Aim: Write a program in C to implement priority queue using array.

Objective of the Experiment:

1. Understanding the working of priority queue and operations on it.

Theory:

Priority Queue is an extension of queue with following properties.
1) Every item has a priority associated with it.
2) An element with high priority is inserted before an element with low priority.
3) If two elements have the same priority, they are served according to their order in the queue.

A typical priority queue supports following operations.
insert: Inserts high priority element before low priority element.
Remove: removes front element.

Algorithm:

Insert:

case 1: if queue is full
then print overflow
case 2: if the queue is empty
f=r=0; //Make both front and rear equal to 0
store the element in the array at index f;
case 3: if the queue is non empty

a. shift all the elements which are smaller than the element to be inserted , towards right by one position.
b. Insert at the proper place
c. Increment rear and count

Remove:

case 1 : if queue is empty
print underflow
case 2. If single element in the queue
display the removed element as element at front
make both front and rear equal to -1
case 3. if the queue is non-empty

a. display the removed element as element at front
b. increment front

Source code for the implementation:
(Write only important functions)

Post Lab Assignment:

1. Differentiate between priority queue and queue.
2. Explain any three applications of priority queue.