package tuan8;

import java.util.Objects;

public abstract class PhongHoc {

protected String maPhong;

protected String dayNha;

protected double dienTich;

protected int soBongDen;

public PhongHoc(String maPhong, String dayNha, double dienTich, int soBongDen) {

super();

this.maPhong = maPhong;

this.dayNha = dayNha;

this.dienTich = dienTich;

this.soBongDen = soBongDen;

}

public String getMaPhong() {

return maPhong;

}

public void setMaPhong(String maPhong) {

this.maPhong = maPhong;

}

public String getDayNha() {

return dayNha;

}

public void setDayNha(String dayNha) {

this.dayNha = dayNha;

}

public double getDienTich() {

return dienTich;

}

public void setDienTich(double dienTich) {

this.dienTich = dienTich;

}

public int getSoBongDen() {

return soBongDen;

}

public void setSoBongDen(int soBongDen) {

this.soBongDen = soBongDen;

}

public boolean duAnhSang() {

return dienTich/soBongDen<=10;

}

public abstract boolean xetDatChuan();

@Override

public String toString() {

return String.format("%6s %3s %8.2s %4d %10s",maPhong, dayNha, dienTich,soBongDen,xetDatChuan());

}

@Override

public int hashCode() {

return Objects.hash(maPhong);

}

@Override

public boolean equals(Object obj) {

if (this == obj)

return true;

if (obj == null)

return false;

// if (getClass() != obj.getClass())

// return false;

PhongHoc other = (PhongHoc) obj;

return Objects.equals(maPhong, other.maPhong);

}

}

package tuan8;

public class PhongLyThuyet extends PhongHoc {

private boolean mayChieu;

public PhongLyThuyet(String maPhong, String dayNha, double dienTich, int soBongDen, boolean mayChieu) {

super(maPhong, dayNha, dienTich, soBongDen);

this.mayChieu = mayChieu;

}

public boolean isMayChieu() {

return mayChieu;

}

public void setMayChieu(boolean mayChieu) {

this.mayChieu = mayChieu;

}

@Override

public boolean xetDatChuan() {

// TODO Auto-generated method stub

return duAnhSang()&& mayChieu;

}

@Override

public String toString() {

return super.toString()+""+(mayChieu?"co may chieu":"khong co may chiếu");

}

}

package tuan8;

public class PhongMayTinh extends PhongHoc {

private int soMayTinh;

public PhongMayTinh(String maPhong, String dayNha, double dienTich, int soBongDen, int soBongDen2) {

super(maPhong, dayNha, dienTich, soBongDen);

soBongDen = soBongDen2;

}

public int getSoBongDen() {

return soBongDen;

}

public void setSoBongDen(int soBongDen) {

this.soBongDen = soBongDen;

}

@Override

public boolean xetDatChuan() {

// TODO Auto-generated method stub

return duAnhSang()&& dienTich/soMayTinh >= 1.5;

}

@Override

public String toString() {

return super.toString()+ " " + soMayTinh+ " May Tinh";

}

}

package tuan8;

public class PhongThiNghiem extends PhongHoc {

private String chuyenNganh;

private int sucChua;

private boolean bonRua;

public PhongThiNghiem(String maPhong, String dayNha, double dienTich, int soBongDen, String chuyenNganh, int sucChua,

boolean bonRua) {

super(maPhong, dayNha, dienTich, soBongDen);

this.chuyenNganh = chuyenNganh;

this.sucChua = sucChua;

this.bonRua = bonRua;

}

public String getChuyenNganh() {

return chuyenNganh;

}

public void setChuyenNganh(String chuyenNganh) {

this.chuyenNganh = chuyenNganh;

}

public int getSucChua() {

return sucChua;

}

public void setSucChua(int sucChua) {

this.sucChua = sucChua;

}

public boolean isBonRua() {

return bonRua;

}

public void setBonRua(boolean bonRua) {

this.bonRua = bonRua;

}

@Override

public boolean xetDatChuan() {

// TODO Auto-generated method stub

return duAnhSang() && bonRua;

}

@Override

public String toString() {

return super.toString()+""+(bonRua?"co Bon rua":"khong co bon rua");

}

}

package tuan8;

public class TestQuanLyPhongHoc {

public static void main(String[] args) {

// TODO Auto-generated method stub

PhongHoc p1= new PhongLyThuyet("A01", "A", 100, 10, true);

PhongHoc p2= new PhongMayTinh("H31","H", 270, 15, 25);

PhongHoc p3= new PhongThiNghiem("H52","E", 45, 23, "IS", 11, false);

QuanLyPhongHoc qlPH = new QuanLyPhongHoc();

qlPH.them(p1);

qlPH.them(p2);

qlPH.them(p3);

System.out.println(qlPH);

System.out.println("sau khi sap xep dien tich la");

qlPH.sapXepTheoDienTichGiamDan();

System.out.println(qlPH);

System.out.println("sau khi xoa la");

System.out.println(qlPH);

qlPH.xoa(p2);

System.out.println("sau khi sap xep tang dan la");

qlPH.sapXepTangDanTheoDayNha();

System.out.println("qlPH");

System.out.print("Tong So Phong Hoc La ");

System.out.println( qlPH.tongSoPhongHoc());

System.out.println(qlPH);

System.out.println("Danh sach sau khi cap nhat la");

qlPH.capNhatPhongMayTinh("H31", 20);

System.out.println(qlPH);

}

}

package tuan8;

import java.util.ArrayList;

import java.util.Collections;

import java.util.Comparator;

import java.util.List;

public class QuanLyPhongHoc {

private List<PhongHoc>List;

public QuanLyPhongHoc() {

List = new ArrayList<>();

}

public boolean them(PhongHoc p) {

if(List.contains(p))

return false;

List.add(p);

return true;

}

public void sapXepTheoDienTichGiamDan () {

Collections.sort(List,new Comparator<PhongHoc>() {

@Override

public int compare(PhongHoc o1, PhongHoc o2) {

// TODO Auto-generated method stub

Double d1 =o1.dienTich;

Double d2 =o2.dienTich;

return -d1.compareTo(d2);

}

} );

}

public void xoa(PhongHoc p) {

List.remove(p);

}

public void xoa(String maPhong)

{

PhongHoc p = null;

for (PhongHoc phonghoc : List) {

if( phonghoc.maPhong.equalsIgnoreCase(maPhong)) {

p= phonghoc;

break;

}

}

if(p != null)

List.remove(p);

}

public void sapXepTangDanTheoDayNha () {

Collections.sort(List,new Comparator<PhongHoc>() {

@Override

public int compare(PhongHoc o1, PhongHoc o2) {

// TODO Auto-generated method stub

String d1 =o1.dayNha;

String d2 =o2.dayNha;

return d1.compareTo(d2);

}

} );

}

//public void sapXepTangDanTheoDSoBongDen () {

// Collections.sort(List,new Comparator<PhongHoc>() {

//

// @Override

// public int compare(PhongHoc o1, PhongHoc o2) {

// // TODO Auto-generated method stub

// int d1 =o1.soBongDen;

// int d2 =o2.soBongDen;

// return d1.compareTo(d2);

// }

// } );

//

//}

public int tongSoPhongHoc () {

return List.size();

}

public void capNhatPhongMayTinh(String maPhong, int soMayTinh) {

PhongMayTinh p=null;

for (PhongHoc phongHoc : List) {

if(phongHoc instanceof PhongMayTinh && phongHoc.maPhong.equals(maPhong))

p= (PhongMayTinh) phongHoc;

break;

}

if(p!=null)

p.setSoBongDen(soMayTinh);

}

@Override

public String toString() {

String s= " Danh Sach";

for (PhongHoc phonghoc : List) {

s+="\n"+phonghoc;

}

return s;

}}

A screenshot of a computer program

Description automatically generated

A diagram of a computer

Description automatically generated with medium confidence

A screenshot of a computer

Description automatically generated