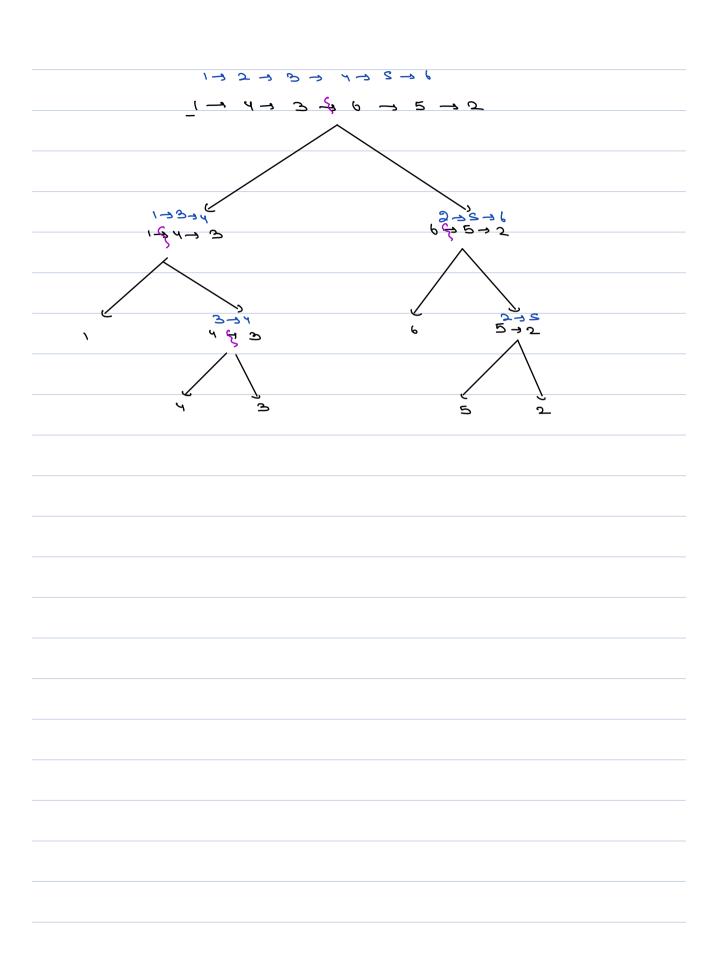
Ques Civen a hm, find middle den	vev j
e.g) mid	
0, -> 02-> 02 -> Q4 -> Q5	
mig	
0, → 02 → 03 → 04 → 05 → 06	
() 2 T	
Solm 1:- find size of LL.	
20 m / + 1110 21 m g 12	
Lo Travel 1:11 tall of	it & Return
T.C-> Om7, 2.C-> Oc1>	thou
Constraint: - Doit in literation	
-	n e ~
e bim	
↑	ment = mm
*)	
0, -> 02 -> 02 -> 04 -> 05 -> 0	
a, -> 02 -> 02 -> 04 -> 02 -> 0	7
0, -> 02 -> 02 -> 04 -> 02 -> 0	
a, -> 02 -> 02 -> 04 -> 05 -> 06 -> 0	meden tum=min+toof
a, -> 02 -> 02 -> 04 -> 05 -> 06 -> 0	menen two b
a, -> 02 -> 02 -> 04 -> 05 -> 06 -> 0 1 1 1 1 1 1 1 1 1 1 1 1 1	menen two b
a, -> 02 -> 02 -> 04 -> 05 -> 06 -> 0	menen two b
$x = 20 \text{ pm/p}^{2}$ $0' \rightarrow 0^{2} \rightarrow 0$	menen two b
$\frac{1}{2}$ $\frac{1}$	Joshows Joshows 3 ax -2 ag -3 mw

s (the spoor mid (node th) &	1.c → 0m)
	lica ou
n newlese & rown = A) bi	<u>.</u> .
(Chizman) & sales of the	<u>~</u>
12 toode 1= ti,	
nede f. t.,	
mphile (questionmeter que	31 Hum = 1 m.
2 = 2 : mest;	
d: dimentimenti,	
0 2 0 1100 1111	
\ _3	
le mersere	
,'s nevleue	
bim	
$\mathcal{F}\mathcal{O}$	
0, -> 02 -> 02 -> 04 -> 02 -> 06 -	
	2 gt - 2 wm.
	.2.5
mpyle (q.w.w)= word & & q.westj= w	m) {
bim	
T ()	
0, -> 02 -> 02 -> 04 -> 05 -> 0	1 2 0 0 - 3 mul
<u> </u>	3 2 2 4 2 11000
	113
while (givestizum ele givina	y is word

Over hiven two sorted his, mange than into a single sorted LL. براد e.g.1 LLI) 2 -> 4 -3 6 -3 8-3 10 1h2) 1-3-3-3-3-3-9 0/2-> 1-> 2-> 3-> 4-> 5-> 6-> 7-> 8-> 9-> 10. e · 9 4 h, 10 - 11-12-13-mm

~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
sode merge ( wade to, , wade to)?
it (this = new) & section that 3
if the measure & course +1,3
mode t, t',
if (h, data < h2 data) & h = h, , t = h, , h, = h, ments
else & h=h2, t=h2, h2=h2. next 3
mahile (th. 1- mull & & th2: - mull &
; g(h,, dala < hz, dala) &
Linast = ti,
t=ti t; =ti, -next
eine &
4: #2
3 - 42 - 42 - 42 - 42 - 42 - 42 - 42 - 4
3
3 (Hum == 1, t) ;
1 x · went = 45;
id (4) = = wan) & f. west = 413
3

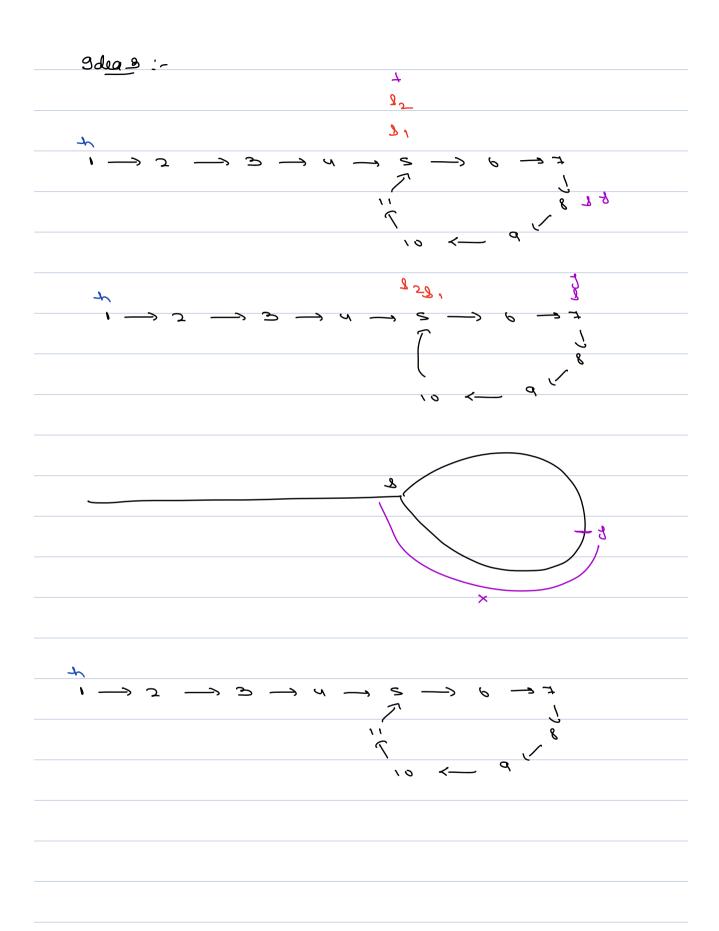
1.C → O(m+m) 1.C → O(1)



<u>On er</u>	Meage boot on hh
	- 4-3-46-35-32
010	1-32 -> 3 -> 4 -> 5 -> 6
8 to 61:-	find middle
	1 - 4 - 3 fr 0 - 2 2 - 3 5
	minest = mw
	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
Pfebo:-	call recuevion to both of them.
	th = meage Sort (h)
	this meuge doot (th)
8 tob 2	- meage both the sorted ht.

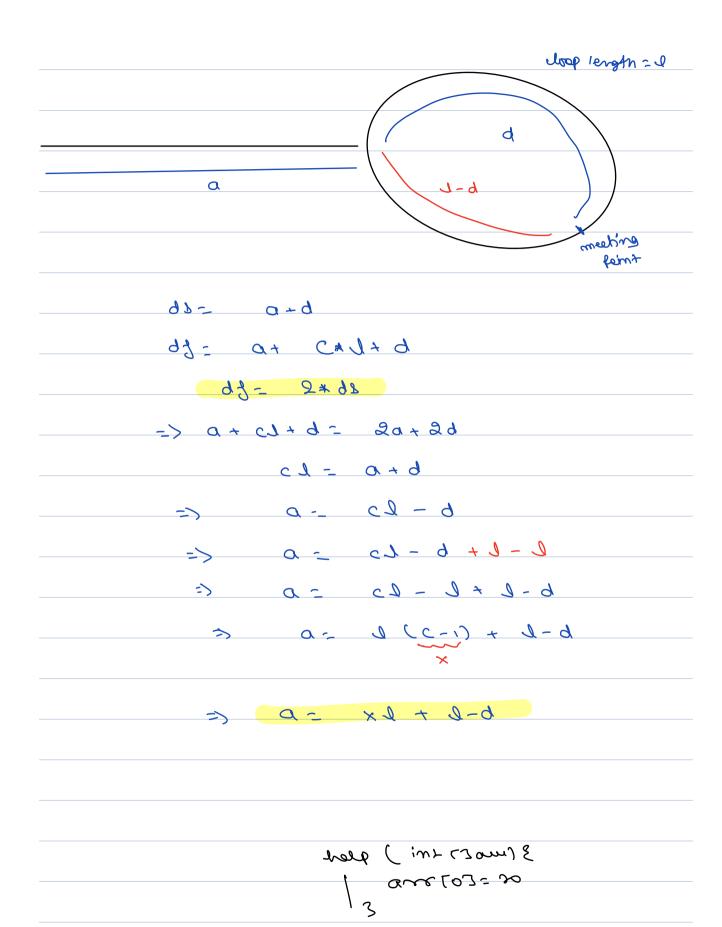
```
-> Tm)
3 (A ebea) tred spream show
         if (the enul 1) themest = = mull) {
            Juetuen h',
         Nade m= middle (+);
          this minert;
          m, nept - nul,
                     > T (m/2)
           th = meage Sort (h) -> Tong)
            this meuge doot (h)
            ths - meuge (th, thi),
           wetern to;
           1.C3 0(10gm)
                     La Stack Space
```

Over Delect cycle in a Lz.
- fleyd cycle Detection
the Bloggi
$1 \longrightarrow 2 \longrightarrow 3 \longrightarrow 4 \longrightarrow 8 \longrightarrow 9 \longrightarrow 7$
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
*
1-> 2-> 3-4 4 -> 5-> 6-> 9
idea! - Put a temp at the head.
( m. quet = quet ) une sebase surret bi
mot a socie socie
and a gele were
4
$\begin{array}{cccccccccccccccccccccccccccccccccccc$
\'\'\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\
10 <
ideal: Howhbel < weder
ideq: - 9tellate on LL, keep on storing
J.C. om modes. 9f you weach null mo eycle
J.C. om mo eycle
y.C. mo eycle
if address stands repeating,
there is a cycle.



noty will they intersect?
when slow pointer enters the cycle, let's say the distance between slow and fast is X. Now we observe
that after every step distance will reduce by one so eventually they will meet _,
_
Ques find Stanking Point of a golo.
<b>→</b>
$\frac{1}{1 \rightarrow 2} \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 5 \rightarrow 7$ $\frac{1}{1} \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 7$ $\frac{1}{1} \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 5 \rightarrow 7$ $\frac{1}{1} \rightarrow 2 \rightarrow 3 \rightarrow 4 \rightarrow 7 \rightarrow 7$
11 8
, o <— d
$\begin{array}{c} \uparrow \\ \downarrow \\$
, o < 9
Stant of Cycle
Take teno leinters l. & 12.
$\Delta_1 \rightarrow head$ ;
$\Delta_1 \rightarrow head$ ; $\Delta_2 \rightarrow gntensection g l & .$
move both the pointers one step at a time. The point there where they will meet will be start of the
cycle.

```
bool detect find fermous Cycle ( wode h) &
  Node D=A;
  wode J-A:
   tool is cycle - false,
   3 cmu = i tasu. f & f mm = : 6 ) slinen
                 1 = lineal;
                  字: 子: か. か. か.)
                  3 cb = = 4) b'
                    12 Cycle = 7800')
         17 (12 Cycle = = false) &
             eather harre
         8,= A, 12= 21 50m)
        Etamore (21: = 22) & li= Brinest, bz=bz:mart
          node E= Si; som
          3 (16 = Itage . +) Siver
               せことのやかり
           Limest: mull',
           "un neuter
```



im) [7 am 'm) [8	\ · .
ins (Jarr);  help (arr);	
	_
	(0) 010) ~
and isk	
tall arrisk	
main arr : sx	

there (int (3 am) &  are = new int (103),  int (3 or = new int (12),  there are : se  [3 (0 1 0 10) -  1 or : se  [4 (1 11)  x - 2  x - 4		3 (ms rzam) glad
int (7 om = new int (83),  though (arr);  ser  (1)  101  101  101  X-2  1		3 are = new int (10);
sr () () () () () () () () () () () () () (	110in()	
sk (a) (a) (a) (a) (a) (a) (a) (a) (a) (a)	107 (Jour = w	ero , wt L8J,
main arr:sx   x - 2  1	13 Hold (arr);	
$\frac{1}{2}$		
$\frac{1}{2} \frac{1}{2} \frac{1}$		
x 2 x 2 x 2	tout Tok	
x 2 x 3 x - 2 1	> man arr:sx	
7 X - 5 J		(X)
7 X - 5		2
T		7
	7	
		•