ASSIGNMENT NO. 9

TITLE: Consider a scenario for Hospital to cater services to different kinds of patients as Serious (top priority), b) non-serious (medium priority), c) General Checkup (Least priority). Implement the priority queue to cater services to the patients.

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PROGRAM:-

```
#include<iostream>
#include<string>
#define N 20
#define SERIOUS 10
#define NONSERIOUS 5
#define CHECKUP 1
using namespace std;
string Q[N];  //Size of Queue
int Pr[N];   //FOR CATAGORY OF Patient
int r = -1,f = -1;
void enqueue(string name,int p)//Enqueue function to insert data and its priority in queue
{
	int i;
	if((f==0)&&(r==N-1)) //Check if Queue is full
		cout<<"Queue is full";
	else {
		if(f==-1) { //if Queue is empty
			f = r = 0;
			Q[r] = name;		//FIRST ENTRY
			Pr[r] = p;		//FIRST ENTRY

		}

		else {	//second patient onwards
			for(i = r;i>=f;i--) {
				if(p>Pr[i]) //if priority of the new patient is > exixting patient then shift the existing patient one place right
				{
					Q[i+1] = Q[i];
					Pr[i+1] = Pr[i];
				}
				else break;
			}
			Q[i+1] = name;
			Pr[i+1] = p;
```

```
                r++;
        }} }
void print() { //print the data of Queue
    int i;
    for(i=f;i<=r;i++) {
        cout << "Patient's Name - "<<Q[i];
        switch(Pr[i]) {
            case 1:
                cout << " Priority - 'Checkup' " << endl;
            break;
            case 5:
                cout << " Priority - 'Non-serious' " << endl;
            break;
            case 10:
                cout << " Priority - 'Serious' " << endl;
            break;
            default:
                cout << "Priority not found" << endl;
        } }}
void dequeue() { //remove the data from front
    if(f == -1) {
        cout<<"Queue is Empty";
    }
    else {
    cout<<"deleted Element ="<<Q[f]<<endl;

        if(f==r) f = r = -1;
        else f++;
    }
}

int main()
{
    string name;
    int opt,n,i,p;
    cout<<"Enter Your Choice:-"<<endl;
while(1)
 {
    cout << "\nMenu \n 1)Insert Data in Queue" << endl << " 2)show the Data in Queue "
<< endl <<" 3)Delete data from the Queue"
        << endl <<" 4)Exit"<< endl;
    cin >> opt;
        switch(opt)
        {
            case 1:
                cout << "Enter the number of patinent" << endl;
                cin >> n;
                i = 0;
                while(i < n)
                {
```

```
                                        cout << "Enter your name of the patient : ";
                                        cin >> name;

                                                cout << "Enter your Prioritys (0: Serious, 1: Non-
serious, 2: General checkup) : ";
                                                cin >> p;
                                                switch(p) {
                                                        case 0:
                                                                enqueue(name,SERIOUS);
                                                        break;
                                                        case 1:
                                                                enqueue(name,NONSERIOUS);
                                                        break;
                                                        case 2:
                                                                enqueue(name,CHECKUP);
                                                        break;

                                                }

                                        i++; }
                        break;
                        case 2:
                                print();
                        break;
                        case 3:
                                 dequeue();
                        break;
                        case 4:

                        exit(0);
                        default:
                        cout<<"Incorrect Choice"<<endl;

                }
        }
    return 0;
}
```

OUTPUT:

```
Enter Your Choice:-
Menu
 1)Insert Data in Queue
 2)show the Data in Queue
 3)Delete data from the Queue
 4)Exit
1
Enter the number of patinent
4
Enter your name of the patient : SHRADDHA
```

```
Enter your Prioritys (0: Serious, 1: Non-serious, 2: General checkup) : 2
Enter your name of the patient : KETAKI
Enter your Prioritys (0: Serious, 1: Non-serious, 2: General checkup) : 0
Enter your name of the patient : KRISHNA
Enter your Prioritys (0: Serious, 1: Non-serious, 2: General checkup) : 1
Enter your name of the patient : SHWETA
Enter your Prioritys (0: Serious, 1: Non-serious, 2: General checkup) : 2

Menu
 1)Insert Data in Queue
 2)show the Data in Queue
 3)Delete data from the Queue
 4)Exit
2
Patient's Name - KETAKI Priority - 'Serious'
Patient's Name - KRISHNA Priority - 'Non-serious'
Patient's Name - SHRADDHA Priority - 'Checkup'
Patient's Name - SHWETA Priority - 'Checkup'
Menu
 1)Insert Data in Queue
 2)show the Data in Queue
 3)Delete data from the Queue
 4)Exit
3
deleted Element =KETAKI
Menu
 1)Insert Data in Queue
 2)show the Data in Queue
 3)Delete data from the Queue
 4)Exit
```