Java OOPs – Polymorphism Assignments

Assignment 1: Calculator Overloading

```
package polymorphism;

public class Calculator {
    int add(int a, int b) {
        return a + b;
    }

    int add(int a, int b, int c) {
        return a + b + c;
    }

    double add(double a, double b) {
        return a + b;
    }

    public static void main(String[] args) {
        Calculator c = new Calculator();
        System.out.println(c.add(10, 20));
        System.out.println(c.add(10, 20, 30));
        System.out.println(c.add(5.5, 4.5));
    }
}
```

Output:

```
30
60
10.0
```

Assignment 2: Area Calculator

```
package polymorphism;

public class Area {
    int area(int side) {
        return side * side;
    }

    int area(int length, int breadth) {
        return length * breadth;
    }

    double area(double radius) {
        return 3.14 * radius * radius;
    }

    public static void main(String[] args) {
        Area a = new Area();
        System.out.println(a.area(5));
        System.out.println(a.area(4, 6));
        System.out.println(a.area(3.0));
    }
}
```

Output:

```
25
24
```

28.26

Assignment 3: Print Data

```
package polymorphism;

public class Printer {
    void print(int a) {
        System.out.println(a);
    }

    void print(String s) {
        System.out.println(s);
    }

    void print(int a, String s) {
        System.out.println(a + " " + s);
    }

    public static void main(String[] args) {
        Printer p = new Printer();
        p.print(10);
        p.print("Hello");
        p.print(5, "Java");
    }
}
```

Output:

```
10
Hello
5 Java
```

Assignment 4: Login System

```
package polymorphism;

public class Login {
    void login(String email) {
        System.out.println("Email login: " + email);
    }

    void login(String email, String password) {
        System.out.println("Email: " + email + ", Password: " + password);
    }

    public static void main(String[] args) {
        Login l = new Login();
        l.login("user@mail.com");
        l.login("admin@mail.com", "admin123");
    }
}
```

Output:

```
Email login: user@mail.com
Email: admin@mail.com, Password: admin123
```

Assignment 5: Payment Calculation

```
package polymorphism;
public class Payment {
```

```
    void pay(int amount) {
        System.out.println("Paid: " + amount);
    }

    void pay(int amount, String mode) {
        System.out.println("Paid: " + amount + " using " + mode);
    }

    public static void main(String[] args) {
        Payment p = new Payment();
        p.pay(500);
        p.pay(1000, "Card");
    }
}
```

Output:

```
Paid: 500
Paid: 1000 using Card
```

Assignment 6: Shape Drawing

```
package polymorphism;

class Shape {
    void draw() {
        System.out.println("Drawing Shape");
    }
}

class Circle extends Shape {
    void draw() {
        System.out.println("Drawing Circle");
    }
}

class Rectangle extends Shape {
    void draw() {
        System.out.println("Drawing Rectangle");
    }
}

public class ShapeDemo {
    public static void main(String[] args) {
        Shape s;
        s = new Circle();
        s.draw();
        s = new Rectangle();
        s.draw();
    }
}
```

Output:

```
Drawing Circle
Drawing Rectangle
```

Assignment 7: Bank Interest

```
package polymorphism;

class Bank {
    double getInterestRate() {
```

```
        return 5.0;
    }
}

class SBI extends Bank {
    double getInterestRate() {
        return 6.5;
    }
}

class HDFC extends Bank {
    double getInterestRate() {
        return 7.0;
    }
}

public class BankDemo {
    public static void main(String[] args) {
        Bank b;
        b = new SBI();
        System.out.println(b.getInterestRate());
        b = new HDFC();
        System.out.println(b.getInterestRate());
    }
}
```

Output:

```
6.5
7.0
```

Assignment 8: Notification System

```
package polymorphism;

class Notification {
    void send() {
        System.out.println("Sending Notification");
    }
}

class EmailNotification extends Notification {
    void send() {
        System.out.println("Sending Email");
    }
}

class SMSNotification extends Notification {
    void send() {
        System.out.println("Sending SMS");
    }
}

public class NotificationDemo {
    public static void main(String[] args) {
        Notification n;
        n = new EmailNotification();
        n.send();
        n = new SMSNotification();
        n.send();
    }
}
```

Output:

```
Sending Email
Sending SMS
```