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SE-C Comp,Viit,Pune

***Aim: To implement a Priority Queue .***

***CODE:***

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\* Program to implement priority queue for a hospital.

\* places patients in lower priority -> first order.

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#include<iostream>

using namespace std;

class EmptyQueueException:public exception{

public:

const char\*what()const throw(){

return "EmptyQueueException";

}

};

struct Node{

int priority;

string name;

Node \*next;

};

void printNode(const Node \* node){

cout<<"Patient : "<<node->name<<" Priority : "<<node->priority<<endl;

}

class PriorityQueue{

Node \* front;

public:PriorityQueue(){

front=NULL;

}

void enQueue(Node \* nn);

Node \* deQueue();

void printQueue();

};

void PriorityQueue::enQueue(Node \* nn){

if(front==NULL || nn->priority<front->priority){

nn->next=front;

front=nn;

}else{

Node \*temp=front;

while(temp->next!=NULL && temp->next->priority<=nn->priority){

temp=temp->next;

}

nn->next=temp->next;

temp->next=nn;

}

}

Node\* PriorityQueue::deQueue(){

if(!front)

throw EmptyQueueException();

Node\* removedNode=front;

front=front->next;

removedNode->next=NULL;

return removedNode;

}

void PriorityQueue::printQueue(){

Node \* temp=front;

while(temp){

printNode(temp);

temp=temp->next;

}

}

Node \* createNode(){

string patientName;int priority;

cout<<"Enter Patient Name and Priority\t";

cin>>patientName>>priority;

Node \* nn=new Node;

nn->name=patientName;

nn->priority=priority;

nn->next=NULL;

return nn;

}

void printMenu(){

cout<<"1)Add Patient\t";

cout<<"2)Treat Patient\t";

cout<<"3)Display Queue\n";

cout<<"4)Exit\tChoice : ";

}

int main(){

int choice;

PriorityQueue hospitalQueue;

printMenu();

do{

cin>>choice;

switch(choice){

case 1:{

hospitalQueue.enQueue(createNode());

break;

}

case 2:{

try{

Node \* removedNode=hospitalQueue.deQueue();

printNode(removedNode);

delete removedNode;

}catch(EmptyQueueException e){

cout<<"No Patients\n";

}

break;

}

case 3:{

hospitalQueue.printQueue();

break;

}

case 4:break;

}

}while(choice!=4);

return 0;

}

***Output:***

