classmate
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PROGRAM-1 [XOR linked list]

Arpana M Ramaswamy
1BM18CS147
23/09/2020 Arpana

```
class Node
{
 int data;
 Node* next/prev;
};

Node* XOR (Node *x, Node* y)
{
 return (Node*) ((uintptr_t) (x) ^ (uintptr_t) (y));
}

//Insert at front
 void insert_front (Node **head, int data)
{
 Node *newNode = new Node();
 newNode -> data = data;
 newNode -> nextprev = *head;
```

Arpana M Ramaswamy
1BM18CS147
23/09/20

```
if (*head != NULL)
{
  *head -> nextprev = XOR(newNode, *head -> nextprev);
}

*head = newNode;
}


// Insert at end

void insert_end(Node **head, int data)
{
 Node * newNode = new Node();
 newNode -> data = data;

 if (*head == NULL){
 newNode -> nextprev = *head;
}
```

Arpana M Ramaswamy
1BM18CS147
28/09/2020 Arpana

```
else
{
 Node *curr=head;
 Node *prev=NULL;
 Node *next;

 while (curr!=NULL)
 {
  next=XOR(prev,curr->nextprev);
  prev=curr;
  curr=next;
 }

 newNode->nextprev=curr;
 curr->nextprev=XOR(prev,newNode);
}
}
```