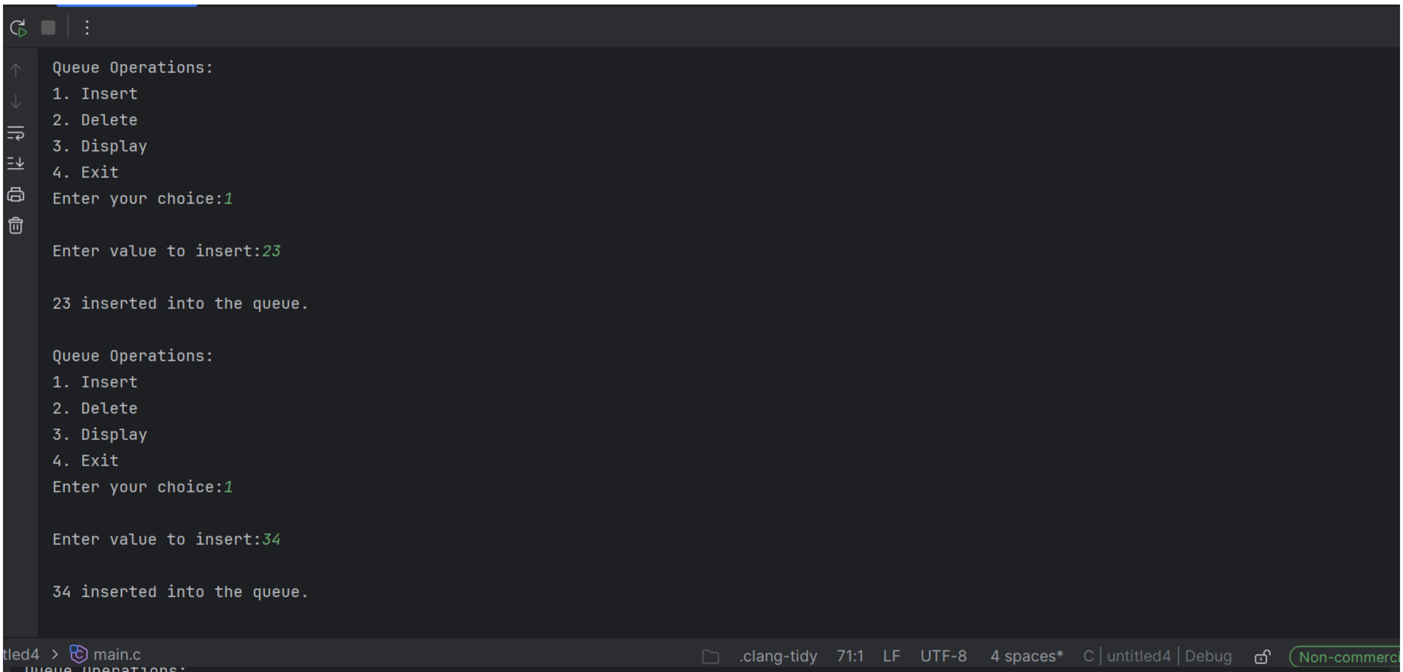
LAB PROGRAM 3A

WAP to simulate the working of a queue of integers using an array. Provide the following operations: Insert, Delete, Display The program should print appropriate messages for queue empty and queue overflow conditions

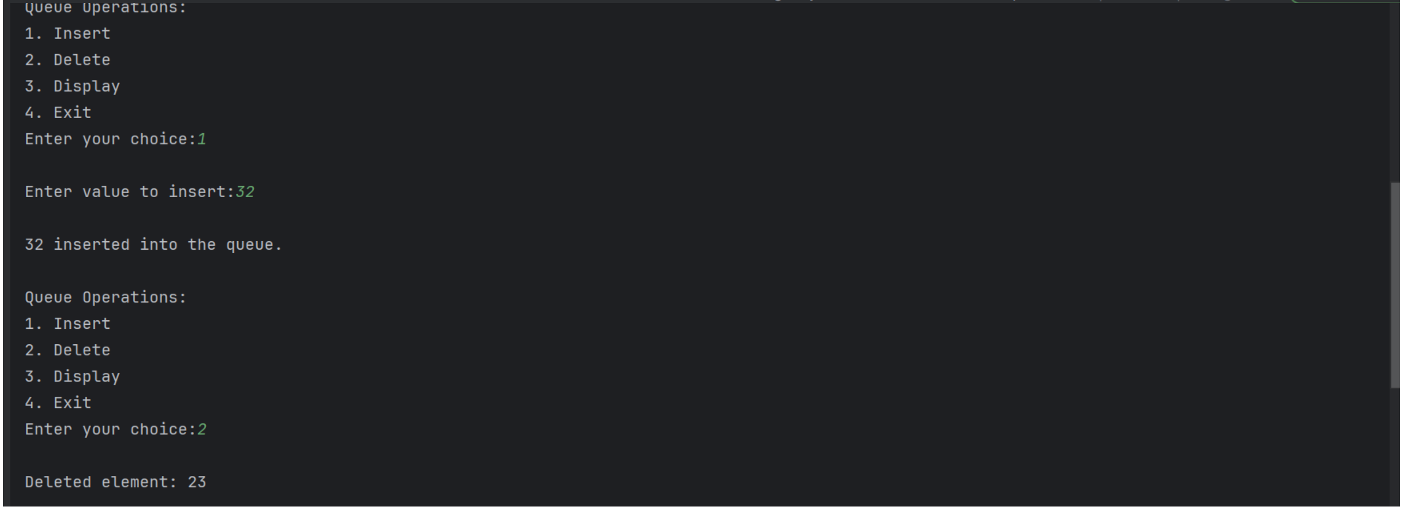
```
#include <stdio.h>
#define MAX 5

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

void insert(int value) {
    if (rear == MAX - 1) {
        printf("Queue Overflow! Cannot insert %d\n", value);
    } else {
        if (front == -1) {
            front = 0;
        }
        rear++;
        queue[rear] = value;
        printf("%d inserted into the queue.\n", value);
    }
}

void delete() {
    if (front == -1 || front > rear) {
        printf("Queue Underflow! Queue is empty.\n");
    } else {
        printf("Deleted element: %d\n", queue[front]);
        front++;
    }
```

```
}

void display() {
    if (front == -1 || front > rear) {
        printf("Queue is empty.\n");
    } else {
        printf("Queue elements: ");
        for (int i = front; i <= rear; i++) {
            printf("%d ", queue[i]);
        }
        printf("\n");
    }
}

int main() {
    int choice, value;
    while (1) {
        printf("\nQueue Operations:\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:
                printf("Enter value to insert: ");
                scanf("%d", &value);
                insert(value);
                break;
            case 2:
                delete();
                break;
            case 3:
                display();
                break;
            case 4:
                printf("Exiting program.\n");
                return 0;
            default:
                printf("Invalid choice! Please try again.\n");
        }
    }
}
```

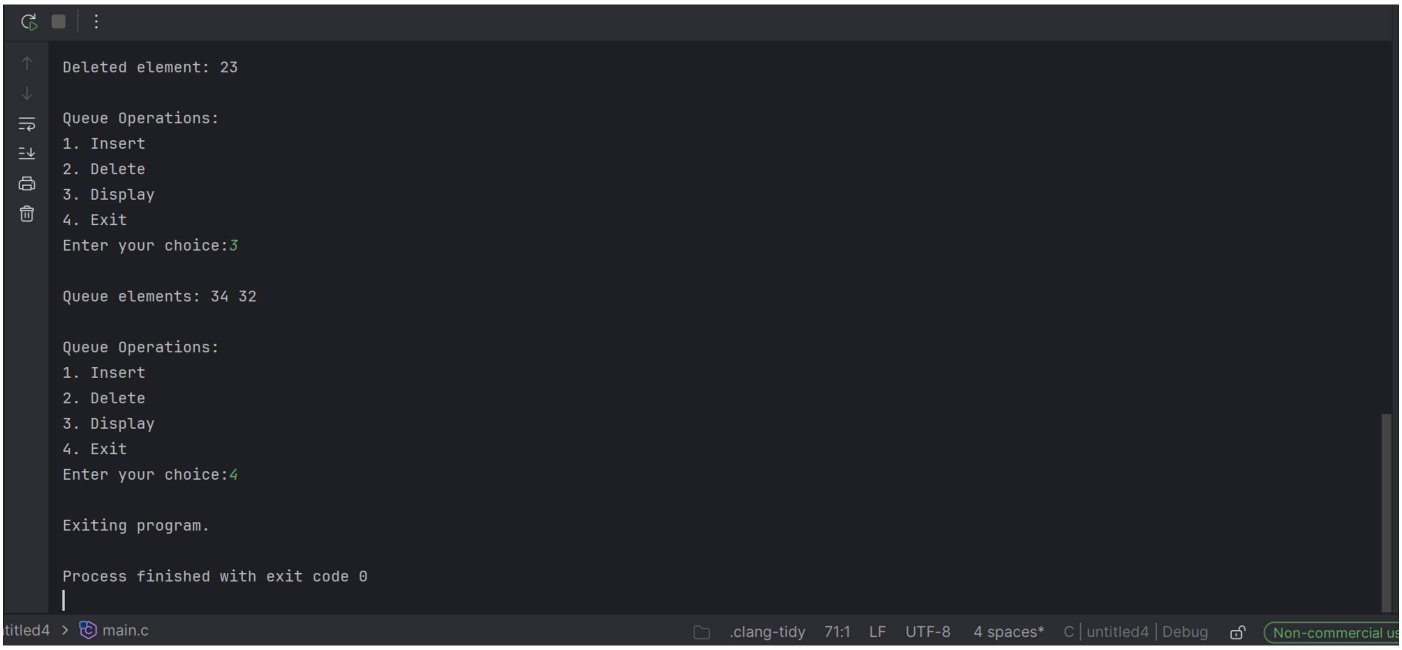
OUTPUT:



```
Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice:1

Enter value to insert:23

23 inserted into the queue.

Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice:1

Enter value to insert:34

34 inserted into the queue.
```



```
Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice:1

Enter value to insert:32

32 inserted into the queue.

Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice:2

Deleted element: 23
```



```
Deleted element: 23

Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice:3

Queue elements: 34 32

Queue Operations:
1. Insert
2. Delete
3. Display
4. Exit
Enter your choice:4

Exiting program.

Process finished with exit code 0
```