Lab 03

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➢ Lab03.1

```
import java.util.Scanner;

class quadraticEquation{
	int a,b,c;
	double rootBelta;
	void setValue(int a,int b,int c) {
		this.a=a;
		this.b=b;
		this.c=c;
		int belta=b*b-4*a*c;

		if(belta>0) {
			rootBelta=Math.sqrt(belta);
			greaterZero();
		}else if(belta<0) {
			lessZero();
		}else if(belta==0) {
			rootBelta=Math.sqrt(belta);
			equlZero();
		}else {
			System.out.println();
		}
	}
	void equlZero() {
		double x=(-b)/(2*a);
		System.out.println("double root is X="+x);
	}
	void lessZero() {
		System.out.println("Equation roots are complex!");
	}
	void greaterZero() {
		double x1=(-b+rootBelta)/(2*a);
		double x2=(-b-rootBelta)/(2*a);
		System.out.println("X1 ="+x1+", X2 ="+x2);
	}
}

public class Lab03_1 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		int a,b,c;
		Scanner sc=new Scanner(System.in);
		System.out.println("Program for calculating roots of quadratic equation ax^2+ bx +c=0");
		System.out.print("Input value of a: ");
		a=sc.nextInt();
```

```
		System.out.print("Input value of b: ");
		b=sc.nextInt();
		System.out.print("Input value of c: ");
		c=sc.nextInt();

		quadraticEquation calcu=new quadraticEquation();
		calcu.setValue(a, b, c);
	}

}
```

```
<terminated> Lab03_1 [Java Application] C:\Program Files\Java\jdk-19.0.1\bin\javaw.exe  (Jan 22,
Program for calculating roots of quadratic equation ax^2+ bx +c=0
Input value of a: 2
Input value of b: 3
Input value of c: 1
X1 =-0.5, X2 =-1.0
```

```
<terminated> Lab03_1 [Java Application] C:\Program Files\Java\jdk-19.0.1\bin\javaw.exe  (Jan 2
Program for calculating roots of quadratic equation ax^2+ bx +c=0
Input value of a: 2
Input value of b: 3
Input value of c: 4
Equation roots are complex!
```

➢ Lab03.2

```
import java.util.Scanner;

public class Lab03_2 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner sc=new Scanner(System.in);
		System.out.println("How many number to be input?");
		System.out.print("Number of input:");
		int num=sc.nextInt();
		int []arrNum=new int[num];
		for(int i=0;i<num;i++) {
			System.out.print("Value #"+i+": ");
			arrNum[i]=sc.nextInt();
		}
		int max=arrNum[0];
		int min=arrNum[0];
		int total=0;
		for(int i=0;i<num;i++) {
			if(max<arrNum[i]) {
				max=arrNum[i];
			}
			if(min>arrNum[i]) {
				min=arrNum[i];
			}
			total+=arrNum[i];
		}
```

```
            float average=(float)total/num;
            System.out.println("Max :"+max);
            System.out.println("Min :"+min);
            System.out.println("Average :"+average);
            System.out.println("Sum :"+total);
        }

}
```

```
<terminated> Lab03_2 [Java Application] C:\P
How many number to be input?
Number of input:5
Value #0: 10
Value #1: 90
Value #2: 84
Value #3: 23
Value #4: 45
Max :90
Min :10
Average :50.4
Sum :252
```

➢ Lab03.3

```
import java.util.Scanner;

class phoneSetting{
        private static Scanner sc=new Scanner(System.in);
        public static void Open() {
                Setting();
        }
        private static void Setting() {
                System.out.println("Phone Setting:");
                System.out.println("1. General \t\t>");
                System.out.println("2. Wi-Fi \t\t>");
                System.out.println("3. Bluetooth \t\t>");
                System.out.println("4. Mobile Data \t\t>");
                System.out.println("5. Hotspot \t\t>");
                System.out.println("6. Notification \t>");
                System.out.println("0. Quit");
                System.out.print("Enter:");
                int index=sc.nextInt();
                switch(index) {
                        case 1->General();
                        case 2->Wifi();
                        case 3->Title();
                        case 4->Title();
                        case 5->Title();
                        case 6->Title();
                        case 0->System.out.println("Exited");
                        default->Setting();
                }
        }
        private static void General() {
                System.out.println("General:");
                System.out.println("1. About \t\t>");
```

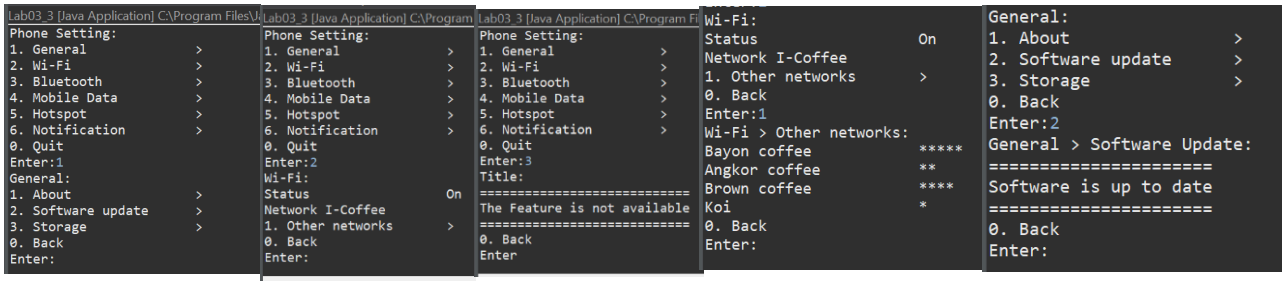
```
		System.out.println("2. Software update \t>");
		System.out.println("3. Storage \t\t>");
		System.out.println("0. Back");
		System.out.print("Enter:");
		int index=sc.nextInt();
		switch(index) {
			case 1->GeneralAbout();
			case 2->GeneralSoftwareUpdate();
			case 3->Title();
			case 0->Setting();
			default->General();
		}
	}
	private static void Wifi() {
		System.out.println("Wi-Fi:");
		System.out.println("Status \t\t\tOn");
		System.out.println("Network I-Coffee");
		System.out.println("1. Other networks \t>");
		System.out.println("0. Back");
		System.out.print("Enter:");
		int index=sc.nextInt();
		switch(index) {
			case 1->WifiOtherNetwork();
			case 0->Setting();
			default->Wifi();
		}
	}
	private static void Title() {
		System.out.println("Title:");
		System.out.println("============================");
		System.out.println("The Feature is not available");
		System.out.println("============================");
		System.out.println("0. Back");
		System.out.print("Enter");
		int index=sc.nextInt();
		switch(index) {
			case 0->Setting();
			default->Title();
		}
	}
	private static void GeneralAbout() {
		System.out.println("General > About:");
		System.out.println("Name \t\tiPhone");
		System.out.println("Model \t\tIXs");
		System.out.println("Version \t18.5");
		System.out.println("0. Back");
		System.out.print("Enter:");
		int index=sc.nextInt();
		switch(index) {
			case 0->General();
			default->GeneralAbout();
		}
	}
```

```
	private static void GeneralSoftwareUpdate() {
		System.out.println("General > Software Update:");
		System.out.println("======================");
		System.out.println("Software is up to date");
		System.out.println("======================");
		System.out.println("0. Back");
		System.out.print("Enter:");
		int index=sc.nextInt();
		switch(index) {
			case 0->General();
			default->GeneralSoftwareUpdate();
		}
	}
	private static void WifiOtherNetwork() {
		System.out.println("Wi-Fi > Other networks:");
		System.out.println("Bayon coffee \t\t*****");
		System.out.println("Angkor coffee \t\t**");
		System.out.println("Brown coffee \t\t****");
		System.out.println("Koi \t\t\t*");
		System.out.println("0. Back");
		System.out.print("Enter:");
		int index=sc.nextInt();
		switch(index) {
			case 0->Wifi();
			default->WifiOtherNetwork();
		}
	}
}

public class Lab03_3 {

	public static void main(String[] args) {
		phoneSetting.Open();
	}

}
```



➢ Lab03.4

```
import java.util.Scanner;

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 Lab03_4 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		Scanner sc =new Scanner(System.in);
		Student[] student =new Student[50];
		int i=0;
		char option=' ';
		do {
			int id,age;
			String name;
			System.out.println("Student #"+(i+1)+":");
			System.out.print("Id :");
			id=sc.nextInt();
			System.out.print("Name :");
			sc.nextLine();
			name=sc.nextLine();
			System.out.print("Age :");
			age=sc.nextInt();
			student[i]=new Student(id, name, age);
			System.out.print("Do you want to add more (y/n)?: ");
			option=sc.next().charAt(0);
			i++;
		}while(option=='y'||option=='Y');
		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("================================================");
	}

}
```

```
<terminated> Lab03_4 [Java Application] C:\Program Files\Java\jdk-19.0.1\bin\ja
Student #1:
Id :1001
Name :Tet Davann
Age :23
Do you want to add more (y/n)?: y
Student #2:
Id :1002
Name :Spider Man
Age :34
Do you want to add more (y/n)?: y
Student #3:
Id :1003
Name :Davann Tet
Age :45
Do you want to add more (y/n)?: n
================================================
| No    | ID    | Name                  | Age   |
================================================
|1      |1001   |Tet Davann             |23     |
|2      |1002   |Spider Man             |34     |
|3      |1003   |Davann Tet             |45     |
================================================
```

➢ Lab03.5

```
class Maths{
	static double add(double a,double b) {
		return a+b;
	}
	static double subtract(double a,double b) {
		return a-b;
	}
	static double multiply(double a,double b) {
		return a*b;
	}
	static double divide(double a,double b) {
		return (float)a/b;
	}
	static double min(double a,double b) {
		return a>b?b:a;
	}
	static double max(double a,double b) {
		return a>b?a:b;
	}
}

public class Lab03_5 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		System.out.println("Maths.add(5,7)="+Maths.add(5,7));
		System.out.println("Maths.subtract(5,7)="+Maths.subtract(5,7));
		System.out.println("Mahts.multiply(5,7)="+Maths.multiply(5, 7));
		System.out.println("Mahts.divide(5,7)="+Maths.divide(5, 7));
		System.out.println("Mahts.min(5,7)="+Maths.min(5,7));
		System.out.println("Mahts.max(5,7)="+Maths.max(5,7));
	}

}
```

```
<terminated> Lab03_5 [Java Application] C:\Program File
Maths.add(5,7)=12.0
Maths.subtract(5,7)=-2.0
Mahts.multiply(5,7)=35.0
Mahts.divide(5,7)=0.7142857142857143
Mahts.min(5,7)=5.0
Mahts.max(5,7)=7.0
```

➢ Lab03.6

```
package Week3;

class Math6{
	static int factorial(int x) {
		return x>0?x*factorial(x-1):1;
```

```
	}
	static double rectangleSurface(double width,double height) {
		return (float)width*height;
	}
	static double circleSurface(double radius) {
		return (float) 3.14*radius*radius;
	}
	static int max(int a,int b,int c,int d,int e) {
		int[] arr= {a,b,c,d,e};
		int m=arr[0];
		for(int i=1;i<5;i++) {
			if(m<arr[i]) {
				m=arr[i];
			}
		}
		return m;
	}
	static int min(int a,int b,int c,int d,int e) {
		int[] arr= {a,b,c,d,e};
		int m=arr[0];
		for(int i=1;i<5;i++) {
			if(m>arr[i]) {
				m=arr[i];
			}
		}
		return m;
	}
}
public class Lab03_06 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		System.out.println("Math6.factorial(5)="+Math6.factorial(5));
		System.out.println("Math6.rectangleSurface(4,5)"+Math6.rectangleSurface(4, 5));
		System.out.println("Math6.circleSurface(5)="+Math6.circleSurface(5));
		System.out.println("Math6.max(4,7,3,5,1)="+Math6.max(4, 7,3, 5, 1));
		System.out.println("Math6.min(4,7,3,5,1)="+Math6.min(4, 7, 3, 4, 1));
	}

}
```

```
<terminated> Lab03_06 [Java Application] C:\Program Files\
Math6.factorial(5)=120
Math6.rectangleSurface(4,5)20.0
Math6.circleSurface(5)=78.50000262260437
Math6.max(4,7,3,5,1)=7
Math6.min(4,7,3,5,1)=1
```

➢ Lab03.7

```
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 Lab03_7 {
	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. Create a student");
		System.out.println("2. List students");
		System.out.println("3. Quit");
		System.out.print("Enter:");
		int index=sc.nextInt();
		switch(index) {
			case 1->createStudent();
			case 2->ListStudent();
			case 3->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();
```

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

}
```

```
Lab03_7 [Java Application] C:\Program Files\Java\jdk-19.0.1\bin\javaw.exe
====== Menu ======
1. Create a student
2. List students
3. Quit
Enter:1
Student #1:
ID :1001
Name :Tet Davann
Age :34

====== Menu ======
1. Create a student
2. List students
3. Quit
Enter:1
Student #2:
ID :1002
Name :Spider Man
Age :25

====== Menu ======
1. Create a student
2. List students
3. Quit
Enter:2
================================================
| No    | ID    | Name                  | Age   |
================================================
|1      |1001   |Tet Davann             |34     |
|2      |1002   |Spider Man             |25     |
================================================
```

➢ Lab03.8

```
//part 1
class Product{
	String name;
	String price;
	String made;
	String start;
	String end;
	Category category;
	void setValue(String name,String price,String made,String start,String end,Category category){
		this.name=name;
		this.price=price;
		this.made=made;
		this.start=start;
		this.end=end;
		this.category=category;
	}
```

```
	void printValue() {
		System.out.println("Name :"+name+"->Price :"+price+"->Made in :"+made+"->Start
:"+start+"->End :"+end+"->Type :"+category.type);
	}
}
class Category{
	String type;
}

//part2
class User{
	String name;
	int age;
	String sex;
	String job;
	Video video;
	void setValue(String name,int age,String sex,String job,Video video) {
		this.name=name;
		this.age=age;
		this.sex=sex;
		this.job=job;
		this.video=video;
	}
	void printValue() {
		System.out.println("Name :"+name+"->Age :"+age+"->Sex :"+sex+"->Job :"+job+"->Title :"+"-
>Type:"+video.type+"->Time :"+video.time);
	}
}
class Video{
	String title;
	String type;
	String time;
}

//part3
class Book{
	String title;
	String lang;
	String price;
	int madeTime;
	int page;
	Author author;
	void setValue(String title,String lang,String price,int madeTime,int page,Author author) {
		this.title=title;
		this.lang=lang;
		this.price=price;
		this.madeTime=madeTime;
		this.page=page;
		this.author=author;
	}
	void printValue() {
		System.out.println("Title :"+title+"->Language :"+lang+"->Price :"+price+"->Produced in
:"+madeTime+"->Author Name :"+author.name+"->Sex :"+author.sex+"->Nationality :"+author.Nationality);
```

```
	}
}
class Author{
	String name;
	String sex;
	String Nationality;
}
public class Lab03_8 {

	public static void main(String[] args) {
		// TODO Auto-generated method stub
		//part 1
		System.out.println("1. Product & Category");
		Product[] product=new Product[3];
		for(int i=0;i<product.length;i++) {
			product[i]=new Product();
		}
		Category category1=new Category();
		category1.type="Soap";
		product[0].setValue("Viso","2.5$","Thai","2020-05-23","2023-05-23", category1);

		Category category2=new Category();
		category2.type="Fast food";
		product[1].setValue("Noodles","0.5$","Japan", "2022-03-27","2023-03-27", category2);

		Category category3=new Category();
		category3.type="Spices";
		product[2].setValue("Sugar","5.99$", "Khmer","2023-01-07","2023-01-07", category3);

		for(int i=0;i<product.length;i++) {
			product[i].printValue();
		}
		//finished


		//part 2
		System.out.println("2. User & Video");
		User[] user=new User[3];
		for(int i=0;i<user.length;i++) {
			user[i]=new User();
		}
		Video video1=new Video();
		video1.title="Logorithm";
		video1.type="Mathemetic";
		video1.time="1h25mn30s";
		user[0].setValue("Tet Davann",45,"Male","Student", video1);

		Video video2=new Video();
		video2.title="History fo Human";
		video2.type="Novel";
		video2.time="5h45mn23s";
		user[1].setValue("Sprider Man", 90,"Female","Actor", video2);
```

```
		Video video3=new Video();
		video3.title="Ban Merl Ban Saoch";
		video3.type="Joke";
		video3.time="20mn30s";
		user[2].setValue("Kim JongAoun", 35,"Female", "Driver", video3);

		for(int i=0;i<user.length;i++) {
			user[i].printValue();
		}

		//part 3
		System.out.println("3. Book & Author");
		Book[] book=new Book[3];
		for(int i=0;i<book.length;i++) {
			book[i]=new Book();
		}
		Author author1=new Author();
		author1.name="Tet Davann";
		author1.sex="Male";
		author1.Nationality="Khmer";
		book[0].setValue("The Segret", "Khmer","25.99$", 2022, 499, author1);

		Author author2=new Author();
		author2.name="Nhouk Time";
		author2.sex="Male";
		author2.Nationality="Khmer";
		book[1].setValue("Khoulabbailen", "Khmer","5.99$",1961, 169, author2);

		Author author3=new Author();
		author3.name="Ti Gihout";
		author3.sex="Male";
		author3.Nationality="Khmer";
		book[2].setValue("Techoyout", "Khmer","3.99$",1955, 121, author3);

		for(int i=0;i<book.length;i++) {
			book[i].printValue();
		}

	}

}
```

```
<terminated> Lab03_8 [Java Application] C:\Program Files\Java\jdk-19.0.1\bin\javaw.exe  (Jan 22, 2023, 6:15:28 PM – 6:15:29 PM) [pid: 19912]
1. Product & Category
Name :Viso->Price :2.5$->Made in :Thai->Start :2020-05-23->End :2023-05-23->Type :Soap
Name :Noodles->Price :0.5$->Made in :Japan->Start :2022-03-27->End :2023-03-27->Type :Fast food
Name :Sugar->Price :5.99$->Made in :Khmer->Start :2023-01-07->End :2023-01-07->Type :Spices
2. User & Video
Name :Tet Davann->Age :45->Sex :Male->Job :Student->Title :->Type:Mathemetic->Time :1h25mn30s
Name :Sprider Man->Age :90->Sex :Female->Job :Actor->Title :->Type:Novel->Time :5h45mn23s
Name :Kim JongAoun->Age :35->Sex :Female->Job :Driver->Title :->Type:Joke->Time :20mn30s
3. Book & Author
Title :The Segret->Language :Khmer->Price :25.99$->Produced in :2022->Author Name :Tet Davann->Sex :Male->Nationality :Khmer
Title :Khoulabbailen->Language :Khmer->Price :5.99$->Produced in :1961->Author Name :Nhouk Time->Sex :Male->Nationality :Khmer
Title :Techoyout->Language :Khmer->Price :3.99$->Produced in :1955->Author Name :Ti Gihout->Sex :Male->Nationality :Khmer
```