Tugas Queue

1. Write the algorithm of queue mechanism using
    - Single linked list
    - Array alternative 1
    - Array alternative 2
    - Array alternative 3
2. Use the same infotype as before
3. Each member is to write 1 mechanism

Jawaban

A. Single Linked List

Algoritma:

- Simpan 2 reference: front → … → … →back
- enqueue(Benda x):
  - Buat sebuah node baru N yang datanya x
  - if queue sebelumnya empty, maka front = back = N
  - else tambahkan N di akhir (dan update back)
- dequeue():
  - Hapus elemen pertama: front = front.next

B. Array alternative 1

Algoritma:

| |
|---|
| Add(P,3)<br>Add(P,4)<br>Add(P,2)<br>Del(P)<br>Del(P)<br>Add(P,5)<br>Del(P)<br>Del(P) |

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 3 | 4 | 2 | | |

Head = 1
Tail = 3
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 2 | | | | |

Head = 1
Tail = 0
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 5 | 2 | | | |

Head = 1
Tail = 2
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Head = 0
Tail = 0
Is empty = False

C. Array Alternative 2

Algoritma:

Add(P,3)
Add(P,4)
Add(P,2)
Del(P)
Del(P)
Add(P,5)
Del(P)
Add(P,6)
Add(P,7)
Del(P)
Del(P)
Del(P)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 3 | 4 | 2 | | |

Head = 1
Tail = 3
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 2 | | | | |

Head = 1
Tail = 0
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 5 | 2 | | | |

Head = 1
Tail = 2
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 2 | | | | |

Head = 1
Tail = 0
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 7 | 6 | 2 | | |

Head = 1
Tail = 3
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Head = 0
Tail = 0
Is empty = False

D. Array alternative 3
Algoritma:

Add(P,3)
Add(P,4)
Add(P,2)
Del(P)
Del(P)
Add(P,5)
Del(P)
Add(P,6)
Add(P,7)
Add(P,8)
Del(P)
Del(P)
Del(P)
Del(P)

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 3 | 4 | 2 | | |

Head = 1
Tail = 3
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 2 | | | | |

Head = 1
Tail = 0
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 5 | 2 | | | |

Head = 1
Tail = 2
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 2 | | | | |

Head = 1
Tail = 0
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| 8 | 7 | 6 | 2 | |

Head = 1
Tail = 3
Is empty = True

| 1 | 2 | 3 | 4 | 5 |
|---|---|---|---|---|
| | | | | |

Head = 0
Tail = 0
Is empty = False