***Introduction to Data Structure and Algorithm in C++ (* QUEUES*)***

Activities for this lab:

* Explain the concepts of Queue.
* ***Queue creation and implementation***
* ***lab exercise***

**QUEUES**

Queue is an order collection of items from which items may be deleted at one end (called front or head of the queue) and into which items may be inserted at the other end (called the rear end  or tail of the queue). It is First-in-First-out (FIFO) type of data structure. Operations on queue are: Create Queue, insert items, remove items, display etc.[1]

AIM:

A C++ program to implement the Queue ADT using arrays and LL to perform all the queue operations

**Algorithm for Implementation of Array Based Queue**

1.Declare and initialize necessary variables, front = 0, rear = -1  
2. For enque operation,   
 If rear >= MAXSIZE - 1  
 print "Queue is full"  
 Else  
 - Increment rear by 1 i.e. rear = rear + 1;  
 - queue[rear] = item;  
3. For next enqueue operation, goto step 2.  
4. For dequeue operation  
 If front > rear  
 print "Queue is Empty"  
 Else  
 - item = queue[front]  
 - increment front by 1 i.e. front = front + 1  
5. For dequeue next data items, goto step 4.  
6. Stop

Step 8: The default case is no such choice

Sample

INPUT / OUTPUT:

Enter the operation to be performed: 1)Enqueue 2)Dequeue 3)Display 4)Exit

1

Enter the number to be added 12

Enter the operation to be performed: 1)Enqueue 2)Dequeue 3)Display 4)Exit

1

Enter the number to be added 23

Enter the operation to be performed: 1)Enqueue 2)Dequeue 3)Display 4)Exit

1

Enter the number to be added 33

Enter the operation to be performed: 1)Enqueue 2)Dequeue 3)Display 4)Exit

1

Enter the number to be added 44

Enter the operation to be performed: 1)Enqueue 2)Dequeue 3)Display 4)Exit

2

The number to be deleted is 12

Enter the operation to be performed: 1)Enqueue 2)Dequeue 3)Display 4)Exit

3

The queue is 23 33 44

Group Assignment 3.

Use the linked list to implement Queue that will contain the following functions:

1. Add to Q using cin>>
2. Remove from item the Queue
3. Count Element in Queue
4. Show List of Elements Queue
5. Check for empty Queue
6. Exit

**Submission on Monday 2nd November, 2015 before or by 5pm**