

Pages 263-92 and Page 113 ***Java Programming A Comprehensive Introduction***

Section 1: Define / Answer

Inheritance- Inheritance is a mechanism wherein a new class is derived from an existing class. In [Java](#), classes may inherit or acquire the properties and methods of other classes.

A [class](#) derived from another class is called a subclass, whereas the class from which a subclass is derived is called a superclass. A subclass can have only one superclass, whereas a superclass may have one or more subclasses.

superclass- A superclass is a class that has been extended by another class. It allows the extending class to inherit its state and behaviors.

subclass- class that is derived from another class is called a *subclass* (also *derived class*, *extended class*, or *child class*)

extends- Extends mean that the class is an extension of another class and inherits all of its attributes, properties, and methods.

Task 1:**USE OBJECT ORIENTATED PROGRAM DESIGN TO SOLVE PROBLEM**

Update Assignment #6, Task 1.

Create a Parent SuperClass Student. Containing First Name, Last Name, DOB.

Create a subclass containing Street Address, and Zip Code

Create a subclass containing Student ID number, Major

The program should execute in way that student objects are created. Then create a menu where the user can print various portions of information about a given student.

Override the method for printing in each class to display the required print information.

Attach Snipping Photos Below

* Main Menu: *

* Enter # to run program or Quit *

* 1) Print Student Name *

| Student Name | Student ID | Point Total |
|---------------------|-------------------|--------------------|
|---------------------|-------------------|--------------------|

| | | |
|-----------------------------------|----------|--|
| * 2) Print Student Address | * | |
|-----------------------------------|----------|--|

| | | |
|------------------------------------|----------|--|
| * 3) Print all Student info | * | |
|------------------------------------|----------|--|

| | | |
|------------------|----------|--|
| * 4) Quit | * | |
|------------------|----------|--|

```

1  /*
2  * To change this license header, choose License Headers in Project Properties.
3  * To change this template file, choose Tools | Templates
4  * and open the template in the editor.
5  */
6
7  //github and bigdog
8  package javaapplication1;
9  import java.util.Scanner;
10
11  class Student{
12      String firstName, lastName, dob;
13
14      Student(String firstName, String lastName, String dob){
15          this.firstName = firstName;
16          this.lastName = lastName;
17          this.dob = dob;
18      }
19
20      void print(){
21          System.out.println("FirstName: " + firstName +
22              "\nLastName: " + lastName +
23              "\nDate of Birth: " + dob);
24      }
25
26
27  }
28
29  class Address extends Student{
30      String streetAddress, zipCode;
31
32      Address(String firstName, String lastName, String dob,
33          String streetAddress, String zipCode){
34          super(firstName, lastName, dob);
35          this.streetAddress = streetAddress;
36          this.zipCode = zipCode;
37      }
38
39      @Override
40      void print(){
41          System.out.println("StreetAddress: " + streetAddress +
42              "\nZipCode: " + zipCode);
43      }
44
45  }
46

```

```

47  class Info extends Address{
48      String studentID, major;
49
50      Info(String firstName, String lastName, String dob,
51          String streetAddress, String zipCode,
52          String studentID, String major){
53          super(firstName, lastName, dob, streetAddress, zipCode);
54          this.studentID = studentID;
55          this.major = major;
56      }
57
58      @Override
59      void print(){
60          System.out.println("FirstName: " + firstName +
61              "\nLastName: " + lastName +
62              "\nDate of Birth: " + dob +
63              "\nStreetAddress: " + streetAddress +
64              "\nZipCode: " + zipCode +
65              "\nStudentID: " + studentID +
66              "\nMajor: " + major);
67      }
68
69  }
70
71
72  public class JavaApplication2 {
73
74      public static void main(String[] args) {
75
76          Info[] ary = new Info[10];
77          ary[0] = new Info("Kachi", "Lau", "01081993", "Oakland", "94612", "10819338", "CS");
78          ary[1] = new Info("Jacky", "Chan", "07021992", "San Deigo", "94111", "10719922", "Math");
79          ary[2] = new Info("Tank", "Lam", "02021997", "San Franscio", "94512", "10325361", "CS");
80          ary[3] = new Info("Kitty", "Lu", "03031988", "Oakland", "12354", "12345678", "Physic");
81          ary[4] = new Info("Ken", "chang", "04041987", "SanFrancisco", "94512", "10232153", "CS");
82          ary[5] = new Info("Ryu", "Kawasaki", "12311993", "Oakland", "94612", "15123524", "CS");
83          ary[6] = new Info("Alex", "Taco", "07071996", "Oakland", "94612", "21231523", "Math");
84          ary[7] = new Info("Chicken", "Chicken", "01011991", "USA", "12325", "12314823", "CS");
85          ary[8] = new Info("Mc", "Donald", "02031995", "Oakland", "94612", "21353262", "CS");
86          ary[9] = new Info("FirstName", "LastName", "08081998", "Oakland", "94612", "12381234", "CS");
87
88          menu(ary);
89
90      }
91

```

```

93 public static void menu(Info[] ary){
94     try{
95         Scanner input = new Scanner(System.in);
96         int option;
97         String id;
98         System.out.println(
99             "\n*****" +
100             "\n*           Main Menus           *" +
101             "\n*1)Print Student Name           *" +
102             "\n*2)Print Student Address        *" +
103             "\n*3)Print all Student Info       *" +
104             "\n*4)Exit                         *" +
105             "\n*****\n");
106
107         do {
108             System.out.print("Please Enter Option: ");
109             option = input.nextInt();
110             switch(option){
111                 case 1:
112                     System.out.print("Please input Student ID: ");
113                     id = input.next();
114                     for(int i = 0; i < ary.length; i++) {
115                         if(ary[i].studentID.equals(id)){
116                             Student first = new Student(ary[i].firstName, ary[i].lastName, ary[i].dob);
117                             first.print();
118                         }
119                     }
120                     break;
121                 case 2:
122                     System.out.print("Please input Student ID: ");
123                     id = input.next();
124                     for(int i = 0; i < ary.length; i++) {
125                         if(ary[i].studentID.equals(id)){
126                             Address second = new Address(ary[i].firstName, ary[i].lastName,
127                                 ary[i].dob, ary[i].streetAddress, ary[i].zipCode);
128                             second.print();
129                         }
130                     }
131                     break;
132                 case 3:
133                     System.out.print("Please input Student ID: ");
134                     id = input.next();
135                     for(int i = 0; i < ary.length; i++) {
136                         if(ary[i].studentID.equals(id)){
137                             Info third = new Info(ary[i].firstName, ary[i].lastName,

```

CIS 36B – 10th Class / Lab Assignment – 10 Points-

| Student Name | Student ID | Point Total |
|--------------|------------|-------------|
|--------------|------------|-------------|

| | | |
|-----|---|--|
| 137 | ary[i].dob, ary[i].streetAddress, ary[i].zipCode, | |
| 138 | ary[i].studentID, ary[i].major); | |
| 139 | third.print(); | |
| 140 | } | |
| 141 | } | |
| 142 | break; | |
| 143 | | |
| 144 | case 4: | |
| 145 | System.out.println("You Exited the Menu."); | |
| 146 | break; | |
| 147 | default: | |
| 148 | System.out.println("Invalid Option"); | |
| 149 | | |
| 150 | } | |
| 151 | } while(option != 4); | |
| 152 | } catch (Exception e) { | |
| 153 | System.out.println("Invalid Input"); | |
| 154 | } | |
| 155 | } | |
| 156 | | |
| 157 | } | |
| 158 | | |

Output - JavaApplication1 (run) ☒

```
run:
*****
*           Main Menu           *
*1)Print Student Name           *
*2)Print Student Address        *
*3)Print all Student Info       *
*4)Exit                         *
*****+
Please Enter Option: 1
Please input Student ID: 10719922
FirstName: Jacky
LastName: Chan
Date of Birth: 07021992
Please Enter Option: 2
Please input Student ID: 10719922
StreetAddress: San Deigo
ZipCode: 94111
Please Enter Option: 3
Please input Student ID: 10719922
FirstName: Jacky
LastName: Chan
Date of Birth: 07021992
StreetAddress: San Deigo
ZipCode: 94111
StudentID: 10719922
Major: Math
Please Enter Option: 1
Please input Student ID: 10819338
FirstName: Kachi
LastName: Lau
Date of Birth: 01081993
Please Enter Option: 4
You Exited the Menu.
BUILD SUCCESSFUL (total time: 41 seconds)
```