Readme

Strangers - HMS

1. How to use

- AndroidStudio에서 가장 최신의 compile version으로 구동합니다.

- mode는 총 3가지입니다.

- Receptionist mode는 Usecase1을 구현한 것이며 새로운 환자를 입원수속 하는 과정입니다. 다양한 환자의 정보를 입력하고 각 버튼을 순차적으로 누릅니다. Allocate 버튼은 환자에게 빈 sickbed를 배정하는 logic이며 배정 완료시 sickbed의 ID(숫자)가 표시됩니다. 환자를 추가할 시 MainActivity에 sickbed를 구현해 놓은 화면에 표시됩니다.

- Caregiver mode는 Usecase2를 구현한 것이며 보호자의 입장에서 환자의 현재 상태를 조회하는 과정입니다. 임의로 caregiver와 연결된 환자 ID는 relatedexample로 설정해 놓았으므로 환자를 hospitalize하는 과정에서 필수로 id가 relatedexample인 환자를 생성해 주어야 합니다. Database의 PatientList에서 해당하는 환자가 없다면 없다고 표시해주며, 있으나 ID가relatedexample이 아니라면 access denied가 출력됩니다. Relatedexample을 조회해보면 다양한 환자의 정보와 함께 vitalsign이 1초마다 표시되며 자체 로직으로 정상 상태인지, 비정상 상태인지 표시해 줍니다.

- MedicalTeam mode는 의료진의 입장에서 모든 환자의 state와 chart를 조회하고 변경이 가능한 mode입니다. Caregiver mode와 같은 액티비티로 구현되나 polymorphism과 view의 invisible을 조절해 다른 화면처럼 보이ㅔ 구현해 코드의 재사용을 줄였습니다. State를 보는 부분은 caregiver mode와 같으며 chart 부분은 조회 및 수정이 가능합니다.

- Database는 임의로 구현하였으며 실제로 외부의 Database와 연결되지 않았습니다.

2. Activities

- MainActivity

package com.ajou.android.hms;  
  
import android.annotation.SuppressLint;  
import android.content.Intent;  
import android.graphics.Color;  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
  
import java.util.ArrayList;  
import java.util.List;  
  
public class MainActivity extends AppCompatActivity {  
  
 private Button receptionist\_bt;  
 private Button caregiver\_bt;  
 private Button medicalteam\_bt;  
  
 private ArrayList<Button> sickbeds;  
 private Button sickbed\_bt\_0;  
 private Button sickbed\_bt\_1;  
 private Button sickbed\_bt\_2;  
 private Button sickbed\_bt\_3;  
 private Button sickbed\_bt\_4;  
 private Button sickbed\_bt\_5;  
 private Button sickbed\_bt\_6;  
 private Button sickbed\_bt\_7;  
 private Button sickbed\_bt\_8;  
 private Button sickbed\_bt\_9;  
  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_main*);  
  
 sickbeds = new ArrayList<>();  
  
 initiateDatabase();  
  
 receptionist\_bt = findViewById(R.id.*receptionist\_bt*);  
 receptionist\_bt.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this, HospitalizeActivity.class);  
 startActivity(intent);  
 }  
 });  
  
 caregiver\_bt = findViewById(R.id.*caregiver\_bt*);  
 caregiver\_bt.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this, StateActivity.class);  
 intent.putExtra("mode", 1);  
 startActivity(intent);  
 }  
 });  
  
 medicalteam\_bt = findViewById(R.id.*medicalteam\_bt*);  
 medicalteam\_bt.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 Intent intent = new Intent(MainActivity.this, StateActivity.class);  
 intent.putExtra("mode", 2);  
 startActivity(intent);  
 }  
 });  
  
 sickbed\_bt\_0 = findViewById(R.id.*sickbed\_0*);  
 sickbeds.add(sickbed\_bt\_0);  
 sickbed\_bt\_1 = findViewById(R.id.*sickbed\_1*);  
 sickbeds.add(sickbed\_bt\_1);  
 sickbed\_bt\_2 = findViewById(R.id.*sickbed\_2*);  
 sickbeds.add(sickbed\_bt\_2);  
 sickbed\_bt\_3 = findViewById(R.id.*sickbed\_3*);  
 sickbeds.add(sickbed\_bt\_3);  
 sickbed\_bt\_4 = findViewById(R.id.*sickbed\_4*);  
 sickbeds.add(sickbed\_bt\_4);  
 sickbed\_bt\_5 = findViewById(R.id.*sickbed\_5*);  
 sickbeds.add(sickbed\_bt\_5);  
 sickbed\_bt\_6 = findViewById(R.id.*sickbed\_6*);  
 sickbeds.add(sickbed\_bt\_6);  
 sickbed\_bt\_7 = findViewById(R.id.*sickbed\_7*);  
 sickbeds.add(sickbed\_bt\_7);  
 sickbed\_bt\_8 = findViewById(R.id.*sickbed\_8*);  
 sickbeds.add(sickbed\_bt\_8);  
 sickbed\_bt\_9 = findViewById(R.id.*sickbed\_9*);  
 sickbeds.add(sickbed\_bt\_9);  
 }  
  
 @Override  
 protected void onResume() {  
 super.onResume();  
 update();  
 }  
  
 private void initiateDatabase() {  
 for (int i = 0; i < 10; i++)  
 Database.*getInstance*().getSickbedList().add(new Sickbed("Sickbed" + i));  
 }  
  
 private void update() {  
 Database.*getInstance*().getSickbedList();  
 for (int i = 0; i < Database.*getInstance*().getSickbedList().size(); i++) {  
 if (Database.*getInstance*().getSickbedList().get(i).isAllocated() == true) {  
 sickbeds.get(i).setBackgroundColor(Color.*rgb*(125, 40, 40));  
 sickbeds.get(i).setText(Database.*getInstance*().getSickbedList().get(i).getPatientID());  
 }  
 }  
 }  
}

- HospitalizeActivity

package com.ajou.android.hms;  
  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.TextView;  
import android.widget.Toast;  
  
import java.text.SimpleDateFormat;  
import java.util.Date;  
  
public class HospitalizeActivity extends AppCompatActivity {  
  
 private Receptionist receptionist;  
  
 private TextView receptionist\_tv;  
 private EditText ID\_et;  
 private Button ID\_bt;  
 private EditText name\_et;  
 private EditText gender\_et;  
 private EditText age\_et;  
 private TextView sickbed\_tv;  
 private Button sickbed\_bt;  
 private Button hospitalize\_bt;  
  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_hospitalize*);  
  
 receptionist = new Receptionist("Receptionist\_1");  
  
 receptionist\_tv = findViewById(R.id.*receptionist\_tv*);  
 receptionist\_tv.setText("Receptionist ID : " + receptionist.getID());  
  
 ID\_et = findViewById(R.id.*ID\_et*);  
  
 ID\_bt = findViewById(R.id.*ID\_bt*);  
 ID\_bt.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 receptionist.register(ID\_et.getText().toString());  
 Toast.*makeText*(getApplicationContext(), "checking done!", Toast.*LENGTH\_SHORT*).show();  
 ID\_bt.setVisibility(View.*INVISIBLE*);  
 }  
 });  
  
 name\_et = findViewById(R.id.*name\_et*);  
 gender\_et = findViewById(R.id.*gender\_et*);  
 age\_et = findViewById(R.id.*age\_et*);  
  
 sickbed\_tv = findViewById(R.id.*sickbed\_tv*);  
  
 sickbed\_bt = findViewById(R.id.*sickbed\_bt*);  
 sickbed\_bt.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 if (SickbedController.*getInstance*().getSickbedList() != null) {  
 sickbed\_tv.setText("Allocated sickbed ID : " + receptionist.allocateSickbedtoPatient());  
 sickbed\_bt.setVisibility(View.*INVISIBLE*);  
 }  
 }  
 });  
  
 hospitalize\_bt = findViewById(R.id.*hospitalize\_bt*);  
 hospitalize\_bt.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 receptionist.allocateCharttoPatient(initiateChart());  
  
 String name = name\_et.getText().toString();  
 String gender = gender\_et.getText().toString();  
 int age = Integer.*parseInt*(age\_et.getText().toString());  
 receptionist.hospitalize(name, gender, age);  
 Toast.*makeText*(getApplicationContext(), name\_et.getText().toString() + "님 입원수속 완료"  
 , Toast.*LENGTH\_SHORT*).show();  
 finish();  
 }  
 });  
 }  
  
 private String initiateChart() {  
 long now = System.*currentTimeMillis*();  
 Date date = new Date(now);  
 SimpleDateFormat sdf = new SimpleDateFormat("yyyy-MM-dd");  
 String time = sdf.format(date);  
 return time + " : 입원수속 완료\n";  
 }  
}

- StateActivity

package com.ajou.android.hms;  
  
import android.content.Intent;  
import android.graphics.Color;  
import android.support.v7.app.AppCompatActivity;  
import android.os.Bundle;  
import android.view.View;  
import android.widget.Button;  
import android.widget.EditText;  
import android.widget.TextView;  
  
public class StateActivity extends AppCompatActivity {  
 private EditText search\_et;  
 private Button search\_bt;  
 private TextView ID\_tv;  
 private TextView name\_tv;  
 private TextView gender\_tv;  
 private TextView age\_tv;  
 private TextView sickbed\_tv;  
 private TextView temparature\_tv;  
 private TextView pulse\_tv;  
 private TextView respiration\_tv;  
 private TextView blood\_tv;  
 private TextView normal\_tv;  
 private EditText chart\_et;  
 private Button chart\_bt;  
  
 private User user;  
 private int mode;  
 private boolean isActive;  
  
 @Override  
 protected void onCreate(Bundle savedInstanceState) {  
 super.onCreate(savedInstanceState);  
 setContentView(R.layout.*activity\_state*);  
  
 isActive = false;  
  
 ID\_tv = findViewById(R.id.*state\_ID\_tv*);  
 name\_tv = findViewById(R.id.*state\_name\_tv*);  
 gender\_tv = findViewById(R.id.*state\_gender\_tv*);  
 age\_tv = findViewById(R.id.*state\_age\_tv*);  
 sickbed\_tv = findViewById(R.id.*state\_sickbed\_tv*);  
 temparature\_tv = findViewById(R.id.*state\_temparature\_tv*);  
 pulse\_tv = findViewById(R.id.*state\_pulse\_tv*);  
 respiration\_tv = findViewById(R.id.*state\_respiration\_tv*);  
 blood\_tv = findViewById(R.id.*state\_blood\_tv*);  
 normal\_tv = findViewById(R.id.*state\_normal\_tv*);  
 chart\_et = findViewById(R.id.*state\_chart\_et*);  
 chart\_bt = findViewById(R.id.*state\_chart\_bt*);  
  
 Intent intent = getIntent();  
 mode = intent.getExtras().getInt("mode");  
  
 if (mode == 1) {  
 user = new Caregiver("caregiver\_1");  
 ((Caregiver) user).setRelatedPatientID("relatedexample");  
 chart\_et.setVisibility(View.*INVISIBLE*);  
 chart\_bt.setVisibility(View.*INVISIBLE*);  
 } else {  
 user = new MedicalTeam("medicalteam\_1");  
 }  
  
 search\_et = findViewById(R.id.*state\_search\_et*);  
  
 search\_bt = findViewById(R.id.*state\_search\_bt*);  
 search\_bt.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 String ID = search\_et.getText().toString();  
  
 if ((PatientController.*getInstance*().requestPatientInfo(ID)) == null) {  
 ID\_tv.setText("There is No patient : " + ID);  
 return;  
 }  
  
 if (user instanceof Caregiver && !(((Caregiver) user).getRelatedPatientID().equals(ID))) {  
 ID\_tv.setText("Access denied");  
 return;  
 }  
  
 isActive = true;  
 update(ID);  
 }  
 });  
  
 chart\_bt.setOnClickListener(new View.OnClickListener() {  
 @Override  
 public void onClick(View v) {  
 String ID = search\_et.getText().toString();  
 Chart chart = PatientController.*getInstance*().getPatientbyID(ID).getPatientInfo()  
 .getChart();  
 chart.changeChart(chart\_et.getText().toString());  
 chart\_et.setText(chart.getChart());  
 }  
 });  
 }  
  
 public void update(String ID) {  
 Patient patient = PatientController.*getInstance*().getPatientbyID(ID);  
 PatientInfo patientInfo = PatientController.*getInstance*().requestPatientInfo(ID);  
  
 ID\_tv.setText("ID : " + patient.getID());  
 name\_tv.setText("name : " + patientInfo.getName());  
 gender\_tv.setText("gender : " + patientInfo.getGender());  
 age\_tv.setText("age : " + patientInfo.getAge());  
 sickbed\_tv.setText("sickbed : " + patientInfo.getSickbed().getID());  
 chart\_et.setText(patientInfo.getChart().getChart());  
 activateVitalMachine(patientInfo);  
 }  
  
 public void activateVitalMachine(final PatientInfo patientInfo) {  
 new Thread() {  
 @Override  
 public void run() {  
 while (isActive) {  
 try {  
 runOnUiThread(new Runnable() {  
 @Override  
 public void run() {  
 patientInfo.measureVital();  
  
 temparature\_tv.setText("temparature : " + patientInfo.getVitalMachine().getTemparature());  
 pulse\_tv.setText("pulse : " + patientInfo.getVitalMachine().getPulse());  
 respiration\_tv.setText("respiration : " + patientInfo.getVitalMachine().getRespiration());  
 blood\_tv.setText("blood : " + patientInfo.getVitalMachine().getBlood\_pressure());  
 if (patientInfo.getVitalMachine().isNormal()) {  
 normal\_tv.setText("NORMAL");  
 normal\_tv.setBackgroundColor(Color.*rgb*(40, 125, 40));  
 } else {  
 normal\_tv.setText("ABNORMAL");  
 normal\_tv.setBackgroundColor(Color.*rgb*(125, 40, 40));  
 }  
 }  
 });  
 Thread.*sleep*(1000);  
 } catch (InterruptedException e) {  
 e.printStackTrace();  
 }  
 }  
 }  
 }.start();  
 }  
}

3. Classes

- Database

package com.ajou.android.hms;  
  
import java.util.ArrayList;  
import java.util.List;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class Database {  
 private static Database *database*;  
 private List<Sickbed> sickbedList;  
 private List<Patient> patientList;  
  
 private Database() {  
 sickbedList = new ArrayList<>();  
 patientList = new ArrayList<>();  
 }  
  
 public static Database getInstance() {  
 if(*database* == null)  
 *database* = new Database();  
  
 return *database*;  
 }  
  
 public List<Sickbed> getSickbedList() {  
 return sickbedList;  
 }  
  
 public List<Patient> getPatientList() {  
 return patientList;  
 }  
  
 public void setSickbedList(List<Sickbed> sickbedList) {  
 this.sickbedList = sickbedList;  
 }  
  
 public void setPatientList(List<Patient> patientList) {  
 this.patientList = patientList;  
 }  
}

- PatientController

package com.ajou.android.hms;  
  
import java.util.List;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 5..  
 \*/*public class PatientController {  
 private static PatientController *patientController*;  
  
 private PatientController() {}  
  
 public static PatientController getInstance() {  
 if(*patientController* == null)  
 *patientController* = new PatientController();  
  
 return *patientController*;  
 }  
  
 public List<Patient> getPatientList() {  
 return Database.*getInstance*().getPatientList();  
 }  
  
 public void allocateCharttoPatient(Patient patient, String memo) {  
 Chart chart = new Chart(memo);  
 patient.getPatientInfo().setChart(chart);  
 }  
  
 public void hospitalize(Patient patient, String name, String gender, int age) {  
 patient.getPatientInfo().setName(name);  
 patient.getPatientInfo().setGender(gender);  
 patient.getPatientInfo().setAge(age);  
 patient.getPatientInfo().setVitalMachine(new VitalMachine());  
 getPatientList().add(patient);  
 }  
  
 public PatientInfo requestPatientInfo(String patientID) {  
 if (getPatientbyID(patientID) != null)  
 return getPatientbyID(patientID).getPatientInfo();  
 return null;  
 }  
  
 public Patient getPatientbyID(String patientId) {  
 for(int i = 0; i < getPatientList().size(); i++)  
 if (getPatientList().get(i).getID().equals(patientId))  
 return getPatientList().get(i);  
 return null;  
 }  
  
  
}

- SickbedController

package com.ajou.android.hms;  
  
import java.util.List;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class SickbedController {  
 private static SickbedController *sickbedController*;  
  
 private SickbedController() {}  
  
 public static SickbedController getInstance() {  
 if(*sickbedController* == null)  
 *sickbedController* = new SickbedController();  
  
 return sickbedController;  
 }  
  
 public List<Sickbed> getSickbedList() {  
 return Database.*getInstance*().getSickbedList();  
 }  
  
 public int allocateSickbedtoPatient(Patient patient) {  
 for (int i = 0; i < getSickbedList().size(); i++) {  
 if (getSickbedList().get(i).isAllocated() == false) {  
 getSickbedList().get(i).setAllocated(true);  
 getSickbedList().get(i).setPatientID(patient.getID());  
 patient.getPatientInfo().setSickbed(getSickbedList().get(i));  
 return i;  
 }  
 }  
 return -1;  
 }  
}

- User

package com.ajou.android.hms;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 7..  
 \*/*public class User {  
 protected String ID;  
  
 public User(String ID) {  
 this.ID = ID;  
 }  
}

- Receptionist

package com.ajou.android.hms;  
  
import java.util.List;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class Receptionist {  
 private String ID;  
 private Patient newPatient;  
  
 public Receptionist(String ID) {  
 this.ID = ID;  
 }  
  
 public void register(String ID) {  
 newPatient = new Patient(ID);  
 newPatient.setPatientInfo(new PatientInfo());  
 }  
  
 public List<Sickbed> getSickbedList() {  
 return SickbedController.*getInstance*().getSickbedList();  
 }  
  
 public int allocateSickbedtoPatient() {  
 if(newPatient != null)  
 return SickbedController.*getInstance*().allocateSickbedtoPatient(newPatient);  
 else  
 return -1;  
 }  
  
 public void allocateCharttoPatient(String memo) {  
 PatientController.*getInstance*().allocateCharttoPatient(newPatient, memo);  
 }  
  
 public void hospitalize(String name, String gender, int age) {  
 PatientController.*getInstance*().hospitalize(newPatient, name, gender, age);  
 }  
  
 public String getID() {  
 return ID;  
 }  
}

- MedicalTeam

package com.ajou.android.hms;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class MedicalTeam extends User{  
  
 public MedicalTeam(String ID) {  
 super(ID);  
 }  
}

- Caregiver

package com.ajou.android.hms;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class Caregiver extends User{  
 private String relatedPatientID;  
  
 public Caregiver(String ID) {  
 super(ID);  
 }  
  
 public void setRelatedPatientID(String relatedPatientID) {  
 this.relatedPatientID = relatedPatientID;  
 }  
  
 public String getRelatedPatientID() {  
 return relatedPatientID;  
 }  
}

- Patient

package com.ajou.android.hms;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class Patient {  
 private String ID;  
 private PatientInfo patientInfo;  
  
 public Patient(String ID) {  
 this.ID = ID;  
 }  
  
 public String getID() {  
 return ID;  
 }  
  
 public PatientInfo getPatientInfo() {  
 return patientInfo;  
 }  
  
 public void setPatientInfo(PatientInfo patientInfo) {  
 this.patientInfo = patientInfo;  
 }  
}

- PatientInfo

package com.ajou.android.hms;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class PatientInfo {  
 private String name;  
 private String gender;  
 private int age;  
 private Sickbed sickbed;  
 private Chart chart;  
 private VitalMachine vitalMachine;  
  
 public PatientInfo() {  
 }  
  
 public String getName() {  
 return name;  
 }  
  
 public String getGender() {  
 return gender;  
 }  
  
 public int getAge() {  
 return age;  
 }  
  
 public Sickbed getSickbed() {  
 return sickbed;  
 }  
  
 public Chart getChart() {  
 return chart;  
 }  
  
 public VitalMachine getVitalMachine() {  
 return vitalMachine;  
 }  
  
 public void setSickbed(Sickbed sickbed) {  
 this.sickbed = sickbed;  
 }  
  
 public void setChart(Chart chart) {  
 this.chart = chart;  
 }  
  
 public void setVitalMachine(VitalMachine vitalMachine) {  
 this.vitalMachine = vitalMachine;  
 }  
  
 public void setName(String name) {  
 this.name = name;  
 }  
  
 public void setGender(String gender) {  
 this.gender = gender;  
 }  
  
 public void setAge(int age) {  
 this.age = age;  
 }  
  
  
 public void measureVital(){  
 this.vitalMachine.measure();  
 }  
  
 public boolean isNormal() {  
 return this.vitalMachine.isNormal();  
 }  
}

- Chart

package com.ajou.android.hms;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class Chart {  
 private String chart;  
  
 public Chart(String chart) {  
 this.chart = chart;  
 }  
  
 public String getChart() {  
 return chart;  
 }  
  
 public void changeChart(String memo) {  
 this.chart = memo;  
 }  
}

- VitalMachine

package com.ajou.android.hms;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class VitalMachine {  
 private int temparature;  
 private int pulse;  
 private int respiration;  
 private int blood\_pressure;  
  
 public VitalMachine() {  
 this.temparature = 0;  
 this.pulse = 0;  
 this.respiration = 0;  
 this.blood\_pressure = 0;  
 }  
  
 public void measure() {  
 this.temparature = *randomRange*(36, 37);  
 this.pulse = *randomRange*(60, 100);  
 this.respiration = *randomRange*(10, 20);  
 this.blood\_pressure = *randomRange*(80, 120);  
 }  
  
 public boolean isNormal() {  
 return ((temparature >= 36) && (temparature <= 37)) &&  
 ((pulse >= 60) && (pulse <= 100)) &&  
 ((respiration >= 12) && (respiration <= 20)) &&  
 ((blood\_pressure >= 80) && (blood\_pressure <= 120));  
 }  
  
 public static int randomRange(int min, int max) {  
 return (int) (Math.*random*() \* (max - min + 1)) + min;  
 }  
  
 public int getTemparature() {  
 return temparature;  
 }  
  
 public int getPulse() {  
 return pulse;  
 }  
  
 public int getRespiration() {  
 return respiration;  
 }  
  
 public int getBlood\_pressure() {  
 return blood\_pressure;  
 }  
}

- Sickbed

package com.ajou.android.hms;  
  
*/\*\*  
 \* Created by Kimjungmin on 2017. 12. 4..  
 \*/*public class Sickbed {  
 private String ID;  
 private String patientID;  
 private boolean allocated;  
  
 public Sickbed(String ID) {  
 this.ID = ID;  
 this.allocated = false;  
 }  
  
 public String getID() {  
 return ID;  
 }  
  
 public String getPatientID() {  
 return patientID;  
 }  
  
 public boolean isAllocated() {  
 return allocated;  
 }  
  
 public void setPatientID(String patientID) {  
 this.patientID = patientID;  
 }  
  
 public void setAllocated(boolean allocated) {  
 this.allocated = allocated;  
 }  
}

4. Layouts

- activity\_main.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout  
 xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 tools:context="com.ajou.android.hms.MainActivity">  
  
 <RelativeLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="20dp">  
  
 <TextView  
 android:id="@+id/mode"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_centerHorizontal="true"  
 android:text="MODE"  
 android:textAlignment="center"  
 android:textColor="#000000"  
 />  
  
 <Button  
 android:id="@+id/receptionist\_bt"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentLeft="true"  
 android:layout\_below="@+id/mode"  
 android:text="receptionist"/>  
  
 <Button  
 android:id="@+id/caregiver\_bt"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@+id/mode"  
 android:layout\_centerHorizontal="true"  
 android:text="caregiver"/>  
  
 <Button  
 android:id="@+id/medicalteam\_bt"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentRight="true"  
 android:layout\_below="@+id/mode"  
 android:text="medicalteam"/>  
 </RelativeLayout>  
  
 <RelativeLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginTop="60dp">  
  
 <TextView  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:text="SICKBED VIEW"  
 android:textAlignment="center"  
 android:textColor="#000000"  
 />  
  
 </RelativeLayout>  
  
 <RelativeLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent">  
  
 <Button  
 android:id="@+id/sickbed\_0"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="0"/>  
  
 <Button  
 android:id="@+id/sickbed\_1"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_below="@+id/sickbed\_0"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="1"/>  
  
 <Button  
 android:id="@+id/sickbed\_2"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_below="@+id/sickbed\_1"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="2"/>  
  
 <Button  
 android:id="@+id/sickbed\_3"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_below="@+id/sickbed\_2"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="3"/>  
  
 <Button  
 android:id="@+id/sickbed\_4"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_below="@+id/sickbed\_3"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="4"/>  
  
 <Button  
 android:id="@+id/sickbed\_5"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_alignParentRight="true"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="5"/>  
  
 <Button  
 android:id="@+id/sickbed\_6"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_alignParentRight="true"  
 android:layout\_below="@+id/sickbed\_5"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="6"/>  
  
 <Button  
 android:id="@+id/sickbed\_7"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_alignParentRight="true"  
 android:layout\_below="@+id/sickbed\_6"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="7"/>  
  
 <Button  
 android:id="@+id/sickbed\_8"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_alignParentRight="true"  
 android:layout\_below="@+id/sickbed\_7"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="8"/>  
  
 <Button  
 android:id="@+id/sickbed\_9"  
 android:layout\_width="100dp"  
 android:layout\_height="40dp"  
 android:layout\_alignParentRight="true"  
 android:layout\_below="@+id/sickbed\_8"  
 android:layout\_marginBottom="20dp"  
 android:background="@color/colorGreen"  
 android:text="9"/>  
  
  
 </RelativeLayout>  
  
</LinearLayout>

- activity\_hospitalize.xml

<?xml version="1.0" encoding="utf-8"?>  
<RelativeLayout  
 xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 tools:context="com.ajou.android.hms.HospitalizeActivity">  
  
 <TextView  
 android:id="@+id/receptionist\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="40dp"  
 android:layout\_marginBottom="5dp"  
 android:background="@color/colorPrimaryDark"  
 android:padding="5dp"  
 android:text="Receptionist ID : null"  
 android:textAlignment="center"  
 android:textColor="#FFFFFF"  
 android:textSize="20dp"/>  
  
 <LinearLayout  
 android:id="@+id/linear"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/receptionist\_tv"  
 android:orientation="horizontal">  
  
 <EditText  
 android:id="@+id/ID\_et"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_marginBottom="5dp"  
 android:layout\_weight="1"  
 android:hint="Patient ID"  
 />  
  
 <Button  
 android:id="@+id/ID\_bt"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="3"  
 android:text="check"/>  
 </LinearLayout>  
  
 <EditText  
 android:id="@+id/name\_et"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/linear"  
 android:layout\_marginBottom="5dp"  
 android:hint="Patient name"  
 />  
  
 <EditText  
 android:id="@+id/gender\_et"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/name\_et"  
 android:layout\_marginBottom="5dp"  
 android:hint="Patient gender"  
 />  
  
 <EditText  
 android:id="@+id/age\_et"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/gender\_et"  
 android:layout\_marginBottom="5dp"  
 android:hint="Patient age"  
 />  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_below="@id/age\_et"  
 android:layout\_marginBottom="5dp"  
 android:orientation="horizontal">  
  
 <TextView  
 android:id="@+id/sickbed\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="1"  
 android:text="Sickbed : null"  
 android:textSize="20dp"/>  
  
 <Button  
 android:id="@+id/sickbed\_bt"  
 android:layout\_width="match\_parent"  
 android:layout\_height="wrap\_content"  
 android:layout\_weight="3"  
 android:text="allocate"/>  
 </LinearLayout>  
  
 <Button  
 android:id="@+id/hospitalize\_bt"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="wrap\_content"  
 android:layout\_alignParentBottom="true"  
 android:layout\_centerHorizontal="true"  
 android:text="hospitalize"  
 />  
  
  
</RelativeLayout>

- activity\_state.xml

<?xml version="1.0" encoding="utf-8"?>  
<LinearLayout  
 xmlns:android="http://schemas.android.com/apk/res/android"  
 xmlns:app="http://schemas.android.com/apk/res-auto"  
 xmlns:tools="http://schemas.android.com/tools"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical"  
 tools:context="com.ajou.android.hms.StateActivity">  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="40dp"  
 android:layout\_marginBottom="30dp">  
  
 <EditText  
 android:id="@+id/state\_search\_et"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:hint="Input patient ID"  
 />  
  
 <Button  
 android:id="@+id/state\_search\_bt"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="3"  
 android:text="serach"/>  
 </LinearLayout>  
  
 <TextView  
 android:id="@+id/state\_ID\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
  
 <TextView  
 android:id="@+id/state\_name\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
  
 <TextView  
 android:id="@+id/state\_gender\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
  
 <TextView  
 android:id="@+id/state\_age\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
  
 <TextView  
 android:id="@+id/state\_sickbed\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:layout\_marginTop="20dp"  
 android:orientation="horizontal">  
  
 <TextView  
 android:id="@+id/state\_temparature\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:layout\_weight="1"  
 android:textAlignment="center"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
  
 <TextView  
 android:id="@+id/state\_pulse\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:layout\_weight="1"  
 android:textAlignment="center"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
 </LinearLayout>  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:orientation="horizontal">  
  
 <TextView  
 android:id="@+id/state\_respiration\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:layout\_weight="1"  
 android:textAlignment="center"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
  
 <TextView  
 android:id="@+id/state\_blood\_tv"  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp"  
 android:layout\_weight="1"  
 android:textAlignment="center"  
 android:textColor="#000000"  
 android:textSize="20dp"  
 />  
 </LinearLayout>  
  
 <RelativeLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="30dp">  
  
 <TextView  
 android:id="@+id/state\_normal\_tv"  
 android:layout\_width="wrap\_content"  
 android:layout\_height="30dp"  
 android:layout\_centerHorizontal="true"  
 android:textAlignment="center"  
 android:textColor="#FFFFFF"  
 android:textSize="20dp"  
 />  
  
 </RelativeLayout>  
  
 <LinearLayout  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:orientation="vertical">  
  
 <EditText  
 android:id="@+id/state\_chart\_et"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="1"  
 android:textSize="15dp"/>  
  
 <Button  
 android:id="@+id/state\_chart\_bt"  
 android:layout\_width="match\_parent"  
 android:layout\_height="match\_parent"  
 android:layout\_weight="4"  
 android:text="modify chart"/>  
 </LinearLayout>  
  
</LinearLayout>