DS-PROGRAMS

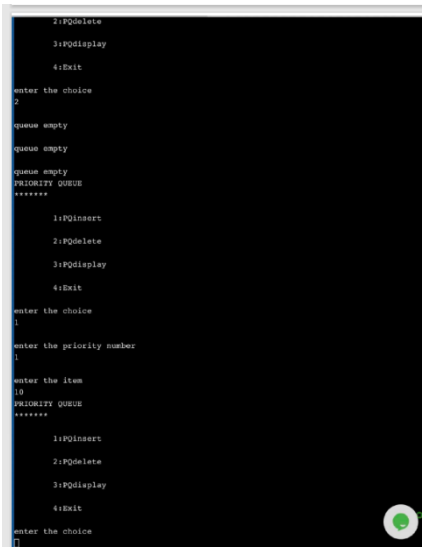
MULTIPLE PRIORITY QUEUE PROGRAM

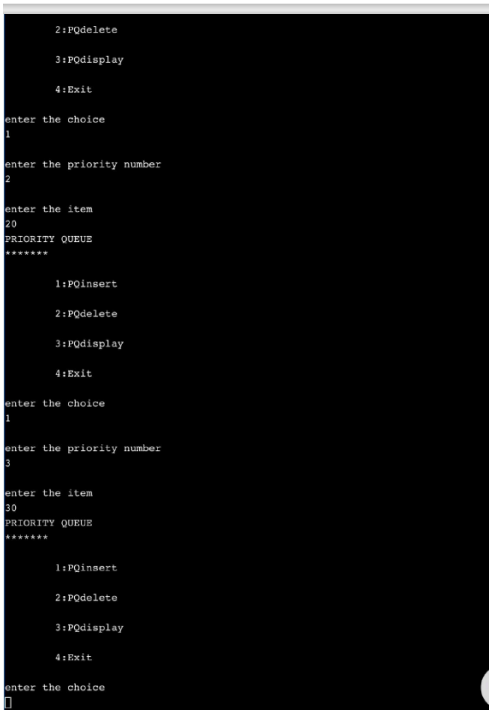
```
#include <stdlib.h>

#include<stdio.h>

#define N 3

int queue[3][N];

int front[3]={0,0,0};

int rear[3]={-1,-1,-1};

void pqinsert(int pr);

void pqdelete();

void display();

int item,pr;

void main()

{

int ch;

while(1)

{

printf("PRIORITY QUEUE\n");

printf("*****************\n");

printf("\n\t1:PQinsert\n");

printf("\n\t2:PQdelete\n");

printf("\n\t3:PQdisplay\n");

printf("\n\t4:Exit\n");

printf("\nenter the choice\n");

scanf("%d",&ch);
```

```
switch(ch)
{
 case 1:printf("\nenter the priority number\n");
                scanf("%d",&pr);
                if(pr>0 && pr<4)
                pqinsert(pr-1);
                else
                printf("\nonly 3 priority exists 1 2 3\n");
                break;
case 2:pqdelete();
        break;
case 3:display();
        break;
case 4:exit(0);
}
}
}
void pqinsert(int pr)
{
 if(rear[pr]==N-1)
 printf("\n Queue overflow\n");
 else
 {
 printf("\nenter the item\n");
 scanf("%d",&item);
```

```
 rear[pr]++;
 queue[pr][rear[pr]]=item;
 }
 return;
}
void pqdelete()
{
int i;
for(i=0;i<3;i++)
{
  if(rear[i]==front[i]-1)
  printf("\nqueue empty\n");
  else
  {
  printf("deleted item is %d of queue %d\n",queue[i][front[i]],i+1);
  front[i]++;
  return;
  }
 }
}
void display()
{
int i,j;
for(i=0;i<3;i++)
{
```

```
if(rear[i]==front[i]-1)
  printf("\nqueue empty %d\n",i+1);
else
  {
  printf("\nQUEUE %d:",i+1);
  for(j=front[i];j<=rear[i];j++)
    printf("%d\t",queue[i][j]);
  }
}
  return;
}
```

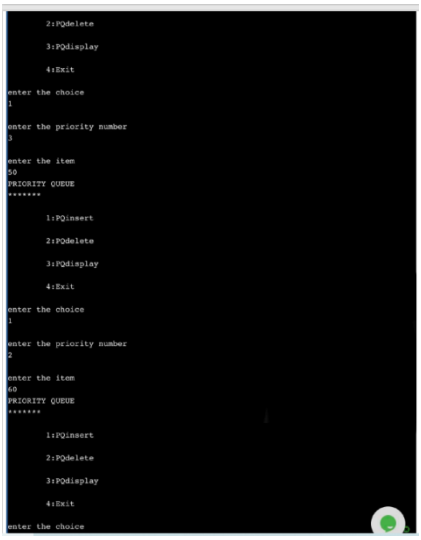

2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2
queue empty
queue empty
queue empty
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
1
enter the item
10
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice

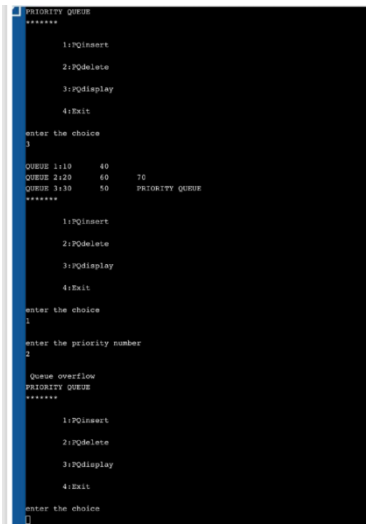

2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
2
enter the item
20
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
3
enter the item
30
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice

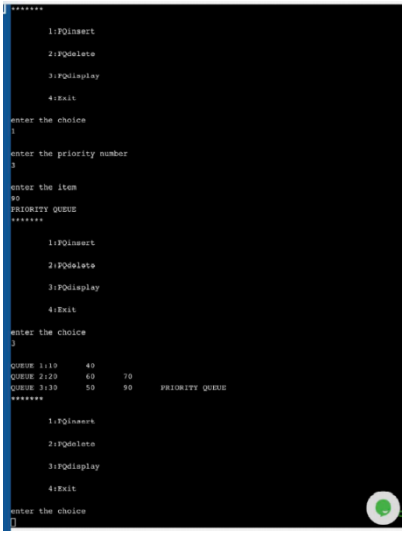
```
*******

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice
3

QUEUE 1:10
QUEUE 2:20
QUEUE 3:30      PRIORITY QUEUE
*******

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice
1

enter the priority number
1

enter the item
40
PRIORITY QUEUE
*******

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice
```

```
enter the item
40
PRIORITY QUEUE
*******

       1:PQinsert

       2:PQdelete

       3:PQdisplay

       4:Exit

enter the choice
1

enter the priority number
1

 Queue overflow
PRIORITY QUEUE
*******

       1:PQinsert

       2:PQdelete

       3:PQdisplay

       4:Exit

enter the choice
50
PRIORITY QUEUE
*******

       1:PQinsert

       2:PQdelete

       3:PQdisplay

       4:Exit

enter the choice
```

```
enter the item
40
PRIORITY QUEUE
*******

       1:PQinsert

       2:PQdelete

       3:PQdisplay

       4:Exit

enter the choice
1

enter the priority number
1

 Queue overflow
PRIORITY QUEUE
*******

       1:PQinsert

       2:PQdelete

       3:PQdisplay

       4:Exit

enter the choice
50
PRIORITY QUEUE
*******

       1:PQinsert

       2:PQdelete

       3:PQdisplay

       4:Exit

enter the choice
```







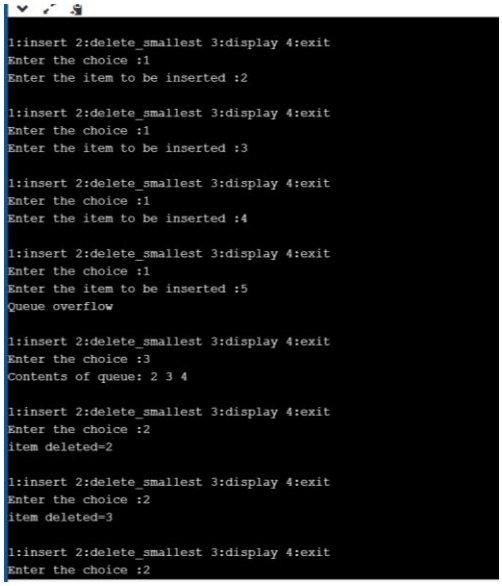
ASCENDING PROGRAM

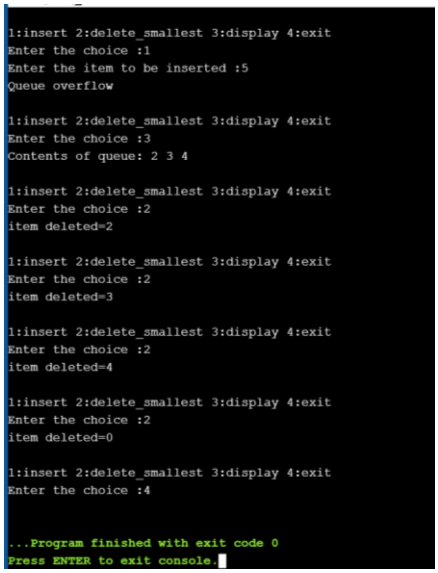
```
#include <stdio.h>
#include <string.h>
#include <stdlib.h>
#define MAX 3

int pq[MAX];
int count = 0;
int d = 0;

void insert(int data){
  int i = 0;
    if(count==MAX)
    {
       printf("Queue overflow\n");
       return;
    }

    if(count == 0){
      pq[count++] = data;
    }else{

                          for(i = count - 1; i >= 0; i-- ){

        if(data<pq[i]){
```

```
            pq[i+1] = pq[i];
          }else{
            break;
          }
        }


        pq[i+1] = data;
        count++;
      }

}

int removeData(){

   return pq[d++];
}
void display()
{int i;
if (count==0)
{
            printf("queue is empty\n");
            return;
}
```

```
printf("Contents of queue: ");
for(i=d;i<count;i++)
{
        printf("%d ",pq[i]);
}
printf("\n");
}

int main() {
   int choice,item;
        for(;;)
        {
                printf("\n1:insert 2:delete_smallest 3:display 4:exit\n");
                printf("Enter the choice :");
                scanf("%d",&choice);
                switch(choice)
                {
                        case 1:printf("Enter the item to be inserted :");
                        scanf("%d",&item);
                        insert(item);
                        break;
                        case 2:item=removeData();
                        if(item==-1)
                        printf("Queue is empty\n");
```

```
                    else
                    printf("item deleted=%d\n",item);
                    break;
                    case 3:display();
                    break;
                    default:exit (0);

                }

        }

 }
```





DESCENDING PROGRAM

```
#include <stdio.h>

#include <stdlib.h>

#define q_size 5

int r=-1,f=0,item,count=0;

int q[10],ch;

void insert_rear(){

        if (r==q_size-1){

                printf("Queue overflow\n");

                return;

        }

        r=r+1;

        q[r]=item;

        count++;

}
```

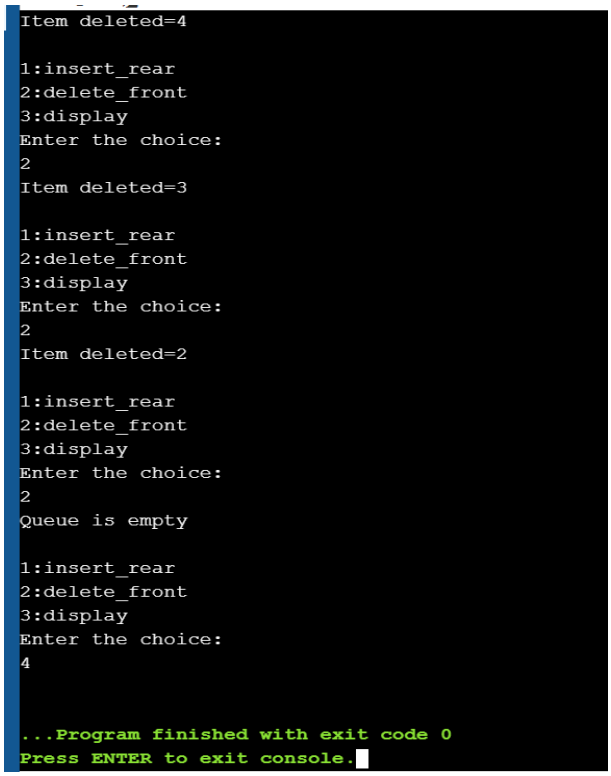
```
void insertion_sort(){
        int i,j,key;
        for (i=1;i<count;i++)
        {
                key=q[i];
                j=i-1;
                while (j>=0 && q[j]>key){
                        q[j+1]=q[j];
                        j=j-1;
                }
                q[j+1]=key;
        }
}
void delete_rear(){
        if (f>r){
                f=0;
                r=-1;
                printf("Queue is empty\n");
                return;
        }
        printf("Item deleted=%d\n",q[r--]);
}
void display(){
        if (f>r){
                printf("Queue is empty\n");
```

```
                return;
        }
        printf("Contents of the queue are:\n");
        for(int i=f;i<=r;i++)
        {
                printf("%d\n",q[i]);
        }
}
int main(){
        for (;;)
        {
                printf("\n1:insert_rear\n2:delete_front\n3:display\n");
                printf("Enter the choice:\n");
                scanf("%d",&ch);
                switch (ch){
                        case 1:printf("Enter the item:\n");
                                scanf("%d",&item);
                                insert_rear();
                                insertion_sort();
                                break;
                   case 2:delete_rear();
                        break;
                   case 3:display();
                        break;
                   default:exit(0);
```

```
        }
    }
    return 0;
}
```

```
1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
2

1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
3

1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
4

1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
5
```

```
Enter the choice:
1
Enter the item:
5
Queue overflow

1:insert_rear
2:delete_front
3:display
Enter the choice:
3
Contents of the queue are:
2
3
4

1:insert_rear
2:delete_front
3:display
Enter the choice:
2
Item deleted=4

1:insert_rear
2:delete_front
3:display
Enter the choice:
2
Item deleted=3

1:insert_rear
2:delete_front
```


Item deleted=4
1:insert_rear
2:delete_front
3:display
Enter the choice:
2
Item deleted=3
1:insert_rear
2:delete_front
3:display
Enter the choice:
2
Item deleted=2
1:insert_rear
2:delete_front
3:display
Enter the choice:
2
Queue is empty
1:insert_rear
2:delete_front
3:display
Enter the choice:
4
...Program finished with exit code 0
Press ENTER to exit console.