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## Linked List

## Linear Annay

- Memony is allocated. Memony is statictly dynamically. allocated.

- · Accessing any clement · Accessing any clement is O(n) complexity is of O(1) time complexity.

we use array 4 when we have large set of known data. and require fast data accessing at any Index.

We use lanked-list

I when we have a set of constantly changing 59 te of data and they are linked to oneanother.



void oneent before particular (struct 19whod list olist, ent data, int val) of Struct node \*new\_node = (struct node \*) malloc (size of (struct node)); new-node - data - data; new\_node + neat=NULL; Struct node temp = 17st - thead; if (19st-shead & data == val)d new\_node & next = list & head; list -> hend = new\_nod; lind + length++; pointf("Succes 11 \n"); while Ctemponent 1= NULL& temponentodate 1= vold temp=temp-snext; (temp = next == NULL) d print ("the element is assentin");

new node - next = temp & next ;

temp snext = new node;

1957 & length ++;

pointf ("Success !!\n");

8.3

To delete a loop, we need to have two pointer, slow and test. It they converge at any point then there is a loop in the 1954.

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with / fait spect to work all tax tax to

the good was allers

> void detect\_loop (struct Pinked\_list \*1"st) il

struct node slowptn = list thead;

struct node techptn = list thead;

while (fast\_ptn = nout she fast\_ptn = next = nout) i

slow-ptn = slow-ptn = next;

fast\_ptn = test\_ptn = next;

it (slow-ptn == tast\_ptn) i

printt ("Loop detected !!!");

netunn;

printf ("No loop detected !!\n");

y

a open mon a transformat 8.4 : ++ Alonal & 6.81 > void dete nemove-loop (smult linked-list. #11st)d struct node & slow = list shead ? shurch node + fast = 1 ist themad; while (fast +) next 1= NULL & 11 feast to NULL) of static Int loop =0; slow=slow=neat; tast = foust oneatoneat; so o o o o o o 16 (slow == fust) devotes sortaing our at any point then the plant to break; The triband dante pool sales prov 7; + (100p=20)1 return; struct noder p1 = 19x thread; while (planent: 1 = slow ment) d PI = PI arent 5 Slow = 40W + next god pl- nent = NULL ; paintf ("Removed Loop! )")



-> void delete\_in\_attenom (struct linked\_list #list, ind.m,

struct node current = 1ist-shead;

Struct node prev = NULL;

9nt count = 0;

while (count < m bb: m;=0) h

prev = current;

Count++;

while (count < m+n) {

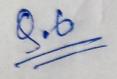
cument = current + mext;

count++;

y

prev + mext = current;

11st + length ·= n;
paintf ["Success 21 In"];



## Advantages of Linear 19 nhed List

> Dynamic memory allocation
> Constant time removal of hand
node.

copy : cuptont !

2 + France

Dis advantages

L'inean Home data accersing with NULLS.