

Linear Queue

```
#include <stdio.h>

#define MAX 5 // maximum size of the queue

int queue[MAX];

int front = -1, rear = -1;

// Function to insert an element in the queue

void insert(int value){

    if (rear == MAX - 1){

        printf("Queue Overflow! Cannot insert %d\n", value);

    }

    else{

        if (front == -1){

            front = 0; // first insertion

        }

        rear++;

        queue[rear] = value;

        printf("%d inserted into the queue.\n", value);

    }

}

// Function to delete an element from the queue

void delete()

{

    if (front == -1 || front > rear){

        printf("Queue Underflow! Queue is empty.\n");

    }

}
```

```
else{
    printf("Deleted element: %d\n", queue[front]);
    front++;
}

// Function to display the elements of the queue
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;
    printf("\nQueue Operations:\n");
    printf("1. Insert\n");
    printf("2. Delete\n");
    printf("3. Display\n");
    printf("4. Exit\n");
```

```
while (1){  
    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");  
    }  
}  
return 0;
```

Output:

```
Queue Operations:  
1. Insert  
2. Delete  
3. Display  
4. Exit  
Enter your choice: 1  
Enter value to insert: 11  
11 inserted into the queue.  
Enter your choice: 1  
Enter value to insert: 21  
21 inserted into the queue.  
Enter your choice: 1  
Enter value to insert: 31  
31 inserted into the queue.  
Enter your choice: 2  
Deleted element: 11  
Enter your choice: 3  
Queue elements: 21 31  
Enter your choice: 5  
Invalid choice! Please try again.  
Enter your choice: 4  
Exiting program.
```