**Interface and Inheritance**  
**Workshop 5**

**In this workshop, you’ll learn:**

* Inheritance
* Method overriding
* Super keyword
* Abstract class
* Polymorphism

**1. We have the design for Phone number:**

|  |
| --- |
| **PhoneNumber** |
| * int are * String number |
| + PhoneNumber()  + PhoneNumber(int a, String n);  + **void display();** |

|  |
| --- |
| **IntPhoneNumber** |
| * String countryCode |
| + IntPhoneNumber ()  + IntPhoneNumber (String cc, int a, String n);  + **void display();** |

**Implement the above classes and make your own main program to test all the above methods. The output of your program something look like:**

|  |
| --- |
| Enter list of phone numbers  -----------------------------------------  Type of phone number ? (1 – local phone, 2 – Inter phone number, 0 - exit): 1  Enter area code: 111  Enter number: 111111  Type of phone number ? (1 – local phone, 2 – Inter phone number, 0 - exit): 2  Enter country code: 22  Enter area code: 222  Enter number: 222222  Type of phone number ? (1 – local phone, 2 – Inter phone number, 0 - exit): 1  Enter area code: 333  Enter number: 333333  Type of phone number ? (1 – local phone, 2 – Inter phone number, 0 - exit): 2  Enter country code: 44  Enter area code: 444  Enter number: 444444  Type of phone number ? (1 – local phone, 2 – Inter phone number, 0 - exit): 0  List of phone number:  ----------------------------------------  111 – 111111  22 – 222 – 222222  333 – 333333  44 - 444 – 444444 |

**Note:** You can using an array of base class PhoneNumber object

**PhoneNumber phonelist[] = new PhoneNumber[1000];**

**2. We have the design for Staff:**

|  |
| --- |
| **Person** |
| - String name |
| + Person()  + Person(String n)  + **void display();**  **+ double getSalary();** |

|  |  |  |  |
| --- | --- | --- | --- |
| **Officer**   |  | | --- | | **Worker** | | - double hrs  - final double RATE = 5.5 | | + Worker ()  + Worker (String n, double hrs)  + **void display();**  **+ double getSalary();** | |
| - double bSalary |
| + Officer ()  + Officer (String n, double s)  + **void display();**  **+ double getSalary();** |

- Person.salary is an abstract method

- Worker and Officer are subclasses of Person and Worker.salary = bSalary \* rate

Implement the above classes and make your own main program to test all the above methods

Add the below code to your main function and run

Employee [] e = new Employee[10];

int n = 0, c = 0;

do{

System.out.println("Worker (1); Officer(2): Exit(0): ");

Scanner in = new Scanner(System.in);

c = in.nextInt();

if(c == 1){

//accept information of worker

System.out.print("Enter worker name: ");

String name = in.next();

System.out.print("Enter worker working hours: ");

int hrs = in.nextInt();

e[n] = new Worker(name, hrs);

n++;

}else if(c == 2){

//accept information of Officer

System.out.print("Enter Officer name: ");

String name = in.next();

System.out.print("Enter officer salary: ");

double salary = in.nextDouble();

e[n] = new Officer(name, salary);

n++;

}

}while(c != 0);

//print all objects of e

for(int i = 0; i < n; i++){

//print the instance of Worker only

if(e[i] instanceof Worker)

e[i].display();

}