Date..................

(1) Program for linear queue
```
#incflde<stdio.h>
#define CAPACITY 5
 int queue [CAPACITY] ;
 int front =0, rear=0;
 void main() {
 int choice, item;
 for(;;){
 printf(" 1: insert 2:delete 3: traverse  4: exit ");
 printf("Enter your choice");
 scanf("%d", &choice);
 switch(choice)
{ case 1: printf("Enter element to be Inserted");
  scanf("%d", &item);
  ~~inset~~ insert(ele); break;
  case 2:
    delete(); break;
  case 3:
   traverse();
   break;
 case 4: exit(0); break;
 default: printf("Invalid Input"); }}}
void insert(int ele)
{ if(rear==CAPACITY -1)
    printf("Queue overflow");
  else {
ele = queue [rear]
  rear++;
printf("Element inserted"); }}
 void delete(){
 int i;
```

Spiral

```
 if(front==rear)
   printf("Queue empty");
else{
 printf(" deleted item is:", queue[front]);
  front++;
   for(i=0; i<rear; i++)
     { queue[i]=queue[i+1];
     rear--; }}}
void traverse() {
      int i;
   if(front==rear)
   printf("queue empty");
   else
   {printf("Elements are:");
    ~~for(i=0;~~ for(i=front; i<=rear; i++)
        printf("%d", queue[i]); }}
```

2. Circular queue

```
#include<stdio.h>
#define CAPACITY 5
int cqueue[CAPACTY];
int front=-1, rear=-1, ele;
void main(){
 int ch;
for(;;){
printf("Enter your choice 1: insert 2: delete 3:
 traverse 4: exit");
scanf("%d",&ch);
switch(ch){
case 1:
printf("Enter element to be inserted");
scanf("%d",&ele);
```

Date...................

```
  insert(ele);      break;
case 2:   delete();     break;
case 3:   traverse();    break;
case 4:   exit(0);        break;
default:  printf("Invalid input");  ~~btto~~  }}}

void insert(int ele) {
  if (front == ((rear+1) % CAPACITY)
     printf(" cqueue is full");
  else if( front ==-1 && rear ==-1)
      {   front = rear = 0;
          cqueue [rear]= ele; }
  else if(rear ==CAPACITY-1) {
     rear = 0;
     cqueue [rear ]= ele; }
 else {
     rear++;
     cqueue [ rear ] = ele; }}

void delete () {
 if( front ==-1  && rear ==-1)
    printf(" queue is empty");
 else if(front ==rear) {
   ele  =cqueue[front];
       front = rear=-1; }
 else if( rear == CAPACITY-1){
       ele= cqueue [front];
       front=0; }
 else {
      ele = cqueue [front];
      front ++; }}
```

Spiral

Date........................

```
void traverse() { int i;
 if(front ==-1 && rear ==-1)
     printf(" queue empty");
else {
   ~~for(i=0; i<=~~
    for (i= front ; i< =rear ; i++)
       printf("%d /n", equeue [i]);   }}
```

De-queues

```
#include<stdio.h>
#define CAPACITY 5
int front=0, rear=-1, q[CAPACTY], i=0, item;
  void main() {
  int ch;
 for (;;) {
printf(" Enter your choice \n 1. insertfront \n 2.
 insertrear  \n 3. deletefront  \n 4. deleterear \n
5. traverse  6. exit ");
scanf(" %d ", &ch);
 switch (ch) {
case 1: { printf(" Enter item to be inserted ");
           scanf("%d", &item);
           insertfront(item);
           break;  }
case 2: { printf(" Enter item to be inserted ");
          scanf("%d", &item);
          insertrear (item);
          break;()  }
case 3:  deletefront();
          break;
case 4: deleterear();   break;
```

Spiral

Date.....................

```
case 5 : traverse();     break;
case 6 : exit(0);     break;
default : printf("wrong input");  }}}

void insertrear(int item) {
 if(rear == CAPACITY-1)
   printf("queue overflow");
 else {
   rear++;
   q[rear]= item;    printf("item inserted"); }}

void deletefront() {
 if(rear == -1 && front == 0)
   printf("queue empty");
 else { front++;
 printf("item deleted from front"); }}

void insertfront(int item) {
 if (front != 0) {
     front = front-1;
     q[front]= item; }
 else if(front == 0 & rear == -1) {
     rear++;
     q[rear]= item; }
 else
  printf("item cannot be inserted"); }

void deleterear() {
 if(front == 0 && rear == -1)
   printf("queue empty");
 else if(front > rear) {
   front = 0;      rear = -1; }}
```

Spiral

Multiple pq.

```
#include<stdio.h>
#define N 3
 int queue[3],[N];
 int front={0,0,0};
 int rear={-1,-1,-1};
 int item, pr;
void main() {
 int ch;
for(;;) {
 printf("Enter your choice \n 1. insert \n 2. delete
  \n 3. display \n 4. exit");
 scanf("%d",&ch);
 switch(ch) {
 case 1 : { printf("Enter item to be inserted");
           scanf("%d",&item);
            insert(item);
```

Date.....................

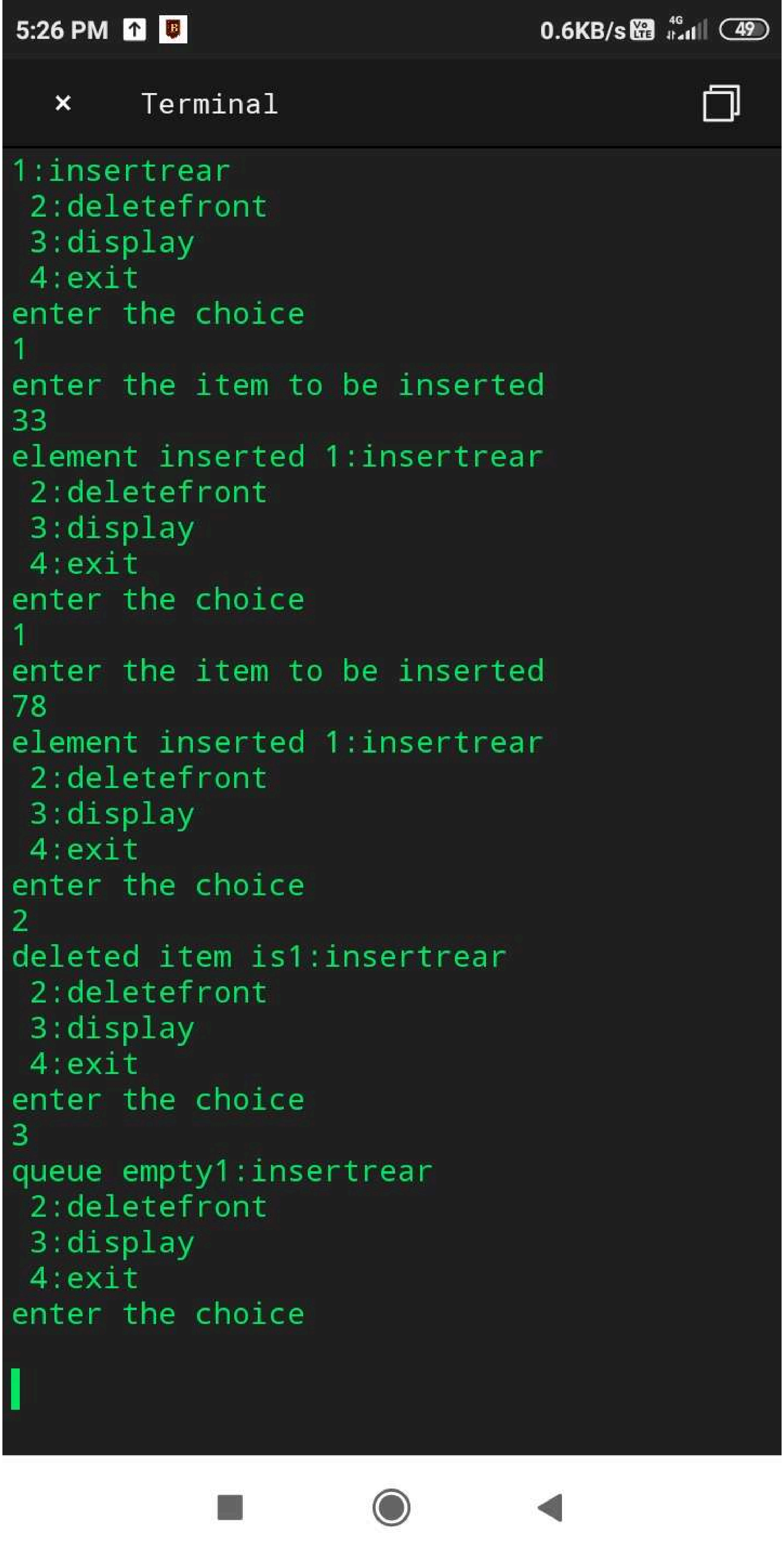
```
case 1 : { printf("enter priority no.");
           scanf("%d", &pr);
           if(pr>0 && pr<4)
              insert(pr-1)
          else
           { printf("priority shd be b/n 1-3");
              break; }
case 2: delete();          break;
case 3: display();         break;
default: printf("wrong input");

void insert(int pr){
    if(rear[pr]==N-1)
       printf("queue overflow");
   else {
    printf("Enter item to be inserted");
   scanf("%d", &item);
    rear[pr]++;
    queue[pr][rear[pr]]=item; }}

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

void display(){ int i, j;
  for(i=0; i<3; i++){
      if(rear[i]==front[i]-1)
```

Spiral

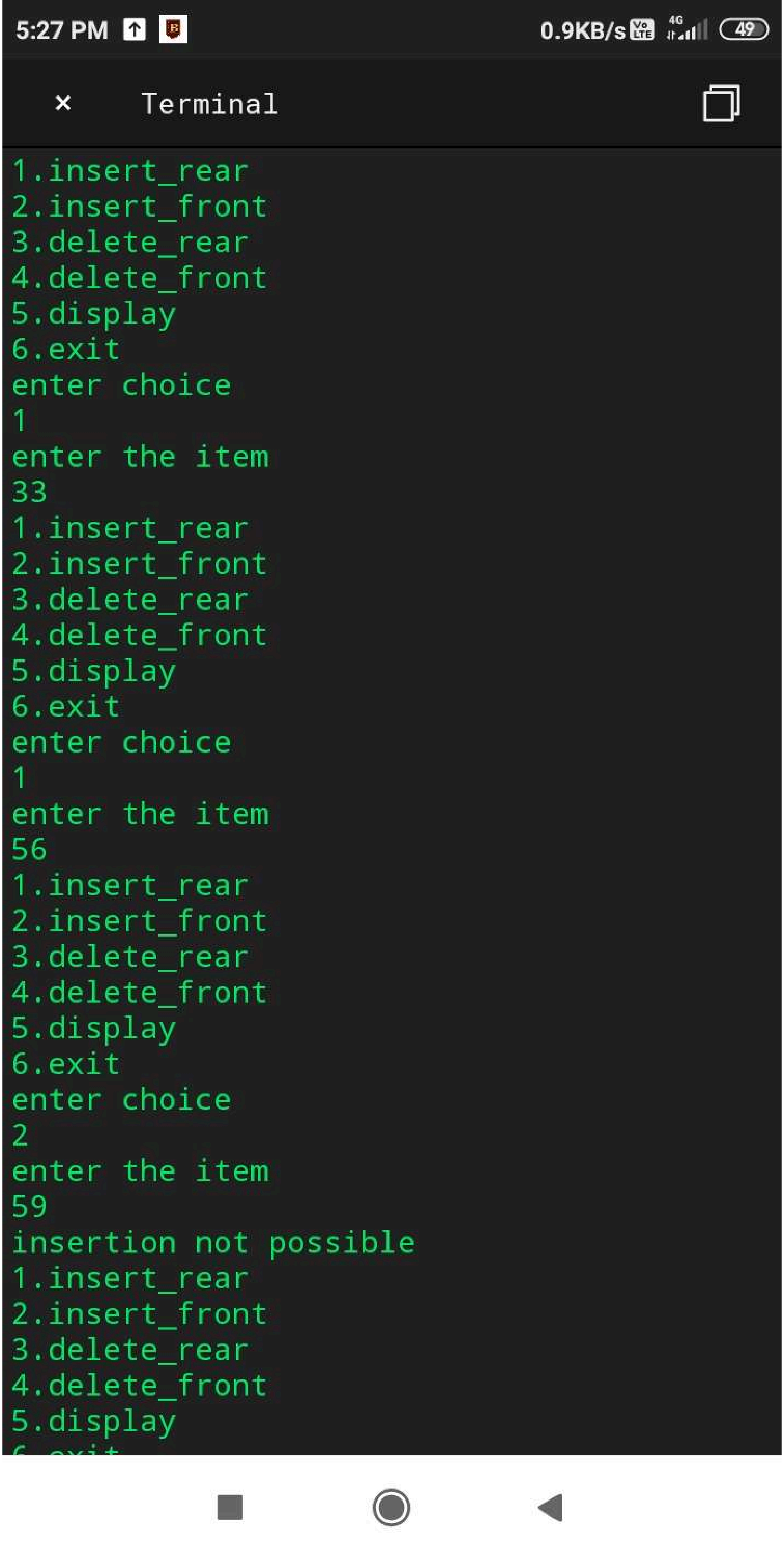
Date....................

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

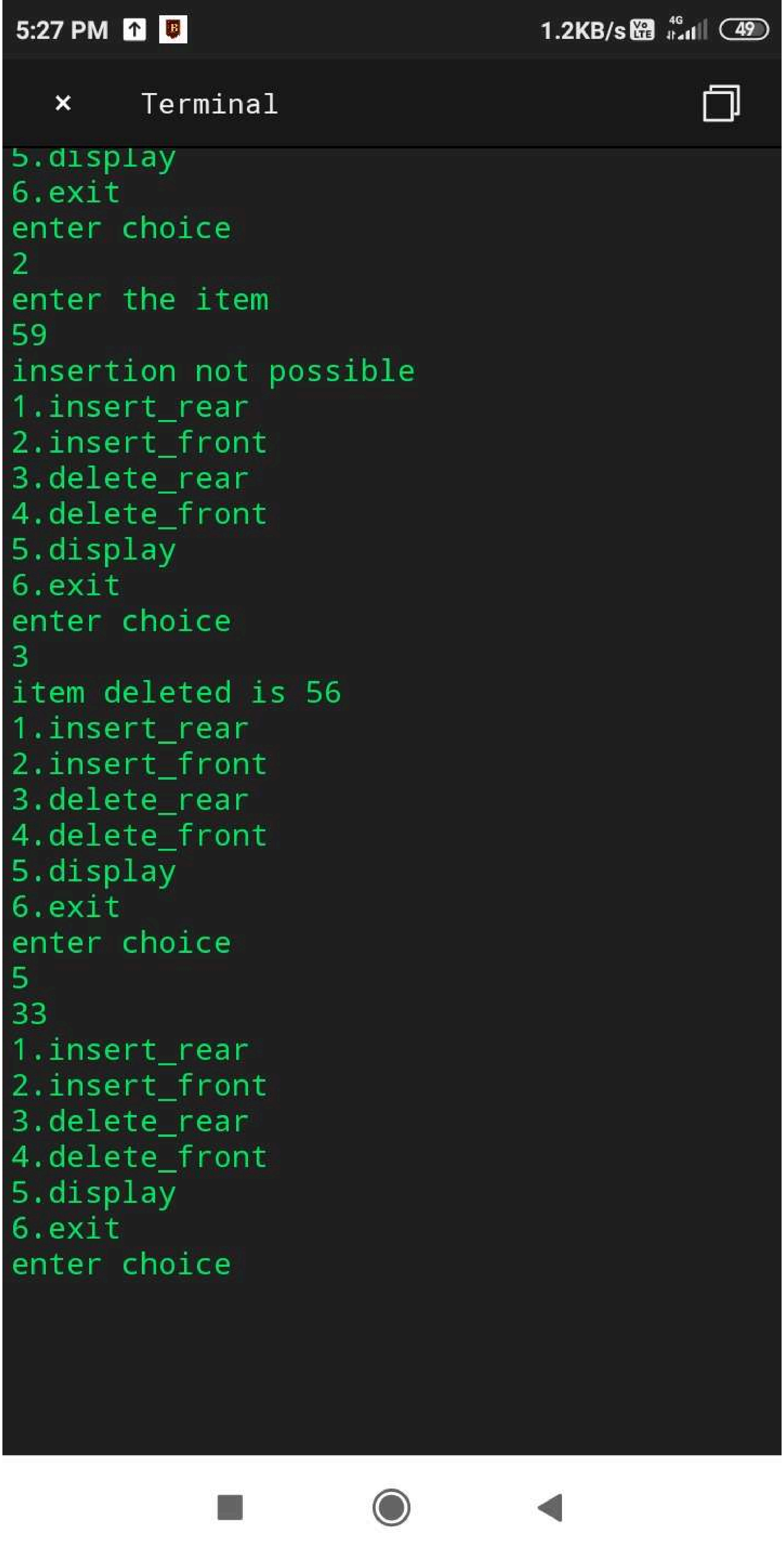
```
#include< stdio.h>
```



```
1:insertrear
 2:deletefront
 3:display
 4:exit
enter the choice
1
enter the item to be inserted
33
element inserted 1:insertrear
 2:deletefront
 3:display
 4:exit
enter the choice
1
enter the item to be inserted
78
element inserted 1:insertrear
 2:deletefront
 3:display
 4:exit
enter the choice
2
deleted item is1:insertrear
 2:deletefront
 3:display
 4:exit
enter the choice
3
queue empty1:insertrear
 2:deletefront
 3:display
 4:exit
enter the choice
```

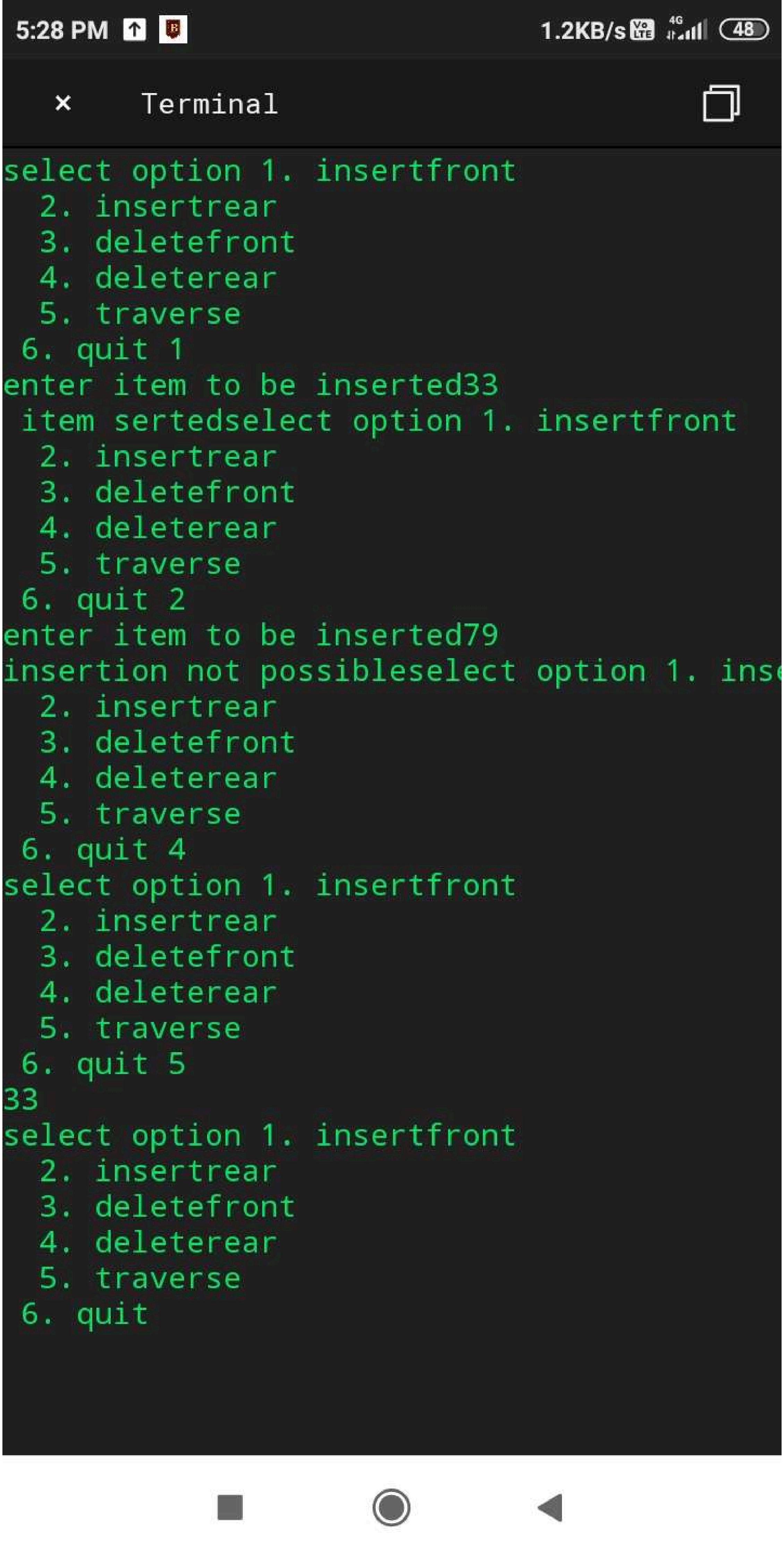


```
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
1
enter the item
33
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
1
enter the item
56
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
2
enter the item
59
insertion not possible
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
```

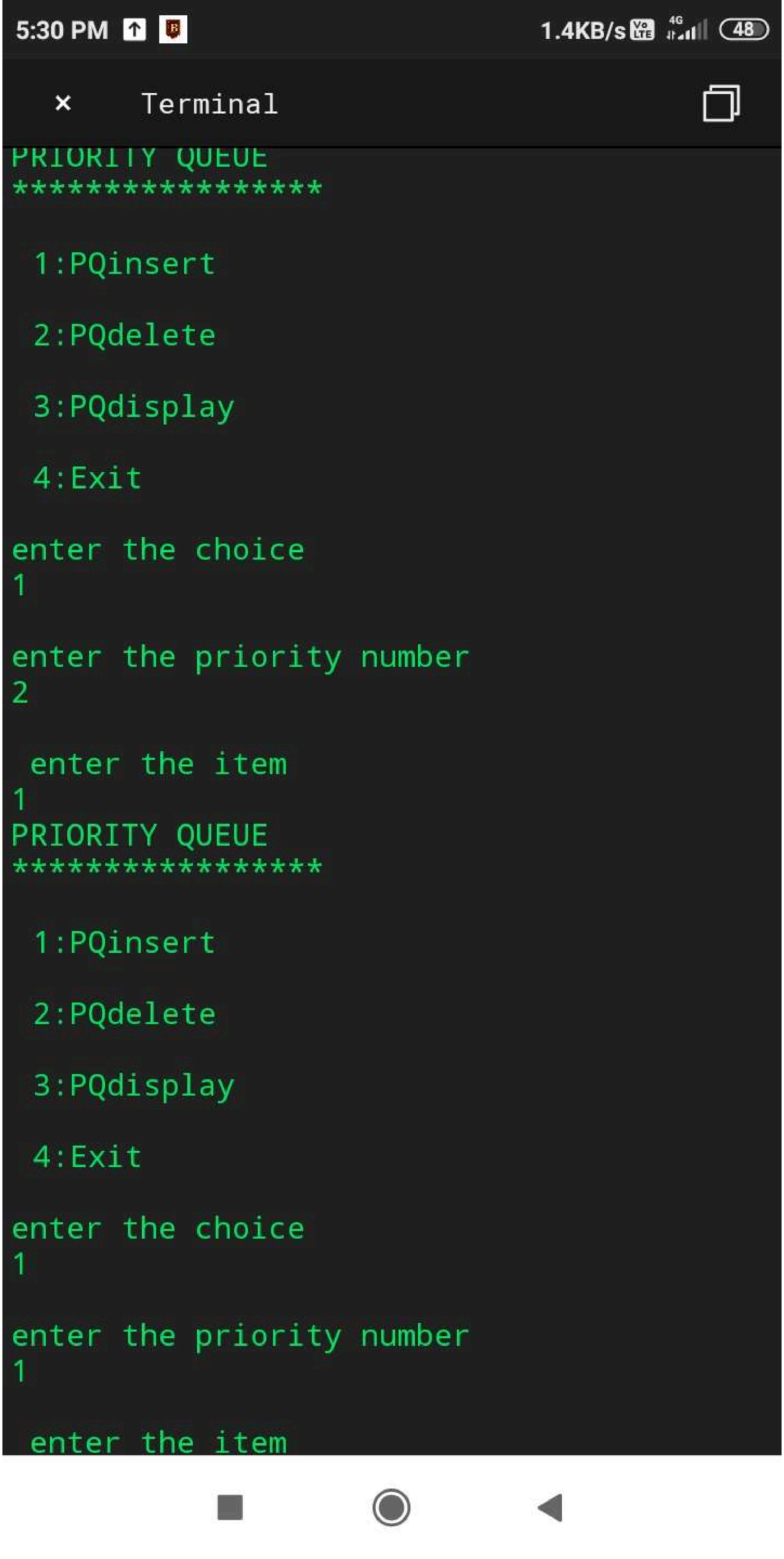

5:27 PM 1.2KB/s 4G 49

Terminal

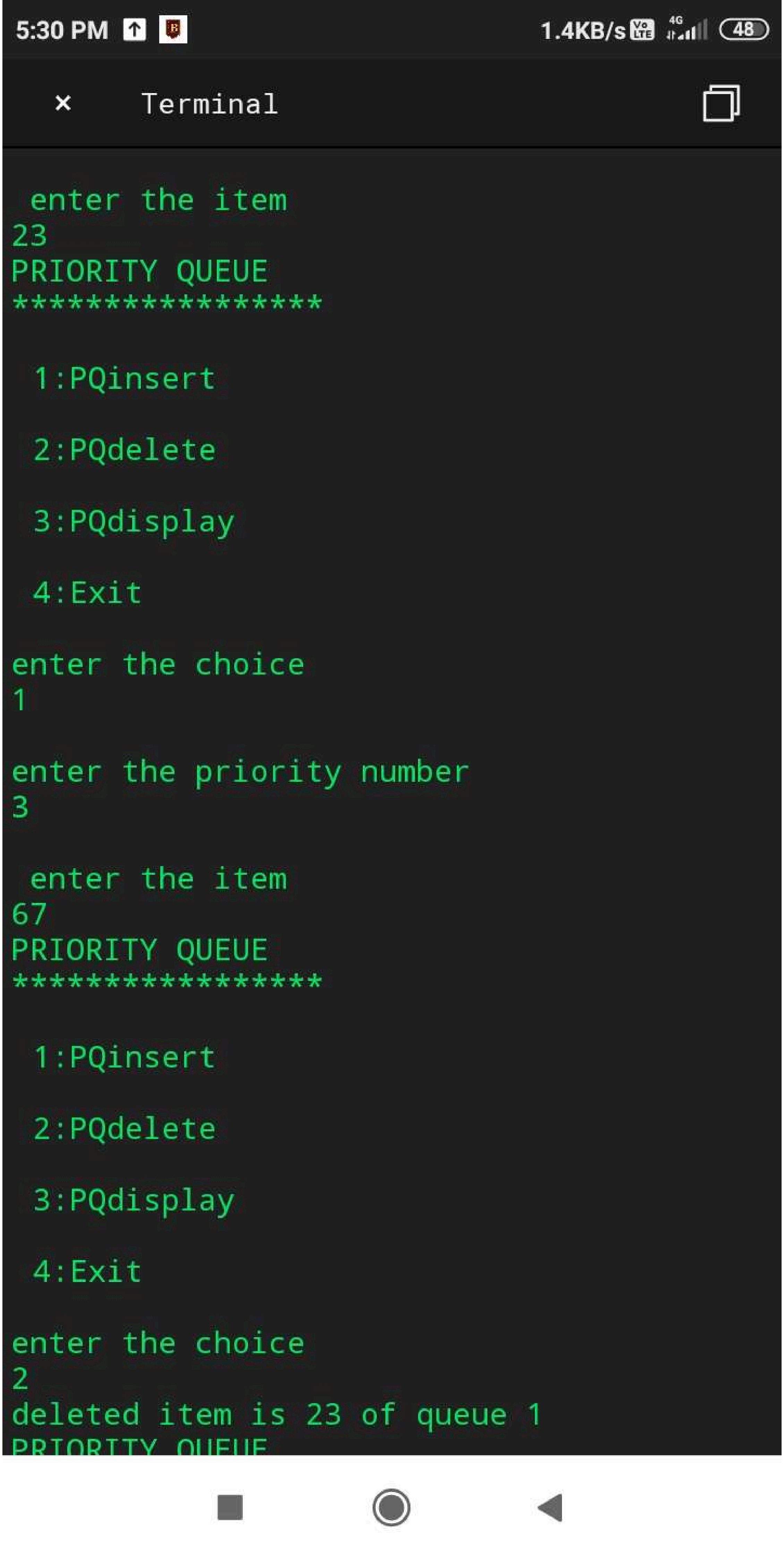
```
5.display
6.exit
enter choice
2
enter the item
59
insertion not possible
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
3
item deleted is 56
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
5
33
1.insert_rear
2.insert_front
3.delete_rear
4.delete_front
5.display
6.exit
enter choice
```



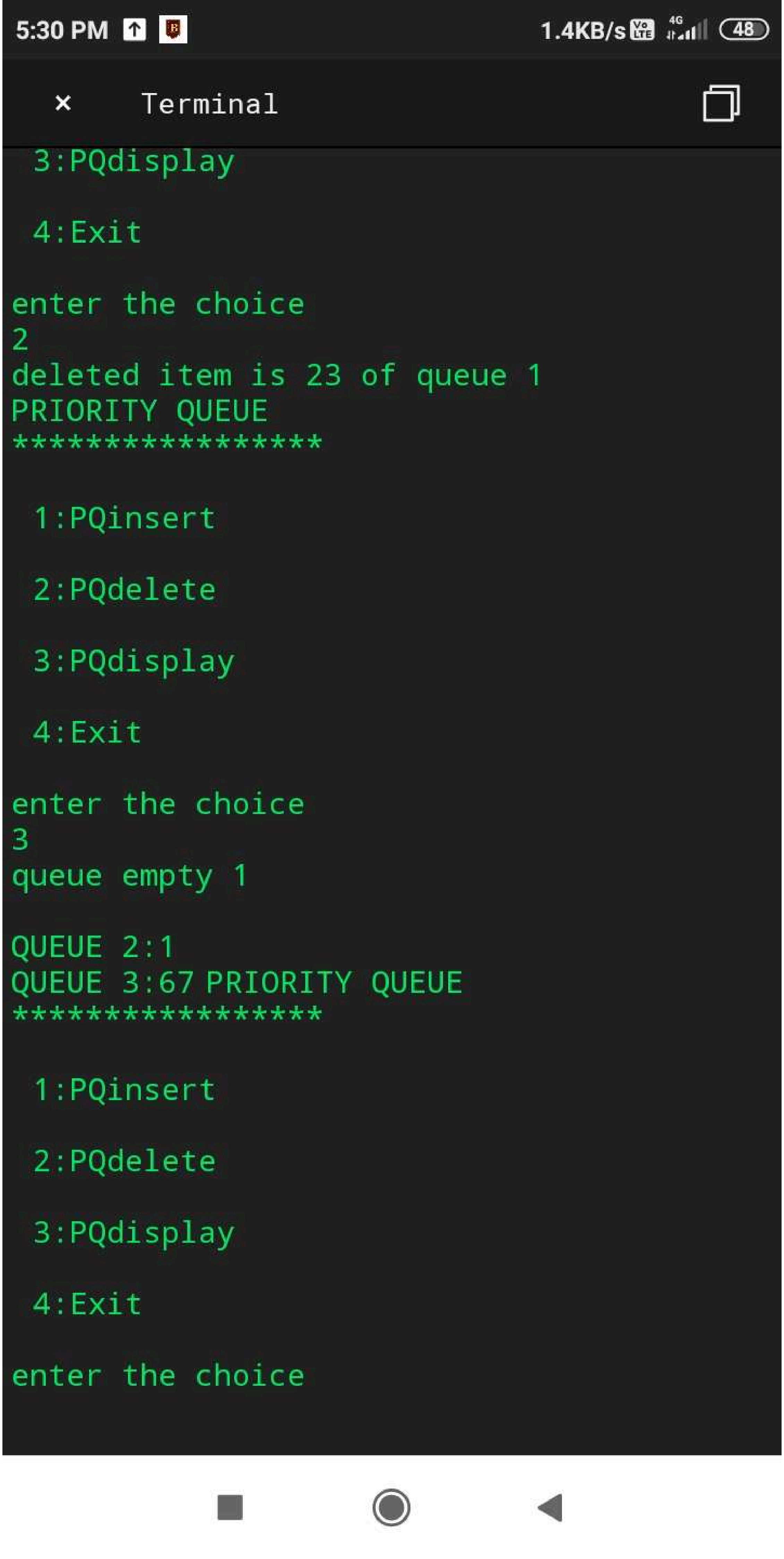
```
select option 1. insertfront
  2. insertrear
  3. deletefront
  4. deleterear
  5. traverse
 6. quit 1
enter item to be inserted33
 item sertedselect option 1. insertfront
  2. insertrear
  3. deletefront
  4. deleterear
  5. traverse
 6. quit 2
enter item to be inserted79
insertion not possibleselect option 1. inse
  2. insertrear
  3. deletefront
  4. deleterear
  5. traverse
 6. quit 4
select option 1. insertfront
  2. insertrear
  3. deletefront
  4. deleterear
  5. traverse
 6. quit 5
33
select option 1. insertfront
  2. insertrear
  3. deletefront
  4. deleterear
  5. traverse
 6. quit
```



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

 1:PQinsert

 2:PQdelete

 3:PQdisplay

 4:Exit

enter the choice
1

enter the priority number
2

 enter the item
1
PRIORITY QUEUE
*****************

 1:PQinsert

 2:PQdelete

 3:PQdisplay

 4:Exit

enter the choice
1

enter the priority number
1

 enter the item
```



```
5:30 PM                                1.4KB/s  48

 ×    Terminal

 enter the item
23
PRIORITY QUEUE
*****************


 1:PQinsert

 2:PQdelete

 3:PQdisplay

 4:Exit

enter the choice
1

enter the priority number
3

 enter the item
67
PRIORITY QUEUE
*****************


 1:PQinsert

 2:PQdelete

 3:PQdisplay

 4:Exit

enter the choice
2
deleted item is 23 of queue 1
```



```
 3:PQdisplay

 4:Exit

enter the choice
2
deleted item is 23 of queue 1
PRIORITY QUEUE
*****************

 1:PQinsert

 2:PQdelete

 3:PQdisplay

 4:Exit

enter the choice
3
queue empty 1

QUEUE 2:1
QUEUE 3:67 PRIORITY QUEUE
*****************

 1:PQinsert

 2:PQdelete

 3:PQdisplay

 4:Exit

enter the choice
```