|  |
| --- |
| **<**class**> DANHSACH** |
| - list: [] HINH |
| Constructor |
| + Nhap(): void |
| + Xuat(): void |
| +ThongKe():void |

|  |
| --- |
| **<**Superclass**> HINH** |
| # tenhinh: String |
| Constructor |
| + VIRTUAL Nhap(): void |
| + Xuat (): void |

|  |
| --- |
| **<subclass>** CHUNHAT |
| - A,B,C: double |
| + Nhap(): void |
| + Xuat(): void |
| + tinhChuVi():double |
| + tinhDienTich():double |

|  |
| --- |
| **<subclass>** TAMGIAC |
| - A,B,C: double |
| + Nhap(): void |
| + Xuat(): void |
| + tinhChuVi():double |
| + tinhDienTich():double |

|  |
| --- |
| **<subclass>** TRON |
| - R: double |
| + OVERRIDE Nhap(): void |
| + Xuat(): void |
| + tinhChuVi():double |
| + tinhDienTich():double |

////LỚP SUPER CLASS HINH/////////////////

**import** java.util.Scanner;

**public** **abstract** **class** HINH **implements** IO {

**protected** String tenhinh;

**public** String getTenhinh() {

**return** tenhinh;

}

**public** **abstract** **double** tinhChuVi();

**public** **abstract** **double** tinhDienTich();

**public** **void** setTenhinh(String tenhinh) {

**this**.tenhinh = tenhinh;

}

**public** HINH() {//hàm khởi tạo không đối

}

**public** HINH(String tenhinh) {//hàm khởi tạo có đối

**this**.tenhinh = tenhinh;

}

**public** HINH(HINH h) {//hàm khởi tạo sao chép

**this**.tenhinh = h.tenhinh;

}

**public** **void** Xuat()

{

System.***out***.println("Ten hinh:"+**this**.tenhinh);

}

**public** **void** Nhap()

{

System.***out***.print("Nhap Ten hinh:");

Scanner sc=**new** Scanner(System.***in***);

**this**.tenhinh=sc.nextLine();

}

}

// LỚP CON SUBCLASS TAMGIAC////////////

**import** java.util.Scanner;

**public** **class** TAMGIAC **extends** HINH **implements** IO{

**private** **double** A;

**private** **double** B;

**private** **double** C;

**public** **double** getA() {

**return** A;

}

**public** **void** setA(**double** a) {

A = a;

}

**public** **double** getB() {

**return** B;

}

**public** **void** setB(**double** b) {

B = b;

}

**public** **double** getC() {

**return** C;

}

**public** **void** setC(**double** c) {

C = c;

}

**public** TAMGIAC()

{

**super**();

}

**public** TAMGIAC(String tenhinh, **double** a, **double** b, **double** c) {

**super**(tenhinh);

**this**.A = a;

**this**.B = b;

**this**.C = c;

}

**public** **double** tinhChuVi()

{

**return** (A+B+C);

}

**public** **double** tinhDienTich()

{ **double** P=**this**.tinhChuVi()/2;

**return** Math.*sqrt*(P\*(P-A)\*(P-B)\*(P-C));

}

**public** **void** Nhap()

{

**super**.Nhap();

Scanner sc=**new** Scanner(System.***in***);

System.***out***.println("Nhap canh A:");

**this**.A=sc.nextDouble();

System.***out***.println("Nhap canh B:");

**this**.B=sc.nextDouble();

System.***out***.println("Nhap canh C:");

**this**.C=sc.nextDouble();

}

**public** **void** Xuat()

{

**super**.Xuat();

System.***out***.println("Canh A:"+**this**.A);

System.***out***.println("Canh B:"+**this**.B);

System.***out***.println("Canh C:"+**this**.C);

System.***out***.println("Chu vi:"+**this**.tinhChuVi());

System.***out***.println("Dien tich:"+**this**.tinhDienTich());

}

}

/////LỚP CON SUBCLASS TRON//////////

**import** java.util.Scanner;

**public** **class** TRON **extends** HINH **implements** IO {

**private** **double** R;

**public** **double** getR() {

**return** R;

}

**public** **void** setR(**double** r) {

R = r;

}

**public** TRON(String tenhinh, **double** r) {

**super**(tenhinh);

R = r;

}

**public** TRON() {

**super**();

}

**public** **double** tinhChuVi()

{

**return** (2\*Math.***PI***\***this**.R);

}

**public** **double** tinhDienTich()

{

**return** (Math.***PI***\***this**.R\***this**.R);

}

**public** **void** Nhap()

{

**super**.Nhap();

Scanner sc=**new** Scanner(System.***in***);

System.***out***.println("Nhap ban kinh R:");

**this**.R=sc.nextDouble();

}

**public** **void** Xuat()

{

**super**.Xuat();

System.***out***.println("Ban kinh R:"+**this**.R);

System.***out***.println("Chu vi:"+**this**.tinhChuVi());

System.***out***.println("Dien tich:"+**this**.tinhDienTich());

}

}

////// LỚP DANH SÁCH /////////////

**import** java.util.Scanner;

**public** **class** DANHSACH {

**private** HINH [] list;

**private** **int** N;

**public** DANHSACH() {

**this**.list=**new** HINH[10];

}

**public** DANHSACH(**int** n){

**this**.N=n;

**this**.list=**new** HINH[**this**.N];

}

**public** **void** Nhap() {

Scanner sc=**new** Scanner(System.***in***);

**for**(**int** i=0;i<**this**.N;i++) {

System.***out***.print("Nhap ky tu 'G' hoac 'g' cho tam giac va 'T' hoac 't' cho hinh tron");

**char** c=' ';

c=sc.nextLine().toLowerCase().charAt(0);

**switch** (c) {

**case** 'g': {

HINH tg=**new** TAMGIAC();

tg.Nhap();

list[i]=tg;

**break**;

}

**case** 't': {

HINH t=**new** TRON();

t.Nhap();

list[i]=t;

**break**;

}

**default**:

System.***out***.print("nhap sai ky tu: ");

}

}

}

**public** **void** Xuat()

{

**for**(**int** i=0;i<**this**.N;i++) {

**this**.list[i].Xuat();

}

}

**public** **void** thongke()

{

**int** counttamgiac=0;

**int** counttron=0;

**for**(**int** i=0;i<**this**.N;i++) {

**if**(**this**.list[i] **instanceof** TAMGIAC)

counttamgiac++;

**else** **if**(**this**.list[i] **instanceof** TRON)

counttron++;

}

System.***out***.println("So hinh tam giac co trong mang list la:"+counttamgiac);

System.***out***.println("So hinh tron co trong mang list la:"+counttron);

}

}

///////lớp BAITAP có chưa phương thức Main///

**public** **class** BAITAP {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

DANHSACH danhsach=**new** DANHSACH(5);

danhsach.Nhap();

danhsach.Xuat();

danhsach. thongke ();

}

}

/////sử dụng kiểu GENERIC<T> THAY CHO KIỂU MẢNG (HINH []) TRONG LỚP DANHSACH///

import java.util.ArrayList;

import java.util.Scanner;

public class SHAPELIST {

private ArrayList<HINH> list;

public SHAPELIST()

{

list=new ArrayList<HINH>();

}

public void Nhap()

{

HINH h;

char type=' ';

char c='y';

Scanner sc=new Scanner(System.in);

while(c=='y')

{

System.out.print("Nhap ky tu 'T/t' hinh tron và 'G/g' hinh tam giac");

type=sc.nextLine().toLowerCase().charAt(0);

switch (type) {

case 't': {

h=new TRON();

h.Nhap();

break;

}

case 'g': {

h=new TAMGIAC();

h.Nhap();

break;

}

default:

throw new IllegalArgumentException("Unexpected value: " + type);

}//END SWICTH

this.list.add(h);

System.out.print("Nhap ky tu 'Y/y' de tiep tuc va phim bat ky de thoat");

c=sc.nextLine().toLowerCase().charAt(0);

}//END while

}//end nhap

public void Xuat()

{

for(HINH h :list)

{

h.Xuat();

}

/\*for(int i=0;i<this.list.size();i++)

{

this.list.get(i).Xuat();

}\*/

}//end Xuat

public void ThongKe()

{

int sotamgiac=0;

int sohinhtron=0;

for(HINH h :list)

{

if(h instanceof TAMGIAC)

sotamgiac++;

else if(h instanceof TRON)

sohinhtron++;

}

System.out.println("So hinh tam giac co trong mang="+sotamgiac);

System.out.println("So hinh tron co trong mang="+sohinhtron);

}//end Xuat

}

// THAY ĐỔI NỘI DUNG MAIN///

///////lớp BAITAP có chưa phương thức Main///

**public** **class** BAITAP {

**public** **static** **void** main(String[] args) {

// **TODO** Auto-generated method stub

SHAPELIST danhsach=**new** SHAPELIST ();

danhsach.Nhap();

danhsach.Xuat();

danhsach.thongke();

}

}