Lab04

Name: Tet Davann

ID: IDTB080023

✓ Lab04.1

```
package Week4;

import java.util.ArrayList;
import java.util.Scanner;
import java.util.concurrent.atomic.AtomicInteger;

class Student{
	int id;
	String name;
	int age;
	public Student(int id,String name,int age) {
		this.id=id;
		this.name=name;
		this.age=age;
	}
}
public class Lab04_1 {

	public static void main(String[] args) {
		ArrayList<Student> list=new ArrayList<Student>();
		Scanner sc=new Scanner(System.in);
		char ch;
		int u=1;
		do {
			System.out.println("Student #"+u+":");
			int id;
			String name;
			int age;
			System.out.print("ID: ");
			id=sc.nextInt();
			System.out.print("Name :");
			sc.nextLine();
			name=sc.nextLine();
			System.out.print("Age :");
			age=sc.nextInt();
			list.add(new Student(id,name,age));
			System.out.print("Do you want to add more (y/n)?:");
			ch=sc.next().charAt(0);
			System.out.println("");
			u++;
		}while(ch=='y'||ch=='Y');
		System.out.println("================================================");
		System.out.println("| No\t| ID\t| Name\t\t\t| Age\t|");
		System.out.println("================================================");
```

```
                AtomicInteger k=new AtomicInteger();
                list.forEach(e->{
                        System.out.println("|"+(k.get()+1)+"\t|"+e.id+"\t|"+e.name+"\t\t|"+e.age+"\t|");

                        k.set(k.get()+1);
                });
                System.out.println("================================================");

        }

}
```

```
<terminated> Lab04_1 [Java Application] C:\Program Files\Java\jdk-19.0.1\
Student #1:
ID: 1001
Name :Tet Davann
Age :24
Do you want to add more (y/n)?:y

Student #2:
ID: 1002
Name :Spider Man
Age :45
Do you want to add more (y/n)?:n

================================================
| No    | ID    | Name                  | Age   |
================================================
|1      |1001   |Tet Davann             |24     |
|2      |1002   |Spider Man             |45     |
================================================
```

✓ Lab04.2

```
package Week4;


import java.util.Scanner;

class StudentManagement{
        int id;
        String name;
        int age;
        public StudentManagement(int id,String name,int age) {
                this.id=id;
                this.name=name;
                this.age=age;
        }

}
public class Lab04_2 {
        private static Scanner sc =new Scanner(System.in);
        private static StudentManagement[] student =new StudentManagement[50];
```

```
private static int i=0;
private static void menu(){
	System.out.println("====== Menu ======");
	System.out.println("1. View all students");
	System.out.println("2. Add a new student");
	System.out.println("3. Delete a student");
	System.out.println("4. Quit");
	System.out.print("Enter:");
	int index=sc.nextInt();
	switch(index) {
		case 1->ListStudent();
		case 2->createStudent();
		case 3->delete();
		case 4->System.out.println("Exited");
		default->menu();
	}

}
private static void createStudent() {
	System.out.println("Student #"+(i+1)+":");
	System.out.print("ID :");
	int id=sc.nextInt();
	System.out.print("Name :");
	sc.nextLine();
	String name=sc.nextLine();
	System.out.print("Age :");
	int age=sc.nextInt();
	student[i]=new StudentManagement(id,name,age);
	i++;
	System.out.println();
	menu();
}
private static void ListStudent() {
	System.out.println("================================================");
	System.out.println("| No\t| ID\t| Name\t\t\t| Age\t|");
	System.out.println("================================================");
	for(int j=0;j<i;j++) {

System.out.println("|"+(j+1)+"\t|"+student[j].id+"\t|"+student[j].name+"\t\t|"+student[j].age+"\t|");
	}
	System.out.println("================================================\n\n");
	menu();
}
private static void delete() {
	System.out.println("==== Delete a student ====");
	boolean b;
	do {
		System.out.print("Input student ID:");
		int id=sc.nextInt();
```

```
                        b=false;
                        for(int k=0;k<i;k++) {
                                if(k==i) {break;}
                                if(student[k].id==id) {
                                        b=true;
                                }
                                if(b) {
                                        student[k]=student[k+1];
                                }
                        }
                        if(!b) {
                                System.out.println("Student is not found. Try again");
                        }else if(b) {
                                i=i-1;
                        }
                }while(!b);
                menu();
        }
        public static void main(String[] args) {
                // TODO Auto-generated method stub
                menu();
        }

}
```

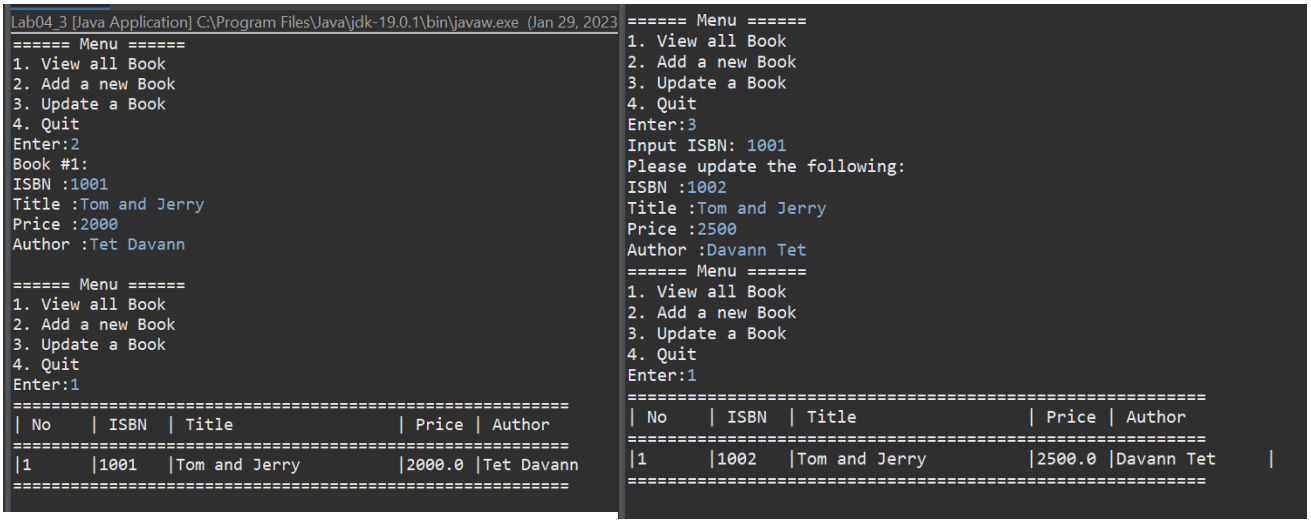
```
Lab04_2 [Java Application] C:\Program Files\Java\jdk-19.0.1\bin\javaw.exe
====== Menu ======
1. View all students
2. Add a new student
3. Delete a student
4. Quit
Enter:2
Student #1:
ID :1001
Name :Tet Davann
Age :34

====== Menu ======
1. View all students
2. Add a new student
3. Delete a student
4. Quit
Enter:1
================================================
| No    | ID    | Name                  | Age   |
================================================
|1      |1001   |Tet Davann             |34     |
================================================


====== Menu ======
1. View all students
2. Add a new student
3. Delete a student
4. Quit
Enter:3
==== Delete a student ====
Input student ID:1003
```

✓ Lab04.3

```
package Week4;


import java.util.Scanner;

class Book{
	int isbn;
	String title;
	double price;
	String author;
	public Book(int isbn,String title,double price,String author) {
		this.isbn=isbn;
		this.title=title;
		this.price=price;
		this.author=author;
	}

}
public class Lab04_3 {
	private static Scanner sc =new Scanner(System.in);
	private static Book[] book =new Book[50];
	private static int i=0;
	private static void menu(){
		System.out.println("====== Menu ======");
		System.out.println("1. View all Book");
		System.out.println("2. Add a new Book");
		System.out.println("3. Update a Book");
		System.out.println("4. Quit");
		System.out.print("Enter:");
		int index=sc.nextInt();
		switch(index) {
			case 1->ListBook();
			case 2->createBook();
			case 3->update();
			case 4->System.out.println("Exited");
			default->menu();
		}

	}
	private static void createBook() {
		System.out.println("Book #"+(i+1)+":");
		System.out.print("ISBN :");
		int isbn=sc.nextInt();
		System.out.print("Title :");
		sc.nextLine();
		String title=sc.nextLine();
		System.out.print("Price :");
		double price=sc.nextInt();
```

```
		System.out.print("Author :");
		sc.nextLine();
		String author=sc.nextLine();
		book[i]=new Book(isbn,title,price,author);
		i++;
		System.out.println();
		menu();
	}
	private static void ListBook() {
		System.out.println("============================================================");
		System.out.println("| No\t| ISBN\t| Title\t\t\t| Price\t| Author");
		System.out.println("============================================================");
		for(int j=0;j<i;j++) {

	System.out.println("|"+(j+1)+"\t|"+book[j].isbn+"\t|"+book[j].title+"\t\t|"+book[j].price+"\t|"+book[j].a
uthor+"\t|");
		}

	System.out.println("============================================================\n\n");
		menu();
	}
	private static void update() {

		boolean b;
		do {
			b=false;
			System.out.print("Input ISBN: ");
			int isbn=sc.nextInt();
			for(int k=0;k<i;k++) {
				if(isbn==book[k].isbn) {
					b=true;
				}
			}
			if(!b) {
				System.out.println("Book is not found. Try again");
			}else {
				System.out.println("Please update the following:");
				System.out.print("ISBN :");
				int isbns=sc.nextInt();
				System.out.print("Title :");
				sc.nextLine();
				String title=sc.nextLine();
				System.out.print("Price :");
				double price=sc.nextInt();
				System.out.print("Author :");
				sc.nextLine();
				String author=sc.nextLine();
				for(int j=0;j<i;j++) {
					if(isbn==book[j].isbn) {
```

```
                                        book[j].isbn=isbns;
                                        book[j].title=title;
                                        book[j].price=price;
                                        book[j].author=author;
                                    }
                                }
                            }
                        }while(!b);
                        menu();
                }
                public static void main(String[] args) {
                        // TODO Auto-generated method stub
                        menu();
                }

}
```

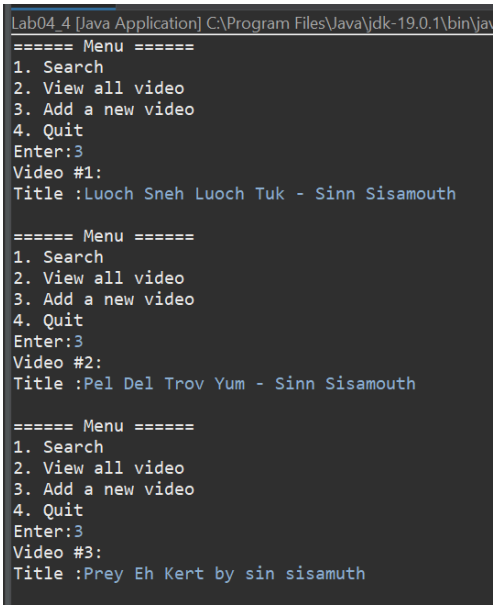


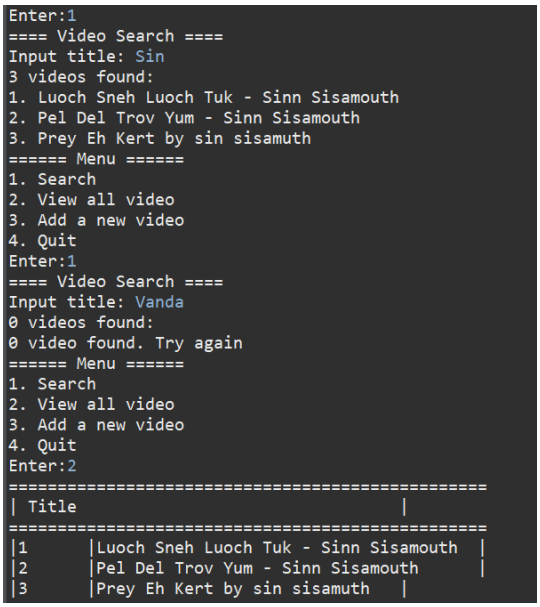
✓ Lab04.4

```
package Week4;

import java.util.Scanner;

class Video{
        String title;
        public Video(String title) {
                this.title=title;
        }

}
public class Lab04_4 {
        private static Scanner sc =new Scanner(System.in);
        private static Video[] video =new Video[50];
        private static int i=0;
        private static void menu(){
                System.out.println("====== Menu ======");
```

```
		System.out.println("1. Search");
		System.out.println("2. View all video");
		System.out.println("3. Add a new video");
		System.out.println("4. Quit");
		System.out.print("Enter:");
		int index=sc.nextInt();
		switch(index) {
			case 1->searchVideo();
			case 2->viewVideo();
			case 3->createVideo();
			case 4->System.out.println("Exited");
			default->menu();
		}

	}
	private static void createVideo() {
		System.out.println("Video #"+(i+1)+":");
		System.out.print("Title :");
		sc.nextLine();
		String title=sc.nextLine();
		video[i]=new Video(title);
		i++;
		System.out.println();
		menu();
	}
	private static void viewVideo() {
		System.out.println("================================================");
		System.out.println("| Title \t\t\t\t|");
		System.out.println("================================================");
		for(int j=0;j<i;j++) {
			System.out.println("|"+(j+1)+"\t|"+video[j].title+"\t|");
		}
		menu();
	}
	private static void searchVideo() {
		System.out.println("==== Video Search ====");
		System.out.print("Input title: ");
		sc.nextLine();
		String search=sc.nextLine();
		int z=0;
		for(int j=0;j<i;j++) {
			int verify=video[j].title.toLowerCase().indexOf(search.toLowerCase());
			if(verify>=0) {
				z++;
			}
		}
		int t=1;
		if(z>0) {
			System.out.println(z+" videos found:");
```

```
                    for(int j=0;j<i;j++) {
                        int verify=video[j].title.toLowerCase().indexOf(search.toLowerCase());
                        if(verify>=0) {
                            System.out.println(t+". "+video[j].title);
                            t++;
                        }
                    }
                }else {
                    System.out.println("0 video found. Try again");
                }
                menu();
            }
            public static void main(String[] args) {
                // TODO Auto-generated method stub
                menu();
            }

}
```



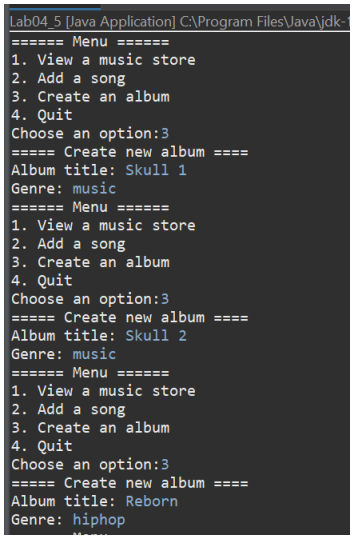


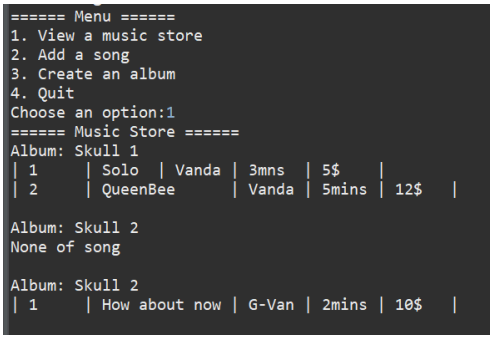
✓ Lab04.5

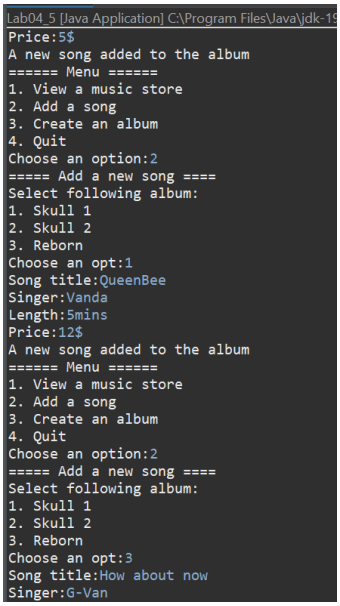
```
package Week4;

import java.util.ArrayList;
import java.util.Scanner;
import java.util.concurrent.atomic.AtomicInteger;

class Music{
    String title;
    String singer;
    String length;
    String price;
    public Music(String title,String singer,String length,String price) {
        this.title=title;
```

```
		this.singer=singer;
		this.length=length;
		this.price=price;
	}
	String albumTitle;
	String albumGenre;
	public Music(String albumTitle,String albumGenre) {
		this.albumTitle=albumTitle;
		this.albumGenre=albumGenre;
	}

}

public class Lab04_5 {
	static Scanner sc=new Scanner(System.in);
	static ArrayList<Music> listAlbum=new ArrayList<Music>();
	static ArrayList<ArrayList<Music>> listMusic=new ArrayList<ArrayList<Music>>();
	static void Menu() {
		System.out.println("====== Menu ======");
		System.out.println("1. View a music store");
		System.out.println("2. Add a song");
		System.out.println("3. Create an album");
		System.out.println("4. Quit");
		System.out.print("Choose an option:");
		int option=sc.nextInt();
		switch(option) {
			case 1->View();
			case 2->Add();
			case 3->Create();
			case 4->System.out.println("Quited");
			default->Menu();
		}
	}
	static void View() {
		System.out.println("====== Music Store ======");
		AtomicInteger at=new AtomicInteger();
		at.set(0);
		listMusic.forEach(e->{
			System.out.println("Album: "+listAlbum.get(at.get()).albumTitle);
			AtomicInteger k=new AtomicInteger();

			if(e.size()>0) {
				k.set(1);
				e.forEach(ex->{
					System.out.println("| "+k.get()+"\t| "+ex.title+"\t| "+ex.singer+"\t|
"+ex.length+"\t| "+ex.price+"\t|");
					k.set(k.get()+1);
				});
				at.set(at.get()+1);
```

```
                        }else {
                                System.out.println("None of song");
                        }
                        System.out.println();
                });
                Menu();
        }
        static void Add() {
                System.out.println("===== Add a new song ====");
                System.out.println("Select following album:");
                AtomicInteger at=new AtomicInteger();
                at.set(1);
                listAlbum.forEach(e->{
                        System.out.println(at.get()+". "+e.albumTitle);
                        at.set(at.get()+1);
                });
                System.out.print("Choose an opt:");
                int option=sc.nextInt();
                System.out.print("Song title:");
                sc.nextLine();
                String title=sc.nextLine();
                System.out.print("Singer:");
                String singer=sc.nextLine();
                System.out.print("Length:");
                String length=sc.nextLine();
                System.out.print("Price:");
                String price=sc.nextLine();
                listMusic.get(option-1).add(new Music(title,singer,length,price));
                System.out.println("A new song added to the album");
                Menu();
        }
        static void Create() {
                System.out.println("===== Create new album ====");
                System.out.print("Album title: ");
                sc.nextLine();
                String title=sc.nextLine();
                System.out.print("Genre: ");
                String genre=sc.nextLine();
                listAlbum.add(new Music(title, genre));
                listMusic.add(new ArrayList<Music>());
                Menu();
        }
        public static void main(String[] args) {
                // TODO Auto-generated method stub
                Menu();

        }

}
```





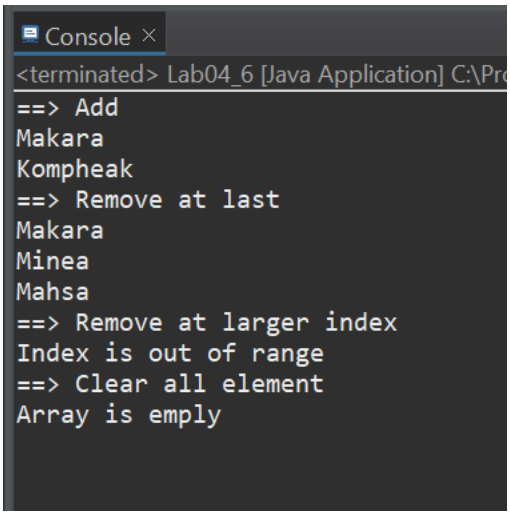


✓ Lab04.6

```
package Week4;
class Node{
	String data;
	Node next;
	Node pre;
}
class List{
	int n;
	Node tail;
	Node head;
	public List(){
		n=0;
		tail=null;
		head=null;
	}
}
class StudentList{
	static List list;
	public StudentList(){
		list=new List();
	}
	public static void add(String data) {
		todoAdd(list, data);
	}
	public static void todoAdd(List list,String data) {
		Node node=new Node();
		node.data=data;
		node.next=list.head;
		if(list.n==0) {
			list.tail=node;
		}else {
```

```
                list.head.pre=node;
        }
        list.head=node;
        list.n++;
}
public static void dispay() {
        Node tm=list.tail;
        while(tm!=null) {
                System.out.println(tm.data);
                tm=tm.pre;
        }
}
public static void removeLast() {
        List ls=new List();
        Node tm=list.tail;
        int k=0;
        while(k<list.n-1) {
                todoAdd(ls,tm.data);
                tm=tm.pre;
                k++;
        }
        list=ls;
}
public static void removeAt(int n) {
        List ls=new List();
        Node tm=list.tail;
        int k=0;
        if(n>list.n) {
                System.out.println("Index is out of range");
        }else {
                while(k<list.n) {

                        if(n==k+1) {
                                k=k+1;
                                continue;
                        }

                        todoAdd(ls,tm.data);
                        tm=tm.pre;
                        k++;
                }
        }

        list=ls;
}
public static void clear() {
        list=new List();
        System.out.println("Array is emply");
}
```

```
}

public class Lab04_6 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		StudentList list=new StudentList();
		System.out.println("==> Add");
		list.add("Makara");
		list.add("Kompheak");
		list.dispay();
		System.out.println("==> Remove at last");
		list.removeLast();
		list.add("Minea");
		list.add("Mahsa");
		list.dispay();
		System.out.println("==> Remove at larger index");
		list.removeAt(10);
		System.out.println("==> Clear all element");
		list.clear();

	}

}
```



✓ Lab04.7

```
package Week4;

//part1
class Point{
	int point_1_x=0;
	int point_1_y=10;
	public void getPoint() {
		System.out.println("Point: ("+point_1_x+","+point_1_y+")");
```

```
	}
}

class Line extends Point{
	int point_2_x=20;
	int point_2_y=10;
	public void getLine() {
		System.out.println("Line: ("+point_1_x+" , "+point_1_y+") , ("+point_2_x+" , "+point_2_y+")");
	}
}

class Triangle extends Line{
	int point_3_x=0;
	int point_3_y=0;
	public void getTriangle() {
		System.out.println("Triangle: ("+point_1_x+" , "+point_1_y+") , ("+point_2_x+" , "+point_2_y+")
, ("+point_3_x+" , "+point_3_y+")");
	}
}
class Retangle extends Triangle{
	int point_4_x=20;
	int point_4_y=0;
	public void getTriangle() {
		System.out.println("Rectangle: ("+point_1_x+" , "+point_1_y+") , ("+point_2_x+" ,
"+point_2_y+") , ("+point_3_x+" , "+point_3_y+") , ("+point_4_x+" , "+point_4_y+")");
	}
}
// finished part1


//part2

class StudentIT{
	int id;
	String departement;
}
class StudentProgrmming extends StudentIT{
	String name;
	public StudentProgrmming(int id,String name) {
		this.id=id;
		this.name=name;
		this.departement="Promming";
	}
	public void getInfo() {
		System.out.println("ID:"+id+"\tName:"+name+"\tDepartment:"+departement);
	}
}
class StudentTelecom extends StudentIT{
	String name;
```

```
	public StudentTelecom(int id,String name) {
		this.id=id;
		this.name=name;
		this.departement="Telecom";
	}
	public void getInfo() {
		System.out.println("ID:"+id+"\tName:"+name+"\tDepartment:"+departement);
	}
}
//finished part2
public class Lab04_7 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub

	}

}
```

✓ Lab04.8

```
package Week4;

class BasicMath{
	double addition(double a,double b) {
		return a+b;
	}
	double substract(double a,double b) {
		return a-b;
	}
}

class AdvanceMath extends BasicMath{
	double multiply(double a,double b) {
		return a*b;
	}
	double divide(double a,double b) {
		return a/b;
	}
}

public class Lab04_8 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		BasicMath bm=new BasicMath();
		System.out.println("6+9="+bm.addition(6,9));
		System.out.println("6-9="+bm.substract(6,9));

		AdvanceMath am=new AdvanceMath();
		System.out.println("6+9="+am.addition(6,9));
```

```
            System.out.println("6-9="+am.substract(6,9));
            System.out.println("6x9="+am.multiply(6,9));
            System.out.println("6/9="+am.divide(6,9));
        }

}
```