

Προγραμματισμός Η/Υ

Παύλος Πέππας

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Κληρονομικότητα Κλάσεων

```
public class Vehicle
{
    String manufacturer;
    String model;
    int maximumSpeed;
    int price;
}
```

Κληρονομικότητα Κλάσεων

```
public class Vehicle
{
    String manufacturer;
    String model;
    int maximumSpeed;
    int price;
}
```



```
public class Car extends Vehicle
{
    static int numWheels = 4;
    int numDoors;
}
```

Κληρονομικότητα Κλάσεων

```
public class Vehicle  
{  
    String manufacturer;  
    String model;  
    int maximumSpeed;  
    int price;  
}
```



```
public class Car extends Vehicle  
{  
    static int numWheels = 4;  
    int numDoors;  
}
```

```
public class motorCycle extends Vehicle  
{  
    static int numWheels = 2;  
}
```

Παράκαμψη Μεθόδου

```
public class Point
{
    protected double x;
    protected double y;

    public Point(double xcor, double ycor)
    {
        x = xcor; y = ycor;
    }

    public double getX()
    { return x; }

    public double getY()
    { return y; }

    public String toString()
    {
        return "(" + x + "," + y + ")";
    }
}
```

Παράκαμψη Μεθόδου

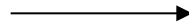
```
public class Point
{
    protected double x;
    protected double y;

    public Point(double xcor, double ycor)
    {
        x = xcor; y = ycor;
    }

    public double getX()
    { return x; }

    public double getY()
    { return y; }

    public String toString()
    {
        return "(" + x + "," + y + ")";
    }
}
```



```
public class Cycle extends Point
{
    static double Pi= 3.14;
    protected double radius;

    public Cycle(double x1, double y1, double r1)
    {
        super(x1,y1);
        radius= (r1>=0? r1: 0.0);
    }

    public double area()
    { return Pi*radius*radius; }
}
```

Παράκαμψη Μεθόδου

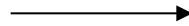
```
public class Point
{
    protected double x;
    protected double y;

    public Point(double xcor, double ycor)
    {
        x = xcor; y = ycor;
    }

    public double getX()
    { return x; }

    public double getY()
    { return y; }

    public String toString()
    {
        return "(" + x + "," + y + ")";
    }
}
```



```
public class Cycle extends Point
{
    static double Pi= 3.14;
    protected double radius;

    public Cycle(double x1, double y1, double r1)
    {
        super(x1,y1);
        radius= (r1>=0? r1: 0.0);
    }

    public double area()
    { return Pi*radius*radius; }

    public String toString()
    {
        return "x= " + x + ", y= " + y + ", r= " + radius;
    }
}
```

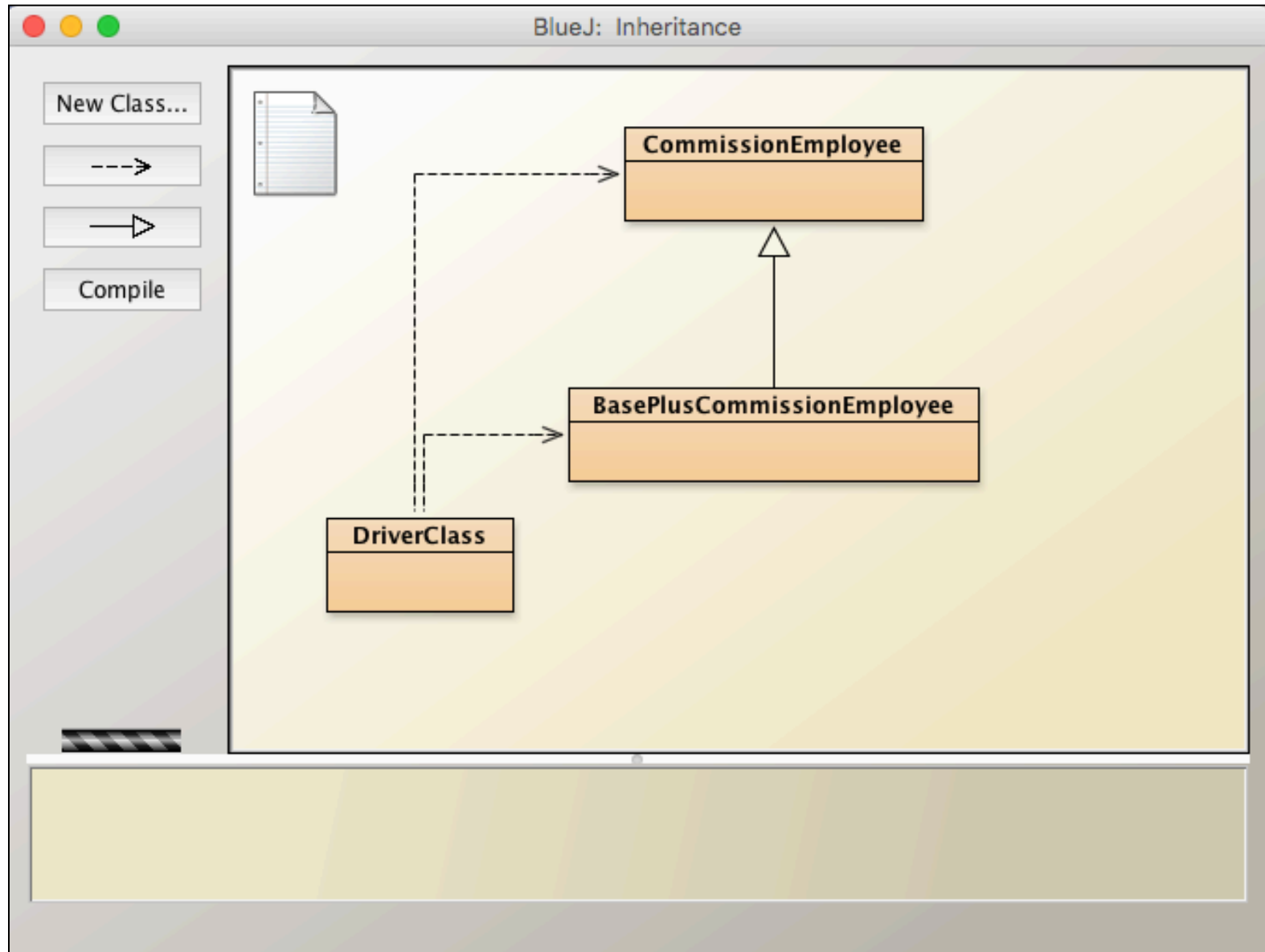
Παράκαμψη Μεθόδου

```
public class Point
{
    protected double x;
    protected double y;
    .
    .
    .
    public String toString()
    {
        return "(" + x + "," + y + ")";
    }
}
```

```
public class Cycle extends Point
{
    static double Pi= 3.14;
    protected double radius;
    .
    .
    .
    public String toString()
    {
        return "x= " + x + ", y= " + y + ", r= " + radius;
    }
}
```

```
public class ShowInheritance
{
    public static void main(String[] args)
    {
        Point p1 = new Point(50.5, 70.5);
        Cycle c1 = new Cycle(40.0, 50.0, 70.5);
        System.out.println("The point: " + p1.toString());
        System.out.println("The cycle: " + c1.toString());
    }
}
```


Παράδειγμα Κληρονομικότητας



Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(String firstName, String lastName,
        String socialSecurityNumber, double grossSales,
        double commissionRate)
    {
        this.firstName = firstName;
        this.lastName = lastName;
        this.socialSecurityNumber = socialSecurityNumber;
        this.grossSales = grossSales;
    }
}
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(String firstName, String lastName,
        String socialSecurityNumber, double grossSales,
        double commissionRate)
    {
        this.firstName = firstName;
        this.lastName = lastName;
        this.socialSecurityNumber = socialSecurityNumber;
        this.grossSales = grossSales;
    }

    public String getFirstName() {
        return firstName;
    }

    public String getLastName() {
        return lastName;
    }
}
```

```
public String getSocialSecurityNumber() {
    return socialSecurityNumber;
}

public double getGrossSales() {
    return grossSales;
}

public double getCommissionRate() {
    return commissionRate;
}
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(String firstName, String lastName,
        String socialSecurityNumber, double grossSales,
        double commissionRate)
    {
        this.firstName = firstName;
        this.lastName = lastName;
        this.socialSecurityNumber = socialSecurityNumber;
        this.grossSales = grossSales;
    }

    public String getFirstName() {
        return firstName;
    }

    public String getLastName() {
        return lastName;
    }
}
```

```
public String getSocialSecurityNumber() {
    return socialSecurityNumber;
}

public double getGrossSales() {
    return grossSales;
}

public double getCommissionRate() {
    return commissionRate;
}

public void setGrossSales(double grossSales) {
    this.grossSales = grossSales;
}

public void setCommissionRate(double commissionRate) {
    this.commissionRate = commissionRate;
}
}
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(String firstName, String lastName,
        String socialSecurityNumber, double grossSales,
        double commissionRate)
    {
        this.firstName = firstName;
        this.lastName = lastName;
        this.socialSecurityNumber = socialSecurityNumber;
        this.grossSales = grossSales;
    }

    public String getFirstName() {
        return firstName;
    }

    public String getLastName() {
        return lastName;
    }
}
```

```
public double earnings()
{
    return commissionRate*grossSales;
}

public String toString()
{
    return
        String.format("%s: %s %s\n%s: %s\n%s: %.2f\n%s: %.2f",
            "commission employee",getFirstName(),getLastName(),
            "social security number", getSocialSecurityNumber(),
            "gross sales", getGrossSales(),
            "commission rate",getCommissionRate());
}
}
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(. . .)
    public String getFirstName()
    public String getLastName()
    public String getSocialSecurityNumber()
    public double getGrossSales()
    public void setGrossSales(. . .)
    public void setCommissionRate(. . .)
    public double earnings()
    public String toString()
}
```

```
public class BasePlusCommissionEmployee extends CommissionEmployee
{
    double baseSalary;
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(. . .)
    public String getFirstName()
    public String getLastName()
    public String getSocialSecurityNumber()
    public double getGrossSales()
    public void setGrossSales(. . .)
    public void setCommissionRate(. . .)
    public double earnings()
    public String toString()
}
```

```
public class BasePlusCommissionEmployee extends CommissionEmployee
{
    double baseSalary;

    public BasePlusCommissionEmployee(String firstName,
                                     String lastName, String socialSecurityNumber,
                                     double grossSales, double commissionRate,
                                     double baseSalary)
    {
        super(firstName,lastName,socialSecurityNumber,grossSales,commissionRate);
        this.baseSalary = baseSalary;
    }
}
```


Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(. . .)
    public String getFirstName()
    public String getLastName()
    public String getSocialSecurityNumber()
    public double getGrossSales()
    public void setGrossSales(. . .)
    public void setCommissionRate(. . .)
    public double earnings()
    public String toString()
}
```

```
public class BasePlusCommissionEmployee extends CommissionEmployee
{
    double baseSalary;

    public BasePlusCommissionEmployee(String firstName,
                                     String lastName, String socialSecurityNumber,
                                     double grossSales, double commissionRate,
                                     double baseSalary)
    {
        super(firstName,lastName,socialSecurityNumber,grossSales,commissionRate);
        this.baseSalary = baseSalary;
    }

    public double getBaseSalary()
    {
        return baseSalary;
    }

    public void setBaseSalary(double baseSalary)
    {
        this.baseSalary = baseSalary;
    }
}
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(. . .)
    public String getFirstName()
    public String getLastName()
    public String getSocialSecurityNumber()
    public double getGrossSales()
    public void setGrossSales(. . .)
    public void setCommissionRate(. . .)
    public double earnings()
    public String toString()
}
```

```
public double earnings()
{
    return baseSalary + super.earnings();
}
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    public CommissionEmployee(. . .)
    public String getFirstName()
    public String getLastName()
    public String getSocialSecurityNumber()
    public double getGrossSales()
    public void setGrossSales(. . .)
    public void setCommissionRate(. . .)
    public double earnings()
```

```
public String toString() {
    return String.format(
        "%s: %s %s\n%s: %s\n%s: %.2f\n%s: %.2f",
        "commission employee", getFirstName(),
        getLastName(), "social security number",
        getSocialSecurityNumber(), "gross sales",
        getGrossSales(), "commission rate",
        getCommissionRate());
}
```

```
public double earnings()
{
    return baseSalary + super.earnings();
}

public String toString()
{
    return String.format(
        "%s: %s %s\n%s: %s\n%s: %.2f\n%s: %.2f\n%s: %.2f",
        "base-salaried commission employee", getFirstName(), getLastName(),
        "social security number", getSocialSecurityNumber(),
        "gross sales", getGrossSales(), "commission rate", getCommissionRate(),
        "base salary", baseSalary);
}
}
```

```
}
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;

    κατασκευαστής + μέθοδοι get
    public void setGrossSales(. . .)
    public void setCommissionRate(. . .)
    public double earnings()
    public String toString()
}
```

```
public class BasePlusCommissionEmployee
extends CommissionEmployee
{
    double baseSalary;

    κατασκευαστής + μέθοδος get
    public void setBaseSalary(. . .)
    public double earnings()
    public String toString()
}
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;
```

κατασκευαστής + μέθοδοι get

```
    public void setGrossSales(. . .)
    public void setCommissionRate(. . .)
    public double earnings()
    public String toString()
}
```

```
public class BasePlusCommissionEmployee
extends CommissionEmployee
```

```
{
    double baseSalary;
```

κατασκευαστής + μέθοδος get

```
    public void setBaseSalary(. . .)
    public double earnings()
    public String toString()
}
```

```
public class DriverClass
{
    public static void main(String[] args)
    {
        BasePlusCommissionEmployee employee =
            new BasePlusCommissionEmployee("Sue", "Jones", "222-22-2222",
                10000.0, 0.06, 70000.0);
```

Παράδειγμα Κληρονομικότητας

```
public class CommissionEmployee
{
    private String firstName;
    private String lastName;
    private String socialSecurityNumber;
    private double grossSales;
    private double commissionRate;
```

κατασκευαστής + μέθοδοι get

```
public void setGrossSales(. . .)
public void setCommissionRate(. . .)
public double earnings()
public String toString()
}
```

```
public class BasePlusCommissionEmployee
extends CommissionEmployee
```

```
{
    double baseSalary;
```

κατασκευαστής + μέθοδος get

```
public void setBaseSalary(. . .)
public double earnings()
public String toString()
}
```

```
public class DriverClass
{
    public static void main(String[] args)
    {
        BasePlusCommissionEmployee employee =
            new BasePlusCommissionEmployee("Sue", "Jones", "222-22-2222",
                10000.0, 0.06, 70000.0);

        System.out.println("Employee information obtained by get methods:");
        System.out.printf("\n%s %s\n", "First name is", employee.getFirstName());
        System.out.printf("%s %s\n", "Last name is", employee.getLastName());
        System.out.printf("%s %s\n", "Social security number is",
            employee.getSocialSecurityNumber());
        System.out.printf("%s %.2f\n", "Gross sales is", employee.getGrossSales());
        System.out.printf("%s %.2f\n", "Commission rate is",
            employee.getCommissionRate());
        employee.setGrossSales(5000);
        employee.setCommissionRate(0.1);

        System.out.printf("\n%s:\n\n%s\n",
            "Updated employee information obtained by toString",
            employee.toString());
    }
}
```

Παράδειγμα Κληρονομικότητας

Employee information obtained by get methods:

First name is Sue

Last name is Jones

Social security number is 222-22-2222

Gross sales is 10000.00

Commission rate is 0.06

Updated employee information obtained by toString:

base-salaried commission employee: Sue Jones

social security number: 222-22-2222

gross sales: 5000.00

commission rate: 0.10

base salary: 70000.00

```
public class BasePlusCommissionEmployee
extends CommissionEmployee
{
    double baseSalary;

    κατασκευαστής + μέθοδος get
    public void setBaseSalary(. . .)
    public double earnings()
    public String toString()
}
```

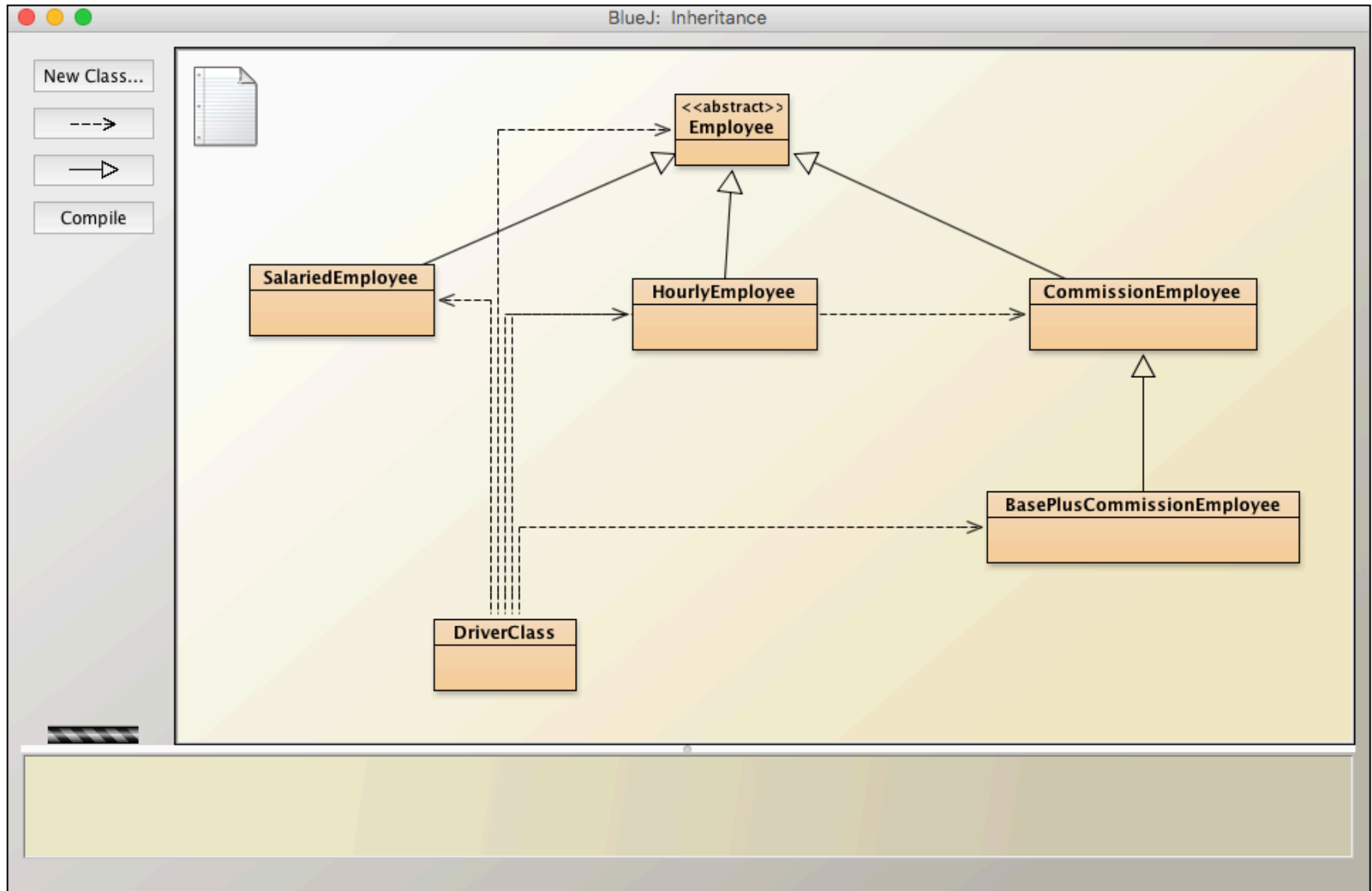
```
ing[] args)

Employee employee =
    new BasePlusCommissionEmployee("Sue", "Jones", "222-22-2222",
        10000.0, 0.06, 70000.0);

System.out.println("Employee information obtained by get methods:");
System.out.printf("%s\n", "First name is", employee.getFirstName());
System.out.printf("%s\n", "Last name is", employee.getLastName());
System.out.printf("%s\n", "Social security number is",
    employee.getSocialSecurityNumber());
System.out.printf("%s %.2f\n", "Gross sales is", employee.getGrossSales());
System.out.printf("%s %.2f\n", "Commission rate is",
    employee.getCommissionRate());
employee.setGrossSales(5000);
employee.setCommissionRate(0.1);

System.out.printf("\n%s:\n\n%s\n",
    "Updated employee information obtained by toString",
    employee.toString());
}
```

Κλάσεις Αφηρημένου Τύπου



Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;

    public Employee(String firstName, String lastName,
        String socialSecurityNumber) {
        this.firstName = firstName;
        this.lastName = lastName;
        this.socialSecurityNumber = socialSecurityNumber;
    }

    public String getFirstName() {
        return firstName;
    }

    public String getLastName() {
        return lastName;
    }

    public String getSocialSecurityNumber() {
        return socialSecurityNumber;
    }
}
```

```
public String toString() {
    return String.format(
        "%s %s\nsocial security number: %s",
        getFirstName(), getLastName(),
        getSocialSecurityNumber() );
}

public abstract double earnings();
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
public String toString()
public abstract double earnings();
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
    public String toString()
    public abstract double earnings();
}
```

```
public class SalariedEmployee extends Employee
{
    private double weeklySalary;

    public SalariedEmployee(String firstName, String lastName,
        String socialSecurityNumber, double weeklySalary)
    {
        super(firstName, lastName, socialSecurityNumber);
        this.weeklySalary = weeklySalary;
    }
}
```

```
    public void setWeeklySalary(double weeklySalary)
    {
        this.weeklySalary = weeklySalary;
    }
```

```
    public double getWeeklySalary() {
        return weeklySalary;
    }
```

```
    public double earnings()
    {
        return getWeeklySalary();
    }
```

```
    public String toString()
    {
        return String.format("salaried employee: %s\n%s: $%,.2f",
            super.toString(), "weekly salary", getWeeklySalary());
    }
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
public String toString()
public abstract double earnings();
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
public String toString()
public abstract double earnings();
}
```

```
public class HourlyEmployee extends Employee
{
    private double wage;
    private double hours;

    public HourlyEmployee(String firstName, String lastName,
String socialSecurityNumber, double wage, double hours) {
        super(firstName, lastName, socialSecurityNumber);
        this.wage = wage;
        this.hours = hours;
    }
}
```

```
public void setWage(double wage) { this.wage = wage; }

public double getWage() { return wage; }

public double getHours() { return hours; }

public void setHours(double hours) { this.hours = hours; }

public double earnings()
{
    if (getHours() <= 40)
        return getWage() * getHours();
    else
        return 40 * getWage() +
            (getHours() - 40) * getWage() * 1.5;
}

public String toString()
{
    return String.format(
        "hourly employee: %s\n%s: $%,.2f; %s: %%,.2f",
        super.toString(), "hourly wage", getWage(),
        "hours worked", getHours());
}
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
public String toString()
public abstract double earnings();
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
public String toString()
public abstract double earnings();
}
```

```
public class CommissionEmployee extends Employee
{
    private double grossSales; private double commissionRate;

    public CommissionEmployee(String firstName,
        String lastName, String socialSecurityNumber,
        double grossSales, double commissionRate) {
        super(firstName, lastName, socialSecurityNumber);
        this.grossSales = grossSales;
        this.commissionRate = commissionRate;
    }
}
```

```
public double getGrossSales() { return grossSales; }

public double getCommissionRate() { return commissionRate;}

public void setGrossSales(double grossSales) {
    this.grossSales = grossSales; }

public void setCommissionRate(double commissionRate) {
    this.commissionRate = commissionRate; }

public double earnings() {
    return commissionRate*grossSales; }

public String toString()
{
    return String.format("%s: %s\n%s: $%,.2f; %s: %.2f",
        "commission employee", super.toString(),
        "gross sales", getGrossSales(),
        "commission rate",getCommissionRate());
}
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
    public String toString()
    public abstract double earnings();
}
```

```
public class CommissionEmployee extends Employee
{
    private double grossSales;
    private double commissionRate;
```

Κατασκευαστής + μέθοδοι get και set

```
    public double earnings()
    public String toString()
}
```


Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
    public String toString()
    public abstract double earnings();
}
```

```
public class CommissionEmployee extends Employee
{
    private double grossSales;
    private double commissionRate;
```

Κατασκευαστής + μέθοδοι get και set

```
    public double earnings()
    public String toString()
}
```

```
public class BasePlusCommissionEmployee
extends CommissionEmployee {
    private double baseSalary;

    public BasePlusCommissionEmployee(String firstName,
        String lastName, String socialSecurityNumber, double grossSales,
        double commissionRate, double baseSalary)
    {
        super(firstName, lastName, socialSecurityNumber,
            grossSales,commissionRate);
        this.baseSalary = baseSalary;
    }

    public void setBaseSalary(double baseSalary)
    {
        this.baseSalary = baseSalary;
    }

    public double getBaseSalary()
    {
        return baseSalary;
    }
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;
```

Κατασκευαστής + μέθοδοι get και set

```
public String toString()
public abstract double earnings();
}
```

```
public class CommissionEmployee extends Employee
{
    private double grossSales;
    private double commissionRate;
```

Κατασκευαστής + μέθοδοι get και set

```
public double earnings()
public String toString()
}
```

```
public double earnings()
{
    return getBaseSalary() + super.earnings();
}
```

```
public String toString()
{
    return String.format("%s %s; %s: $%,.2f",
        "base-salaried", super.toString(),
        "base salary", baseSalary);
}
}
```

Κλάσεις Αφηρημένου Τύπου

```
public abstract class Employee
{
    private final String firstName;
    private final String lastName;
    private final String socialSecurityNumber;

    Κατασκευαστής + μέθοδοι get και set
    public String toString()
    public abstract double earnings();
}
```

```
public class SalariedEmployee
extends Employee
{
    private double weeklySalary;

    Κατασκευαστής + μέθοδοι get και set
    public double earnings()
    public String toString()
}
```

```
public class HourlyEmployee
extends Employee
{
    private double wage;
    private double hours;

    Κατασκευαστής + μέθοδοι get και set
    public double earnings()
    public String toString()
}
```

```
public class CommissionEmployee
extends Employee
{
    private double grossSales;
    private double commissionRate;

    Κατασκευαστής + μέθοδοι get και set
    public double earnings()
    public String toString()
}
```

```
public class BasePlusCommissionEmployee
extends CommissionEmployee
{
    private double baseSalary;

    Κατασκευαστής + μέθοδοι get και set
    public double earnings()
    public String toString()
}
```

Κλάσεις Αφηρημένου Τύπου

```
public class DriverClass
{
    public static void main(String[] args)
    {
        SalariedEmployee s_Emp = new
        SalariedEmployee("John", "Smith",
        "111-11-1111", 800.00);

        HourlyEmployee h_Emp = new
        HourlyEmployee("Karen", "Price",
        "222-22-2222", 16.75, 40);

        CommissionEmployee c_Emp = new
        CommissionEmployee("Sue", "Jones",
        "333-33-3333", 10000, .06);

        BasePlusCommissionEmployee b_Emp = new
        BasePlusCommissionEmployee("Bob", "Lewis",
        "444-44-4444", 5000, .04, 300);

        System.out.println("Employees processed individually:");

        System.out.printf("\n%s\n%s: $%,.2f\n\n", s_Emp,
        "earned", s_Emp.earnings());
```

```
        System.out.printf("%s\n%s: $%,.2f\n\n", h_Emp,
        "earned", h_Emp.earnings());

        System.out.printf("%s\n%s: $%,.2f\n\n", c_Emp,
        "earned", c_Emp.earnings());

        System.out.printf("%s\n%s: $%,.2f\n\n", b_Emp,
        "earned", b_Emp.earnings());

        Employee[] employees = new Employee[4];

        employees[0] = s_Emp;
        employees[1] = h_Emp;
        employees[2] = c_Emp;
        employees[3] = b_Emp;

        System.out.printf("Employees processed "+
        "polymorphically:\n\n");

        for (int j = 0; j < employees.length; j++) {
            System.out.printf("Employee %d is a %s\n", j,
            employees[j].getClass().getName());
        }
    }
}
```

Employees processed individually:

salaried employee: John Smith

social security number: 111-11-1111

weekly salary: \$800.00

earned: \$800.00

hourly employee: Karen Price

social security number: 222-22-2222

hourly wage: \$16.75; hours worked: 40.00

earned: \$670.00

commission employee: Sue Jones

social security number: 333-33-3333

gross sales: \$10,000.00; commission rate: 0.06

earned: \$600.00

base-salaried commission employee: Bob Lewis

social security number: 444-44-4444

gross sales: \$5,000.00; commission rate: 0.04; base salary: \$300.00

earned: \$500.00

Employees processed polymorphically:

Employee 0 is a SalariedEmployee

Employee 1 is a HourlyEmployee

Employee 2 is a CommissionEmployee

Employee 3 is a BasePlusCommissionEmployee

Ενθυλάκωση

	public	protected	χωρίς προσδιορισμό	private
Ίδια κλάση	✓	✓	✓	✓
Ίδιο πακέτο	✓	✓	✓	x
Εκτός πακέτου	✓	x	x	x
Υποκλάση ίδιου πακέτου	✓	✓	✓	x
Υποκλάση άλλου πακέτου	✓	✓	x	x