**DSA Lab**

**Experiment number 07**

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**Aim:** Implementation of Stack using Singly linked list

**Algorithms:**

Algorithm to Push an element onto stack:

Step 1: [INITIALIZE] New\_node

Step 2: SET New\_Node->Data = START

Step 3: New\_Node->Next = TOP

Step 4: SET TOP = New\_Node

Step 5: EXIT

Algorithm to Push an element onto stack:

Step 1: IF START == NULL

PRINT "Stack is already empty"

Goto Step 7

Step 2: [INITIALIZE] ptr

Step 3: SET ptr = TOP

Step 4: SET TOP = ptr->Next

Step 5: free(ptr)

Step 6: EXIT

Algorithm to Display element from stack:

Step 1: IF START == NULL

PRINT "Stack is already empty"

Goto Step 8

Step 2: [INITIALIZE] ptr

Step 3: SET ptr = TOP

Step 4: Repeat steps 5, 6 WHILE ptr->Next != NULL

Step 5: PRINT ptr->Data

Step 6: SET ptr = ptr-> Next

[End of loop]

Step 7: PRINT ptr -> Data

Step 8: EXIT

Algorithm to Peek element from stack:

Step 1: IF START == NULL

PRINT "Stack is already empty"

Goto Step 3

Step 2: PRINT TOP -> Data

Step 3: EXIT

Algorithm to find Size of stack:

Step 1: IF START == NULL

PRINT 0

[End If]

Step 2: [INITIALIZE] ptr, count=1

Step 3: SET ptr = TOP

Step 4: Repeat step 5 WHILE ptr->Next != NULL

Step 5: SET count = count + 1

[End of loop]

Step 7: PRINT count

Step 8: EXIT