0		(O) ·	Davie	Liver	Dote:		
			DOUBLY	CINKED	LIST (C) THE PROPERTY OF THE P		
	START						
		X	1	*	2 5 X		
5							
	A doub	ly linted	dist o	or a tur	oway linked but is a more complex		
	A doubly linked list or a two way linked list is a more complex type of linked list which contains a pointer to the next as well as						
	the previous mode in the sequence. Therefore it consists of Three						
	parts -> data, a pointer to the next node, and pointer to the previous node.						
10							
	In C, structure of a doubly linked list can be given as:-						
	U U						
		struc	t node				
		ફ			PREV -> Store address of the		
15		C	struct ni	sde * pr			
	int data;				NEXT > store address of the next		
	Struct node * next; node.						
			} ;				
	The PREV field of the first node and the NEXT field of the last node						
20		rtain NVL		,	1. 25 1		
	On seeing that a doubly linked list calls for more space permode and more						
	expensive basic operations. The main advantages of using a doubly linked						
	18st	s that	it ma	kes seo	riching twice as efficient.		
START	19st is that it makes searching twice as efficient:						
25		DATA	PREV	NEXT	estable to the state of the sta		
	→1	н	-1	3	of traff a service to the		
	2.				TANK OF THE STATE OF		
	3	E	1	6			
	4				·		
30	5			45			
	6	L	3	7			
	7	L	6	9			
	3 .						
	9	^	-	-1			

	Date :	
0	INSCRING A NEW MODE IN A DODBLY LINKED LIST	1
(9)	Inserting a Node at the Beginning of a Doubly dinked dist	_
	X 1	_
5	START	_
	Allocate memory for the new mode and initialize it DATA post to 9 as	nd
	PREV field to NULL.	_
		_
	X 9	
10	Add the new node before the START Mode. Now the new node become	5
	the first node of the list.	-
	X 9 7 7 8 7 4 2 X	_
	X 9 7 7 7 8 1 4 1 2 X	
	And the state of t	
. 15	ALGORITHMS	
	1: F AVAIL = NULL Write Overflow	-
	Gro to Step 9	
20	[Enone 16]	
	2: SET NEW-HODE = AVAIL	
	8: SET AVAIL = AVAIL - NEXT	
	4: SET NEWHODE -> DATA = VAL	
	5: SET HEWHODE → PREV= NULL	
25	6: SET NEWNODE → NEXT = START	
•	7: SET START -> PREV = NEW-NODE	

2.

9:

SET START = NEWNODE

EXIT.

Inserting a Node at the End of a Doubly dinked dist
The state of the s
Step 1: F AVAIL= NULL
Write OVERFLOW
GoTo Step 11
[END OF IF]
Step 2: SET NEW-NODE = AVAIL
Step3: SET AVAIL = AVAIL > NEXT
Step 4: SET NEW-NODE -> DATA = VAL
SHEPS: SET NEW-NODE -> NEXT = NULL
Step 6: SET PTR = START
Step 7: Repeat Step 8 while PTR -> NEXT! = NULL
SHEPS: SET PTR = PTR -> NEXT
[END OF LOOP]
Step 9: SET PTR-> NEXT = NEW-NODE - 201 11 30 0
Step 10: SET NEW-NODE -> PREV = PTR
Step 11: EXIT
Step 11: EXIT
X 1 7 3 4 2 X
× 1 7 3 4 2 x
X 1 7 2 X START Allocate memory for the new mode and initialize its DATA part to 9 wits
X 1 7 3 4 2 X START Allocate memory for the new mode and initialize its DATA part to 9 wits NEXT field to NULL. 9 X
X 1 7 3 4 2 X START Allocate memory for the new mode and initialize Its DATA part to 9 6 its NEXT field to NULL.
X 1 7 3 4 2 X START Allocate memory for the new mode and initialize its DATA part to 9 wits NEXT field to NULL. 9 X
X 1 7 2 X START Auocate memory for the new node and initialize its DATA part to 9 wits NEXT field to NULL. 9 X Take a pointer variable PTR and make its point to the list mode of the dist. X 1 7 3 4 2 X START, PTR
X 1 7 3 4 2 X START Allocate memory for the new mode and imbalite its DATA part to 9 6 its NEXT field to NULL. 9 X Take a pointer variable PTR and make its point to the list mode of the dist. X 1 7 3 4 2 X
X 1 7 3 4 2 X START Allocate memory for the new node and Imitialize its DATA part to 9 6 its NEXT field to NULL. 9 X Take a pointer variable PTR and make its point to the first made of the dist. X 1 7 3 4 2 2X START, PTR move PTR so that it points to the last node of the list. Add new mode after the mode pointed by PTR.
START Allocate memory for the new mode and initialize its DATA part to 9 wits NEXT field to NULL. 9 X Take a pointer variable PTR and make its point to the first node of the dist. X 1
X 1 7 3 4 2 X START Allocate memory for the new node and Imitialize its DATA part to 9 6 its NEXT field to NULL. 9 X Take a pointer variable PTR and make its point to the first made of the dist. X 1 7 3 4 2 2X START, PTR move PTR so that it points to the last node of the list. Add new mode after the mode pointed by PTR.

Date:____

O mserting a New Wode after a given mode to a Doubly dinked dist.
SEPS! IF AVAIL = NOLL
write overflow
GOTO STEP 12
s [END OF IF]
Step 2: SET NEW-NODE = AVAIL
Steps: SET AVAIL = AVAIL -> NEXT
STEP 4: SET NEW-NODE -> DATA = VAL
STOPS: SET PTR = START
10 Step6: Repeat Step7 While PTR > DATA != NUM
STEPT: SET PTR = PTR -> NEXT
[END OF LOOP]
Step 8: SET NEW NODE -> NEXT = PTR -> NEXT
Step9: SET NEWNODE -> PREV = PTR.
15 Step 10: SET PTR -> NEXT = NEW-NODE
Step 11: SET PTR -> NEXT -> PREV = NEW NODE
Step12: EXIT
$X \downarrow 1 \qquad 7 \qquad 3 \qquad 4 \qquad 2 \times $
PTR PTR
Insert node (new node) blue PTR and the node succeeding it.
x 1 7 3 4 2 x
PTR 1
25

	o mudo hadam á atimostic	Date :	
U	V	de in a Doubly disheddist	1
Step1:	F AVAIL = NULL	* 4	
	Write Overflow		
-	Goto Step 12.	· 1 · · · · · · · · · · · · · · · · · ·	
L	ENDOFIFT	. 1 7 51 %	
tep2: Se	T NEW-NODE = AVAIL	(f + 1 - 4)* 1;	
Heps: Se	T AVAIL= AVAIL-> NEXT		
Hep4: 5	SET NEW-NODE - DATA = V	AL DESTRUCTIONS	
steps:	SET PTR = START	of the kind operation of they	
Step6:	Repeat Step7 While PTR-	DATA! = NUM	
Step 7:	SET PTR = PTR - NE		
	END OF LOOP]		
	SET NEW-HODE -> NEXT	FPTR	
Stepq:	SET NEW-NODE -> PREV	=PTR->PREY	
Step 10:	SET PTR - PREV = NEW	INODE	
step11:	SET PTR -> PREV -> NE	XT = NEW- NODE	
Step12:	EXIT		,
			,
x 1	7 3	4 2 x	
	PT	R	
START			
		and the same of th	
		e node pointed by PTR and the node	
preceding	1		
0		Committee of the	
		HI LA HE L	
		- 11 + v 111 , '	
		7.4.81. AFF 17. 1. F. C	

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•	Date:
O Deleting a Node from a Doubly Linked List	The state of the s
(a) Delete the first Node ?->	
Step 1: IF START = NULL	
Write Underflow	1,
GOTO STEP 6	
END OF IF]	
Step 2: SET PTR = START	
Step3: SET START = START -> NEXT	
Step 4: SET START -> PREV = NULL	
Steps: FREE PTR	
10 Step 6: EXIT.	10
x 1 3 5 7	8 7 9 X
START	
Free the memory occupied by the first of	node of the list and make
the second node of the list as the St	ART NODE.
	1 1 1 1 1
X 3 5 7 7	8 9
STARI	
20	
(h) Deleting the last node young Doubly dinke	d dist
Step 1: IF START = NULL	
Write UNDERFLOW	
GOTO 81EP 7-	
[END OF IF]	
Step 2: SET PTR = START	
Step3: Repeat Step4 while PTR > NEXT!=N	ULL
Step 4: SET PTR=PTR-> NEXT	
Step 5: SET PTR -> PREV -> NEXT = NULL	
30 Step 6: FREE PTR	
Step7: EXIT.	

Determine
Date :
$\times 1$ 3 5 7 8 9 X
START, PTR
Take a pointer variable PTA that points to the first mode of the list.
Move PTR to the last mode of the list.
x 1 3 5 7 8 x
START.
A STATE OF THE STA
111 11 111
(C) Deleting the Node After a Given Node in a hinked hist
V 200 0 00 00 00 00 00 00 00 00 00 00 00
Step 1: IF START = NULL
write Underflow
GO TO STEP 9
[END OF IF]
Step 2: SET PTR = START
Step3: Repeat Step 4 While PTR -> DATA!= NUM
Step 4: SET PTR = PTR -> NEXT
[END OF LOOP]
Step 5: SET TEMP = PTR -> NEXT
Step 6: SET PTR -> NEXT = TEMP -> NEXT
Step7: SET TEMP -> NEXT -> PREV = PTR
Step 8: FREE TEMP
Step9: ExiT
· ·
30

6	(3) (3) (3) (6) (6) Date:
	Deleting the Node Before a Given Node:-
	Step 1: IF START = NULL
	Write Under PLOW
	GOTO STEP 9
5	[ENDOFIF]
	Step 2: SET PTR = START
	Step 3: Repeat Step 4 While PTR -> DATA! = NUM
	Step 4: BET PTR = PTR -> NEXT
	[END OF LOOP]
	Steps: SET TEMP= PTR -> PREY
	Step6: SET TEMP -> PREV -> NEXT = PTR
	Step7: SET PTR -> PREV = TEMP -> PREV
	Step 8: FREE TEMP
	Step9: Exit.
9	
2	
3	

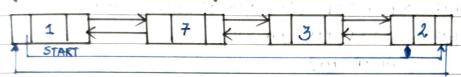
		(
CIRCUL	AR DOUR	PLY LINKED	LIST

The difference blue a Doubly Linked dist and Circular Linked dist Circulary Doubly dinked dist having No NULL value either at first node OH the last node. First Node previous contain address of the last node and next of last made combin address of the first mode.

Main advantage of using a Circular Doubly dinked dist is that it make a Searching twice as efficient.

INSERTING A NEW MODE IN C.D.L.L

(a). Inserting a node at the Beginning.



Allocate memory for the new node and Initialize New Nove with DATA J.

Step 1: IF AVAIL = NULL

Write OVERFLOW

GO TO STEP 13

[END OF IF]

Step3: SET AVAIL = AVAIL > NEXT

Step 2: SET NEW_NODE = AVAIL

SET NEW-NODE -> DATA = VAL

SET PTR= STARF Step 5:

Repeat sty + While PTR +NEXT != START Step6:

SET PTR = PTR - NEXT

[END OF LOOP]

Step 8. SET PTR -> NEXT = NEW NODE

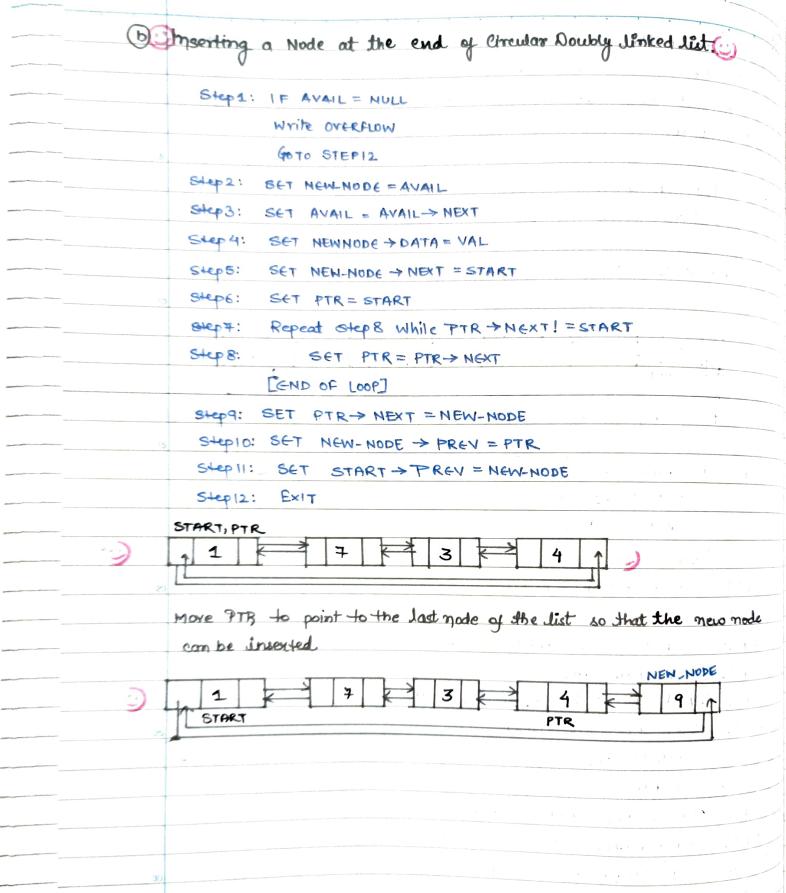
Step 9: SET NEWHODE -> PREV = PTR

Step10: 8ET NEWHODE -NEXT = START

Step 11:

Step12: SET START = NEW_NODE

Step 13: EXIT.



0	DELETING NODE FROM THENDOURLY LINKED LIST
	Deleting the mode (FIRST NODE) from the Circular Doubly Linked List.
	Step 1: IF START = NULL
	WTITE UNDERFLOW
	GOTO STEP 8
	[ENO OF IE]
	Step 2: SET PTR = START
	Step3: Repeat Step4 while PTR -> NEXT != START
	Step +: SET PTR = PTR -> NEXT
10	[END of LOOP]
	Step 5: SET PTR -> NEXT = START -> NEXT
	Step6: SET START -> NEXT -> PREV = PTR
	SLEDT: FREE START
	Step 8: SET START = PTR -> NEXT.
·Ļ	
(b)	Deleting the last Node From the Circular Doubly Linked hist
	Q
	Step1: IF START = NULL
	Write UNDERFLOW
2	цо то STEP 8
	[END OF IF]
	Step 2: SET PTR = START
	Step3: Repeat Step4 While PTR->NEXT!=START
	Step4: SET PTR = PTR -> NEXT
2E	[END OF LOOP]
	Step 5: SET PTR -> PREV -> NEXT = START
	Steps: SET START -> PREV = PTR -> PREV
	Step7: FREE PTR
	Step8: EXIT
30	