ASSIGNMENT-6 - COFFEE SHOP LINE

```cpp
/*Name: Sahil Badve PRN: B24CE1114 Div: S.Y.B-Tech 2 Batch C*/
//Coffee Shop Line (Simple Queue)
/*Arrival: Customers arrive at the coffee shop and stand in line.
 * Order Processing: The first customer in line gets their order taken,
 * and the barista starts making the coffee.Serving: Once the first customer is served,
 * they leave the queue, and the next customer in line moves forward to be served.
 * Write a program to implement a simple queue
*/
//Queue implementation using array


#include <iostream>
#define SIZE 10
#define MIN 0

using namespace std;

class CoffeeShop {
private:
    int token_no[SIZE];
    int front, rear;

public:
    CoffeeShop() {
        front = -1;
        rear = -1;
    }

    int isFull();
    int isEmpty();
    void enQueue(int token);
    int deQueue();
    void display();
};

int CoffeeShop::isFull() {
    if (rear == SIZE - 1) {
        return 1;
    } else {
        return 0;
    }
}
```

```cpp
int CoffeeShop::isEmpty() {
    if (front == -1 || front > rear) {
        return 1;
    } else {
        return 0;
    }
}

void CoffeeShop::enQueue(int token) {
    if (isFull()) {
        cout << "Queue is full, cannot add customer " << token << endl;
    } else {
        if (front == -1) {
            front = 0;
        }
        rear = rear + 1;
        token_no[rear] = token;
        cout << "Customer " << token << " got a token and joined the line." << endl;
    }
}

int CoffeeShop::deQueue() {
    if (isEmpty()) {
        cout << "Queue is empty, no customer to process." << endl;
        return -1;
    } else {
        int t = token_no[front];
        cout << "Customer " << t << " is being served and leaves the line." << endl;
        front++;
        return t;
    }
}

void CoffeeShop::display() {
    if (isEmpty()) {
        cout << "No customers in the line." << endl;
    } else {
        cout << "Current line: ";
        for (int i = front; i <= rear; i++) {
            cout << token_no[i] << " ";
        }
        cout << endl;
    }
```

```cpp
}

int main() {
    CoffeeShop shop;
    int choice, token;
    do {
        cout << "\nEnter choice number:\n";
        cout << "1. Get Token\n2. Process Token\n3. Display Queue\n4. Exit\n";
        cin >> choice;

        switch (choice) {
        case 1:
            cout << "Enter customer token number: ";
            cin >> token;
            shop.enQueue(token);
            break;
        case 2:
            shop.deQueue();
            break;
        case 3:
            shop.display();
            break;
        case 4:
            cout << "Exiting..." << endl;
            break;
        default:
            cout << "Invalid choice!" << endl;
        }
    } while (choice != 4);

    return 0;
}
```

OUTPUT:-

Enter choice number:
1. Get Token
2. Process Token
3. Display Queue
4. Exit
1
Enter customer token number: 1

Customer 1 got a token and joined the line.

Enter choice number:
1. Get Token
2. Process Token
3. Display Queue
4. Exit
2
Customer 1 is being served and leaves the line.

Enter choice number:
1. Get Token
2. Process Token
3. Display Queue
4. Exit
3
No customers in the line.

Enter choice number:
1. Get Token
2. Process Token
3. Display Queue
4. Exit
1
Enter customer token number: 2
Customer 2 got a token and joined the line.

Enter choice number:
1. Get Token
2. Process Token
3. Display Queue
4. Exit
3
Current line: 2

Enter choice number:
1. Get Token
2. Process Token
3. Display Queue
4. Exit
4
Exiting...