Name: Khushal Patil Class: SE-II (R-Batch)

Roll No.: 64

**Code:**

#include<iostream>

#include <iostream>

#define MAX\_SIZE 10

using namespace std;

class priority\_queue {

   private:

    string queue[MAX\_SIZE];

    int priority\_val[MAX\_SIZE];

    int front;

    int rear;

   public:

    priority\_queue() {

        front = -1;

        rear = -1;

    }

    bool is\_empty() { return front == -1; }

    bool is\_full() { return rear == MAX\_SIZE - 1; }

    void enqueue(string data, int priority) {

        if (is\_full()) {

            cout << "Queue is full" << endl;

            return;

        }

        if (is\_empty()) {

            front = 0;

            rear = 0;

            queue[rear] = data;

            priority\_val[rear] = priority;

        } else {

            int i;

            rear++;

            for (i = rear-1; i >= front; i--) {

                if (priority\_val[i] < priority) {

                    queue[i + 1] = queue[i];

                    priority\_val[i + 1] = priority\_val[i];

                } else {

                    break;

                }

            }

            queue[i + 1] = data;

            priority\_val[i + 1] = priority;

        }

    }

    string dequeue() {

        if (is\_empty()) {

            cout << "Queue is empty" << endl;

            return "";

        }

        string data = queue[front];

        if (front == rear) {

            front = -1;

            rear = -1;

        } else {

            front++;

        }

        return data;

    }

    int get\_priority() {

        if (is\_empty()) {

            return -1;

        }

        return priority\_val[front];

    }

    void display() {

        if (is\_empty()) {

            cout << "Queue is empty" << endl;

            return;

        }

        cout << "Queue is:" << endl;

        for (int i = front; i <= rear; i++) {

            cout << priority\_val[i] << " : " << queue[i] << endl;

        }

        cout << endl;

    }

};

int main() {

    priority\_queue queue;

    int ch = 0;

    int priority;

    string name;

    cout<<"Priorities are 0: General Checkup, 1: Non-Serious, 2: Serious"<<endl;

    do {

        cout << "------: MENU :------" << endl;

        cout << "1. Add Patient" << endl;

        cout << "2. Remove Patient" << endl;

        cout << "3. Display Queue" << endl;

        cout << "4. Exit" << endl;

        cout << "Enter your choice: ";

        cin >> ch;

        switch (ch) {

            case 1:

                cout << "Enter Patient Name: ";

                cin >> name;

                cout << "Enter Priority: ";

                cin >> priority;

                queue.enqueue(name, priority);

                cout << "Patient Added Successfully" << endl;

                break;

            case 2:

                priority = queue.get\_priority();

                name = queue.dequeue();

                cout << "Patient '" << name << "' with priority '" << priority

                     << "' removed" << endl;

                break;

            case 3:

                queue.display();

                break;

            case 4:

                cout << "Thank You" << endl;

                break;

            default:

                cout << "Invalid Choice" << endl;

                break;

        }

    } while (ch != 4);

    return 0;

}

**Output:**

Priorities are 0: General Checkup, 1: Non-Serious, 2: Serious

------: MENU :------

1. Add Patient

2. Remove Patient

3. Display Queue

4. Exit

Enter your choice: 1

Enter Patient Name: khushal

Enter Priority: 0

Patient Added Successfully

------: MENU :------

1. Add Patient

2. Remove Patient

3. Display Queue

4. Exit

Enter your choice: 1

Enter Patient Name: yash

Enter Priority: 2

Patient Added Successfully

------: MENU :------

1. Add Patient

2. Remove Patient

3. Display Queue

4. Exit

Enter your choice: 1

Enter Patient Name: ajay

Enter Priority: 1

Patient Added Successfully

------: MENU :------

1. Add Patient

2. Remove Patient

3. Display Queue

4. Exit

Enter your choice: 3

Queue is:

2 : yash

1 : ajay

0 : khushal

------: MENU :------

1. Add Patient

2. Remove Patient

3. Display Queue

4. Exit

Enter your choice: 2

Patient 'yash' with priority '2' removed

------: MENU :------

1. Add Patient

2. Remove Patient

3. Display Queue

4. Exit

Enter your choice: 3

Queue is:

1 : ajay

0 : khushal