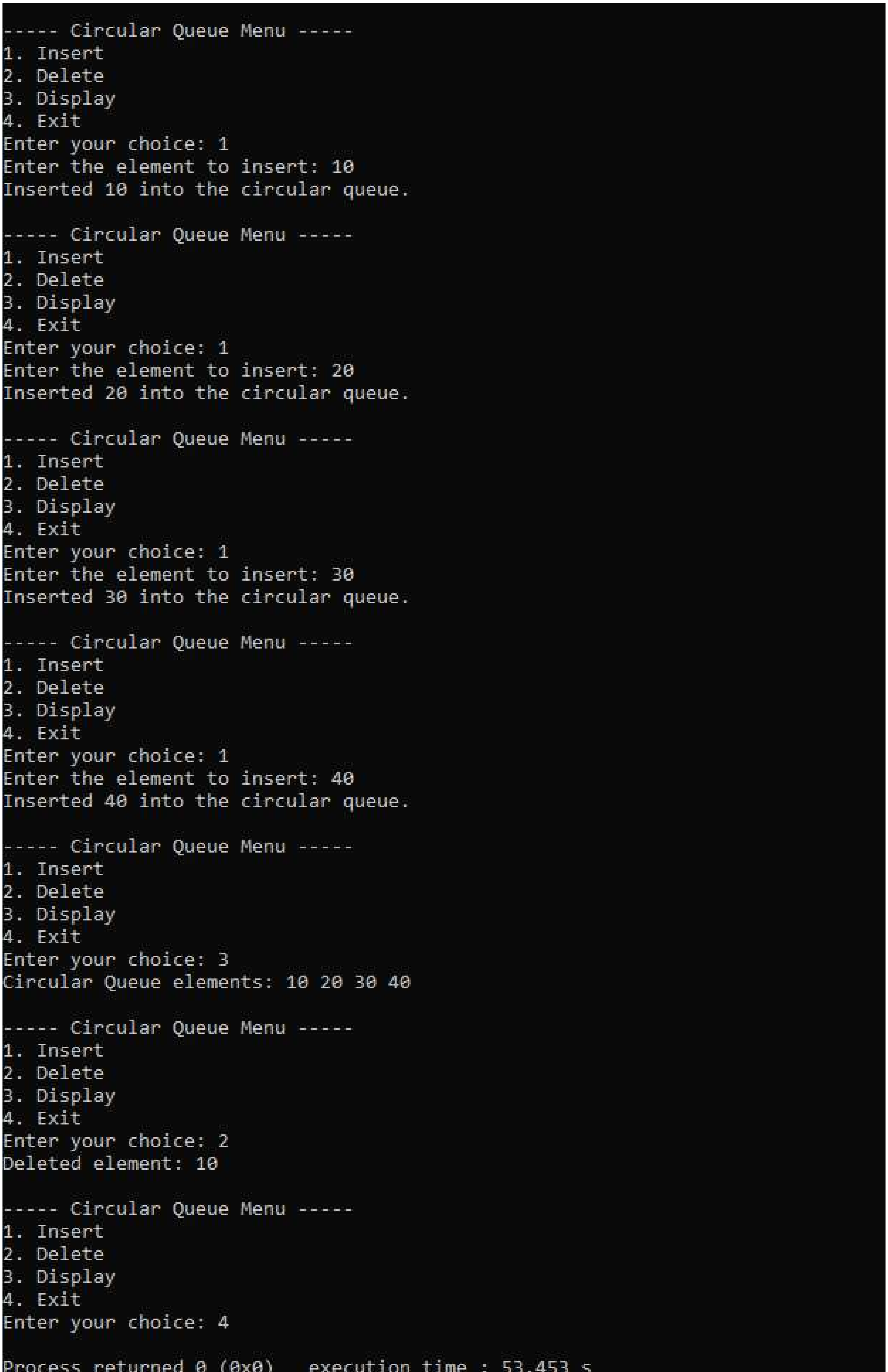
Question:
WAP to simulate the working of a circular queue of
integers using an array. Provide the following operations:
Insert, Delete & Display
The programshould print appropriate messagesfor queue
empty and queue overflow conditions

Input:

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

#define MAX 5

int queue[MAX];
int front = -1, rear = -1;

void insert() {
    int item;

    if ((front == 0 && rear == MAX - 1) || (rear + 1) % MAX == front) {
        printf("Queue Overflow! Cannot insert more elements.\n");
        return;
    }

    printf("Enter the element to insert: ");
    scanf("%d", &item);

    if (front == -1) {
        front = rear = 0;
    }
    else {
        rear = (rear + 1) % MAX;
    }

    queue[rear] = item;
    printf("Inserted %d into the circular queue.\n", item);
}

void delete() {
    if (front == -1) {
        printf("Queue Underflow! Queue is empty.\n");
        return;
    }

    printf("Deleted element: %d\n", queue[front]);

    if (front == rear) {
        front = rear = -1;
    }
    else {
        front = (front + 1) % MAX;
    }
}

void display() {
    if (front == -1) {
        printf("Queue is empty.\n");
        return;
    }

    printf("Circular Queue elements: ");

    int i = front;
    while (1) {
        printf("%d ", queue[i]);
        if (i == rear)
            break;
        i = (i + 1) % MAX;
    }

    printf("\n");
}

int main() {
    int choice;

    while (1) {
        printf("\n----- Circular Queue Menu -----\n");
        printf("1. Insert\n");
        printf("2. Delete\n");
        printf("3. Display\n");
        printf("4. Exit\n");
        printf("Enter your choice: ");
        scanf("%d", &choice);

        switch (choice) {
            case 1: insert(); break;
            case 2: delete(); break;
            case 3: display(); break;
            case 4: exit(0);
            default: printf("Invalid choice! Try again.\n");
        }
    }

    return 0;
```



```
----- Circular Queue Menu -----
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the element to insert: 10
Inserted 10 into the circular queue.

----- Circular Queue Menu -----
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the element to insert: 20
Inserted 20 into the circular queue.

----- Circular Queue Menu -----
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the element to insert: 30
Inserted 30 into the circular queue.

----- Circular Queue Menu -----
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 1
Enter the element to insert: 40
Inserted 40 into the circular queue.

----- Circular Queue Menu -----
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 3
Circular Queue elements: 10 20 30 40

----- Circular Queue Menu -----
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 2
Deleted element: 10

----- Circular Queue Menu -----
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice: 4

Process returned 0 (0x0)   execution time : 53.453 s
```