

Write a program to stimulate the working of priority queue of integers using an array.  
Provide the following operations: insert, delete, display.  
The program should print appropriate for queue empty and queue overflow conditions.

```
//operations over priority queue(ascending order)
#include<stdio.h>
#include<stdlib.h>
#define max 5
int queue[max];
int front=-1,rear=-1;

void insertion(int item)
{
    if(rear==max-1)
    {
        printf("queue overflow.cannot insert %d\n",item);
    }
    else if(front==0)
    {
        front=0;
        rear=0;
        queue[rear]=item;
    }
    else
    {
        int j=rear;
        while(j>0&&item<queue[j])
        {
            queue[j+1]=queue[j];
            j--;
        }
        queue[j+1]=item;
        rear=rear+1;
        printf("%d inserted into the queue\n",queue[j+1]);
    }
}

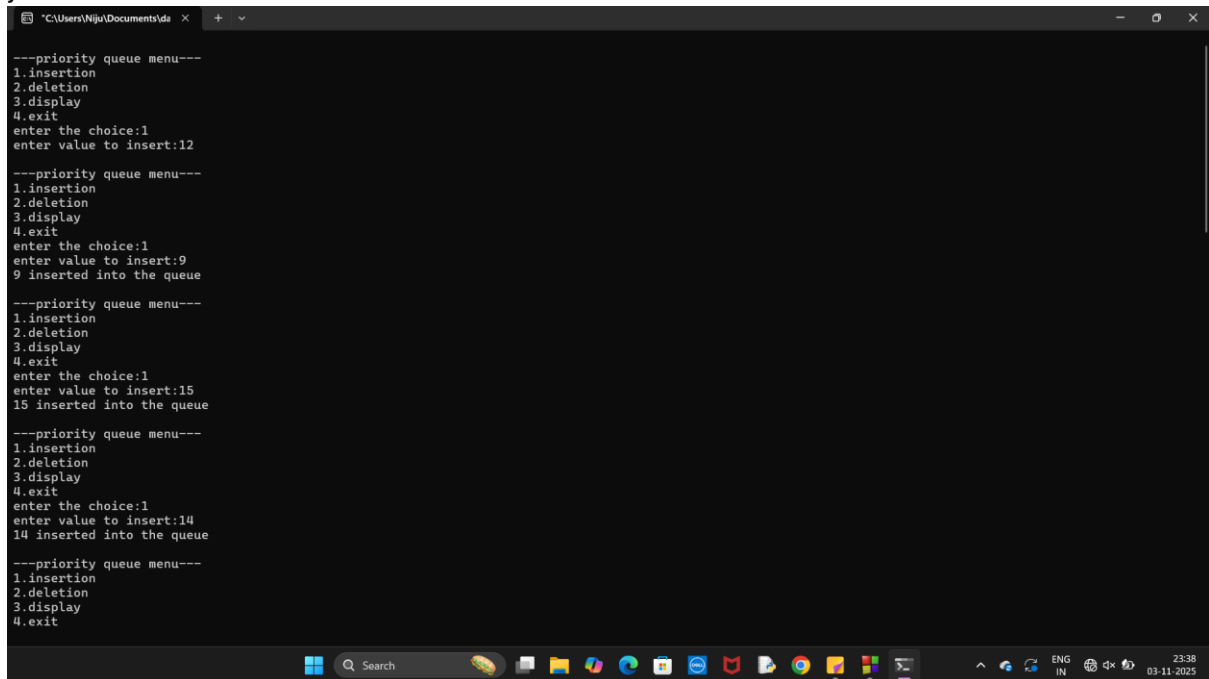
void deletion()
{
    if(front==0)
    {
        printf("queue underflow. queue is empty\n");
    }
    else
    {
        printf("deleted element: %d\n",queue[front]);
        if(front==rear)
        {
            front=-1;
            rear=-1;
        }
    }
}
```

```

        else
        {
            front=front+1;
        }
    }
}
void display()
{
    if(front== -1)
    {
        printf("queue is empty\n");
    }
    else
    {
        printf("queue elements:\n");
        for(int i=front;i<=rear;i++)
        {
            printf("\n%d ",queue[i]);
        }
    }
}
int main()
{
    int choice,value;
    while(1)
    {
        printf("\n---priority queue menu---");
        printf("\n1.insertion \n2.deletion \n3.display \n4.exit \n");
        printf("enter the choice:");
        scanf("%d",&choice);
        switch(choice)
        {
            case 1:
                printf("enter value to insert:");
                scanf("%d",&value);
                insertion(value);
                break;
            case 2:
                deletion();
                break;
            case 3:
                display();
                break;
            case 4:
                printf("exiting program");
                exit(0);
            default:

```

```
        printf("invalid choice. please try again\n");
    }
}
return 0;
}
```



The screenshot shows a Windows terminal window with a dark background. The window title bar indicates the file path is "C:\Users\Nijal\Documents\ids". The terminal displays the output of a C program that implements a priority queue menu. The menu options are: 1.insertion, 2.deletion, 3.display, and 4.exit. The program shows three successful insertion operations: inserting 12, 9, and 15. Each time, the user enters choice 1, then the value to insert. The program also shows the menu being displayed again after each insertion. The Windows taskbar is visible at the bottom, showing the Start button, a search bar, and various application icons. The system clock in the bottom right corner shows the time as 23:38 on 03-11-2025.

```
---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:1
enter value to insert:12

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:1
enter value to insert:9
9 inserted into the queue

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:1
enter value to insert:15
15 inserted into the queue

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:1
enter value to insert:14
14 inserted into the queue

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
```

```
---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:1
enter value to insert:8
8 inserted into the queue

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:3
queue elements:
8
9
12
14
15

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:2
deleted element: 8

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:2
deleted element: 9

---priority queue menu---
1.insertion

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:3
queue elements:
12
14
15

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:1
enter value to insert:13
queue overflow.cannot insert 13

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:3
queue elements:
12
14
15

---priority queue menu---
1.insertion
2.deletion
3.display
4.exit
enter the choice:4
exiting program
Process returned 0 (0x0)   execution time : 90.798 s
Press any key to continue.
```