

Double Ended Queues

Enqueue_At_Rear(Value)

Step 1 : IF [FRONT = 0 and REAR = SIZE - 1] or REAR = FRONT - 1

PRINT "Queue is FULL"

ELSE IF REAR = -1 and FRONT = -1

SET REAR = 0

SET FRONT = 0

SET QUEUE[REAR] = Value

ELSE

SET REAR = (REAR+1) % SIZE

SET QUEUE[REAR] = Value

[END OF IF]

Step 2 : EXIT

Enqueue_At_Front(Value)

Step 1 : IF [FRONT = 0 and REAR = SIZE - 1] or REAR = FRONT - 1

PRINT "Queue is FULL"

ELSE IF REAR = -1 and FRONT = -1

SET REAR = 0

SET FRONT = 0

SET QUEUE[FRONT] = Value

ELSE IF FRONT = 0

SET FRONT = SIZE - 1

SET QUEUE[FRONT] = Value

ELSE

SET FRONT = FRONT - 1

SET QUEUE[FRONT] = Value

[END OF IF]

Step 2 : EXIT

Dequeue_At_Rear()

Step 1 : Declare a variable Val

Step 2 : IF [FRONT = -1 and REAR = - 1]

 SET Val = -1

ELSE IF REAR = FRONT

 SET Val = QUEUE[REAR]

 SET REAR = -1

 SET FRONT = -1

ELSE IF REAR = 0

 SET Val = QUEUE[REAR]

 REAR = SIZE – 1

ELSE

 SET Val = QUEUE[REAR]

 SET REAR = REAR - 1

[END OF IF]

Step 3 : RETURN Val

Dequeue_At_Front()

Step 1 : Declare a variable Val

Step 2 : IF [FRONT = -1 and REAR = - 1]

 SET Val = -1

ELSE IF REAR = FRONT

 SET Val = QUEUE[FRONT]

 SET REAR = -1

 SET FRONT = -1

ELSE

 SET Val = QUEUE[FRONT]

 SET FRONT = (FRONT + 1) % SIZE

[END OF IF]

Step 3 : RETURN Val