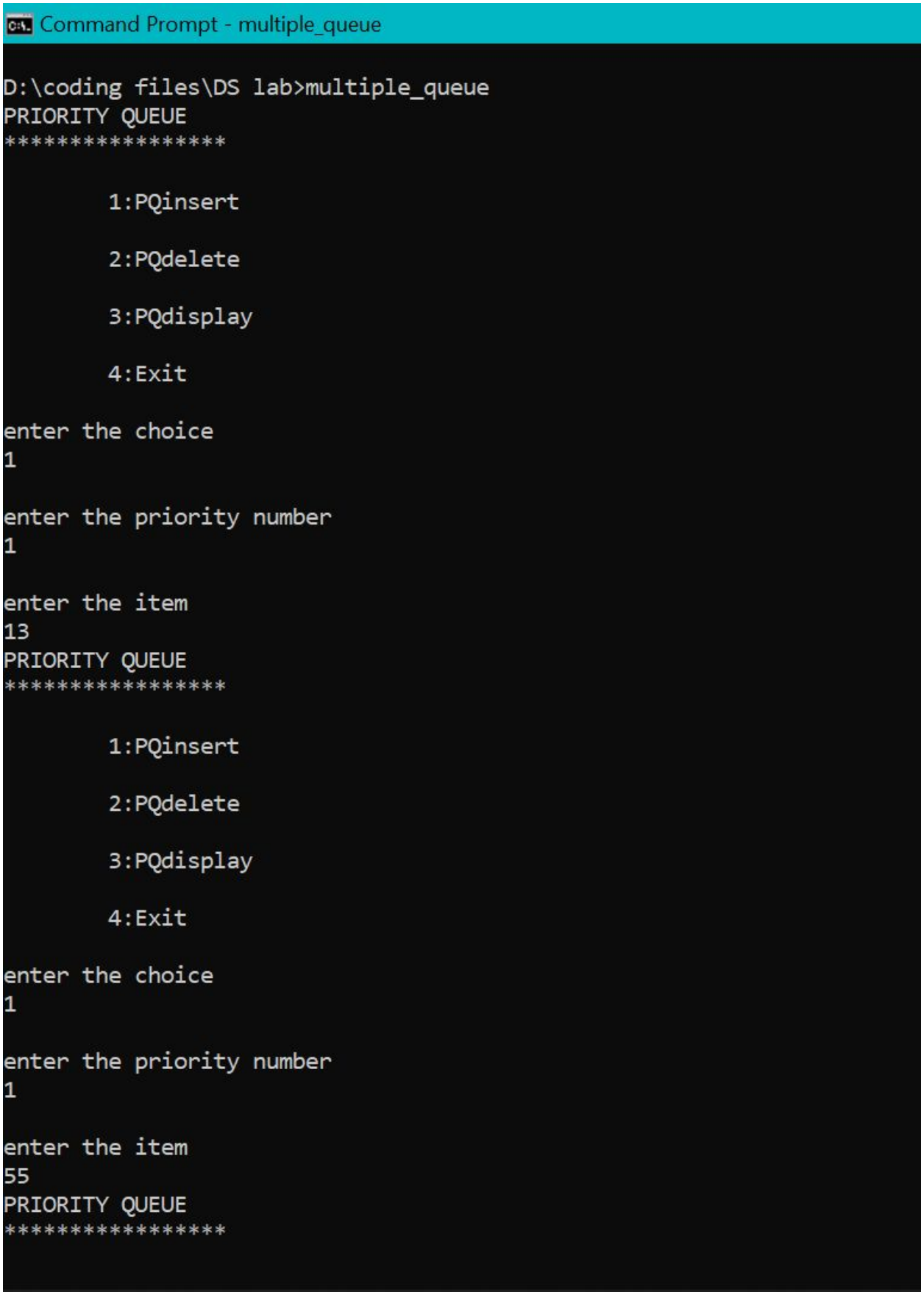
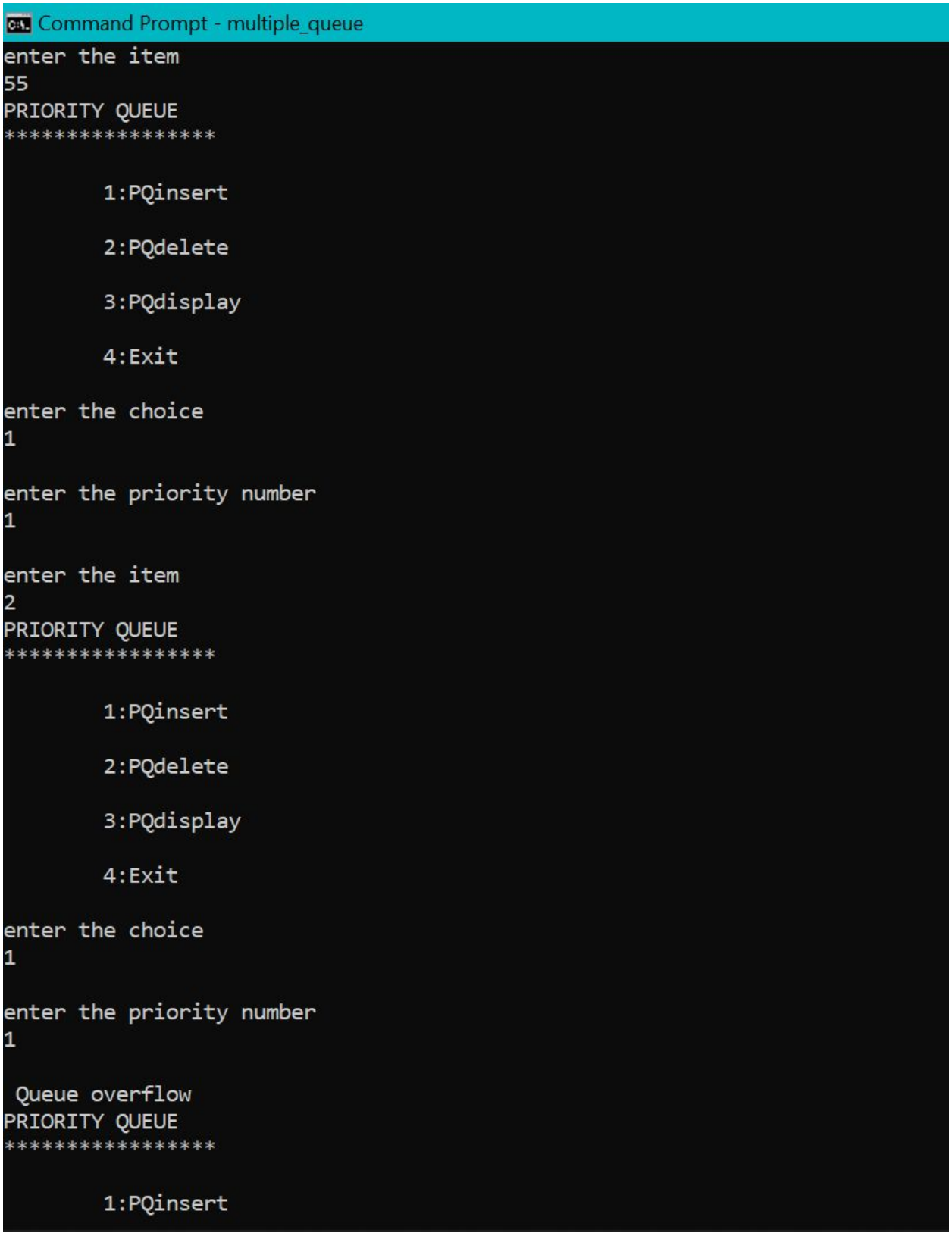
PRACTICE - 3

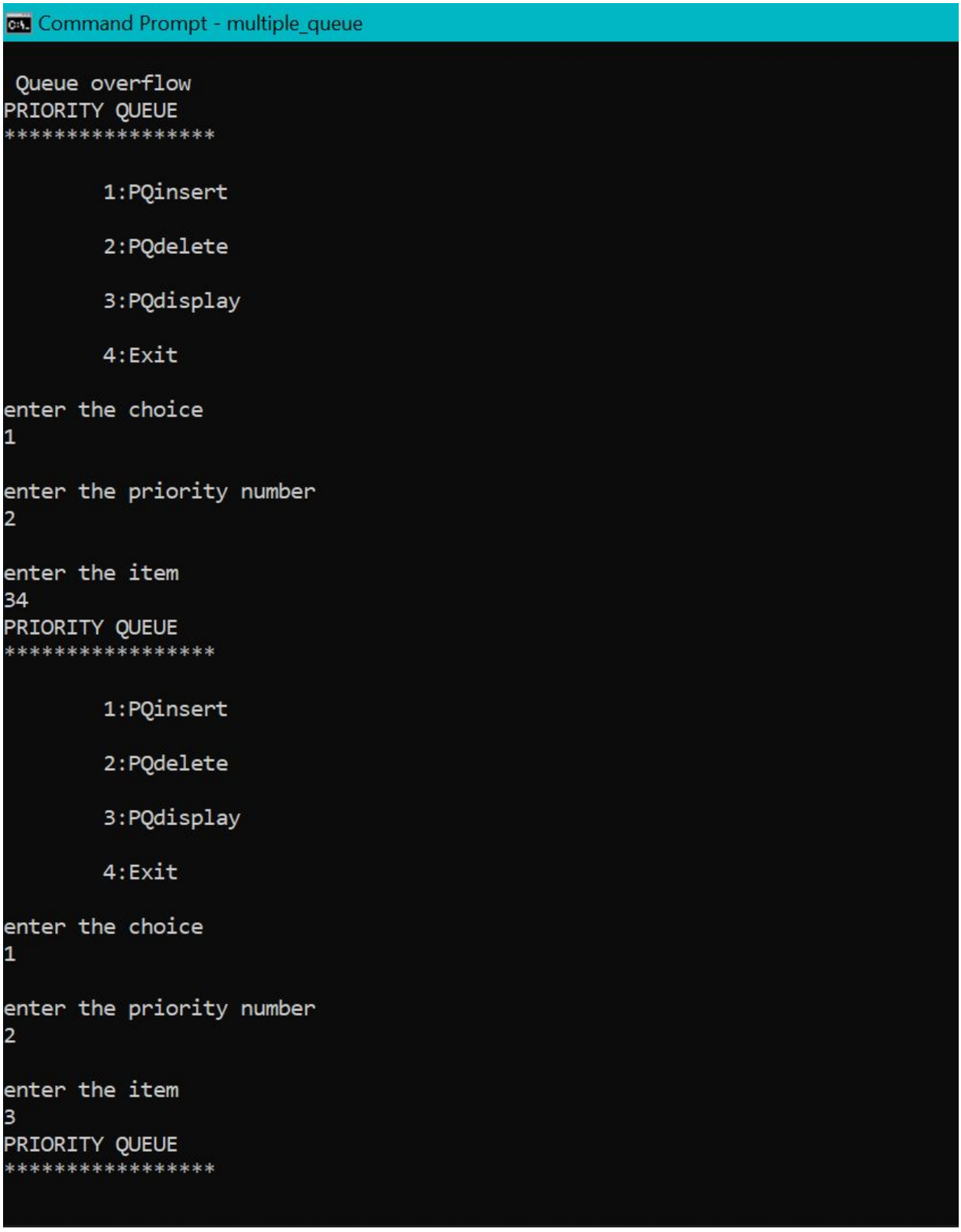
//multiple queue using 2Darray

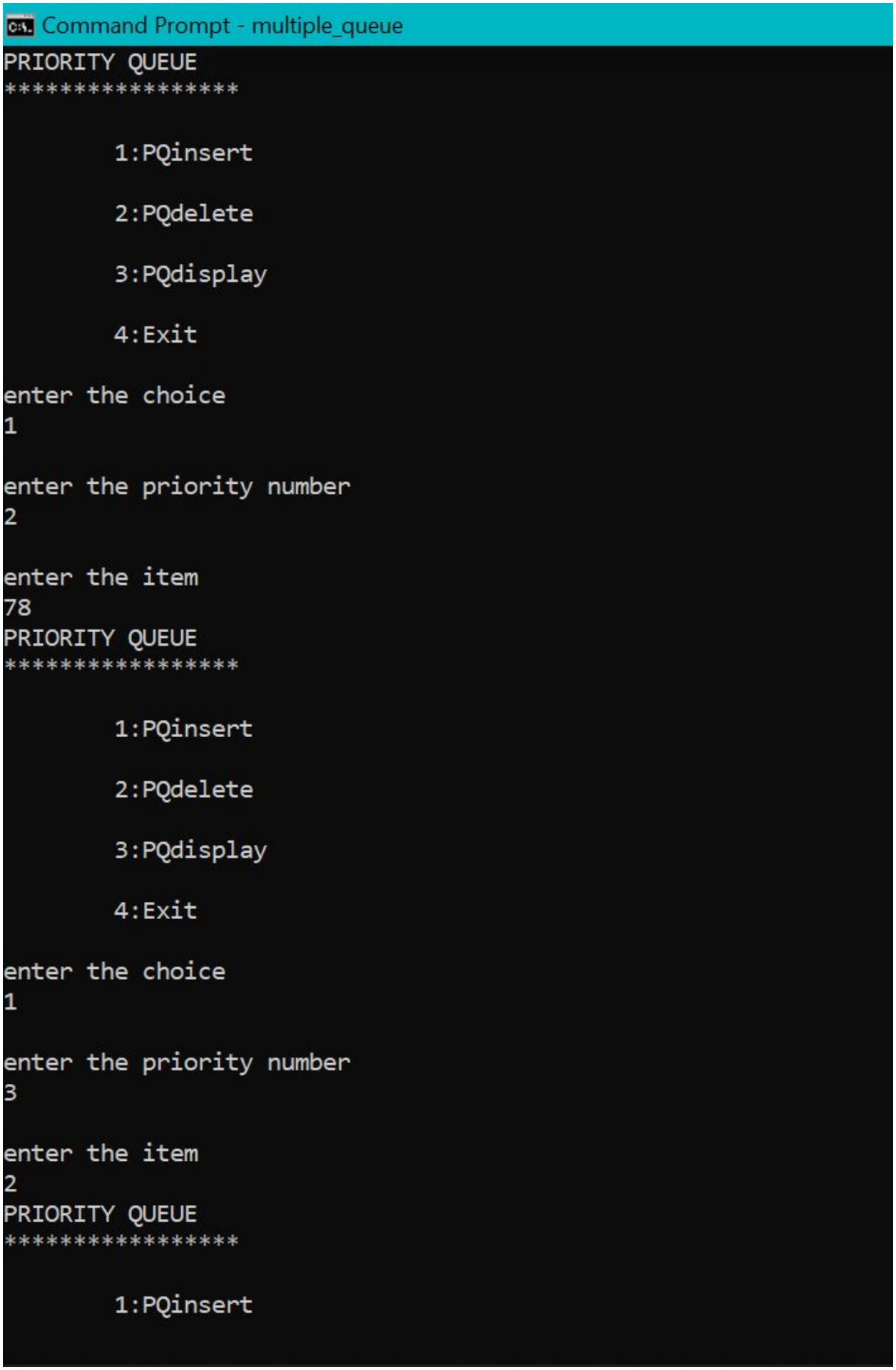
```
#include<stdio.h>
#include<conio.h>
#include<stdlib.h>
#define N 3
int queue[3][N];
int front[3]={0,0,0};
int rear[3]={-1,-1,-1};
int item,pr;

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;
}
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);
}
}
}
```


Command Prompt - multiple_queue
D:\coding files\DS lab>multiple_queue
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
1
enter the item
13
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
1
enter the item
55
PRIORITY QUEUE
****

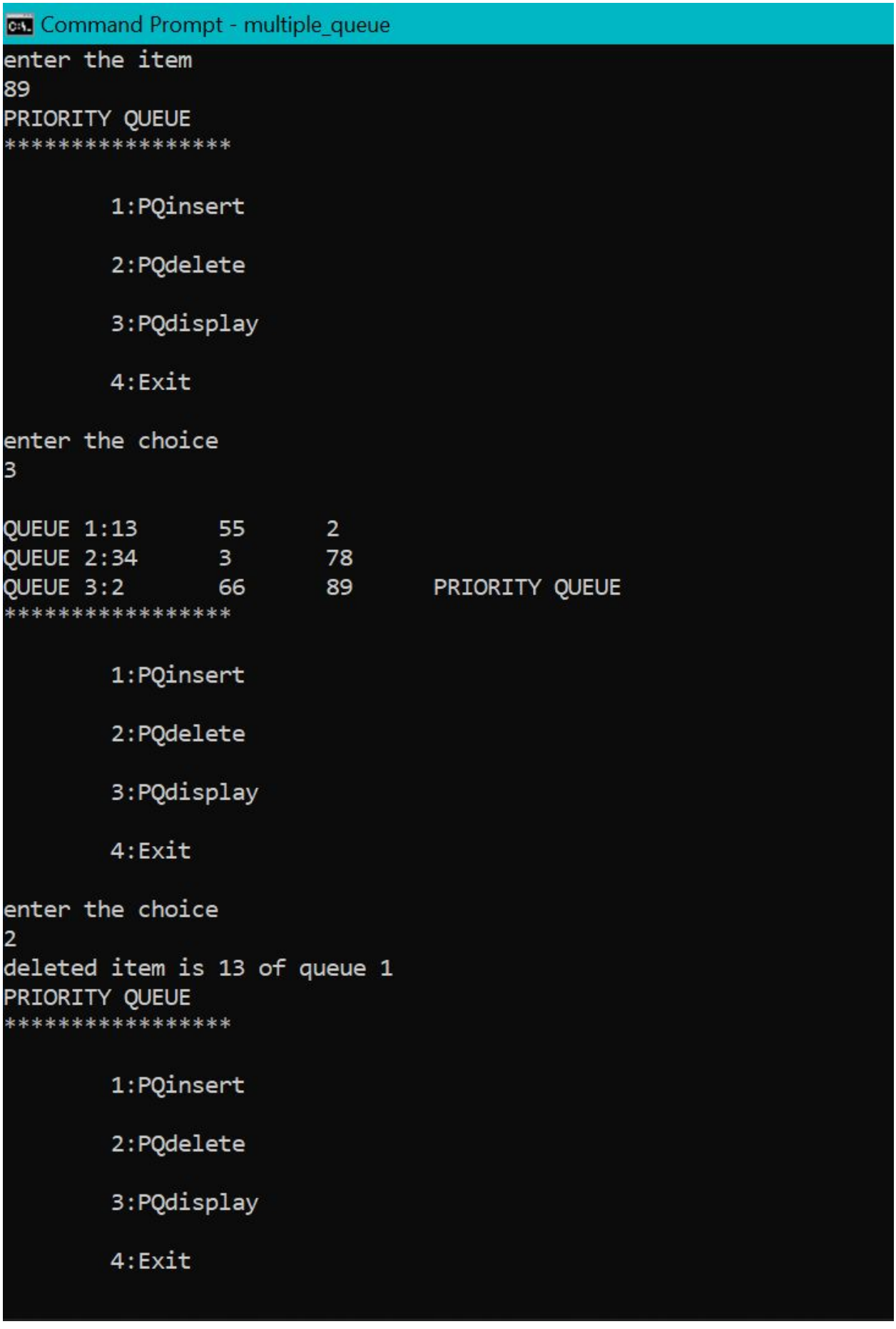

Command Prompt - multiple_queue
enter the item
55
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
1
enter the item
2
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
1
Queue overflow
PRIORITY QUEUE
****
1:PQinsert

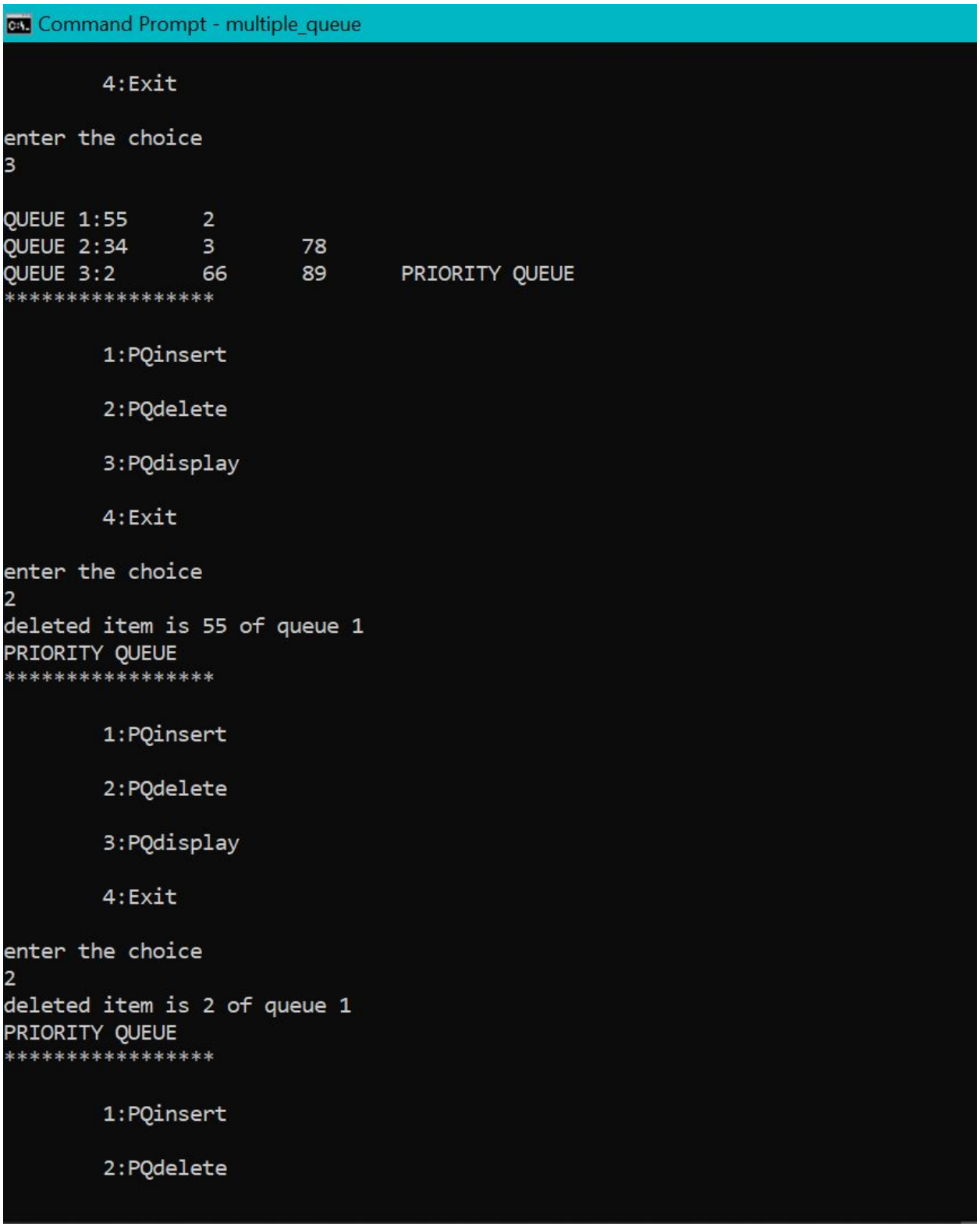

Command Prompt - multiple_queue
Queue overflow
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
2
enter the item
34
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
2
enter the item
3
PRIORITY QUEUE
****

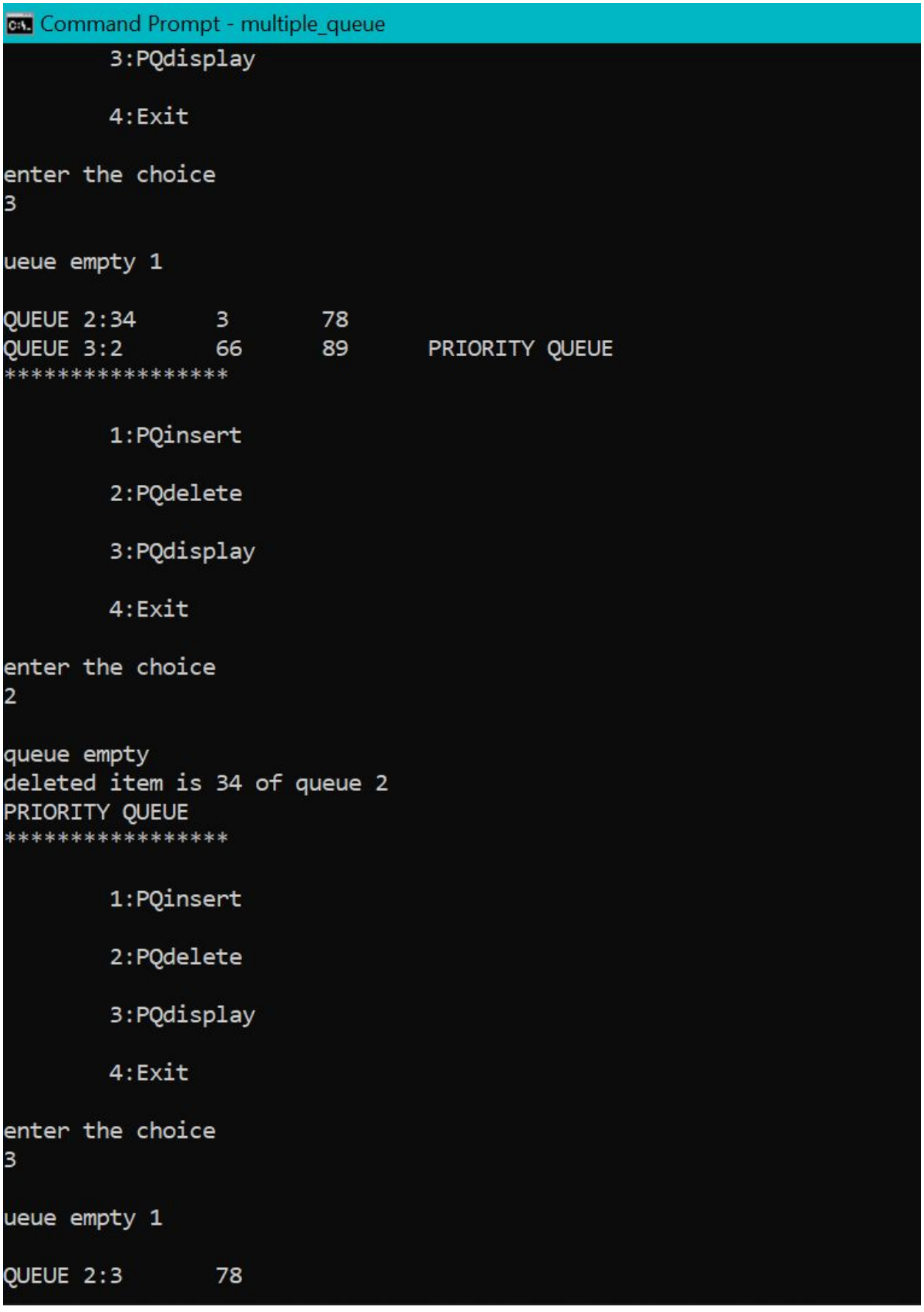

Command Prompt - multiple_queue
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
2
enter the item
78
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
1
enter the priority number
3
enter the item
2
PRIORITY QUEUE
****
1:PQinsert

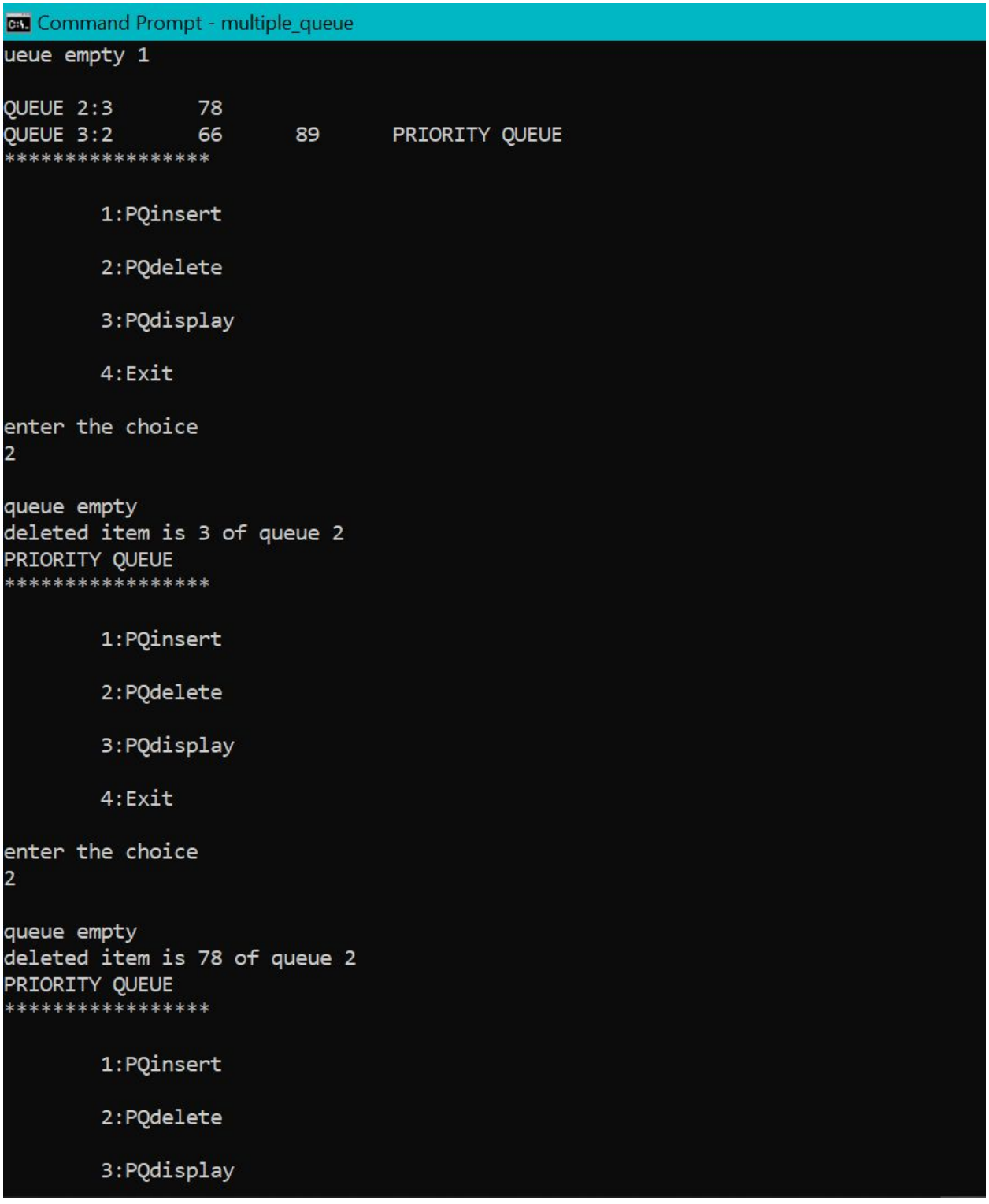
Command Prompt - multiple_queue

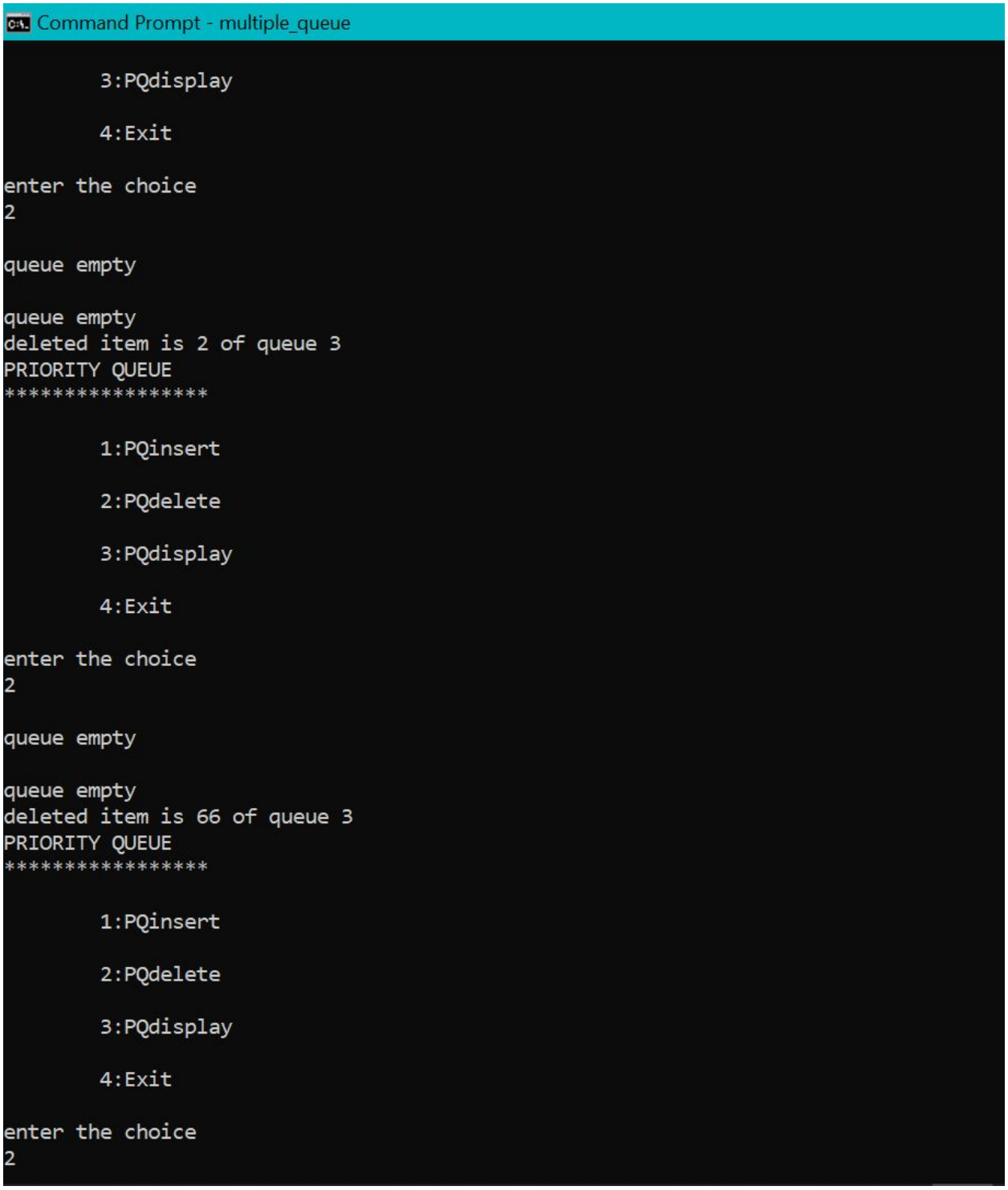
```
****************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice
1

enter the priority number
3

enter the item
66
PRIORITY QUEUE
****************

        1:PQinsert

        2:PQdelete

        3:PQdisplay

        4:Exit

enter the choice
1

enter the priority number
3

enter the item
89
PRIORITY QUEUE
****************

        1:PQinsert

        2:PQdelete
```

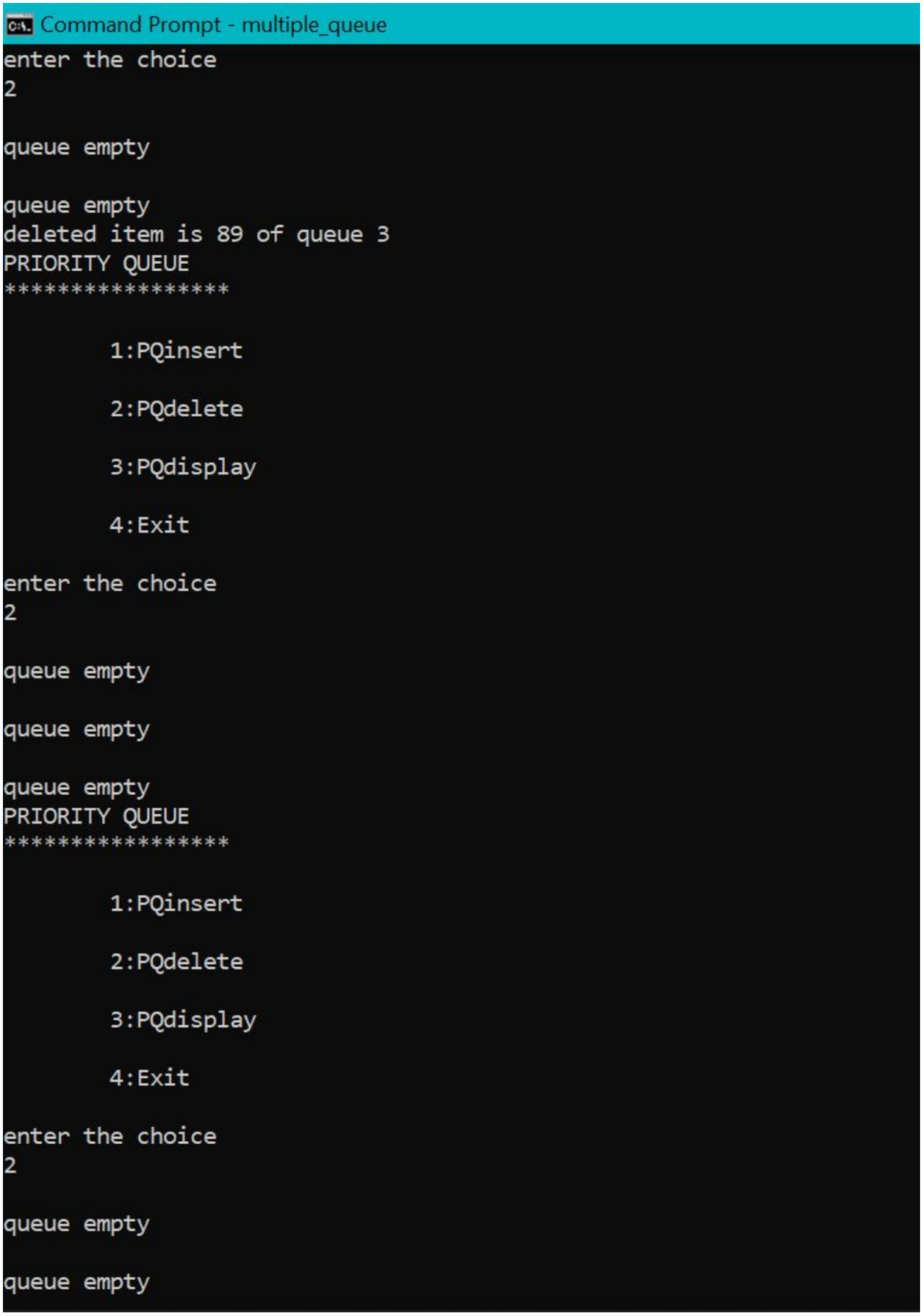

Command Prompt - multiple_queue
enter the item
89
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
3
QUEUE 1:13 55 2
QUEUE 2:34 3 78
QUEUE 3:2 66 89 PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2
deleted item is 13 of queue 1
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit


Command Prompt - multiple_queue
4:Exit
enter the choice
3
QUEUE 1:55 2
QUEUE 2:34 3 78
QUEUE 3:2 66 89 PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2
deleted item is 55 of queue 1
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2
deleted item is 2 of queue 1
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete


Command Prompt - multiple_queue
3:PQdisplay
4:Exit
enter the choice
3
ueue empty 1
QUEUE 2:34 3 78
QUEUE 3:2 66 89 PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2
queue empty
deleted item is 34 of queue 2
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
3
ueue empty 1
QUEUE 2:3 78


Command Prompt - multiple_queue
ueue empty 1
QUEUE 2:3 78
QUEUE 3:2 66 89 PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2
queue empty
deleted item is 3 of queue 2
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2
queue empty
deleted item is 78 of queue 2
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay


Command Prompt - multiple_queue
3:PQdisplay
4:Exit
enter the choice
2
queue empty
queue empty
deleted item is 2 of queue 3
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2
queue empty
queue empty
deleted item is 66 of queue 3
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
2


Command Prompt - multiple_queue
enter the choice
2
queue empty
queue empty
deleted item is 89 of queue 3
PRIORITY QUEUE
****
1:PQinsert
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
2
queue empty
queue empty


Command Prompt - multiple_queue
enter the choice
2
queue empty
queue empty
queue empty
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice
3
ueue empty 1
ueue empty 2
ueue empty 3
PRIORITY QUEUE
****
1:PQinsert
2:PQdelete
3:PQdisplay
4:Exit
enter the choice

//Ascending priority Queue
//Descending Priority QUEUE

```
#include<stdio.h>
#include<stdlib.h>
#define SIZE 5
int PQ[SIZE],f=0,r=-1;

int PQinsert(int elem)
 {
 int i;
  if(Qfull())
  printf("\nOverflow!!\n");
  else
   {
    i=r;
    ++r;
    while(PQ[i]>=elem && i>=0)
     {
      PQ[i+1]=PQ[i];
      i--;
      }
     PQ[i+1]=elem;
   }
  }
int PQdelete_ASC()
 {
  int elem;
  if(Qempty()){
    printf("\nUnderflow!!\n");
  return(-1);
}
  else
   {
   elem=PQ[f];
   f=f+1;
   return(elem);
   }
 }

 int PQdelete_DES()
  {
```

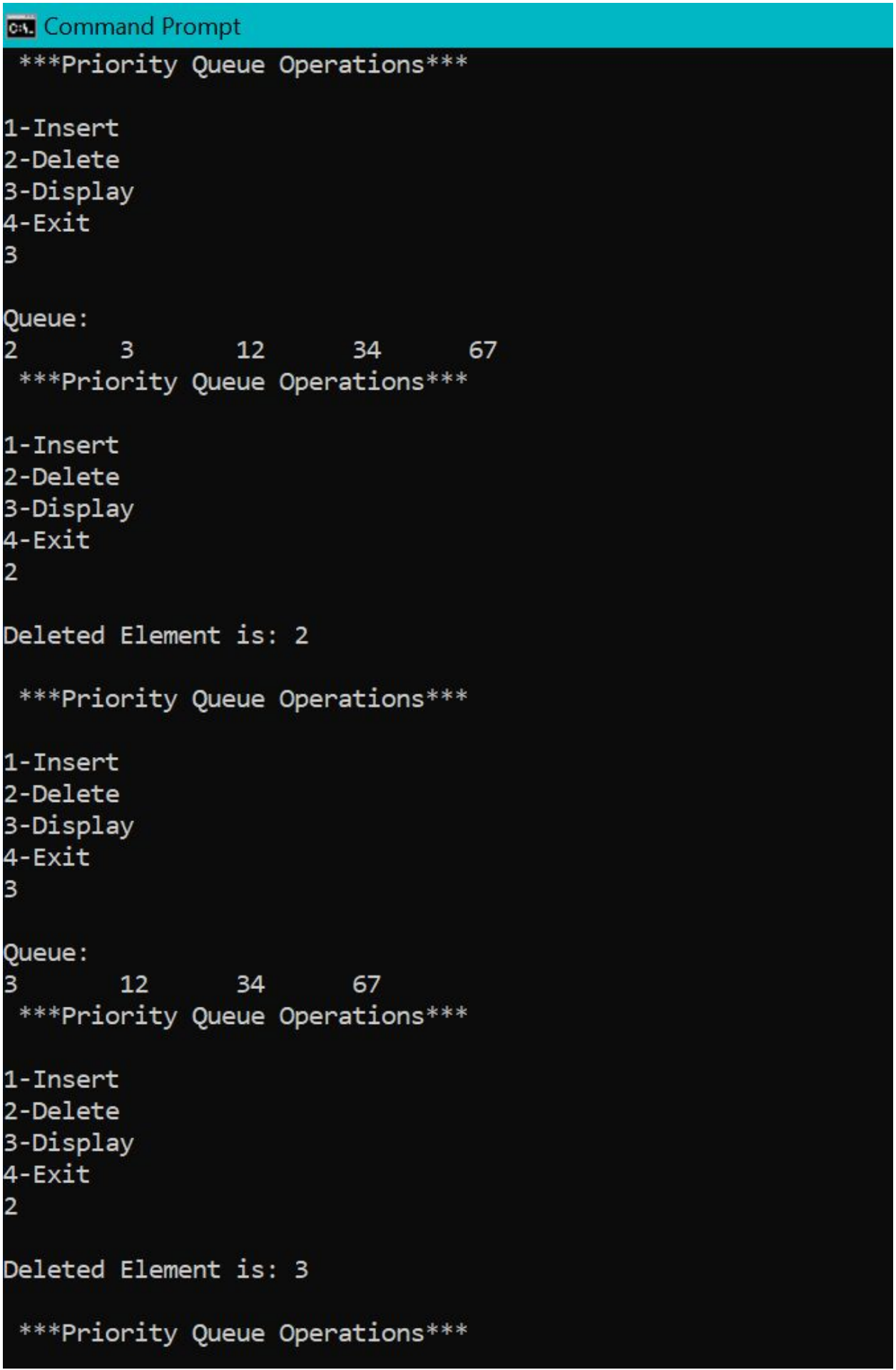
```
  int elem;
  if(Qempty()){
    printf("\nUnderflow!!\n");
  return(-1);
}
  else
   {
   f=f+1;
   elem=PQ[SIZE-f];
   return(elem);
   }
 }

int Qfull()
 {
   if(r==SIZE-1)
   return 1;
   return 0;
 }
int Qempty()
 {
   if(f > r)
   return 1;
   return 0;
 }

 void display_ASC()
  {
   int i;
   if(Qempty())
   printf(" \nEmpty Queue\n");
   else
    {
     for(i=f;i<=r;i++)
     printf("%d\t",PQ[i]);
    }
  }
  void display_DES()
   {
    int i;
    if(Qempty())
    printf(" \nEmpty Queue\n");
    else
     {
```

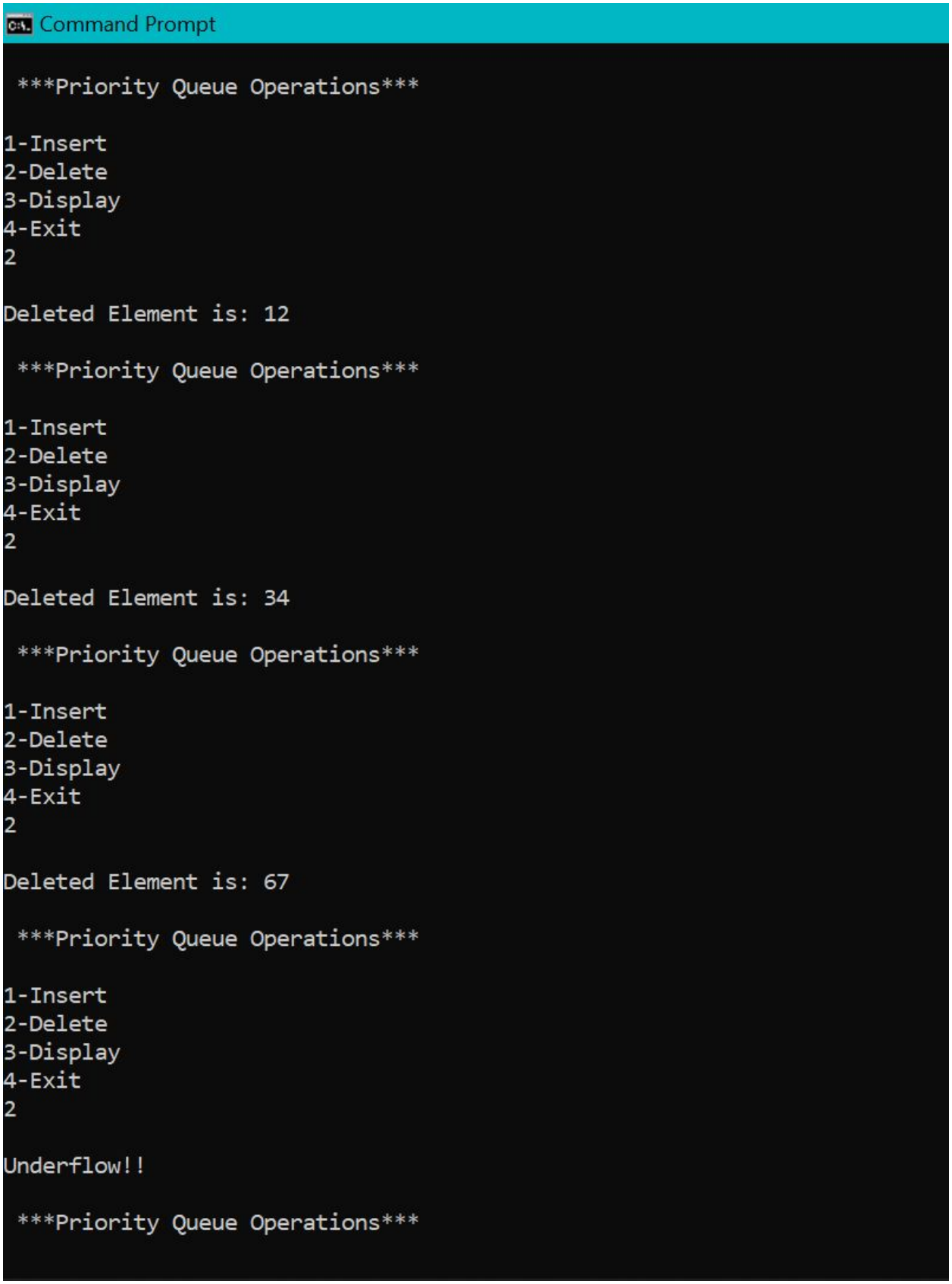
```
    for(i=SIZE-(f+1);i>=0;i--)
    printf("%d\t",PQ[i]);
   }
  }
void main()
{
 int opn,ch,elem;
 printf("Enter what you want:\n1.Ascending priority Queue\n2.Descending Priority Queue\n");
 scanf("%d",&ch);
 do
  {
   printf("\n ***Priority Queue Operations*** \n");
   printf("\n1-Insert\n2-Delete\n3-Display\n4-Exit\n");
   scanf("%d",&opn);
   switch(opn)
    {
    case 1: printf("\nEnter element to be Inserted\n");
            scanf("%d",&elem);
            PQinsert(elem);
            break;
    case 2: if(ch==1){
           elem = PQdelete_ASC();
           if( elem!=-1)
           printf("\nDeleted Element is: %d \n",elem);
           break;
          }
          if(ch==2){
            elem = PQdelete_DES();
            if( elem!=-1)
            printf("\nDeleted Element is: %d \n",elem);
            break;
          }
    case 3: if(ch==1){
            printf("\nQueue: \n");
            display_ASC();
            break;
          }
          if(ch==2){
            printf("\nQueue: \n");
            display_DES();
            break;
          }
    case 4:exit(0);
    default:printf("\nInvalid Option!!\nTry Again!!\n");
```

```
            break;
    }
    }while(opn != 4);
}
```

```
D:\coding files\DS lab>ascending_descending
Enter what you want:
1.Ascending priority Queue
2.Descending Priority Queue
1

 ***Priority Queue Operations***

1-Insert
2-Delete
3-Display
4-Exit
1

Enter element to be Inserted
12

 ***Priority Queue Operations***

1-Insert
2-Delete
3-Display
4-Exit
1

Enter element to be Inserted
34

 ***Priority Queue Operations***

1-Insert
2-Delete
3-Display
4-Exit
1

Enter element to be Inserted
2
```

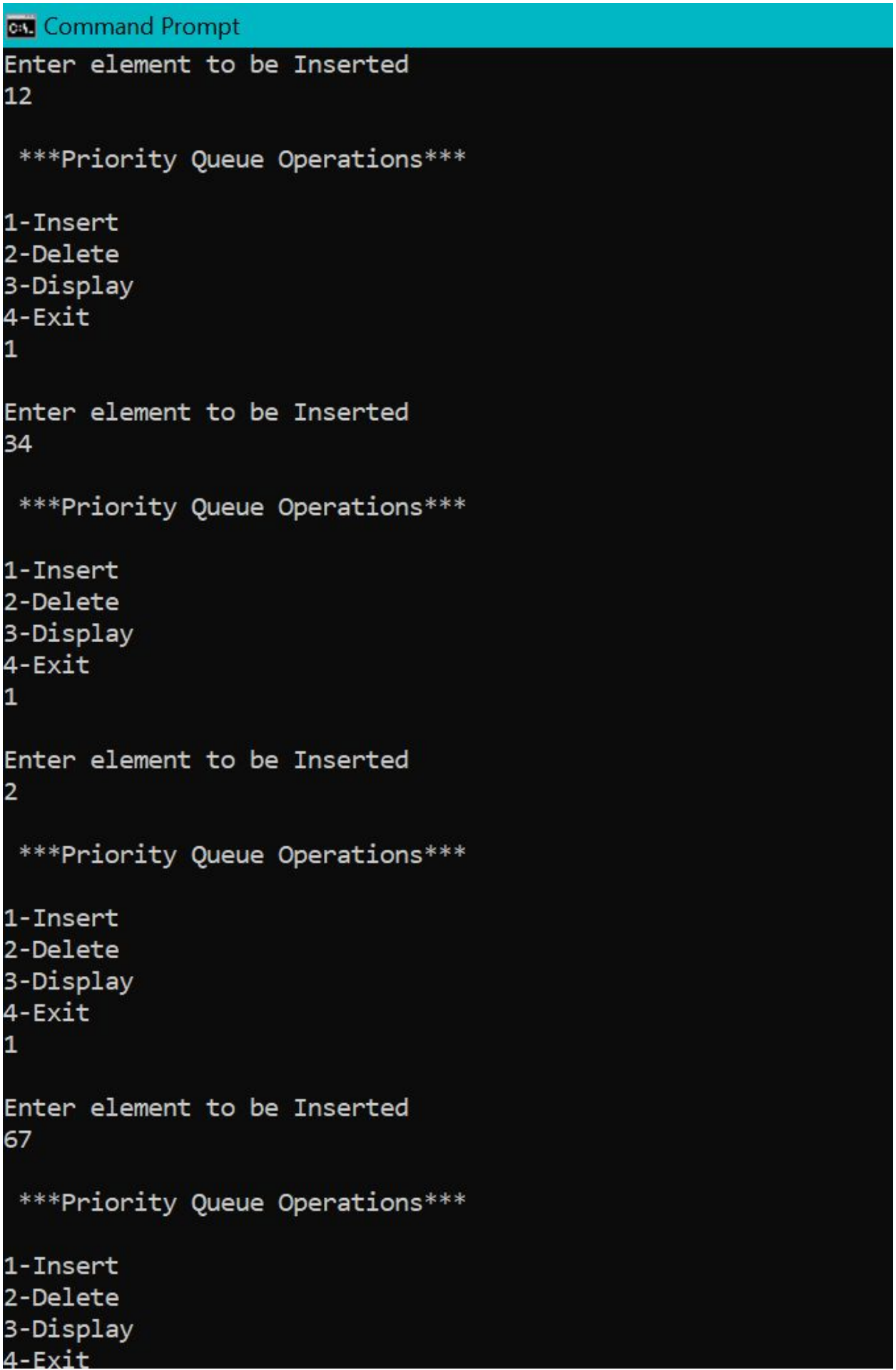

Command Prompt
Enter element to be Inserted
2
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
1
Enter element to be Inserted
67
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
1
Enter element to be Inserted
3
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
1
Enter element to be Inserted
44
Overflow!!
Priority Queue Operations
1-Insert
2-Delete
3-Display

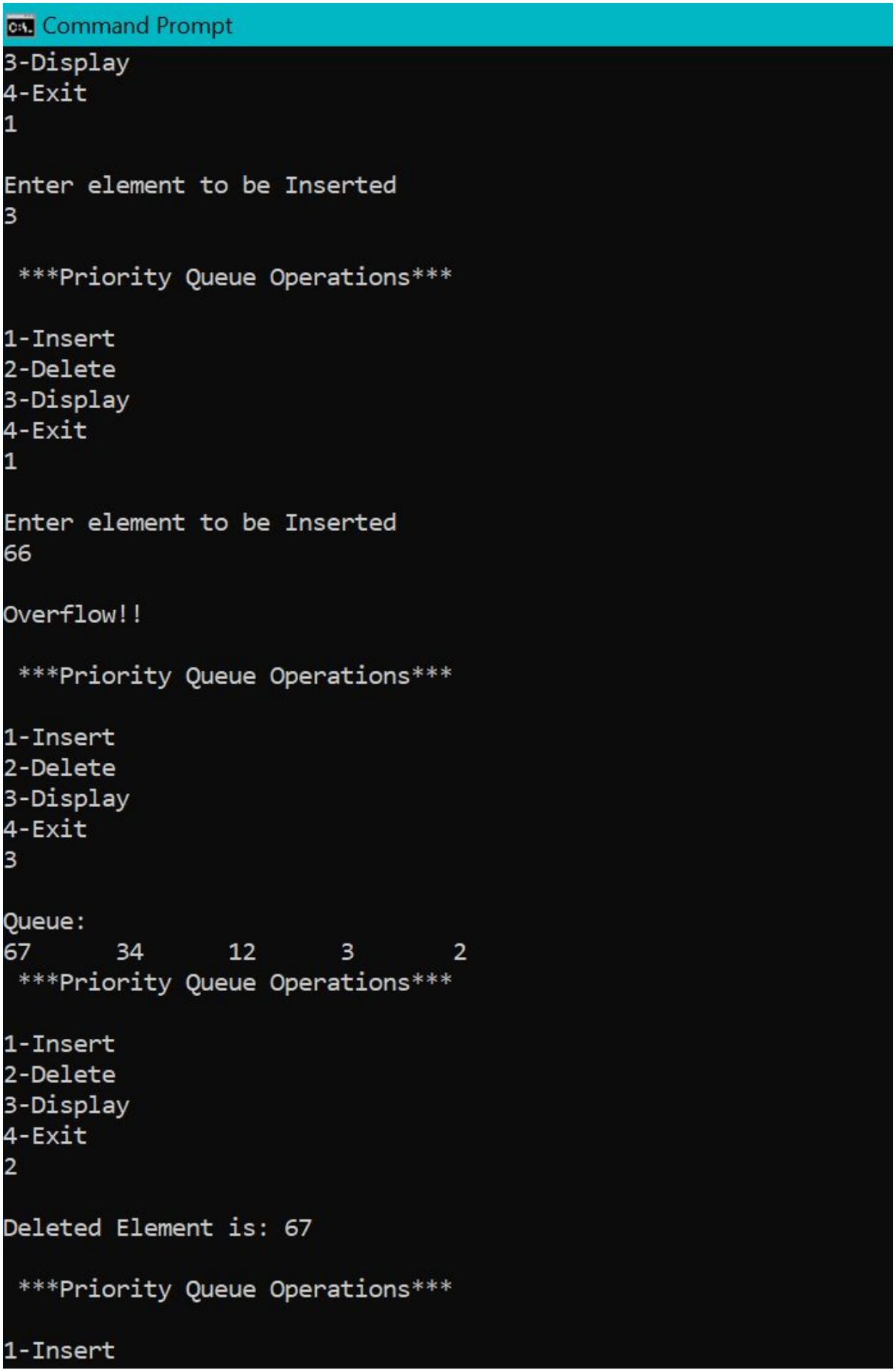

Command Prompt
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
3
Queue:
2 3 12 34 67
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 2
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
3
Queue:
3 12 34 67
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 3
Priority Queue Operations

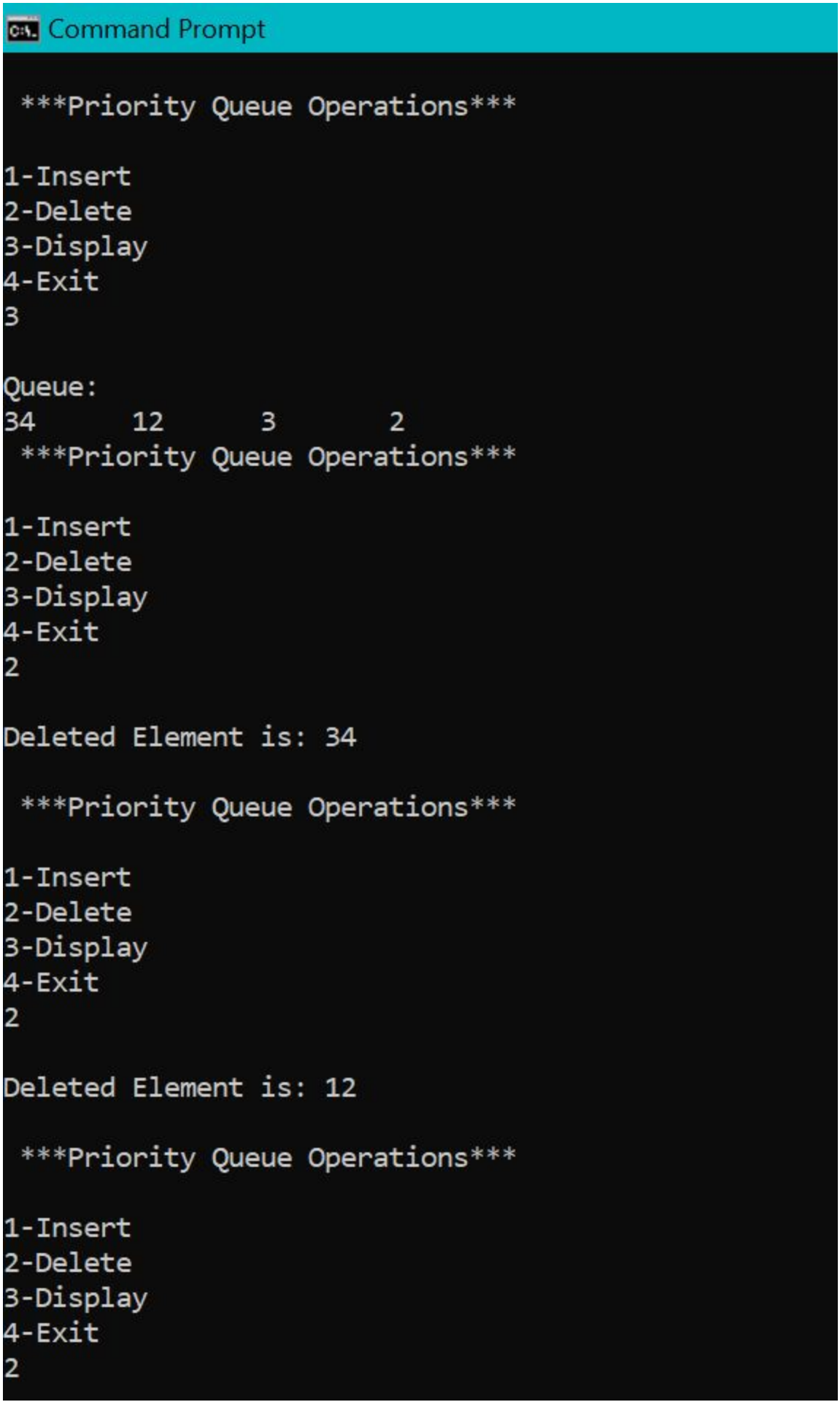

Command Prompt
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 12
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 34
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 67
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Underflow!!
Priority Queue Operations

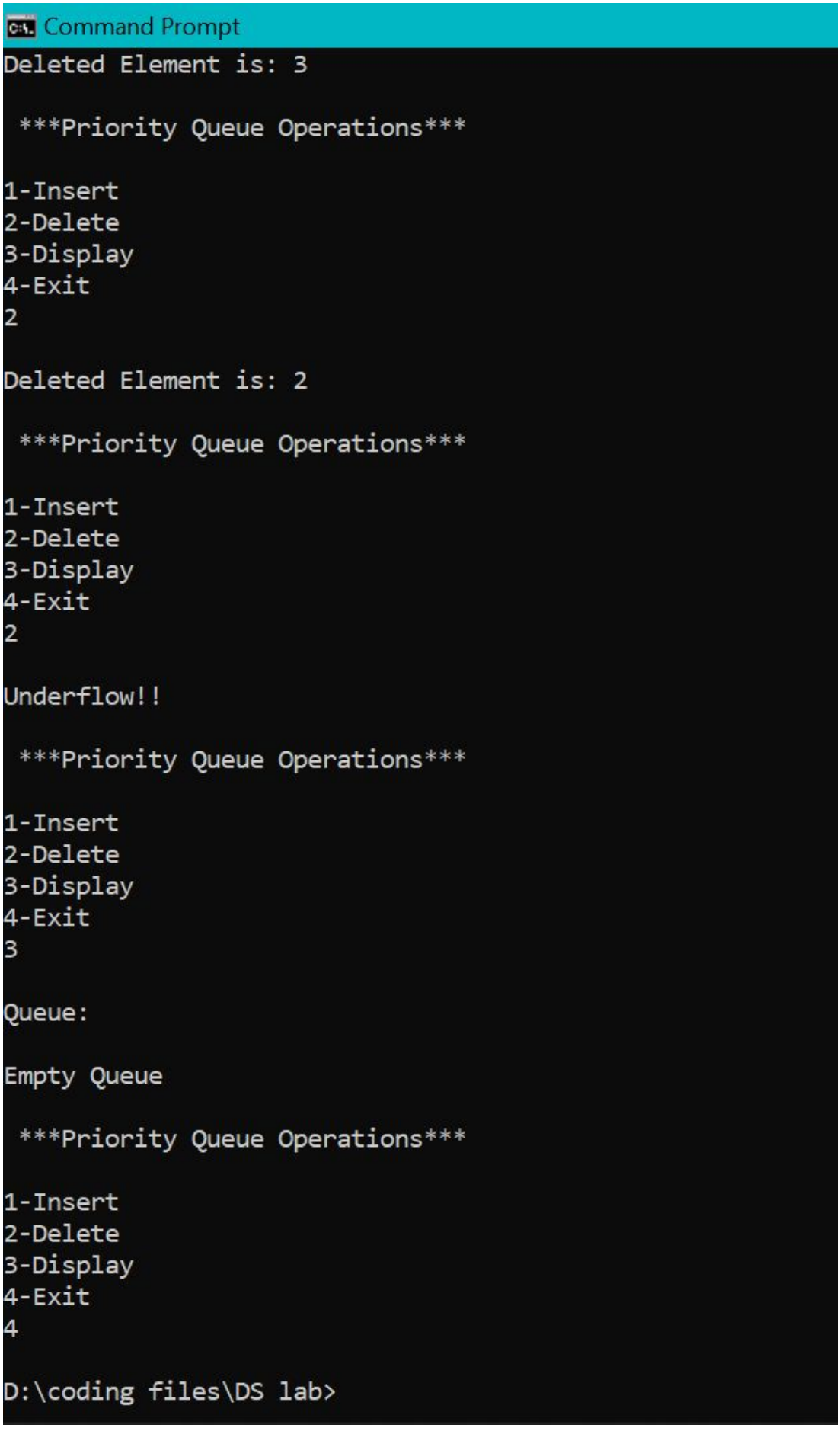
Command Prompt

```
2

Underflow!!

 ***Priority Queue Operations***

1-Insert
2-Delete
3-Display
4-Exit
3

Queue:

Empty Queue

 ***Priority Queue Operations***

1-Insert
2-Delete
3-Display
4-Exit
4

D:\coding files\DS lab>ascending_descending
Enter what you want:
1.Ascending priority Queue
2.Descending Priority Queue
2

 ***Priority Queue Operations***

1-Insert
2-Delete
3-Display
4-Exit
1

Enter element to be Inserted
12

 ***Priority Queue Operations***
```


Command Prompt
Enter element to be Inserted
12
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
1
Enter element to be Inserted
34
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
1
Enter element to be Inserted
2
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
1
Enter element to be Inserted
67
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit


Command Prompt
3-Display
4-Exit
1
Enter element to be Inserted
3
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
1
Enter element to be Inserted
66
Overflow!!
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
3
Queue:
67 34 12 3 2
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 67
Priority Queue Operations
1-Insert


Command Prompt
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
3
Queue:
34 12 3 2
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 34
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 12
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2


Command Prompt
Deleted Element is: 3
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Deleted Element is: 2
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
2
Underflow!!
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
3
Queue:
Empty Queue
Priority Queue Operations
1-Insert
2-Delete
3-Display
4-Exit
4
D:\coding files\DS lab>