Assignment 6

Code :

```
#include <iostream>
using namespace std;

class CircularQueue {
    int front, rear, capacity;
    string* queue;

public:
    CircularQueue(int size) {
        capacity = size;
        queue = new string[capacity];
        front = -1;
        rear = -1;
    }

    bool isFull() {
        return (front == 0 && rear == capacity - 1) || ((rear + 1) % capacity == front);
    }

    bool isEmpty() {
        return front == -1;
    }

    void enqueue(string jobName) {
        if (isFull()) {
            cout << "Printer queue is full! Cannot add job: " << jobName << endl;
            return;
        }
        if (isEmpty()) {
            front = 0;
            rear = 0;
        } else {
            rear = (rear + 1) % capacity;
```

```
        }
        queue[rear] = jobName;
        cout << "Print job '" << jobName << "' added to the queue.\n";
    }

    void dequeue() {
        if (isEmpty()) {
            cout << "Printer queue is empty! No job to process.\n";
            return;
        }
        cout << "Processing and removing print job: " << queue[front] << endl;
        if (front == rear) {
            front = rear = -1;
        } else {
            front = (front + 1) % capacity;
        }
    }

    void display() {
        if (isEmpty()) {
            cout << "Printer queue is empty.\n";
            return;
        }
        cout << "Current print queue: ";
        int i = front;
        while (true) {
            cout << queue[i] << " ";
            if (i == rear)
                break;
            i = (i + 1) % capacity;
        }
        cout << "\n";
    }
};

int main() {
    int size;
    cout << "------ Printer Spooler ------";
    cout << "\nEnter printer queue capacity: ";
    cin >> size;
```

```
    CircularQueue printer(size);

    int choice;
    string jobName;
    do {
        cout << "\n1. Add Print Job\n2. Process Print Job\n3. Display Queue\n4. Exit\n";
        cout << "Enter your choice: ";
        cin >> choice;

        switch (choice) {
        case 1:
            cout << "Enter print job name: ";
            cin >> jobName;
            printer.enqueue(jobName);
            break;
        case 2:
            printer.dequeue();
            break;
        case 3:
            printer.display();
            break;
        case 4:
            cout << "Exiting printer spooler.\n";
            break;
        default:
            cout << "Invalid choice! Try again.\n";
        }
    } while (choice != 4);

    return 0;
}
```

Output :

```
Enter your choice: 1
Enter print job name: cleaning
Print job 'cleaning' added to the queue.

1. Add Print Job
2. Process Print Job
3. Display Queue
4. Exit
Enter your choice: 2
Processing and removing print job: cleaning

1. Add Print Job
2. Process Print Job
3. Display Queue
4. Exit
Enter your choice: 3
Printer queue is empty.

1. Add Print Job
2. Process Print Job
3. Display Queue
4. Exit
Enter your choice: 4
Exiting printer spooler.


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(program exited with code: 0)

Press any key to continue . . .
```