

23/09/2020

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APS LAB

WEEK 2

WRITE UP

Memory efficient ~~and~~ doubly linked list  
using XOR

Pseudo code:

Insert at beginning

```
function insert_beg (Node n, int data)
{
```

~~newn = new~~

newn = new Node;

newn → data = data;

newn → nptr = n;

~~if (n) n → nptr = newn~~

if (n)

n → nptr = XOR(newn, n → nptr)

n = newn.

}

Insert at End

```
function insert_end (Node n, int data)
{
```

Node newn = new Node;

newn → data = data;

if (!n)

{

newn → nptr = n;

n = newn;

}

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else  
{

Node curr = n;

Node prev = NULL;

Node next;

while (XOR(prev, curr->npx) != NULL)  
{

next = XOR(prev, curr->npx);

prev = curr;

curr = next;

}

new->npx = curr;

curr->npx = XOR(prev, new);

}

}

XOR function:

function XOR(Node a, Node b) {

{

return (Node) (uintptr\_t(a)  
^ (uintptr\_t(b)));

}