**DSA Lab**

**Experiment number 07**

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

**Algorithms:**

**Algorithm to insert in the queue**

Step 1: [INITIALIZE] New\_node

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

Step 3: IF Front = NULL AND Rear = NULL THEN

SET Front = New\_Node

SET Rear = New\_Node

SET New\_Node->Next = NULL

[END IF]

Step 4: ELSE

Rear->Next = New\_Node

Rear = New\_Node

New\_Node -> Next = NULL

[END ELSE]

Step 5: EXIT

**Algorithm to delete from queue**

Step 1: [INITIALIZE] ptr

Step 2: IF Front = NULL AND Rear = NULL THEN

PRINT "Queue is already empty"

Goto Step 6

[END IF]

Step 3: Front = ptr -> Next

Step 4: Free(ptr)

Step 5: IF Front = NULL

SET Rear = NULL

[END IF]

Step 6: EXIT

**Algorithm to Display front of the queue**

Step 1: IF Front = NULL AND Rear = NULL THEN

PRINT "Queue is already empty"

Goto Step 6

[END IF]

Step 2: PRINT Front -> Data

**Algorithm to display size of queue**

Step 1: IF Front = NULL AND Rear = NULL THEN

PRINT 0

GOTO Step 9

[END IF]

Step 2: SET Count = 1

Step 3: [INITIALIZE] ptr

Step 4: ptr = Front

Step 5: REPEAT Steps 6, 7 WHILE ptr -> Next != NULL

Step 6: ptr = ptr -> Next

Step 7: Count = Count + 1

[END LOOP]

Step 8: PRINT Count

Step 9: EXIT

**Algorithm to Display elements of the queue**

Step 1: IF Front = NULL AND Rear = NULL THEN

PRINT “Queue is empty”

GOTO Step 8

[END IF]

Step 2: [INITIALIZE] ptr

Step 3: ptr = Front

Step 4: REPEAT Steps 6, 7 WHILE ptr -> Next != NULL

Step 5: PRINT ptr->data

Step 6: ptr = ptr -> Next

[END LOOP]

Step 7: PRINT ptr -> Data

Step 8: EXIT