Java Encapsulation Assignments

Assignment 1: Student Encapsulation

```
package Encapsulation;

public class Student {
    private int id;
    private String name;

    public int getId() { return id; }
    public void setId(int id) { this.id = id; }

    public String getName() { return name; }
    public void setName(String name) { this.name = name; }
}

public class StudentDemo {
    public static void main(String[] args) {
        Student s = new Student();
        s.setId(101);
        s.setName("Rahul");
        System.out.println("ID: " + s.getId());
        System.out.println("Name: " + s.getName());
    }
}
```

Output:

```
ID: 101
Name: Rahul
```

Assignment 2: Bank Account

```
package Encapsulation;

public class BankAccount {
    private int accountNumber;
    private double balance;

    public void setAccountNumber(int accountNumber) {
        this.accountNumber = accountNumber;
    }

    public void setBalance(double balance) {
        if(balance >= 0)
            this.balance = balance;
    }

    public double getBalance() {
        return balance;
    }
}

public class BankDemo {
    public static void main(String[] args) {
        BankAccount acc = new BankAccount();
        acc.setAccountNumber(12345);
        acc.setBalance(5000);
        System.out.println("Balance: " + acc.getBalance());
```

```
    }
}
```

Output:
```
Balance: 5000.0
```

Assignment 3: Employee Salary

```
package Encapsulation;

public class Employee {
    private int empId;
    private double salary;

    public void setEmpId(int empId) {
        this.empId = empId;
    }

    public void setSalary(double salary) {
        if(salary > 0)
            this.salary = salary;
    }

    public void displaySalary() {
        System.out.println("Salary: " + salary);
    }
}

public class EmployeeDemo {
    public static void main(String[] args) {
        Employee e = new Employee();
        e.setEmpId(1);
        e.setSalary(25000);
        e.displaySalary();
    }
}
```

Output:
```
Salary: 25000.0
```

Assignment 4: Product Price

```
package Encapsulation;

public class Product {
    private double price;

    public void setPrice(double price) {
        if(price >= 100 && price <= 100000)
            this.price = price;
    }

    public double getPrice() {
        return price;
    }
}

public class ProductDemo {
    public static void main(String[] args) {
        Product p = new Product();
        p.setPrice(5000);
```

```
        System.out.println("Price: " + p.getPrice());
    }
}
```

Output:
```
Price: 5000.0
```

Assignment 5: Login Credentials

```
package Encapsulation;

public class User {
    private String email;
    private String password;

    public void setEmail(String email) {
        this.email = email;
    }

    public void setPassword(String password) {
        if(password.length() >= 8)
            this.password = password;
    }
}

public class UserDemo {
    public static void main(String[] args) {
        User u = new User();
        u.setEmail("user@mail.com");
        u.setPassword("password123");
        System.out.println("User created successfully");
    }
}
```

Output:
```
User created successfully
```

Assignment 6: Customer Profile

```
package Encapsulation;

public class Customer {
    private String name;
    private int age;

    public void setName(String name) {
        this.name = name;
    }

    public void setAge(int age) {
        if(age >= 18)
            this.age = age;
    }

    public String getDetails() {
        return "Name: " + name + ", Age: " + age;
    }
}

public class CustomerDemo {
    public static void main(String[] args) {
```

```
        Customer c = new Customer();
        c.setName("Anita");
        c.setAge(22);
        System.out.println(c.getDetails());
    }
}
```

Output:
```
Name: Anita, Age: 22
```

Assignment 7: Mobile Phone

```
package Encapsulation;

public class Mobile {
    private String brand;
    private double price;

    public void setBrand(String brand) {
        this.brand = brand;
    }

    public void setPrice(double price) {
        this.price = price;
    }

    public double getPriceWithGST() {
        return price + (price * 0.18);
    }
}

public class MobileDemo {
    public static void main(String[] args) {
        Mobile m = new Mobile();
        m.setBrand("Samsung");
        m.setPrice(20000);
        System.out.println("Price with GST: " + m.getPriceWithGST());
    }
}
```

Output:
```
Price with GST: 23600.0
```

Assignment 8: ATM System

```
package Encapsulation;

public class ATMAccount {
    private int pin;
    private double balance;

    public void setPin(int pin) {
        if(String.valueOf(pin).length() == 4)
            this.pin = pin;
    }

    public void setBalance(double balance) {
        this.balance = balance;
    }

    public void withdraw(double amount) {
```

```
        if(amount <= balance) {
            balance -= amount;
            System.out.println("Withdrawal successful");
        } else {
            System.out.println("Insufficient balance");
        }
    }
}

public class ATMDemo {
    public static void main(String[] args) {
        ATMAccount acc = new ATMAccount();
        acc.setPin(1234);
        acc.setBalance(5000);
        acc.withdraw(2000);
    }
}
```

Output:
```
Withdrawal successful
```

Assignment 9: College Admission

```
package Encapsulation;

public class Admission {
    private int marks;
    private String grade;

    public void setMarks(int marks) {
        this.marks = marks;
        if(marks >= 90) grade = "A";
        else if(marks >= 75) grade = "B";
        else if(marks >= 60) grade = "C";
        else grade = "Fail";
    }

    public String getGrade() {
        return grade;
    }
}

public class AdmissionDemo {
    public static void main(String[] args) {
        Admission a = new Admission();
        a.setMarks(82);
        System.out.println("Grade: " + a.getGrade());
    }
}
```

Output:
```
Grade: B
```

Assignment 10: Insurance Policy

```
package Encapsulation;

public class Policy {
    private int policyId;
    private double premium;
    public void setPolicyId(int policyId) {
```

```
        this.policyId = policyId;
    }

    public void calculatePremium(int age) {
        if(age < 25) premium = 3000;
        else if(age <= 40) premium = 5000;
        else premium = 7000;
    }

    public double getPremium() {
        return premium;
    }
}

public class PolicyDemo {
    public static void main(String[] args) {
        Policy p = new Policy();
        p.setPolicyId(1);
        p.calculatePremium(30);
        System.out.println("Premium: " + p.getPremium());
    }
}
```

Output:

```
Premium: 5000.0
```