Week 7 :- Practice programs.

A ccreasing priority queue :-

```
#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("\n Queue Overflow \n");
    return;
  }
  r++;
  q[r] = item;
  count++;
}
void insertion_sort()
{
  int i, j, key;
  for(i=0; i<count; i++)
  {
    key = q[i];
    j = i-1;
    while(j>=0 && q[j]<key) [// for descending priority q[i]>key]
    {
      q[j+1] = q[j];
      j--;
    }
    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])
}
void main()
{
    for(;;)
    {
        printf("\n1: insert-rear\n2: delete front\n3: display\n");
        printf("Enter you choice:\n");
        scanf("%d", &ch);
        switch (ch) {
            case 1: printf("Enter the item: ");
                    scanf("%d", &item);
                    insert_rear();
                    insertionSort();
                    break;
```

```
case 2: delete_rear()
        break;
case 3: display()
        break;
default : exit(0);
    }
  }
}
```

```
1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
12

1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
13

1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
11

1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
14

1:insert_rear
2:delete_front
3:display
Enter the choice:
1
Enter the item:
10
```

```
1:insert_rear
2:delete_front
3:display
Enter the choice:
2:delete_front
3:display
Enter the choice:
3
Contents of the queue are:
14
13
12
11
10

1:insert_rear
2:delete_front
3:display
Enter the choice:
2
Item deleted=10

1:insert_rear
2:delete_front
3:display
Enter the choice:
2
Item deleted=11

1:insert_rear
2:delete_front
3:display
Enter the choice:
2
Item deleted=12
```

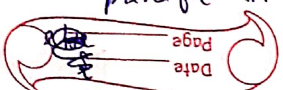
Multi priority queue:-

```
#include<stdio.h>
#include<conio.h>
#define N 5
int queue[3][N], front[3]={0,0,0}, rear[3]={0,0,0}, item, pr;
void main()
{
  int ch;
  while(1)
  {
    printf("PRIORITY QUEUE\n********\n1:PQinsert\n2:PQdelete\n");
    printf("3:PQdisplay\n4:EXIT\nEnter the choice:");
    scanf("%d",&ch);
    switch(ch)
    {
      case 1: printf("Enter the priority number:");
              scanf("%d",&pr)
              if(pr>0 && pr<4)
                pq_insert(pr-1);
              else
                printf("Only 3 priority queue exist 1 2 3\n");
              break;
      case 2: pq_delete();
              break;
      case 3: display();
              break;
      case 4: exit(0);
    }
  }
}
```

```
pq insert (int pr)
{
  if (rear[pr] == N-1)
    printf("In Queue overflow \n");
  else
  {
    printf("Enter the item: ");
    scanf("%d", &item);
    rear[pr]++;
    queue[pr][rear[pr]]=item;
  }
  return;
}

pq delete()
{
   int i;
   for (i=0; i<3; i++)
   {
    if (rear[i] == front[i]-1)
      printf("In Queue Empty \n");
    else
    {
      printf("Delete item is %d of queue %d \n", queue[i][front[i]], i+1);
      front[i]++;
    return
    }
   }
}

display()
{
   int i,j;
   for (i=0; i<3; i++)
   {
    if (rear[i] == front[i]-1)
      printf("In queue empty %d \n", i+1);
```



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

```
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:1

enter the priority number:2
enter the item:10
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:1

enter the priority number:1
enter the item:20
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:1

enter the priority number:1
enter the item:30
```

```
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:14
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:3

QUEUE 1:20      30
QUEUE 2:10      12      13
queue empty 3
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:2
deleted item is 20 of queue 1
```

```
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:1

enter the priority number:2
enter the item:12
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:1

enter the priority number:2
enter the item:13
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:1

enter the priority number:2

 Queue overflow
```

```
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:2
deleted item is 30 of queue 1
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:3

queue empty 1

QUEUE 2:10      12      13
queue empty 3
PRIORITY QUEUE
******************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice:4
PS D:\DS 3rd Sem Notes\DS Lab\Week 7>
```