#include <iostream>

using namespace std;

int cqueue[5];

int front = -1, rear = -1, n=5;

void insertCQ(int val) {

   if ((front == 0 && rear == n-1) || (front == rear+1)) {

      cout<<"Queue Overflow \n";

      return;

   }

   if (front == -1) {

      front = 0;

      rear = 0;

   }

   else {

      if (rear == n - 1)

      rear = 0;

      else

      rear = rear + 1;

   }

   cqueue[rear] = val ;

}

void deleteCQ() {

   if (front == -1) {

      cout<<"Queue Underflow\n";

      return ;

   }

   cout<<"Element deleted from queue is : "<<cqueue[front]<<endl;

   if (front == rear) {

      front = -1;

      rear = -1;

   } else {

      if (front == n - 1)

      front = 0;

      else

      front = front + 1;

   }

}

void displayCQ() {

   int f = front, r = rear;

   if (front == -1) {

      cout<<"Queue is empty"<<endl;

      return;

   }

   cout<<"Queue elements are :\n";

   if (f <= r) {

      while (f <= r){

         cout<<cqueue[f]<<" ";

         f++;

      }

   } else {

      while (f <= n - 1) {

         cout<<cqueue[f]<<" ";

         f++;

      }

      f = 0;

      while (f <= r) {

         cout<<cqueue[f]<<" ";

         f++;

      }

   }

   cout<<endl;

}

int main() {

   int ch, val;

   cout<<"1)Insert\n";

   cout<<"2)Delete\n";

   cout<<"3)Display\n";

   cout<<"4)Exit\n";

   do {

      cout<<"Enter choice : "<<endl;

      cin>>ch;

      switch(ch) {

         case 1:

         cout<<"Input for insertion: "<<endl;

         cin>>val;

         insertCQ(val);

         break;

         case 2:

         deleteCQ();

         break;

         case 3:

         displayCQ();

         break;

         case 4:

         cout<<"Exit\n";

         break;

         default: cout<<"Incorrect!\n";

      }

   } while(ch != 4);

   return 0;

}