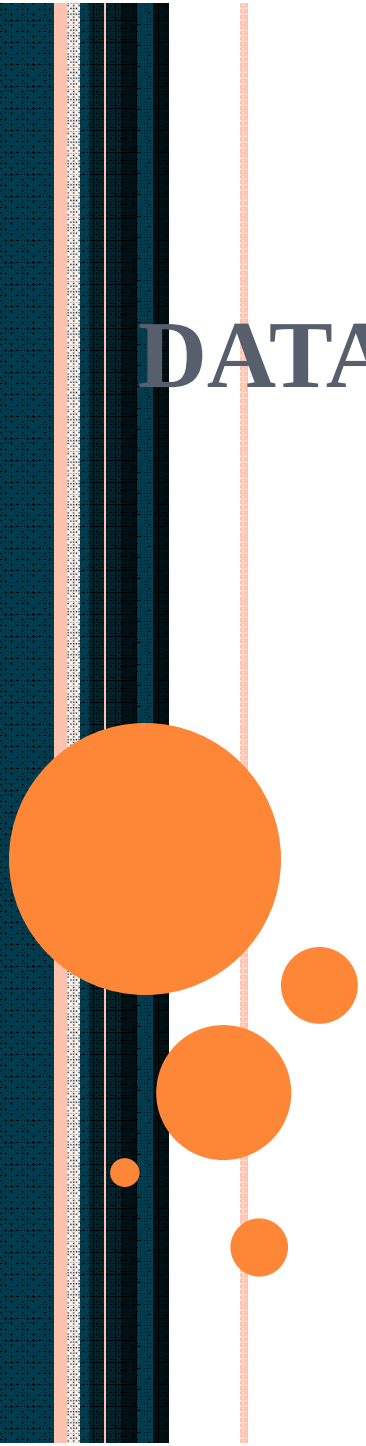
# DATA STRUCTURES USING ‘C’



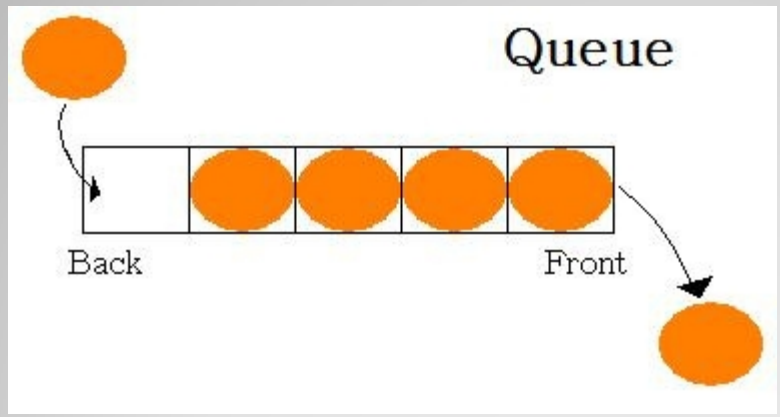
# Lecture-15

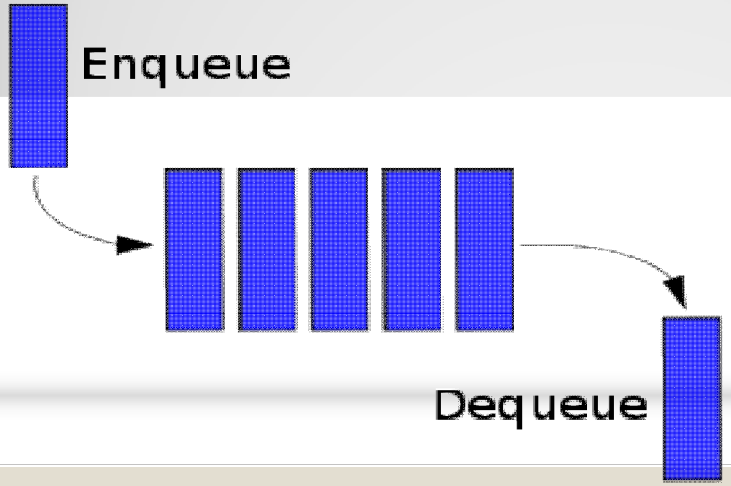
# QUEUE

# Queue

- Ordered collection of homogeneous elements
- Non-primitive linear data structure.
- A new element is added at one end called rear end and the existing elements are deleted from the other end called front end.
- This mechanism is called First-In-First-Out (FIFO).
- Total no of elements in queue= rear – front +1

# Fig: Models of a Queue



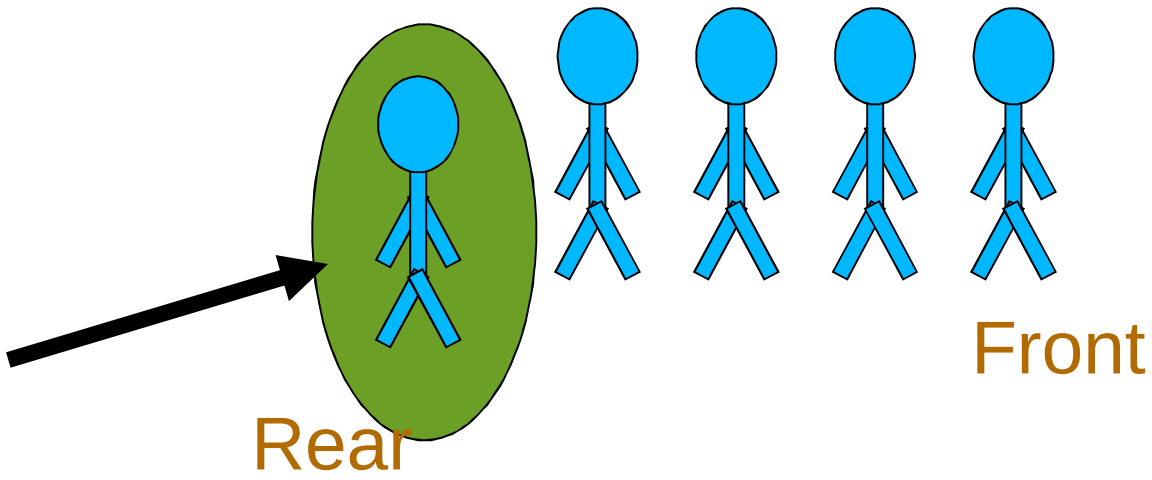



# Operations On A Queue

1. To insert an element in queue
2. Delete an element from queue

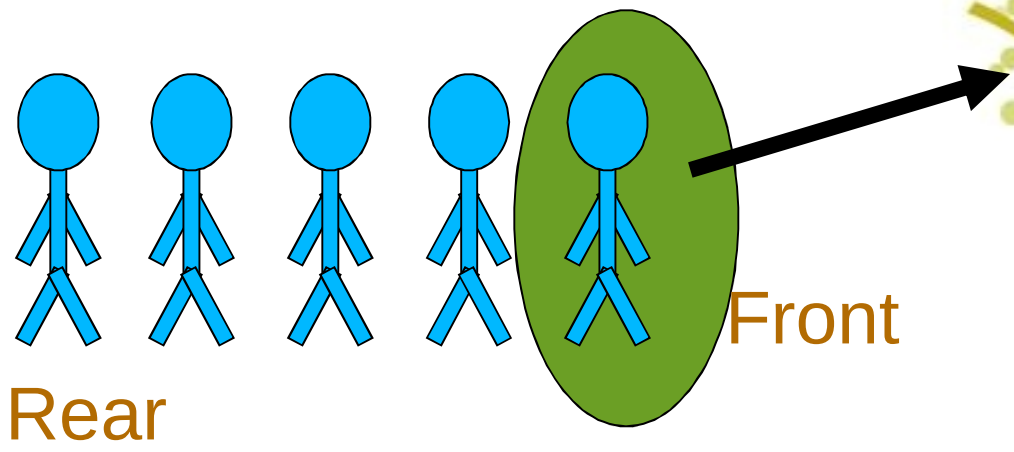
# The Queue Operation

Placing an item in a queue is called "insertion or enqueue", which is done at the end of the queue called "rear".



# The Queue Operation

Removing an item from a queue is called “deletion or dequeue”, which is done at the other end of the queue called “front”.



1. If (rear = maxsize-1 )

print (“queue overflow”) and return

2. Else

rear = rear + 1

Queue [rear] = item

## Algorithm QINSERT (ITEM)

# Algorithm QDELETE ()

1. If (front = rear)

   print “queue empty” and return

2. Else

   Front = front + 1

   item = queue [front];

   Return item

# Queue Applications

- Real life examples
  - ✓Waiting in line
  - ✓Waiting on hold for tech support
- Applications related to Computer Science
  - ✓Round robin scheduling
  - ✓Job scheduling (FIFO Scheduling)
  - ✓Key board buffer

# 3 states of the queue

1. Queue is empty

   **FRONT=REAR**

2. Queue is full

   **REAR=N**

3. Queue contains element >=1

   **FRONT<REAR**

   **NO. OF ELEMENT=REAR-FRONT+1**

# Representation Of Queues

1. Using an array
2. Using linked list


Thank
You