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JAVA LAB-2

INHERITANCE

1.Create a TeeShirt class for Toby's Tee Shirt Company. Fields include an order number, size, color, and price. Create set methods for the order number, size, and color and get methods for all four fields. The price is determined by the size: $22.99 for XXL or XXXL, and $19.99 for all other sizes. Create a subclass named CustomTee that descends from TeeShirt and includes a field to hold the slogan requested for the shirt, and include get and set methods this field. Write an application that creates two objects of each class, and demonstrate that all the methods work correctly. Save the files as **TeeShirt.java, CustomTee.java**, and **DemoTees.java**.

TeeShirt.java

```
package Tshirt;
import java.util.Scanner;
public class TeeShirt {
 int orderno;
 String size;
 String colour;
 double price;
 void get()
 {
 Scanner in = new Scanner(System.in);
 System.out.println("Enter order no: ");
 orderno = in.nextInt();
 System.out.println("Enter colour: ");
 colour = in.nextLine();
 in.nextLine();
 System.out.println("Enter size: ");
 size = in.nextLine();
 }
 void set()
 {
 if (size.equals("XXL") || size.equals("XXXL")) {
 price = 22.99;
 System.out.println("Price = " + price);
 }
 else
```

```
 {
 price = 19.99;
 System.out.println("Price = " + price);
 }
 }
}
```

CustomTee.java

```
package Tshirt;
import java.util.Scanner;
public class CustomTee extends TeeShirt{
 String slogan;
 void get()
 {
 Scanner in = new Scanner(System.in);
 System.out.println("Enter slogan:");
 slogan = in.nextLine();
 }
}
```

DemoTees.java

```
package Tshirt;
public class DemoTees {
 public static void main(String[] args){
 TeeShirt t = new TeeShirt();
 CustomTee c =new CustomTee();
 t.get();
 c.get();
 t.set();
 }
}
```

Output:

```
Enter order no:
123
Enter colour:
Red
Enter size:
XXL
Enter slogan:
Whats up
Price = 22.99
```

2.Create a class named Pizza with data fields for description (such as *sausage and onion*) and price. Include a constructor that requires arguments for both fields and a method to display the data. Create a subclass named DeliveryPizza that inherits from Pizza but adds a delivery fee and a delivery address. The description, price, and delivery address are required as arguments to the constructor. The delivery fee is $3 if the pizza ordered costs more than $15; otherwise it is $5. Write an application that instantiates at least two objects of each type, and display the values. Save the files as **Pizza.java**, **DeliveryPizza.java**, and **DemoPizzas.java**.

Pizza.java

```
package Pizza;
import java.util.Scanner;
public class Pizza {
 String description;
 double price;
 Pizzza()
 {
 Scanner in = new Scanner(System.in);
 System.out.println("Enter description:");
 description = in.nextLine();
 this.description = description;
 System.out.println("Enter price:");
 price = in.nextDouble();
 this.price = price;
 }
}
```

DeliveryPizza.java

```
package Pizza;
public class DeliveryPizza extends Pizzza{
 float dfee;
 String daddress;
 void DeliveryPizza(String d, double p)
 {
 if(price>15) {
 dfee = 3;
 System.out.println("Delivery fee = " + dfee);
 }
 else
 {
 dfee = 5;
 System.out.println("Delivery fee = " + dfee);
 }
```

```
 }
}
```

DemoPizzas.java

```
package Pizza;
public class DemoPizzas {
 public static void main(String[] args){
 DeliveryPizza d = new DeliveryPizza();
 d.DeliveryPizza("Pizza",50);
 }
}
```

Output:

```
Enter description:
Cheese, tomato
Enter price:
9
Delivery fee = 5.0

Process finished with exit code 0
```

```
Enter description:
Chicken, Sauce
Enter price:
18
Delivery fee = 3.0

Process finished with exit code 0
```

3.Develop a set of classes for a college to use in various student service and personnel applications. Classes you need to design include the following:

•• Person—A Person contains a first name, last name, street address, zip code, and phone number. The class also includes a method that sets each data field, using a series of dialog boxes and a display method that displays all of a Person's information on a single line at the command line on the screen.

•• CollegeEmployee—CollegeEmployee descends from Person. A CollegeEmployee also includes a Social Security number, an annual salary, and a department name, as well as methods that override the Person methods to accept and display all CollegeEmployee data.

•• Faculty—Faculty descends from CollegeEmployee. This class also includes a Boolean field that indicates whether the Faculty member is tenured, as well as methods that override the CollegeEmployee methods to accept and display this additional piece of information.

•• Student—Student descends from Person. In addition to the fields available in Person, a Student contains a major field of study and a grade point average as well as methods that override the Person methods to accept and display these additional facts.

Write an application named CollegeList that declares an array of four "regular" CollegeEmployees, three Faculty, and seven Students. Prompt the user to specify which type of person's data will be entered (C, F, or S), or allow the user to quit (Q). While the user chooses to continue (that is, does not quit), accept data entry for the appropriate type of Person. If the user attempts to enter data for more than four CollegeEmployees, three Faculty, or seven Students, display an error message. When the user quits, display a report on the screen

listing each group of Persons under the appropriate heading of "College Employees," "Faculty," or "Students." If the user has not entered data for one or more types of Persons during a session, display an appropriate message under the appropriate heading. Save the files as **Person.java**, **CollegeEmployee.java**, **Faculty.java**, **Student.java**, and **CollegeList.java**.

Person.java

```
package College;
import java.util.Scanner;
public class Person {
 String first, last;
 String add, zip;
 int phone;
 void set()
 {
 Scanner in = new Scanner(System.in);
 System.out.println("Enter first name:");
 first = in.nextLine();
 System.out.println("Enter last name:");
 last = in.nextLine();
 System.out.println("Enter address:");
 add = in.nextLine();
 System.out.println("Enter zipcode:");
 zip = in.nextLine();
 System.out.println("Enter phone number:");
 phone = in.nextInt();
 }
 void display()
 {
 System.out.println(first + "\t" + last + "\t" + add + "\t" + zip + "\t" +
phone);
 }
 }
```

CollegeEmployee.java

```
package College;
import java.util.Scanner;
public class CollegeEmployee extends Person{
 int ssn,salary;
 String department;
 void set() {
 Scanner in = new Scanner(System.in);
 System.out.println("Enter social security number:");
 ssn = in.nextInt();
 System.out.println("Enter salary:");
 salary = in.nextInt();
```

```
 System.out.println("Enter department:");
 department = in.nextLine();
 in.nextLine();
 }
 void display()
 {
 System.out.println(ssn + "\t" + salary + "\t" + department);
 }
}
```

Faculty.java

```
package College;
import java.util.Scanner;
public class Faculty extends CollegeEmployee{
 boolean tenured;
 void set()
 {
 Scanner in = new Scanner(System.in);
 System.out.println("Enter if the faculty is tenured:");
 tenured = in.nextBoolean();
 }
 void display()
 {
 System.out.println("The faculty is tenured: "+tenured);
 }
}
```

Student.java

```
package College;
import java.util.Scanner;
public class Student extends Person{
 String study;
 double gpa;
 void set() {
 Scanner in = new Scanner(System.in);
 System.out.println("Enter major field of study:");
 study = in.nextLine();
 System.out.println("Enter gpa:");
 gpa = in.nextDouble();
 }
 void display()
 {
 System.out.println(study + "\t" + gpa);
 }
}
```

CollegeList.java

```
package College;
```

```
import java.util.Scanner;
public class CollegeList {
 public static void main(String[] args) {
 Scanner in = new Scanner(System.in);
 CollegeEmployee[] emp = new CollegeEmployee[4];
 Faculty[] fac = new Faculty[3];
 Student[] stu = new Student[7];
 int countemp = 0, countfac = 0, countstudent = 0;
 char letter;
 String input;
 int x;
 System.out.println("Enter C, F or S to enter data for \n 1.College employee
\n 2.Faculty
\n 3.Student \n Enter Q to quit");
 input = in.next();
 letter = input.charAt(0);
 while (letter != 'Q')
 {
 if(letter == 'C' || letter == 'c')
 {
 if(countemp < 4)
 {
 CollegeEmployee c = new CollegeEmployee();
 c.set();
 emp[countemp] = c;
 ++countemp;
 }
 else
 System.out.println("More than 4 employee records entered");
 }
 else if(letter == 'F'|| letter == 'f')
 {
 if(countfac < 3)
 {
 Faculty f = new Faculty();
 f.set();
 fac[countfac] = f;
 ++countfac;
 }
 else
 System.out.println("More than 3 faculty records entered");
 }
 else if(letter == 'S'|| letter == 's')
 {
 if(countstudent < 7)
 {
 Student s = new Student();
 s.set();
```

```
 stu[countstudent] = s;
 ++countstudent;
 }
 else
 System.out.println("More than 7 student records entered");
 }
 System.out.println("Enter C, F or S to enter data for \n 1.College employee
\n
2.Faculty \n 3.Student \n Enter Q to quit");
 input = in.next();
 letter = input.charAt(0);
 }
 System.out.println("\nCollege Employees:");
 if(countemp == 0)
 System.out.println("No employees entered");
 else
 for(x = 0; x < countemp; ++x)
 emp[x].display();
 System.out.println("\nFaculty:");
 if(countfac == 0)
 System.out.println("No faculty entered");
 else
 for(x = 0; x < countfac; ++x)
 fac[x].display();
 System.out.println("\nStudents:");
 if(countstudent == 0)
 System.out.println("No students entered");
 else
 for(x = 0; x < countstudent; ++x)
 stu[x].display();
 }
}
```

Output:

```
Enter C, F or S to enter data for
 1.College employee
 2.Faculty
 3.Student
 Enter Q to quit
C
Enter social security number:
456
Enter salary:
43000
Enter department:
Computers
Enter C, F or S to enter data for
 1.College employee
 2.Faculty
 3.Student
 Enter Q to quit
C
Enter social security number:
156
Enter salary:
54000
Enter department:
Electronics
Enter C, F or S to enter data for
 1.College employee
 2.Faculty
 3.Student
 Enter Q to quit
```

```
Enter if the faculty is tenured:
TRUE
Enter C, F or S to enter data for
 1.College employee
 2.Faculty
 3.Student
 Enter Q to quit
F
Enter if the faculty is tenured:
TRUE
Enter C, F or S to enter data for
 1.College employee
 2.Faculty
 3.Student
 Enter Q to quit
S
Enter major field of study:
Computer Science
Enter gpa:
8.9
Enter C, F or S to enter data for
 1.College employee
 2.Faculty
 3.Student
 Enter Q to quit
S
```

```
S
Enter major field of study:
Finance
Enter gpa:
7.8
Enter C, F or S to enter data for
 1.College employee
 2.Faculty
 3.Student
 Enter Q to quit
Q

College Employees:
456 43000
156 54000

Faculty:
The faculty is tenured: true
The faculty is tenured: true

Students:
Computer Science    8.9
Finance 7.8

Process finished with exit code 0
```