand elementele sunt aranjate in ordine inversa

Best Case Complexity

O(n) Atunci cand elementele sunt deja sortate,sau aproape sortate

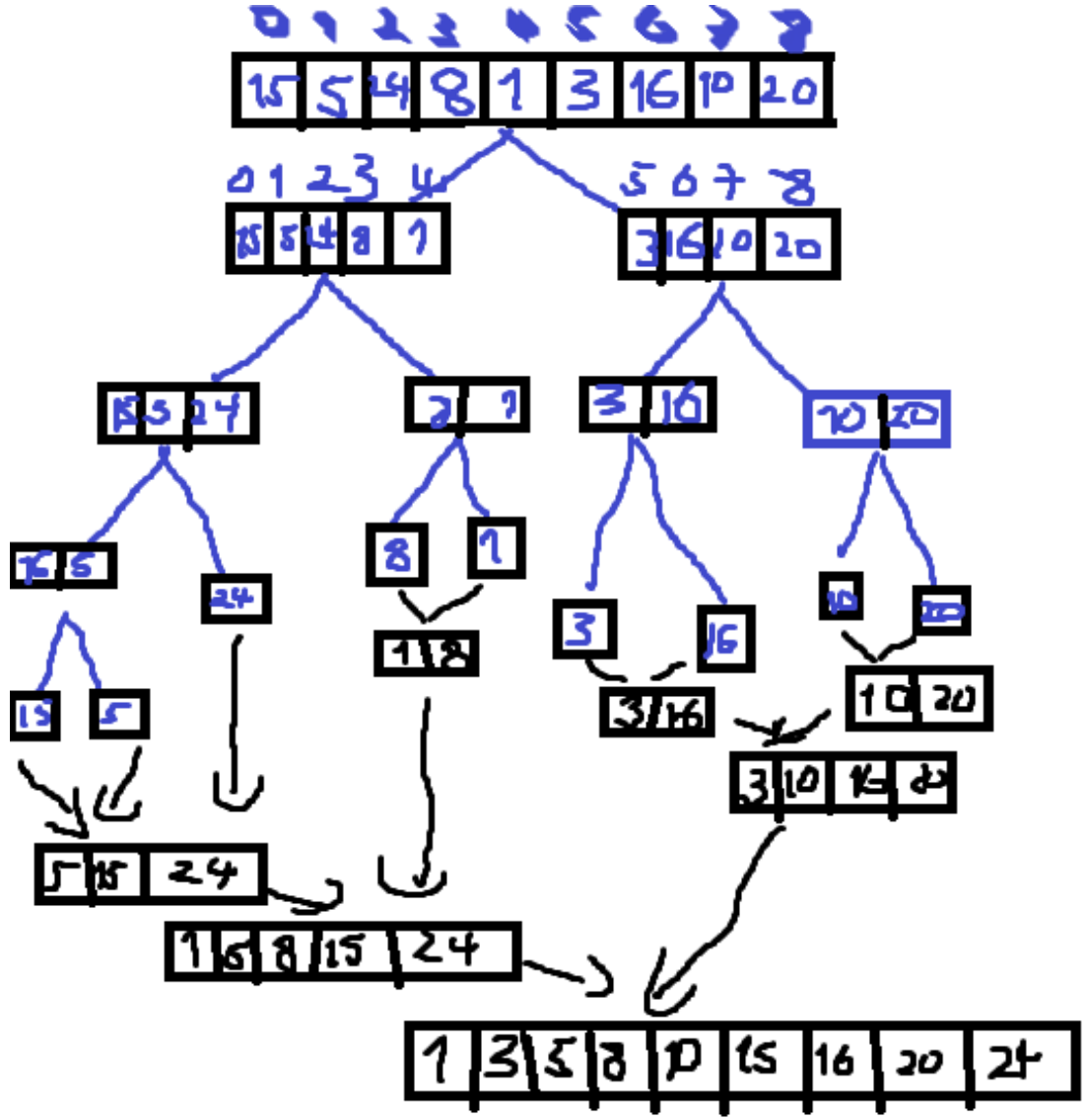
Average Case Complexity

*O(n*log n)*

Timp de rulare pentru diferite numere

- Best case:-10 nr:0.022s-100 nr:0.032s-1000 nr:0.134s-10000 nr:1.257s
- Worst case:10 nr:0.026-100 nr:0.040-1000 nr:0.140s-10000 nr:1.409s
- Average case:10 nr:0.027-100nr:0.039-1000nr:0.136s-10000 nr:1.294s

Merge sort



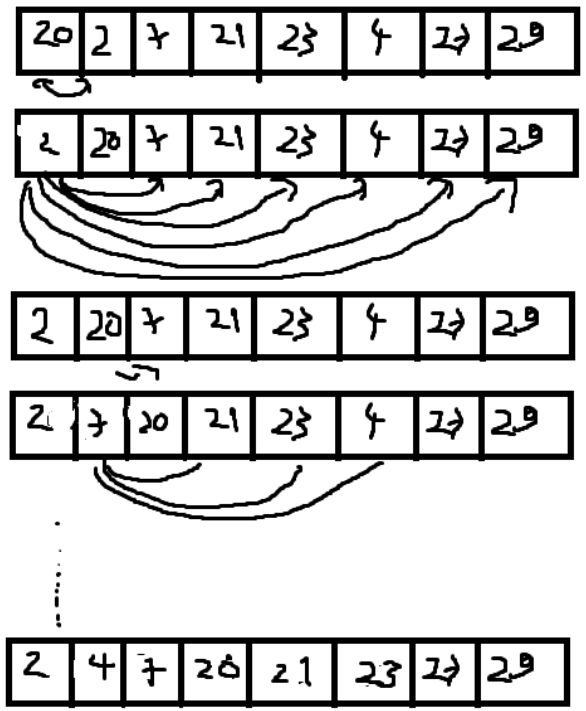
Complexitate

- **Worst Case Complexity**
  *O(n*log n)*
  Best Case Complexity
  *O(n*log n)*
  Average Case Complexity
- *O(n*log n)*

Timp de rulare pentru diferite numere

- Average case:10 nr:0.026s-100nr:0.039-1000nr:0.141s-10000 nr:1.280s

Bubble sort


20 2 7 21 23 4 24 29
2 20 7 21 23 4 24 29
2 20 7 21 23 4 24 29
2 7 20 21 23 4 24 29
2 4 7 20 21 23 24 29

Complexitate

- **Worst Case Complexity-elemente sortate descrescator**
  O(n^2)
  Best Case Complexity-elemente sortate crescator
  O(n)
  Average Case Complexity
  O(n^2)

Timp de rulare pentru diferite numere

- Best case:-10 nr:0.026s-100 nr:0.042s-1000 nr:0.136s-10000 nr:1.369s
- Worst case:10 nr:0.027-100 nr:0.036-1000 nr:0.160s-10000 nr:1.861s
- Average case:10 nr:0.031-100nr:0.039-1000nr:0.170s-10000 nr:1.625s

Count sort

Complexitate

- **Worst Case Complexity-elemente sortate descrescator**
  O(n+k),toate elementele fiind egale
  Best Case Complexity-elemente sortate crescator
  O(n + k),care apare atunci când toate elementele de intrare sunt distincte și distribuite uniform
  Average Case Complexity

  O(n + k)

Timp de rulare pentru diferite numere

- Best case:-10 nr:0.025s-100 nr:0.035s-1000 nr:0.146s-10000 nr:1.280s
- Worst case:10 nr:0.030-100 nr:0.037-1000 nr:0.134s-10000 nr:1.336s
- Average case:10 nr:0.028-100nr:0.036-1000nr:0.140s-10000 nr:1.412s

Radix sort

Complexitate

- **Worst Case Complexity-elemente sortate descrescator**
  O(nk)-elementele au numar diferit de cifre
  Best Case Complexity-elemente sortate crescator
  O(nk)-elementele au nr egal de cifre
  Average Case Complexity

  O(nk)

Timp de rulare pentru diferite numere

- Best case:-10 nr:0.024s-100 nr:0.029s-1000 nr:0.136s-10000 nr:1.220s
- Worst case:10 nr:0.030-100 nr:0.033-1000 nr:0.134s-10000 nr:1.326s
- Average case:10 nr:0.028-100nr:0.031-1000nr:0.135s-10000 nr:1.302s