Hospital Information System

Presented to

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Introduction

In our project we aim to use a hospital information system to keep track of patients' records during their admittance in the Intensive Care Unit. To apply this system, we used C++ language and object-oriented programming. Our code of system consists of 5 classes : patient, doctor, ICU, prescription, and Hospital. Each class has its properties and methods, where patient class contains unique ID for the patient, his personal information, medical history, allergies and medical status, doctor class contains unique social security number, his personal information and his professional information, ICU class contains unique code and number, manager, and a set of beds numbered according to its capacity, prescription class contains unique code, the directions for each medication, and finally hospital class we use to connect all of these class to solve the requirements of the project.

Motivation :

In general, we look forward to improving the health system and facilitating communication in hospitals and obtaining information that pertains to the patient and the patient's medical history. Personally, improving the skills of coding C++ and OOP.

Tools:

Visual Studio 2015 ,C++ ,Visual C++ compiler,QT Creator.

Challenges and Problems:

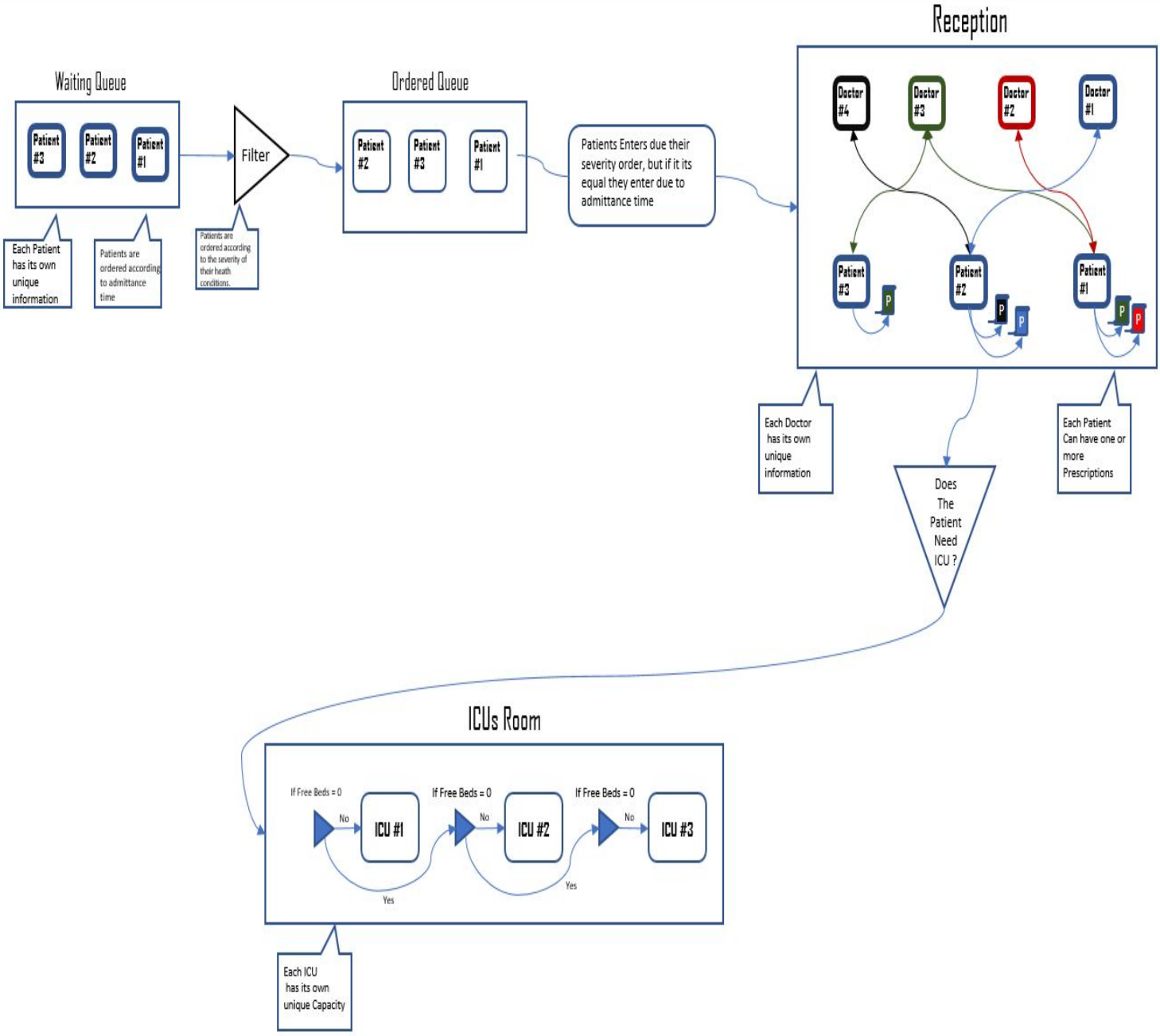
learning a course of OOP and graphical user interface(GUI).

learning pointer and pointer to pointer and send by reference.

Implementation of priority Queue.

Searching for open source projects in GitHub to simulate them.

Block Diagram



User manual Before GUI

When you run the code from the main.cpp file, you will be asked to

- Press 1 to assign new doctor
- Press 2 to add new patient
- press 3 to assign new ICU unit
- Press 4 to exit

```
Welcome to our system
Press 1 to assign new doctor  ,   Press 2 to add new patient  , press 3 to assign new ICU unit , press 4 to exit
```

›If you want to assign new doctor Press 1, then you will be asked to enter the following information

* Name * Major

*Degree * Birthdate * sex

```
Welcome to our system
Press 1 to assign new doctor  ,   Press 2 to add new patient  , press 3 to assign new ICU unit , press 4 to exit
1
##Please enter doctor informations##
##enter name##
.
##enter major##
.
##enter degree##
.
##enter birthDate##
.
##enter sex##
.
Press 1 to terminate else Press 2 if you want to add new doctor
```

then you will be asked to press 1 to terminate or 2 to assign another doctor .

› If you press 1, doctor information will be displayed and you will return to the previous request to press 1 or 2 or 3 or 4

```
Press 1 to terminate else Press 2 if you want to add new doctor
1
##informations of added doctor##
Display Doctor with SSN: 100
Name  : .
Birth date: .
Degree: .
Major: .
SEX: .
Press 1 to assign new doctor  ,   Press 2 to add new patient  , press 3 to assign new ICU unit , press 4 to exit
```

›if you want to add new patient press 2, then you will be asked to enter the following information

*Name *Address * Phone *Birthdate

* Sex *medical history * blood pressure *Allergies

* heart rate * temperature *severity level

```
Welcome to our system
Press 1 to assign new doctor  ,   Press 2 to add new patient  , press 3 to assign new ICU , press 4 to exit
2
##Enter Patient##
enter name
.
##enter address##
.
##enter pphone##
.
##enter birthDate##
.
##enter patient sex##
.
##enter medicalHistory##
.
##enter allergies##
0
##enter bloodPressure##
120/80
##enter heart rate ##
90
##enter temperature ##
37.5
##enter severity##
2
You have entered a new patient to our seystem with id= 1
press 1 to terminate or 2 to enter new patient
```

then you will be asked to press 1 to terminate or 2 to add another patient

› If you press 1, patient queue counter will increase 1 and you will be asked to press one to dequeue this patient or 2 to terminate

```
press 1 to terminate or 2 to enter new patient
1
##Dequeue Patients##
patients queue counter is 1
 patients in hospital is 0
##dequeue patient press 1 terminate press 2##
```

› if you press 1, the patient will be dequeued and patient information will be displayed .

then you will return to the first request to press 1 or 2 or 3 or 4 .

```
##dequeue patient press 1 terminate press 2##
1
Personal INFO:
Patient of ID: 1
Name: .
Address: .
Phone: .
Birthdate: .
Sex: .
Medical Info:
Patient of ID: 1
medicalHistory: .
allergies: 0
bloodPressure: 120/80
heartRate: 90
temperature: 37.5
severity: 0
Press 1 to assign new doctor  ,  Press 2 to add new patient  , press 3 to assign new ICU , press 4 to exit
```

› If you want to assign new ICU unit Press 3 , then you will be asked to enter the following information

*Name *Manager *Code * capacity

```
Press 1 to assign new doctor  ,   Press 2 to add new patient  , press 3 to assign new ICU , press 4 to exit
3
##Please enter ICU informations##
##enter name##
.
##enter manager##
.
##enter code##
2
##enter capacity##
5
Press 1 to terminate else Press 2 if you want to add new ICU
```

then you will be asked to press 1 to terminate or 2 to add new ICU

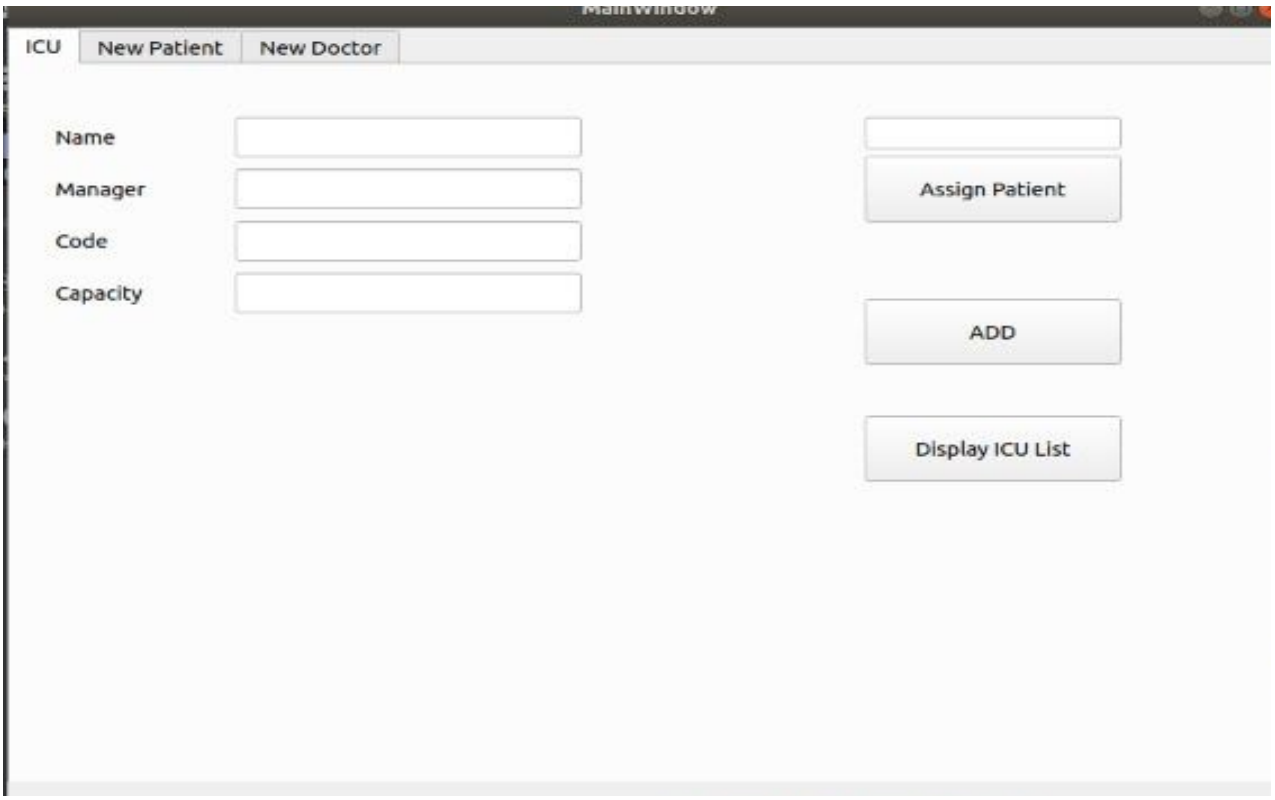
› If you press 1 , the ICU information will be displayed and you will return to the first request to press 1 or 2 or 3 or 4 .

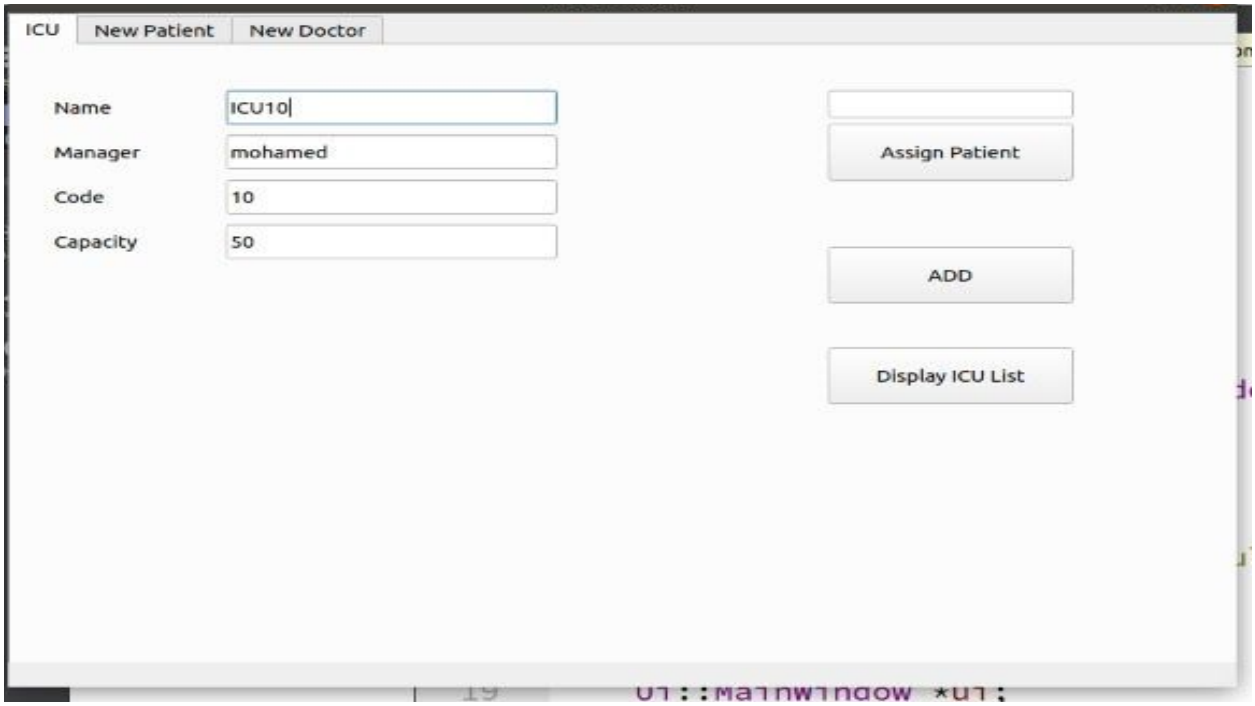
```
Press 1 to terminate else Press 2 if you want to add new ICU
1
##informations of added ICU##
the ICU of code : 2 and name : .
manager is :.
capacity is: 5
num of free beds is :5
Press 1 to assign new doctor  ,   Press 2 to add new patient  , press 3 to assign new ICU , press 4 to exit
```

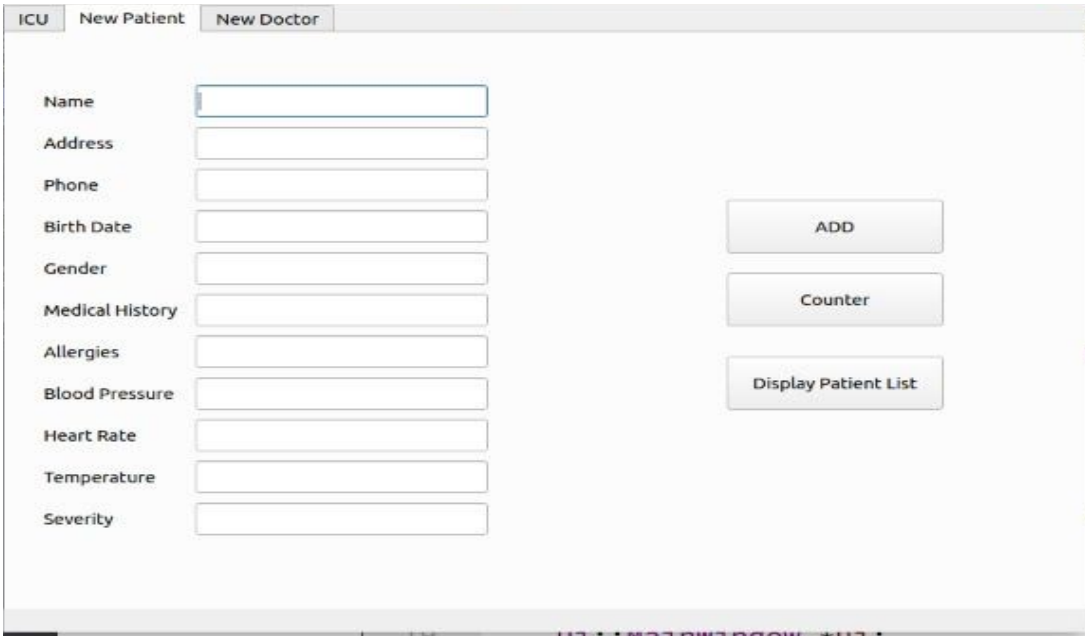
› if you want to exit press 4

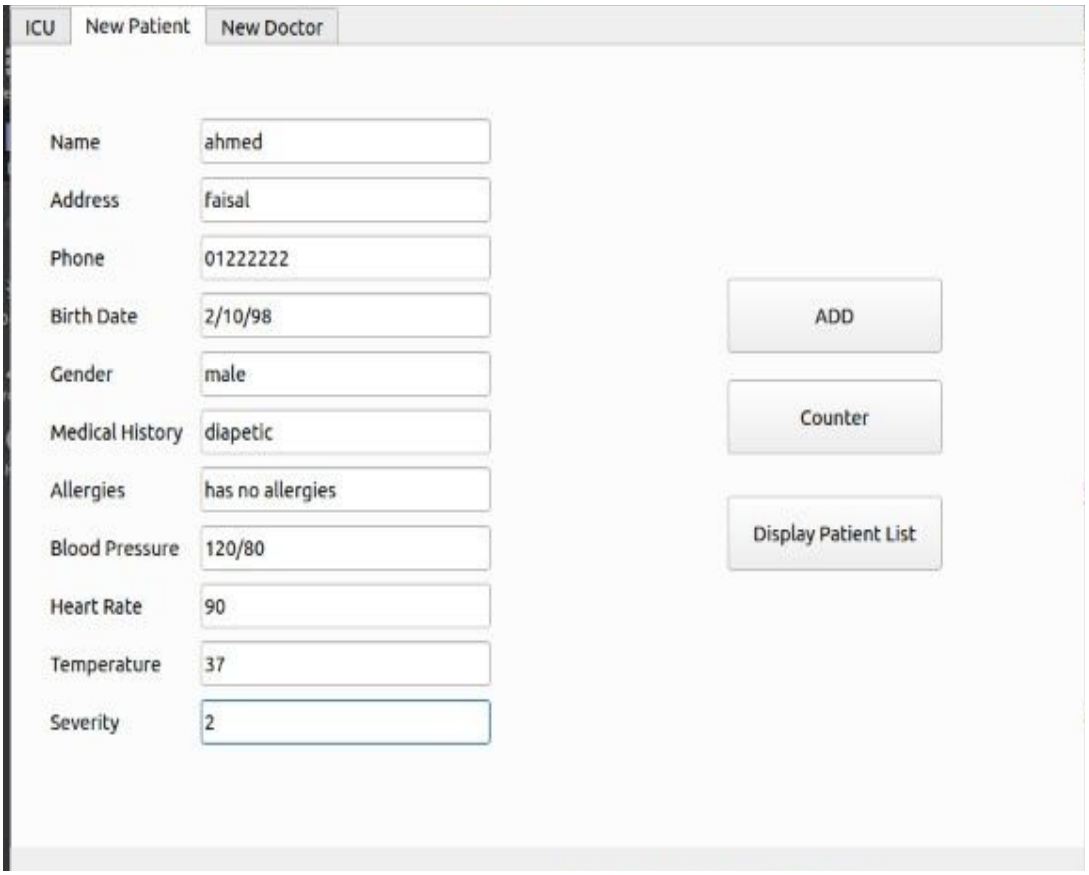
```
Welcome to our system
Press 1 to assign new doctor  ,   Press 2 to add new patient  , press 3 to assign new ICU , press 4 to exit
4

E:\visual studio\HIS\Debug\HIS.exe (process 17368) exited with code 0.
Press any key to close this window . . .
```

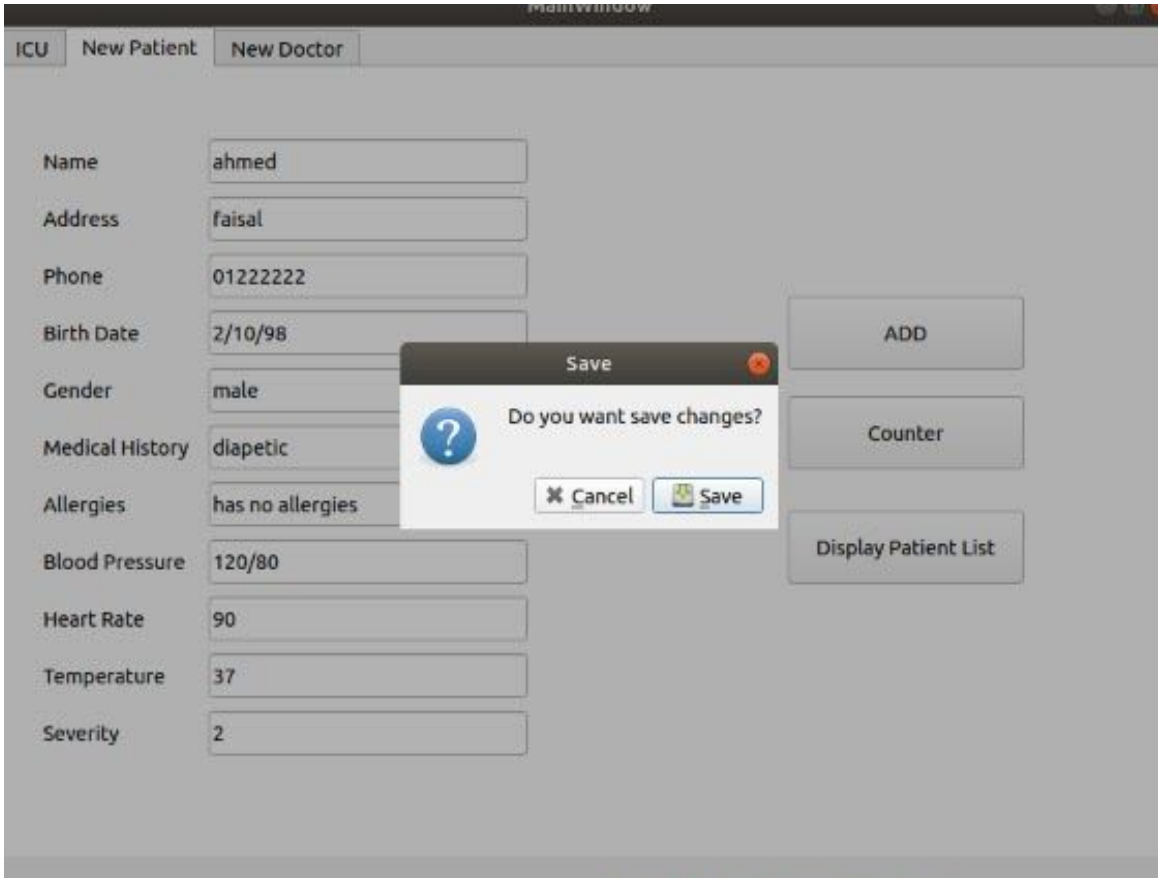
Screenshots for GUI program

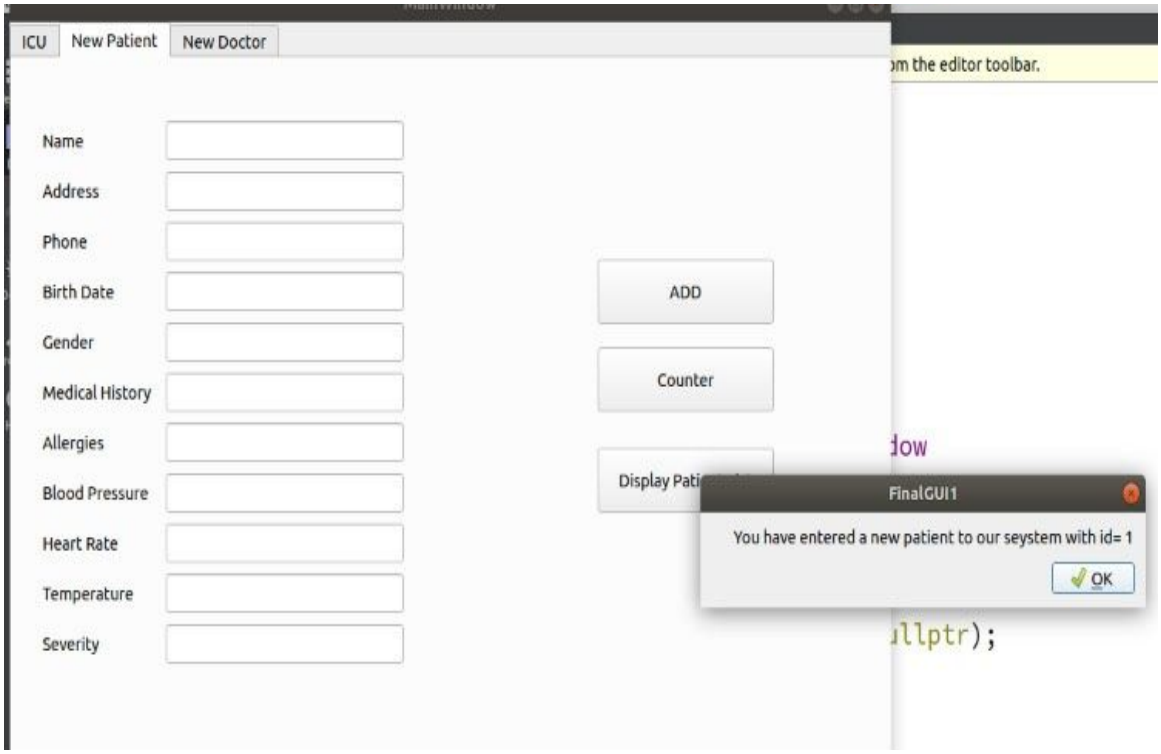


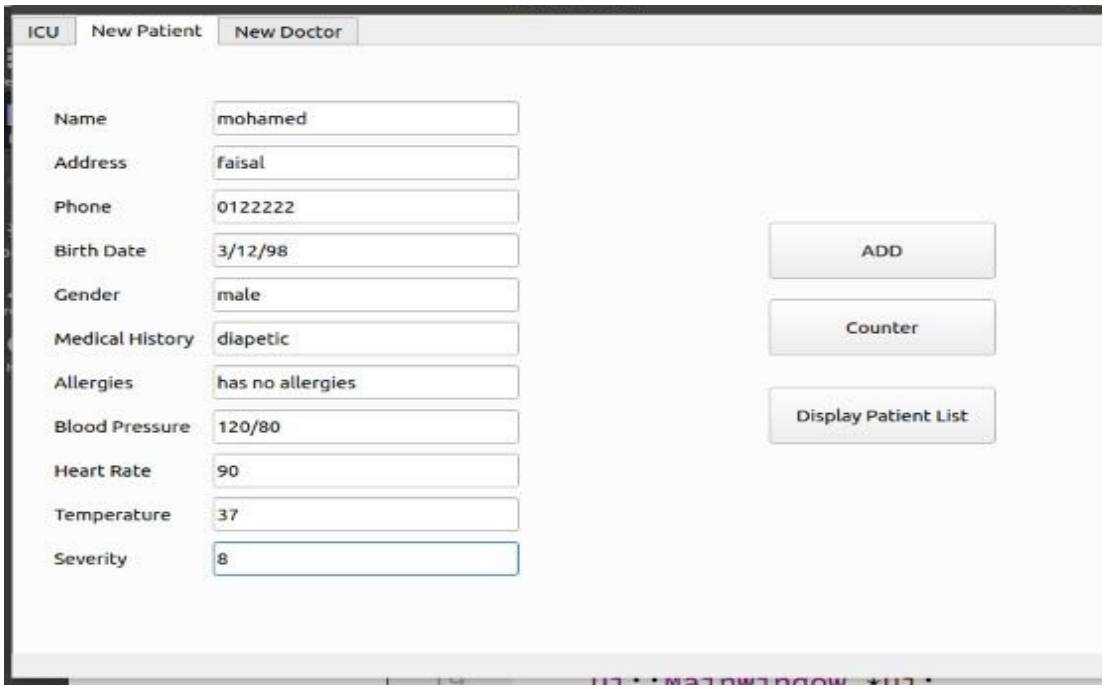


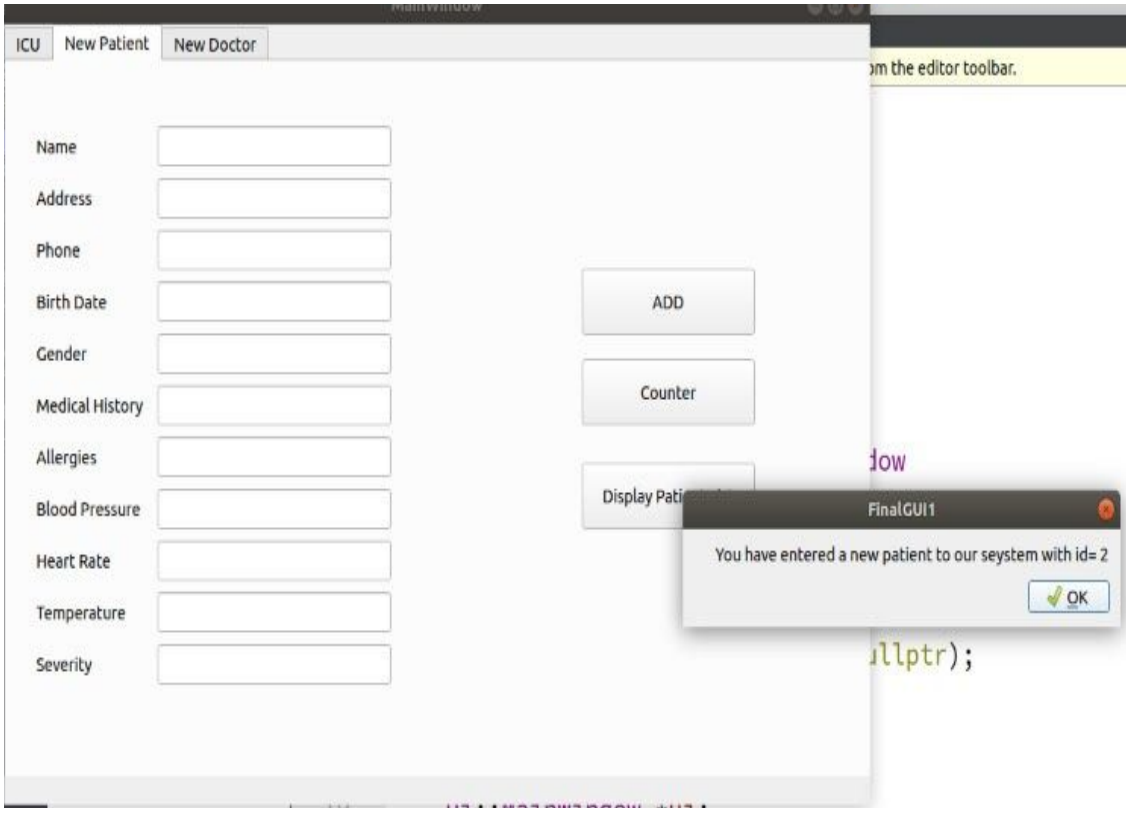

ICU
New Patient
New Doctor
Name
Address
Phone
Birth Date
Gender
Medical History
Allergies
Blood Pressure
Heart Rate
Temperature
Severity
ADD
Counter
Display Patient List

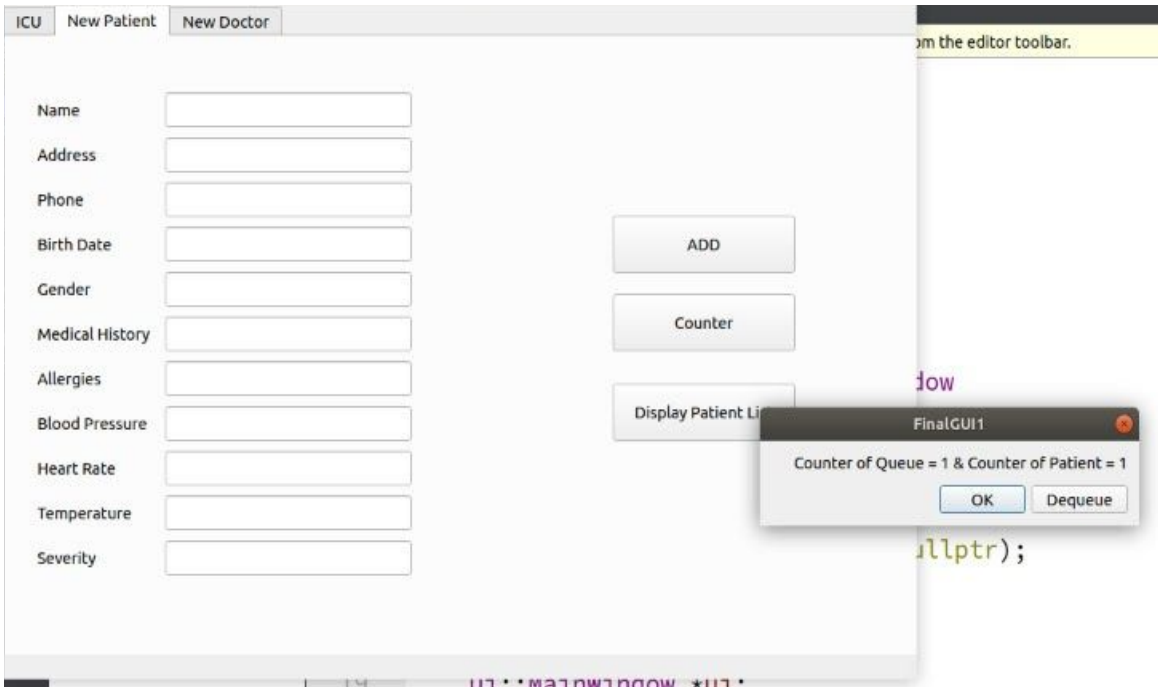

ICU
New Patient
New Doctor
Name
ahmed
Address
faisal
Phone
01222222
Birth Date
2/10/98
Gender
male
Medical History
diapetic
Allergies
has no allergies
Blood Pressure
120/80
Heart Rate
90
Temperature
37
Severity
2
ADD
Counter
Display Patient List

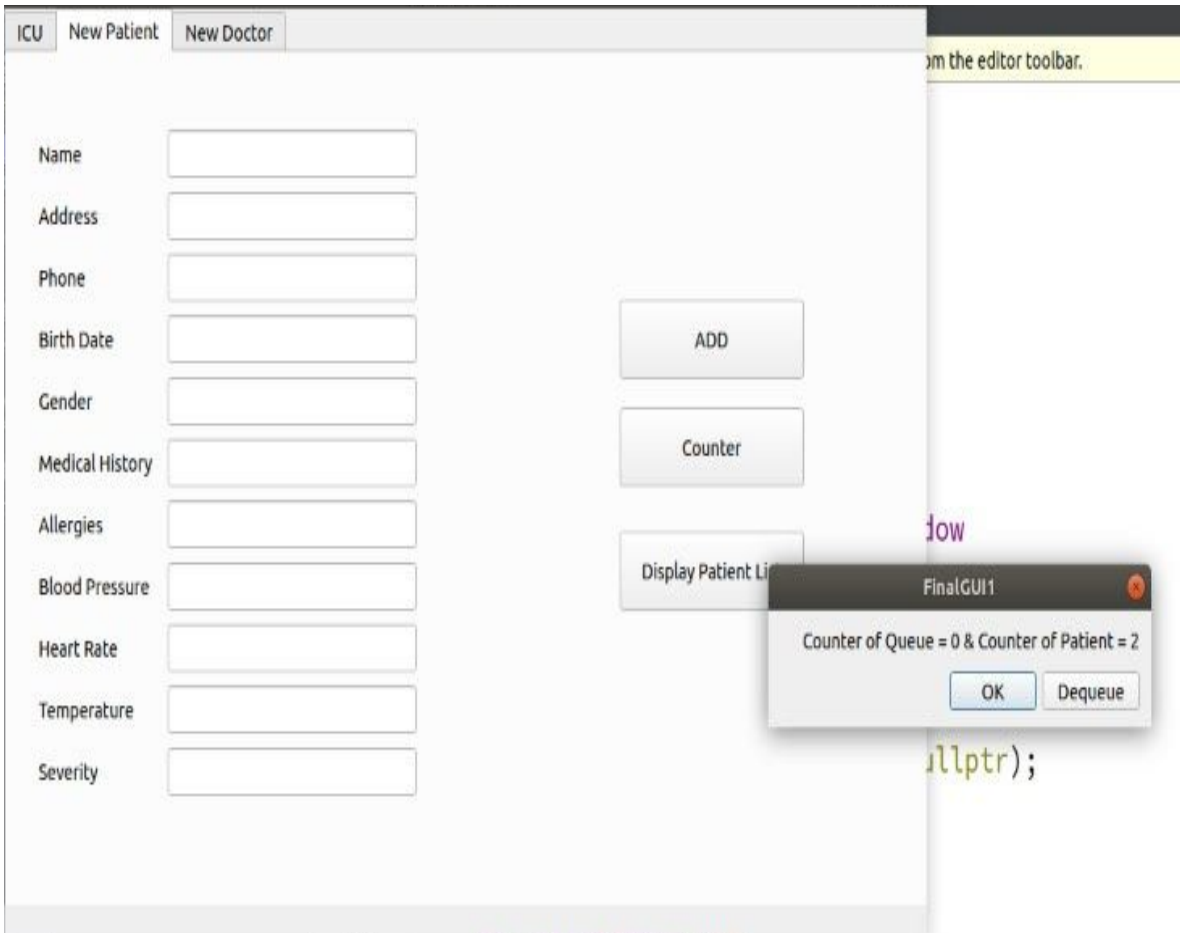

ICU
New Patient
New Doctor
Name
ahmed
Address
faisal
Phone
01222222
Birth Date
2/10/98
Gender
male
Medical History
diapetic
Allergies
has no allergies
Blood Pressure
120/80
Heart Rate
90
Temperature
37
Severity
2
ADD
Counter
Display Patient List
Save
Do you want save changes?
Cancel
Save

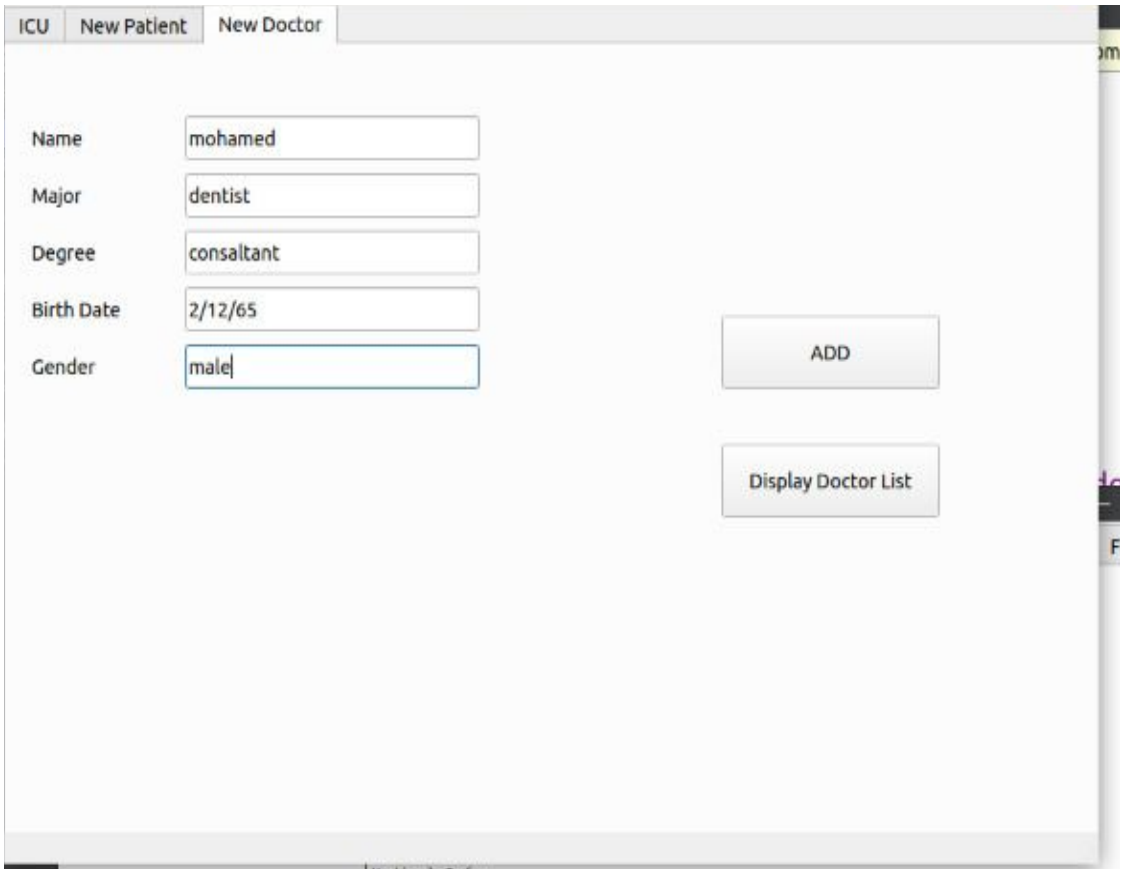

ICU
New Patient
New Doctor
Name
Address
Phone
Birth Date
Gender
Medical History
Allergies
Blood Pressure
Heart Rate
Temperature
Severity
ADD
Counter
FinalGUI1
You have entered a new patient to our seystem with id= 1
OK


ICU
New Patient
New Doctor
Name
mohamed
Address
faisal
Phone
0122222
Birth Date
3/12/98
Gender
male
Medical History
diapetic
Allergies
has no allergies
Blood Pressure
120/80
Heart Rate
90
Temperature
37
Severity
8
ADD
Counter
Display Patient List


ICU
New Patient
New Doctor
Name
Address
Phone
Birth Date
Gender
Medical History
Allergies
Blood Pressure
Heart Rate
Temperature
Severity
ADD
Counter
FinalGUI1
You have entered a new patient to our seystem with id= 2
OK


ICU
New Patient
New Doctor
Name
Address
Phone
Birth Date
Gender
Medical History
Allergies
Blood Pressure
Heart Rate
Temperature
Severity
ADD
Counter
Display Patient Li
FinalGUI1
Counter of Queue = 1 & Counter of Patient = 1
OK
Dequeue


ICU
New Patient
New Doctor
Name
Address
Phone
Birth Date
Gender
Medical History
Allergies
Blood Pressure
Heart Rate
Temperature
Severity
ADD
Counter
Display Patient Li
FinalGUI1
Counter of Queue = 0 & Counter of Patient = 2
OK
Dequeue


ICU
New Patient
New Doctor
Name
mohamed
Major
dentist
Degree
consaltant
Birth Date
2/12/65
Gender
male
ADD
Display Doctor List

Contribution

* Ahmed Galal coded Hospital files and main file .

* Abdelrahman Gamal coded patient files and ICU Files.

* Abdelrahman Almahdy coded doctor Files and prescription files.

* We all worked in GUI files and Priority queue.

* we all helped each other in each file equally.

References

1. Object-Oriented Programming in C++ (4th Edition) by Robert Lafore.
2. https://www.youtube.com/watch?v=iPIFOBEKSNM&t=571s
3. https://www.youtube.com/watch?v=6U6WtWG3NrA&list=PL1DUmTEdeA6KLEvI00NyrkT91BVIe8BOU
4. https://www.youtube.com/watch?v=d3kd5KbGB48&fbclid=IwAR39H9AR-mbAb-HKv5Wo-TYeI-J_uUTtzb6cCj2ScqeXDdN1hrfQiPISeIU
5. https://www.youtube.com/watch?v=38IG-UToeZ0&fbclid=IwAR0WtSUQa4eqMzHAK9dIR-1u_WUVDqt04cijSB6NwBhkDkgeWRDoQAur-2Y