

Assignment no.7

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//Task no.1

```
public class Student{
    String name;
    String prog;
    public Student(String name,String prog){
        this.name = name;
        this.prog = prog;
    }
    public void updateName(String newName){
        this.name = newName;
    }
    public String accessName(){
        return this.name;
    }
    public void updateProgram(String newProg){
        this.prog = newProg;
    }
    public String accessProgram(){
        return this.prog;
    }
}
```

}

```
public class StudentTester{  
    public static void main(String[] args){  
        Student s1 = new Student("Harry", "CSE");  
        System.out.println(s1.name);  
        s1.updateName("Harry Potter");  
        System.out.println(s1.accessName());  
        System.out.println(s1.prog);  
        s1.updateProgram("CS");  
        String prog = s1.accessProgram();  
        System.out.println(prog);  
    }  
}
```

```
}
```

```
//Task no.2
```

```
public class Toy{
```

```
String name;  
int price;  
public Toy(String name, int price){  
    this.name = name;  
    this.price = price;  
    System.out.println("A new toy has been made!");  
}  
public void updatePrice(int newPrice){  
    this.price = newPrice;  
  
}  
public void showPrice(){  
    System.out.println("price:"+this.price+" Taka");  
}  
public void updateName(String newName){  
    System.out.println("Changing old name: "+name);  
    this.name = newName;  
    System.out.println("new name: "+name);  
}  
}
```

```
public class ToyTester{
    public static void main(String[] args){
        Toy t1 = new Toy("Car", 230);
        System.out.println("1=====");
        t1.updatePrice(250);
        System.out.println("2=====");
        System.out.println(t1.name);
        t1.showPrice();
        System.out.println("3=====");
        Toy t2 = new Toy("Robot", 450);
        System.out.println("4=====");
        t2.updateName("Autobot");
        System.out.println("5=====");
        System.out.println(t2.name);
        t2.showPrice();
    }
}
```

//Task no.3

```
public class Parcel{
    String name;
    int weight;
    double fee;
    String location;
    public Parcel(){
        this.name = name;
        this.weight = weight;
        this.fee = fee;
    }
    public Parcel(String name){
        this.name = name;
```

```
    this.weight = weight;
    this.fee = fee;
}
public Parcel(String name, int weight){
    this.name = name;
    this.weight = weight;
    this.fee = fee;
}
public void printDetails(){
    if(name == null){
        System.out.println("Set name first");
    }
    else{
        System.out.println("Name: "+name);
        System.out.println("Total Weight: "+weight);
        System.out.println("Total Fee: "+fee);
    }
}
public void calcFee(String location){
    this.location = location;
    if (location.equals("Dhanmondi")){
        this.fee = (weight * 20) + 50;
    }
    else{
        this.fee = (weight * 20);
    }
}
```



```
public void addWeight(int newWeight){
    this.weight = weight + newWeight;
    System.out.println("Updated Weight: "+weight);
}
}
```

```
public class ParcelDriver {
    public static void main(String[] args){
        Parcel p1 = new Parcel();
        p1.printDetails();
        p1.name = "Spongebob";
        p1.printDetails();
        System.out.println("1*****");
        Parcel p2 = new Parcel("Bob the Builder");
        p2.weight = 15;
        p2.calcFee("Gulshan");
        p2.printDetails();
    }
}
```

```
System.out.println("2*****");
p2.addWeight(25);
p2.calcFee("Banani");
p2.printDetails();
System.out.println("3*****");
Parcel p3 = new Parcel("Dora the Explorer", 10);
p3.addWeight(15);
p3.calcFee("Dhanmondi");
p3.printDetails();
}
}
```

//Task no.4

```
public class Shape2D{
    String tri;
    int length;
    int breadth;
    int base;
    public Shape2D(int length){
        this.length = length;
        System.out.println("A Square has been created with
length: "+length);
    }
    public void area(){
        if (breadth == 0 && base == 0 && tri == null) {
            double area = length*length;
            System.out.println("The area of the Square is: "+area);
        }
        else if(tri != null && base == 0){
            double area = 0.5*length*breadth;
            System.out.println("The area of the Triangle is:
"+area);
```

```

    }
    else if(base != 0){
        double s = (length+breadth+base)/2;
        double area = Math.sqrt(s*(s - length)*(s - breadth)*(s -
base));
        System.out.println("The area of the Triangle is: " +
area);
    }
    else{
        double area = length*breadth;
        System.out.println("The area of the Rectangle is:
"+area);
    }
}

public Shape2D(int length,int breadth){
    this.length = length;
    this.breadth = breadth;
    System.out.println("A Rectangle has been created with
length: "+length+" and breadth: "+breadth);
}

public Shape2D(int length,int breadth,String tri){
    this.length = length;
    this.breadth = breadth;
    this.tri = tri;
    System.out.println("A "+tri+" has been created with
height: "+length+" and base: "+breadth);
}

```

```
public Shape2D(int length,int breadth,int base){  
    this.length = length;  
    this.breadth = breadth;  
    this.base = base;  
    System.out.println("A Triangle has been created with  
the following sides: "+length+", "+breadth+", "+base);  
}  
}
```

```
public class Shape2DTester {  
    public static void main(String[] args) {  
        Shape2D sq = new Shape2D(5);  
        System.out.println("-----1-----");  
        sq.area();  
        System.out.println("-----2-----");  
    }  
}
```

```
Shape2D rectangle = new Shape2D(5,6);
System.out.println("-----3-----");
rectangle.area();
System.out.println("-----4-----");
Shape2D tri1 = new Shape2D(5,6,"Triangle");
System.out.println("-----5-----");
tri1.area();
System.out.println("-----6-----");
Shape2D tri2 = new Shape2D(5,6,7);
System.out.println("-----7-----");
tri2.area();
System.out.println("-----8-----");
}
}
```

//Task no.5

```
public class Book{
    String bookName;
    String author;
    String year;
    int price;
    public Book(String bookName){
        this.bookName = bookName;
    }
    public Book(String year,String author){
        this.author = author;
        this.year = year;
    }
    public Book(String bookName,String author,int price){
        this.bookName = bookName;
        this.author = author;
        this.price = price;
    }
    public void displayDetails(){
        System.out.print("Title: ");
```

```
    if(bookName != null){
        System.out.print(bookName);
    }
    if(year != null){
        System.out.print(year);
    }
    if(author != null){
        System.out.print(", Author: "+author);
    }
    if (price != 0) {
        System.out.print(", Price: " + price);
    }
    System.out.println();
}
public void setDetails(int newPrice){
    this.price = newPrice;
}
public void setDetails(String newAuthor,int newPrice){
    this.author = newAuthor;
    this.price = newPrice;
}
}
```



```

public class BookTester {
    public static void main(String[] args) {
        System.out.println("< -----1----->");
        Book b1 = new Book("The Alchemist");
        b1.displayDetails();
        System.out.println("< -----2----->");
        Book b2 = new Book("1984", "George Orwell");
        b2.displayDetails();
        System.out.println("< -----3----->");
        Book b3 = new Book("To Kill a Mockingbird", "Harper
Lee", 300);
        b3.displayDetails();
        System.out.println("< -----4----->");
        b1.setDetails(250);
        b1.displayDetails();
        System.out.println("< -----5----->");
        b2.setDetails("Orwell", 350);
        b2.displayDetails();
    }
}

```

//Task no.6

```
public class Product{  
    String name;  
    double price;  
    int quantity;  
    boolean available;  
    public Product() {  
        this.name = "Unknown";
```

```
this.price = 0.0;
this.quantity = 0;
this.available = false;
}
public Product(String name,double price){
    this.name = name;
    this.price = price;
}
public void setQuantity(int quantity){
    this.quantity = quantity;
    this.available = (quantity > 0);
}
public double getPrice(){
    return this.price;
}
public int getQuantity(){
    return this.quantity;
}
public void displayInfo(){
    System.out.println("Product Name: "+name);
    System.out.println("Price: $" +price);
}
public void displayInfo(boolean showQuantity){
    System.out.println("Product Name: "+name);
    System.out.println("Price: $" +price);
    if (showQuantity){
        System.out.println("Quantity: "+quantity);
    }
}
```

```
}  
}  
}
```

```
public class ProductTester{  
    public static void main(String[] args) {  
        System.out.println("< -----1----->");  
        Product product1 = new Product();  
        product1.displayInfo();  
        System.out.println();  
        System.out.println("< -----2----->");  
        Product product2 = new Product("Laptop", 1200.00);  
        product2.setQuantity(10);  
        product2.displayInfo(true);  
        System.out.println("< -----3----->");  
        System.out.println("Retrieved Price: $" +  
product2.getPrice());  
    }  
}
```

```
        System.out.println("Retrieved Quantity: " +  
product2.getQuantity());  
    }  
}
```

//Task no.7

```
public class Student{
    int id;
    double cgpa;
    String[] courses;
    int courseCount;
    public Student(int id){
        this.id = id;
        this.cgpa = 0.0;
        this.courses = new String[4];
        this.courseCount = 0;
    }
    public Student(int id,double cgpa){
        this.id = id;
        this.cgpa = cgpa;
        this.courses = new String[4];
        this.courseCount = 0;
    }
    public void setCG(double cgpa){
        this.cgpa = cgpa;
    }
    public void setID(int id){
        this.id = id;
    }
    public void addCourse(String course){
        if(cgpa == 0.0){
            System.out.println("Failed to add " + course);
            System.out.println("Set CG first");
        }
    }
}
```

```

        return;
    }
    if(courseCount >= 4){
        System.out.println("Failed to add " + course);
        System.out.println("Maximum 4 courses allowed.");
        return;
    }
    if(cgpa < 3.0 && courseCount >= 3){
        System.out.println("Failed to add " + course);
        System.out.println("CG is low. Can't add more than 3
courses.");
        return;
    }
    courses[courseCount] = course;
    courseCount++;
}
public void addCourse(String[] courseList){
    for(int i=0;i<courseList.length;i++){
        addCourse(courseList[i]);
    }
}
public void rmAllCourse(){
    for(int i=0;i<4;i++){
        courses[i] = null;
    }
    courseCount = 0;
}

```

```
public void showAdvisee(){
    System.out.println("Student ID: "+id+", CGPA: "+cgpa);
    if(courseCount == 0){
        System.out.println("No courses added.");
    }
    else{
        System.out.println("Added courses are:");
        for(int i=0;i<courseCount;i++){
            System.out.print(courses[i] + " ");
        }
        System.out.println();
    }
}
}
```

```
public class StudentDriver {
```



```
public static void main(String[] args){
    System.out.println("-----");
    Student student1 = new Student(12345678);
    student1.addCourse("CSE110");
    student1.setCG(2.5);
    student1.addCourse("CSE110");
    student1.addCourse("ENG101");
    student1.showAdvisee();
    System.out.println("-----");
    student1.rmAllCourse();
    student1.showAdvisee();
    System.out.println("-----");
    student1.setID(54652365);
    String[] courses = {"SOC101","CSE111","ENG102"};
    student1.addCourse(courses);
    student1.showAdvisee();
    System.out.println("-----");
    student1.addCourse("CSE230");
    student1.showAdvisee();
    System.out.println("-----");
    Student student2 = new Student(975738383,3.7);
    String[] courses2 =
{"CSE220","PHY112","MAT120","BUS101","CHN101"};
    student2.addCourse(courses2);
    student2.showAdvisee();
}
}
```

//Task no.8

```
public class ABCServer{  
    String serverName;  
    int memberCapacity;  
    String[] members;  
    String[] roles;  
    int totalMembers;  
    public ABCServer(){
```

```
this.serverName = "Default";
this.memberCapacity = 10;
this.members = new String[10];
this.roles = new String[10];
this.totalMembers = 0;
}
public ABCServer(String serverName,int
memberCapacity){
    this.serverName = serverName;
    this.memberCapacity = memberCapacity;
    this.members = new String[memberCapacity];
    this.roles = new String[memberCapacity];
    this.totalMembers = 0;
}
public void addMembers(String memberName){
    if(totalMembers < memberCapacity){
        members[totalMembers] = memberName;
        roles[totalMembers] = "Rising Hero";
        totalMembers++;
        System.out.println("Rising Hero is added.");
    }
    else{
        System.out.println("Sorry, maximum capacity
exceeded!");
    }
}
```

```

public void addMembers(String memberName,String
role){
    if(totalMembers < memberCapacity){
        members[totalMembers] = memberName;
        roles[totalMembers] = role;
        totalMembers++;
        System.out.println(role+" is added.");
    }
    else{
        System.out.println("Sorry, maximum capacity
exceeded!");
    }
}

public void details(){
    System.out.println("Server Name: "+serverName);
    System.out.println("Member Capacity:
"+memberCapacity);
    System.out.println("Total Members: "+totalMembers);
    System.out.println("Members:");
    if(totalMembers == 0){
        System.out.println();
    }
    else{
        for(int i=0;i<totalMembers;i++){
            System.out.println("Name:Role -->
"+members[i]+":"+roles[i]);
        }
    }
}

```

```
}  
}  
}
```

```
public class ABCServerTester{  
    public static void main (String args []){  
        ABCServer server1 = new ABCServer();  
        server1.details();  
        System.out.println("-----");  
        ABCServer server2 = new ABCServer("Heroes  
Reborn",6);  
        server2.details();  
        System.out.println("-----");  
        server2.addMembers("Edward");  
        server2.addMembers("William");
```

```
System.out.println("-----");
server2.details();
System.out.println("-----");
server2.addMembers("John", "Hero's Mentor");
server2.addMembers("Albert", "Thunderstrike");
server2.addMembers("Max", "Radiant Avenger");
System.out.println("-----");
server2.details();
System.out.println("-----");
server2.addMembers("Daniel");
server2.addMembers("Donal", "Valor Knight");
System.out.println("-----");
server2.details();
}
}
```