4.WAP to simulate the working of a queue of integers using an array. Provide the following operations :

a) Insert

b) Delete

c) Display

The program should print appropriate messages for queue empty and queue overflow conditions.

Solution:

```
#include <stdio.h>


#define MAX 50


void insert();
void delete();
void display();
int queue_array[MAX];
int rear = - 1;
int front = - 1;
int main()
{
   int choice;
   printf("----------------------QUEUE IMPLEMENTATION-----------------\n");
   while (1)
   {
      printf("1.Insert element to queue \n");
      printf("2.Delete element from queue \n");
      printf("3.Display all elements of queue \n");
      printf("4.Quit \n");
      printf("Enter your choice : \n");
```

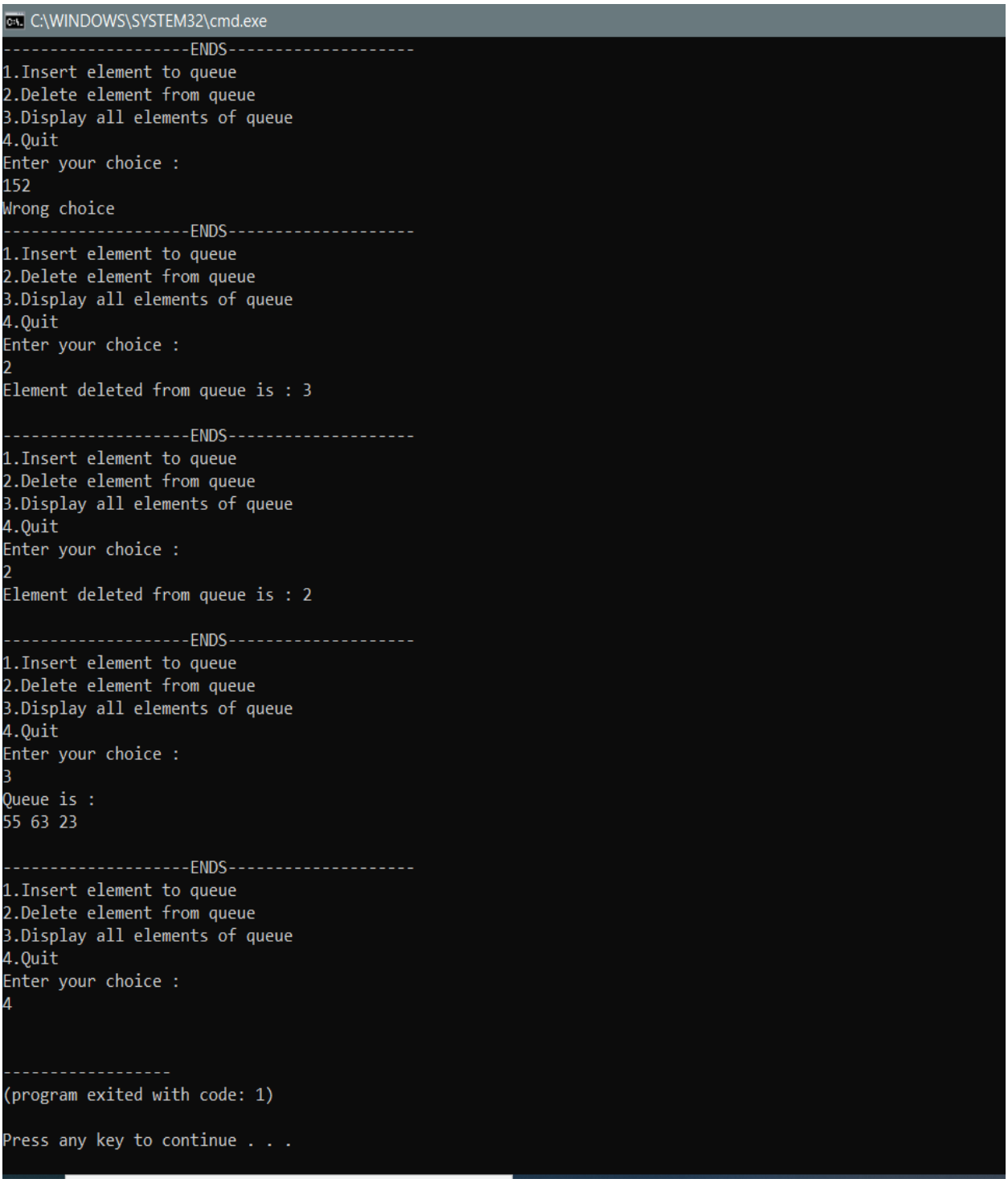
```
        scanf("%d", &choice);
        switch (choice)
        {
           case 1:
           insert();
           printf("\n");
           break;
           case 2:
           delete();
            printf("\n");
           break;
           case 3:
           display();
            printf("\n");
           break;
           case 4:
             exit(1);
             break;
              printf("\n");
           default:
             printf("Wrong choice \n");
        } /* End of switch */
        printf("--------------------ENDS--------------------\n");
    } /* End of while */
    return 0;
} /* End of main() */

void insert()
{
```

```
    int add_item;
    if (rear == MAX - 1)
    printf("Queue Overflow \n");
    else
    {
        if (front == - 1)
        /*If queue is initially empty */
        front = 0;
        printf("Inset the element in queue : ");
        scanf("%d", &add_item);
        rear = rear + 1;
        queue_array[rear] = add_item;
    }
} /* End of insert() */

void delete()
{
    if (front == - 1 || front > rear)
    {
        printf("Queue Underflow \n");
        return ;
    }
    else
    {
        printf("Element deleted from queue is : %d\n", queue_array[front]);
        front = front + 1;
    }
} /* End of delete() */
```

```
void display()
{
   int i;
   if (front == - 1)
      printf("Queue is empty \n");
   else
   {
      printf("Queue is : \n");
      for (i = front; i <= rear; i++)
         printf("%d ", queue_array[i]);
      printf("\n");
   }
} /* End of display() */
```

C:\WINDOWS\SYSTEM32\cmd.exe

```
--------------------QUEUE IMPLEMENTATION------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
1
Inset the element in queue : 3

--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
1
Inset the element in queue : 2

--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
1
Inset the element in queue : 55

--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
1
Inset the element in queue : 63

--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
1
Inset the element in queue : 23

--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
```


C:\WINDOWS\SYSTEM32\cmd.exe
--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
152
Wrong choice
--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
2
Element deleted from queue is : 3
--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
2
Element deleted from queue is : 2
--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
3
Queue is :
55 63 23
--------------------ENDS--------------------
1.Insert element to queue
2.Delete element from queue
3.Display all elements of queue
4.Quit
Enter your choice :
4

(program exited with code: 1)
Press any key to continue . . .