DS_TUTORIAL-8

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B100

ALGORITHMS

1.

i. Insert in beginning

```
1. Start
2. Input the DATA to be inserted
3. Create a new node.
4. NewNode → Data = DATA NewNode →Lpoint =NULL
5. IF START IS NULL NewNode→ Rpoint = NULL
6. Else NewNode → Rpoint = START, START→Lpoint = NewNode
7. START = NewNode
8. Stop
```

ii. Inset at last

```
1. Start
2. Input DATA to be inserted
3. Create a NewNode
4. NewNode → DATA = DATA
5. NewNode → RPoint = NULL
6. If (SATRT equal to NULL)
       a. START = NewNode
       b. NewNode → LPoint=NULL
   Else
       c. TEMP = START
       d. While (TEMP → Next not equal to NULL)
       i.     TEMP = TEMP → Next
       e. TEMP → RPoint = NewNode
       f. NewNode → LPoint = TEMP
7. Stop
```

iii. Insert at any random location

```
1. Start
2. Input the DATA and POS
3. Initialize TEMP = START; i = 0
4. Repeat the step 4 if (i less than POS) and (TEMP is not equal to NULL)
5. TEMP = TEMP → RPoint; i = i +1
6. If (TEMP not equal to NULL) and (i equal to POS)
     Create a New Node
    a) NewNode → DATA = DATA
    b) NewNode → RPoint = TEMP → RPoint
    c) NewNode → LPoint = TEMP
    d) (TEMP → RPoint) → LPoint = NewNode
    e) TEMP → RPoint = New Node
Else
    Display “Position NOT found” .
    9. Stop.
```

iv. Delete from beginning

```
1. Start.
2. If head is equal to NULL
   Display underflow.
Else
   set head equals head->next.
3. Stop.
```

v. Delete from last

```
1. Start.
```

```
2. If head is equal to NULL

    a. Display underflow and return.
    b. Else if head->next equals NULL
    c. Set head = NULL.
    d. Free the head.

    Else

    e. Set Ptr=head
    f. Repeat steps until ptr->next is not equal to NULL
    g. ptr = ptr->next.
    h. [End of if structure]
    i. ptr = ptr->prev.
    j. ptr->next = NULL.

3. Stop.
```

vi. Delete node after specified location

```
1. Start.
2. Check for above conditions first and if not true continue.
3. Declare a temporary variable temp and traverse with it upto the specified position.
4. Declare a pointer prv holding previous position of temp.
5. Set prv->next = temp->next.
6. Set temp->next->prev = prv.
7. Delete the temp.
8. Stop.
```

vii. Search for an element.

```
1.Start.
2.IF HEAD == NULL
```

```
 a. WRITE "UNDERFLOW" GOTO STEP 8 [END OF IF]
3. Set PTR = HEAD
4. Set i = 0
5. Repeat step 5 to 7 while PTR != NULL
6. IF PTR → data = item
    1. return i [END OF IF]
7. i = i + 1
8.PTR = PTR → next
9.Stop.
```