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