SSN College of Engineering, Kalavakkam
Department of Computer Science and Engineering
III Semester - CSE
UCS 1312 Data Structures Lab Laboratory

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Exercise 5: Queue and its Applications

[CO1,K3]

The structure Queue consists of integer array, front and rear. Implement Queue using circular array with the following methods.

void enqueu(Queue *Q, int x) – Insert an element into the queue
int dequeue(Queue *Q) – Dequeue an element from the queue
void disp(Queue *Q) – Display elements from the Queue
int isEmpty(Queue *Q) – Check whether the queue is empty
int isFull(Queue *Q) – Check whether the queue is full

Note:

Implement queue with the specified operations in queueADT.h & queueImpl.h
Check the queue by writing application program in queueapp.c

1. Demonstrate Queue ADT with the following testcase
   init(Q,3)
   push(Q,1)
   push(Q,2)
   push(Q,3)
   push(Q,4) → Queue full
   top(Q)
   top(Q)
   top(Q)
   top(Q) → Queue empty

2. Write an Application to use QueueADT to schedule the jobs to CPU
   Modify the queue to contain job number and the cpu burst time
   Instantiate 2 queues Q1 and Q2
   Insert queue with the following contents
   (J1,2), (J2,4), (J3,8), (J4,5), (J5,2), (J6,7), (J7,4), (J8,3) (J9,6) & (J10,6)
   Insert the job into the queue whichever is empty. If it is not empty, insert the job into the queue whichever is having minimum average time
   Display the jobs waiting in both the queues along with their CPU burst time.