LAB 7

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Task 1

```
package lab77;
class Circle {
private double radius;
private String color;
Circle(){
radius=1.0;
color="Red";
}
Circle(double radius,String color){
this.radius=radius;
this.color=color;
}
Circle(double radius){
this.radius=radius;
}
public double getRadius(){
return radius;
}
public String getColor(){
return color;
}
void setRadius(double radius){
this.radius=radius;
}
public void setColor(String color){
this.color=color;
}
public double getArea(){
final double pi=3.14d;
return pi*(radius*radius);
}
public String toString(){
return "[+Radius"+radius+"color"+color+"]";
}
}
class Cylinder extends Circle{
private double height;
Cylinder(){
height=1.0;
}
Cylinder(double radius){
super(radius);
}
Cylinder(double radius,String color){
super(radius,color);
}
```

```
public Cylinder(double height,double radius,String color){
super(radius,color);
this.height=height;
}
public double getHeight(){
return height;
}
public void setHeight(){
this.height=height;
}
double getVolume(){
final double pi=3.14;
return pi*getRadius()*getRadius()*height;
}
}
class Task1{
public static void main(String[]args){
Cylinder obj = new Cylinder();
System.out.println("Cylinder:"
+ " radius=" + obj.getRadius()
+ " height=" + obj.getHeight()
+ "area=" + obj.getArea()
+ " volume=" + obj.getVolume());
Cylinder obj2=new Cylinder(2.1,2.5,"blue");
System.out.print("Cylinder: "+"radius="+
obj2.getRadius()+"height="+obj2.getHeight()+
"Area"+obj2.getArea()+"volume"+obj2.getVolume());
}
}
```

output

```
Cylinder: radius=1.0 height=1.0area=3.14 volume=3.14
Cylinder: radius=2.5height=2.1Area19.625volume41.2125
```

Task 2

```
package lab77;
class Point2D{
private int x,y;
Point2D(){
this.x=0;
this.y=0;
}
Point2D(int x,int y){
this.x=x;
this.y=y;
}
public int getX() {
return x;
}
public void setX(int x) {
this.x = x;
}
public int getY() {
return y;
}
public void setY(int y) {
this.y = y;
}
public String toString() {
return "("+"X" +x+"Y :"+y+")";
}
}
class Point3D extends Point2D{
private int z;
Point3D(){
super();
z=0;
}
public Point3D(int z,int x,int y){
super(x,y);
```

```
this.z=z;
}
public String toString() {
return "("+"X :"+getX()+" Y :"+getY()+" z :"+z+")";
}
public int getZ() {
return z;
}
public void setZ(int z) {
this.z = z;
}
}
public class Task2 {
public static void main(String[]args) {
Point3D obj=new Point3D();
System.out.println(obj.toString());
Point3D obj2=new Point3D(3,5,9);
System.out.println(obj2.toString());
}
}
```

output

```
(X :0 Y :0 z :0)
(X :5 Y :9 z :3)
```

Task 3

```
package lab77;
class Person{
private String name,Adress;
Person(String name,String Adress){
this.name=name;
this.Adress=Adress;
}
public String getName() {
return name;
}
public String getAdress() {
return Adress;
}
public void setAdress(String adress) {
Adress = adress;
}
String tosString() {
return "("+"Name :"+name+"Address :"+Adress+")";
}
}
class Student extends Person{
private String program;
private int year;
private double fees;
Student(String name,String Adress,String program,int year,double fees){
super(name,Adress);
this.program=program;
this.year=year;
this.fees=fees;
}
public String getProgram() {
return program;
}
public void setProgram(String program) {
this.program = program;
}
public int getYear() {
return year;
}
public void setYear(int year) {
this.year = year;
}
public double getFees() {
return fees;
}
public void setFees(double fees) {
this.fees = fees;
}
public String toString() {
return "Student[Person [Name "+getName()+" ,Adress "+getAdress()+"]"+
"program " + program + " year" + year + " fees " + fees+"]" ;
}
```

```
}
class Staff extends Person{
private String School;
private double pay;
public Staff(String name,String Adress,String school, double pay) {
super(name,Adress);
School = school;
this.pay = pay;
}
public String getSchool() {
return School;
}
public void setSchool(String school) {
School = school;
}
public double getPay() {
return pay;
}
public void setPay(double pay) {
this.pay = pay;
}
public String toString() {
return "Staff[Person [Name "+getName()+", Adress"+
getAdress()+",School "+School+" ,Pay"+pay+"]";
}
}
public class Task3 {
public static void main (String[]args) {
Student obj=new Student("Aqmal","SubhanAllanh colony","BSCS",2025,3000.9);
System.out.println(obj.toString());
Staff obj1=new Staff("Shabir","Shate chok","public school",900000);
System.out.println(obj1.toString());
}
}
```

Output

```
Student[Person [Name Aqmal ,Adress SubhanAllanh colony]program BSCS  year2025fees  3000.9]
Staff[Person [Name Shabir, AdressShate chok,School public school ,Pay900000.0]
```

Task 4

```
package lab77;
class Animal{
String name,gender;
int age ;
public Animal(int age) {
this.age = age;
}
public Animal(int age, String name) {
this.age = age;
this.name = name;
}
public Animal(int age, String name, String gender) {
this.age = age;
this.name = name;
this.gender = gender;
}
void ProduceSound() {
System.out.print("Maoo");
}
public String toString() {
return "Animal [name =" + name + ", age =" + age + ", gender=" + gender +"]";
}
}
class Dog extends Animal{
Dog(String name,String gender,int age){
super(age ,name,gender );
}
void ProduceSound() {
System.out.println("SoundProduce Dog Bow bow");
}
}
class Frog extends Animal{
Frog(String name,String gender,int age){
super(age ,name,gender );
}
void ProduceSound() {
System.out.println("SoundProduce Frog Traw traw");
}
}
class Kitten extends Animal{
Kitten(String name,String gender,int age){
super(age ,name,gender );
}
void ProduceSound() {
System.out.println("SoundProduce Kitten woeoo waoo");
}
}
```

```
class Tomcate extends Animal{
Tomcate(String name,String gender,int age){
super(age ,name,gender );
}
void ProduceSound() {
System.out.println("SoundProduce tomcate Maooo maoo");
}
}
public class Task4 {
public static void main(String []args) {
Dog dog=new Dog("dog","male",8);
Frog frog=new Frog("frog","male",9);
Kitten kitten=new Kitten("kitten","male",6);
Tomcate tomecat=new Tomcate("tomecate","male",5);
Animal animal[]= {dog,frog,kitten,tomecat};
int sum=0;
double Average ;
for(Animal temp:animal) {
System.out.println(temp);
temp.ProduceSound();
sum+=temp.age;
}
System.out.print("Average of all Animal age is:"+(sum/animal.length));
}
}
```

Output

```
Animal [name =dog, age =8, gender=male]
SoundProduce Dog Bow bow
Animal [name =frog, age =9, gender=male]
SoundProduce Frog Traw  traw
Animal [name =kitten, age =6, gender=male]
SoundProduce Kitten woeoo waoo
Animal [name =tomecate, age =5, gender=male]
SoundProduce tomcate Maooo maoo
Average of all Animal age is:7
```

Task 5

```
package lab77;
class Alien {
private int health;
private String name;
public Alien(int health, String name) {
this.health = health;
this.name = name;
}
public int getHealth() {
return health;
}
public void setHealth(int health) {
this.health = health;
}
public String getName() {
return name;
}
public void setName(String name) {
this.name = name;
}
public int getDamage() {
return 0;
}
}
class SnakeAlien extends Alien {
public SnakeAlien(int health, String name) {
super(health, name);
}
public int getDamage() {
return 10;
}
}
class OgreAlien extends Alien {
public OgreAlien(int health, String name) {
super(health, name);
}
public int getDamage() {
return 6;
}
}
class MarshmallowManAlien extends Alien {
public MarshmallowManAlien(int health, String name) {
super(health, name);
}
public int getDamage() {
return 1;}
}
```

```
public class Task5 {
public static void main(String[] args) {
SnakeAlien obj=new SnakeAlien(0,"Snake");
OgreAlien obj1=new OgreAlien(1,"Ogre");
MarshmallowManAlien obj2=new MarshmallowManAlien(2,"Snake");
Alien alien[]= {obj,obj1,obj2};
int damage=0;
for(Alien temp:alien) {
damage+=temp.getDamage();
}
System.out.print("Damaged is :"+damage);
}
}
```

Output

```
Damaged is :17
```