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## ADS

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I Memory efficient doubly linked list:

Insert-front (head, data)

node new = new node()

new → data = data

new → Ptrdiff = head

if (head != NULL)

head → Ptrdiff = head → Ptrdiff XOR new

head = new

return head;

Insert-rear (head, data)

node new = new node()

new → data = data      if (head == NULL)  
                                 new → Ptrdiff = NULL  
                                 return new

temp = head, prev = NULL

while (temp != NULL)

next = prev XOR temp → Ptrdiff

prev = temp

temp = next

prev → Ptrdiff = prev → Ptrdiff XOR new

new → Ptrdiff = prev

return head