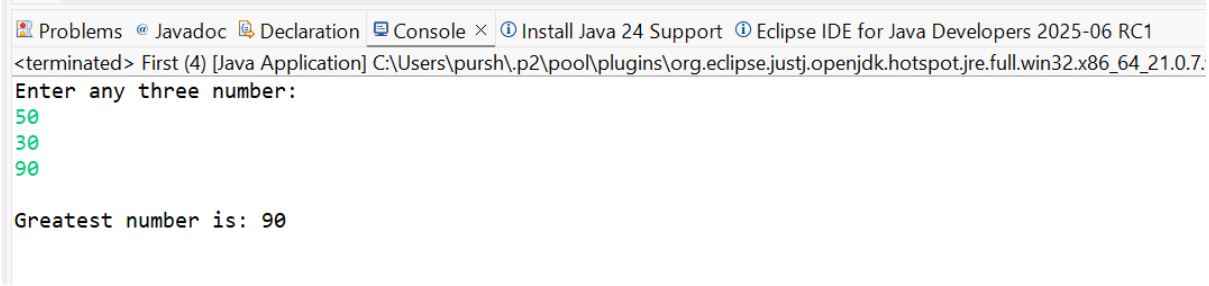
AssignmentsModule – 3 (Core Java)

1] W.A.J.P to Take three numbers from the user and print the greatest number.

```
package Assignment;

import java.util.Scanner;

public class First {

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

		System.out.println("Enter any three number: ");

		Scanner sc=new Scanner(System.in);
		int a=sc.nextInt();
		int b=sc.nextInt();
		int c=sc.nextInt();

		System.out.print("\nGreatest number is: ");
		if(a>b && a>c ) {
			System.out.println(a);
		}else if(b>c) {
			System.out.println(b);
		}else {
			System.out.println(c);
		}

	}
}
```

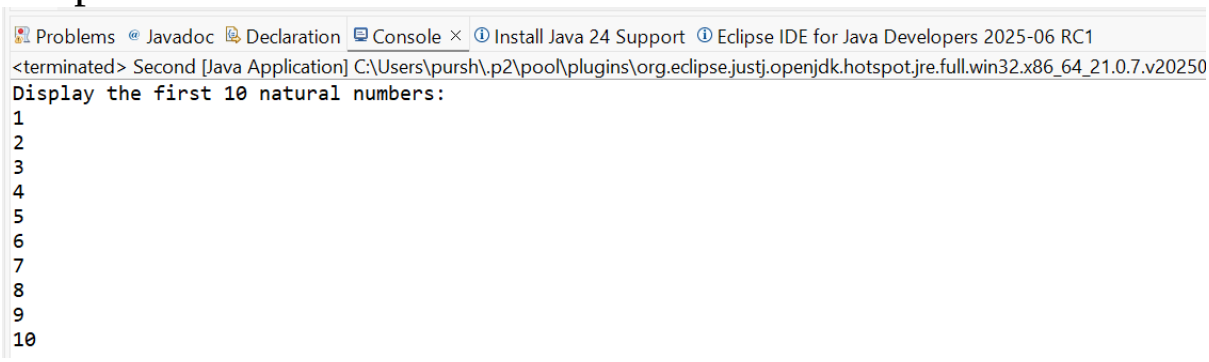
Output:



2] W.A.J.P in Java to display the first 10 natural numbers using while loop.

```java
package Assignment;
public class Second {

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

		System.out.println("Display the first 10 natural numbers: ");

		for(int i=1; i<=10; i++) {
			System.out.println(i);
		}
	}

}
```

Output:

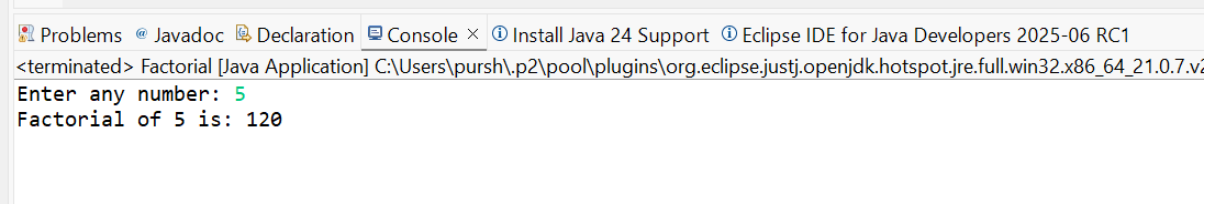


3] W.A.J.P to find factorial for Given Number.

```java
package Assignment;

import java.util.Scanner;

class Fact{

	int fact=1;
	void disp(int a) {

		for(int i=1; i<=a; i++) {
			fact = fact*i;
		}
		System.out.println("Factorial of "+a+" is: "+fact);
	}
}

public class Factorial {

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

		Scanner sc=new Scanner(System.in);

		System.out.print("Enter any number: ");
		int ui=sc.nextInt();
```

```
		Fact fa=new Fact();
		fa.disp(ui);

	}

}
```

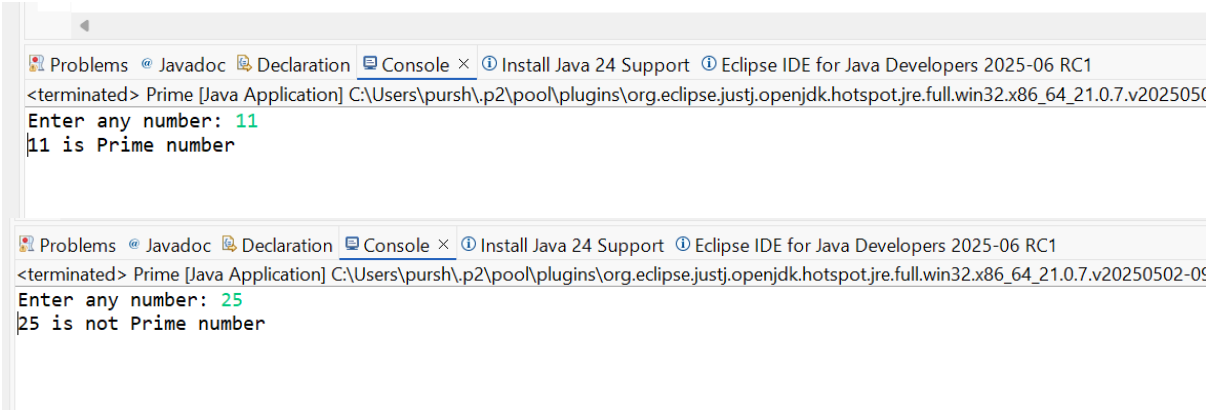
Output:



4] W.A.J.P to check given number is Prime or not?

```
package Assignment;

import java.util.Scanner;

public class Prime {

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

		Scanner sc=new Scanner(System.in);

		System.out.print("Enter any number: ");
		int num=sc.nextInt();
		int count=0;

		for(int i=1; i<=num; i++) {
			if(num % i == 0) {
				count++;
			}
		}

		if(count==2) {
			System.out.println(num+" is Prime number");
		}else {
			System.out.println(num+" is not Prime number");
		}

	}
}
```

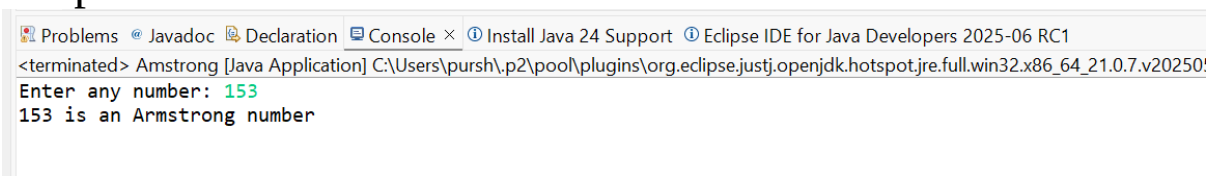
Output:

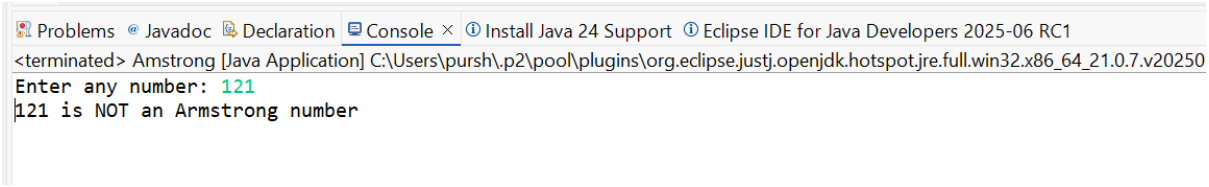


5] W.A.J.P to check given number is Armstrong or not?

```
package Assignment;

import java.util.Scanner;

public class Amstrong {

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

		Scanner sc=new Scanner(System.in);

		System.out.print("Enter any number: ");
		int num=sc.nextInt();

		int backUP=num;
		int sum=0;

		while(num>0) {
			sum = sum + (num%10)*(num%10)*(num%10);
			num = num/10;
		}

		if(sum==backUP) {
			System.out.println(backUP + " is an Armstrong number");
		}
		else {
			System.out.println(backUP + " is NOT an Armstrong number");
		}

	}
}
```

Output:

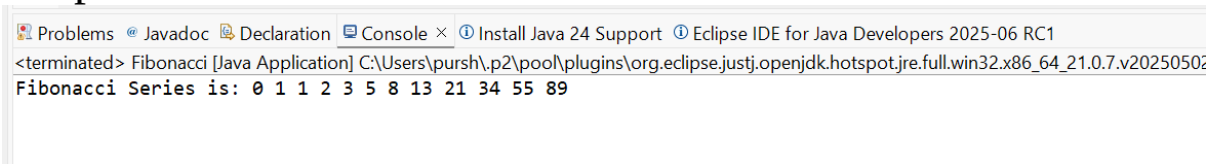




6] W.A.J.P for create Fibonacci Series.

```
package Assignment;

public class Fibonacci {

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

		int n1=0, n2=1;
		int sum=0;

		System.out.print("Fibonacci Series is: "+n1+" "+n2);

		for(int i=0; i<10; i++)
		{
			sum = n1+n2;
			System.out.print(" "+sum);  //1, 2
			n1=n2; //1
			n2=sum; //1
		}
	}

}
```

Output:



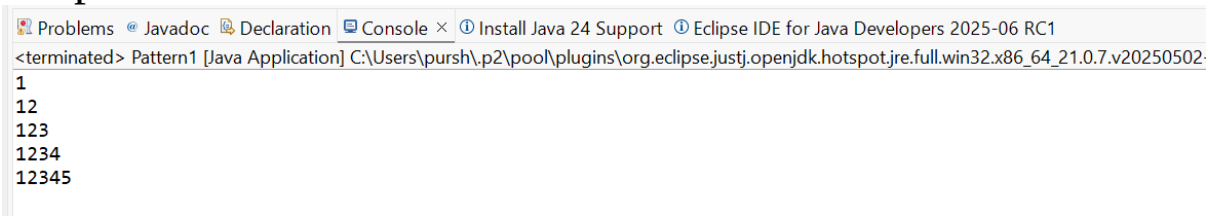
7] W.A.J.P to Print pattern Given Below.

I] Pattern1:

```
package Assignment;

public class Pattern1 {

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

		for(int i=1; i<=5; i++) { // row
```

```
                for(int j=1; j<=i; j++) { //column
                        System.out.print(j);
                }
                System.out.println();
            }
        }
}
```

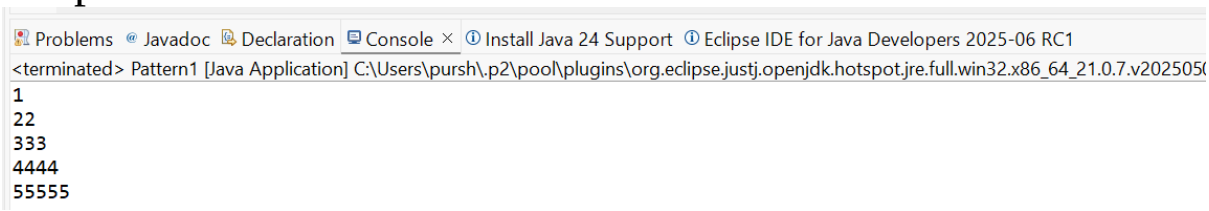
Output:



II] Pattern2:

```
package Assignment;

public class Pattern1 {

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

                for(int i=1; i<=5; i++) { // row

                        for(int j=1; j<=i; j++) { //column
                                System.out.print(i);
                        }
                        System.out.println();
                }
        }
}
```

Output:

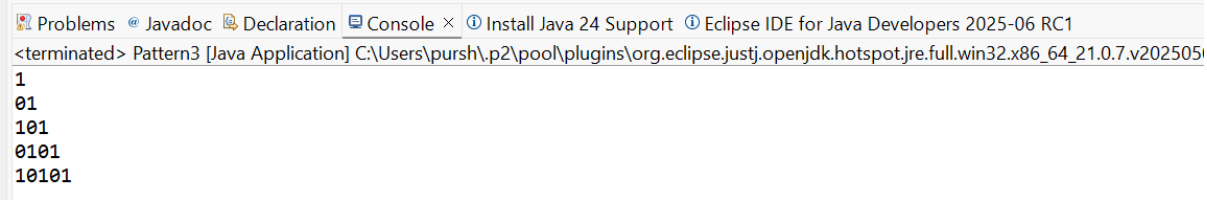


III] Pattern3:

```
package Assignment;

public class Pattern3 {

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

```
		int count=0;
		for(int i=1; i<=5; i++) {

			for(int j=1; j<=i; j++) {

				count= i+j;
				if(count % 2==0) {
					System.out.print(1);
				}else {
					System.out.print(0);
				}
			}
			System.out.println();
		}
	}
}
```

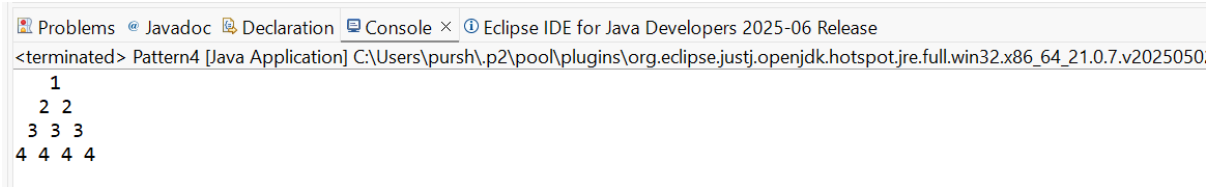
Output:



IV] Pattern4:

```
package Assignment;

public class Pattern4 {

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

		int length=4;

		for(int i=1; i<=length; i++) {

			for(int j=length-i; j>=1; j--) {
				System.out.print(" ");
			}
			for(int k=1; k<=i; k++) {
				System.out.print(i+" ");
			}
			System.out.println();
		}
	}
}
```

Output:



V] Pattern5:

```
package Assignment;

public class Pattern5 {

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

		int length=3;

		for(int i=1; i<=length; i++) {

			for(int j=1; j<=length-i; j++) {
				System.out.print("  ");
			}
			for(int j=1; j<=2*i-1; j++) {
				System.out.print("* ");
			}
			System.out.println();
		}

		for(int i=length-1; i>=1; i--) {

			for(int j=1; j<=length-i; j++) {
				System.out.print("  ");
			}
			for(int j=1; j<=2*i-1; j++) {
				System.out.print("* ");
			}
			System.out.println();
		}
	}
}
```

Output:

8] WAP to compute the sum of the first 100 prime numbers.

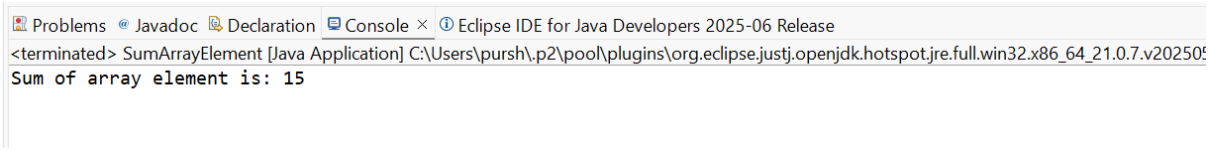
```java
package Assignment;

public class SumOfPrime {

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

	  int n=100;
	  int sum=0;

	  for(int i=1; i<=n; i++) {

		int count=0;
		for(int j=1; j<=n; j++) {
			if(i%j==0) {
				count++;
			}
		}

		if(count==2) {
			sum +=i;
		}
	  }
	  System.out.println("1 to 100 Prime number sum is: "+sum);
	}
}
```

Output:

9] **WAP to sum values of an array.**

```java
package Assignment;

public class SumArrayElement {

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

		int arr[]= {1,2,3,4,5};
		int sum=0;
		for(int i=0; i<arr.length; i++) {
			sum += arr[i];
		}
		System.out.println("Sum of array element is: "+sum);
	}
}
```

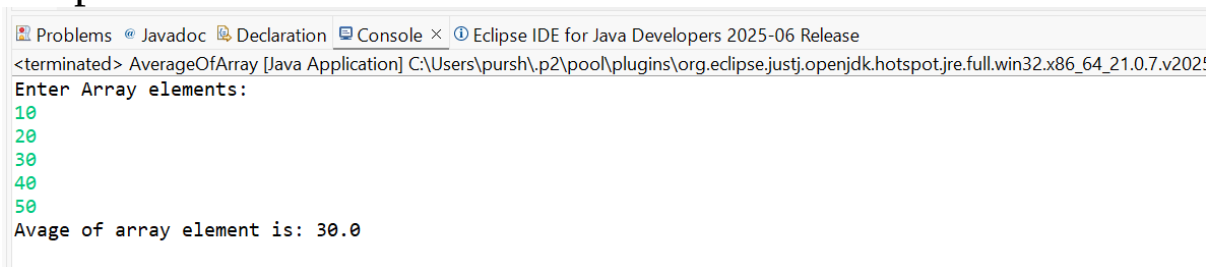
Output:



10] WAP to calculate the average value of array elements.

```
package Assignment;

import java.util.Scanner;

public class AverageOfArray {

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

		int a[]=new int[5];
		int sum=0;

		Scanner sc=new Scanner(System.in);

		System.out.println("Enter Array elements: ");

		for(int i=0; i<5; i++) {
			a[i]=sc.nextInt();
		}
		for(int i=0; i<5; i++) {
			sum +=a[i];
		}
		double average=sum/5.0;

		System.out.println("Avage of array element is: "+average);
	}
}
```

Output:

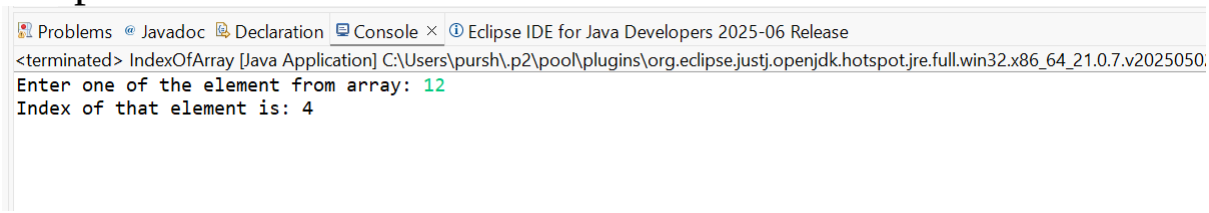


11] WAP to find the index of an array element.

```
package Assignment;

import java.util.Scanner;

public class IndexOfArray {
```

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

		int a[]= {2,4,8,10,12,14,18};
		Scanner sc= new Scanner(System.in);

		System.out.print("Enter one of the element from array: ");
		int value=sc.nextInt();

		for(int i=0; i<a.length; i++) {
			if(a[i]==value) {
				System.out.println("Index of that element is: "+i);
			}
		}
	}
}
```

Output:

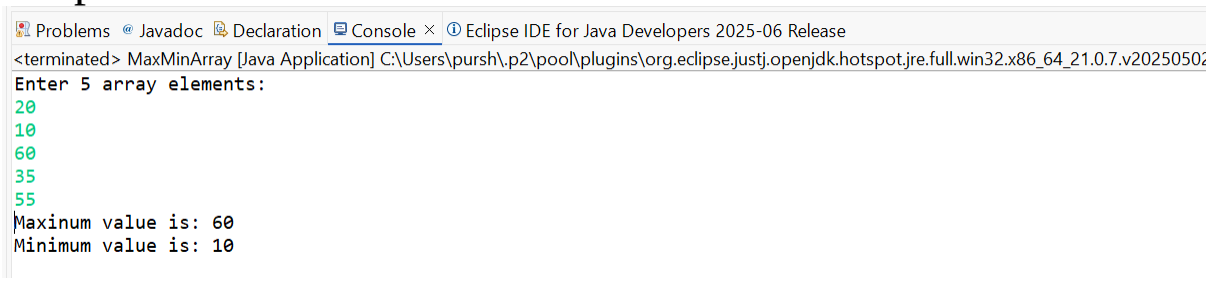


12] WAP to find the maximum and minimum value of an array.

```
package Assignment;

import java.util.Scanner;

public class MaxMinArray {

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

		int a[]=new int[5];

		Scanner sc=new Scanner(System.in);

		System.out.println("Enter 5 array elements: ");
		for(int i=0; i<a.length; i++) {
			a[i]=sc.nextInt();
		}

		int max=a[0];
		for(int i=0; i<a.length; i++) {
			if(a[i]>max) {
				max=a[i];
			}
		}
		System.out.println("Maxinum number is: "+max);

		int min=a[0];
```

```
		for(int i=0; i<a.length; i++) {
			if(a[i]<min) {
				min=a[i];
			}
		}
		System.out.println("Minimum number is: "+min);
	}
}
```

Output:



13] WAP to Compare Two String.

```
package Assignment;

public class CompareString {

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

		String s1="Riddhi";
		String s2=new String("Riddhi");

		if(s1.equals(s2)) {
			System.out.println("Match");
		}else {
			System.out.println("Not Match");
		}
	}
}
```

Output:

14] WAP to concatenate a given string to the end of another string.

```
package Assignment;

import java.util.Scanner;
```

```java
public class ConcateString {

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

		Scanner sc= new Scanner(System.in);
		System.out.println("Enter any string: ");
		String a= sc.nextLine();

		String con = a.concat(" How are you?");
		System.out.println(con);
	}

}
```

Output:

15] WAP to demonstrate try catch block.

```java
package Exception;

public class TestException {

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

		try {
			int data=50/0;
			System.out.println("Hello: "+data);
		}catch(ArithmeticException e) {
			System.out.println("Error"+e);
		}
		System.out.println("Rest of the code...");
	}

//	 int a=10;
//	 int b=0;
//	 System.out.println("division is "+(a/b));
//	 System.out.println("Hello ");
}
```

Output:

16] WAP to demonstrate multiple catch blocks

```
package Exception;

public class Testing {

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

		int arr[]=new int[5];
		try {
			arr[5]=10;
			System.out.println("hello");
		}catch(ArithmeticException e){ //always first mention child class
			System.out.println("Error"+e);
		}catch(Exception e){ //always parent class is mention in last
			System.out.println("Error"+e);
		}
		System.out.println("Rest of the code..");
	}
}
```

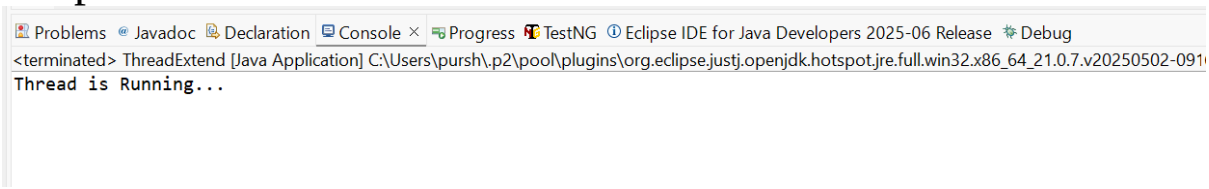
Output:

17] WAP to create one thread by implementing Runnable interface in Class.

```
package Thraed;

class Thread2 implements Runnable{

	@Override
	public void run() {
		// TODO Auto-generated method stub
		System.out.println("Thread is rumming..");
	}

}

public class ThreadImplement {
```

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

		Thread2 m1=new Thread2();
		Thread t1=new Thread(m1);
		//Thread class che default parent aene to
	object banai ne start method call karvi j padse
		t1.start();
	}
}
```

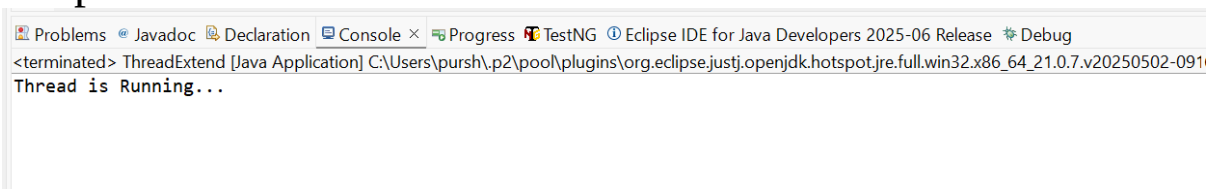
Output:



18] WAP to create one thread by extending Thread class in another Class.

```
package Thraed;

class Thread1 extends Thread{

	public void run() { //automatically invoked
		test1();
	}

	void test1() {
		System.out.println("Thread is Running...");
	}
}

public class ThreadExtend {

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

		Thread1 t1=new Thread1();
		t1.start();
	}
}
```

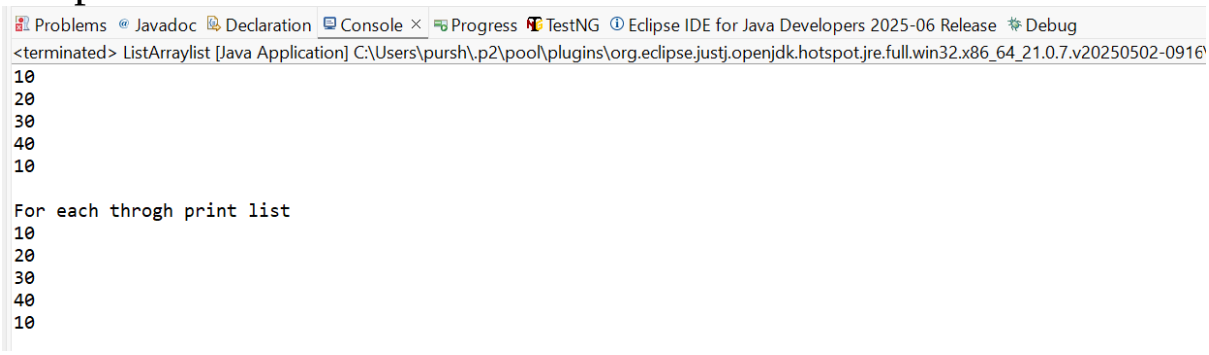
Output:



19] WAP to iterate through all elements in an array list.

```
package Collection;

import java.util.ArrayList;
import java.util.Iterator;
import java.util.List;

public class ListArraylist {

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

		List<Integer> ls=new ArrayList<>(); //integer values
		ls.add(10);
		ls.add(20);
		ls.add(30);
		ls.add(40);
		ls.add(10); //list allows duplicate values

		//System.out.println(ls);

		//iterator interface one by one list ni values ne print karse
		Iterator itr=ls.iterator();
		while(itr.hasNext()) {
			System.out.println(itr.next());
		}

		//second way to print list values in one by one is Foreach loop
		System.out.println("\nFor each throgh print list");
		for(int obj:ls) {
			System.out.println(obj);
		}
	}
}
```

Output:

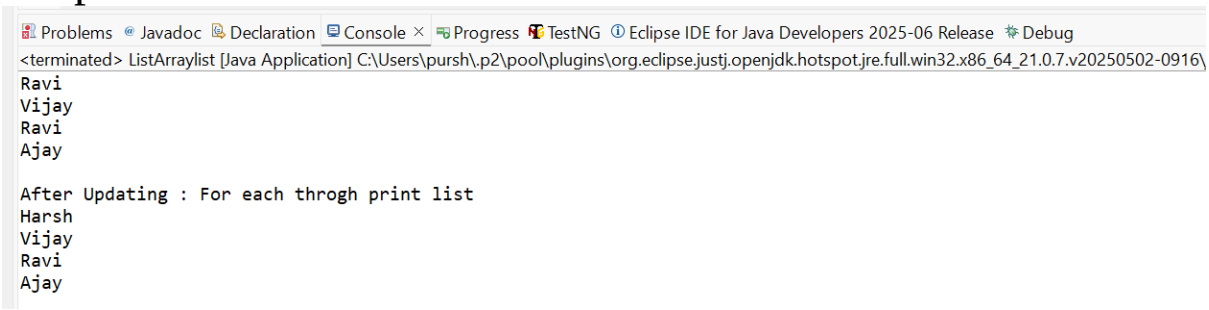


20] WAP to update specific array element by given element.

```
package Collection;

import java.util.ArrayList;
```

```java
import java.util.Iterator;
import java.util.List;

public class ListArraylist {

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

		ArrayList<String> ls=new ArrayList<>(); //String values
		ls.add("Ravi"); //adding object in arraylist
		ls.add("Vijay");
		ls.add("Ravi");
		ls.add("Ajay");
		//Traversig list through Iterator
		Iterator itr=ls.iterator();
		while(itr.hasNext()) {
			System.out.println(itr.next());
		}

		//Index 0 set “Harsh” in arraylist
		ls.set(0,"Harsh");

		System.out.println("\nAfter Updating : For each throgh print list");
		//second way to print list values in one by one is Foreach loop
		for(String obj:ls) {
			System.out.println(obj);
		}

	}
}
```

Output:

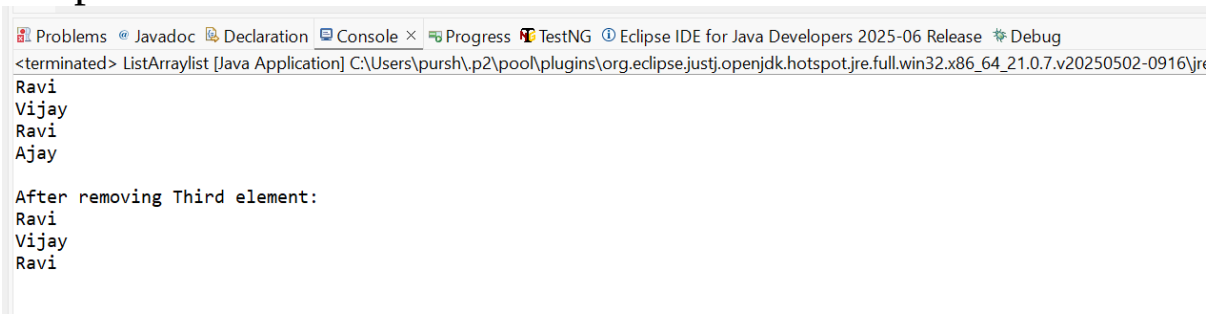


21] WAP to remove the third element from a array list.

```java
package Collection;

import java.util.ArrayList;
import java.util.Iterator;
import java.util.List;

public class ListArraylist {

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

```
		ArrayList<String> ls=new ArrayList<>(); //String values
		ls.add("Ravi"); //adding object in arraylist
		ls.add("Vijay");
		ls.add("Ravi");
		ls.add("Ajay");
		//Traversig list through Iterator
		Iterator itr=ls.iterator();
		while(itr.hasNext()) {
			System.out.println(itr.next());
		}

		//Remove Third element from array
		ls.remove(3);

		System.out.println("\nAfter removing Third element: ");
		//second way to print list values in one by one is Foreach loop
		for(String obj:ls) {
			System.out.println(obj);
		}
	}
}
```

Output:

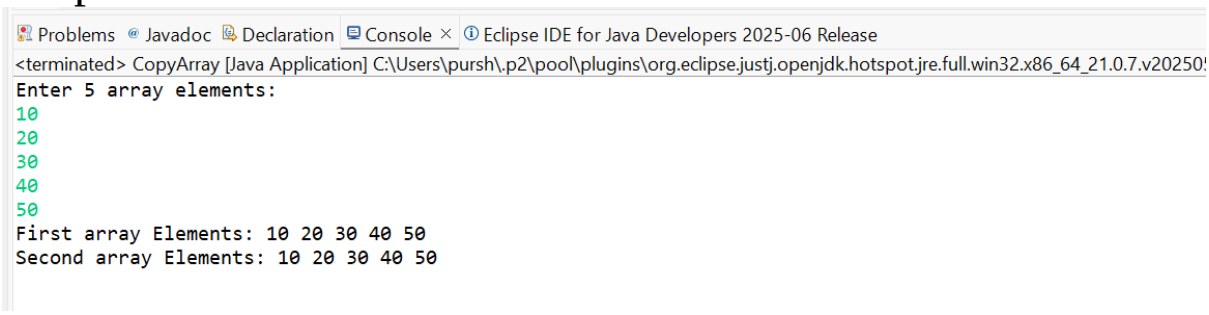


22] WAP to Copy one array into another.

```
package Assignment;

import java.util.Scanner;

public class CopyArray {

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

		int a[]=new int[5];
		int b[]=new int[5];

		Scanner sc= new Scanner(System.in);
		System.out.println("Enter 5 array elements: ");
		for(int i=0; i<a.length; i++) {
			a[i]=sc.nextInt();
		}
		System.out.print("First array Elements: ");
		for(int i=0; i<a.length; i++) {
```

```
                System.out.print(a[i]+" ");
            }
            System.out.print("\nSecond array Elements: ");
            for(int i=0; i<a.length; i++) {
                b[i]=a[i];
                System.out.print(b[i]+" ");
            }
        }
}
```

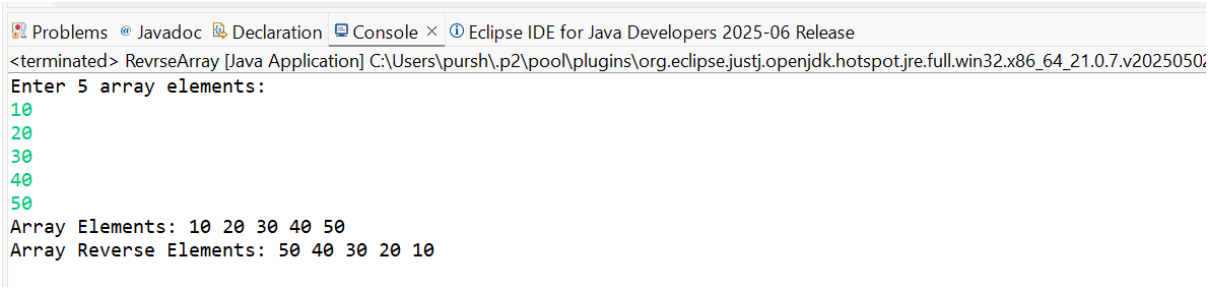
Output:



23] **WAP to reverse an array of integer values.**

```
package Assignment;

import java.util.Scanner;

public class RevrseArray {

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

            int a[]=new int[5];

            Scanner sc= new Scanner(System.in);
            System.out.println("Enter 5 array elements: ");
            for(int i=0; i<a.length; i++) {
                a[i]=sc.nextInt();
            }
            System.out.print("Array Elements: ");
            for(int i=0; i<a.length; i++) {
                System.out.print(a[i]+" ");
            }
            System.out.print("\nArray Reverse Elements: ");
            for(int i=a.length-1; i>=0; i--) {
                System.out.print(a[i]+" ");
            }

        }
}
```

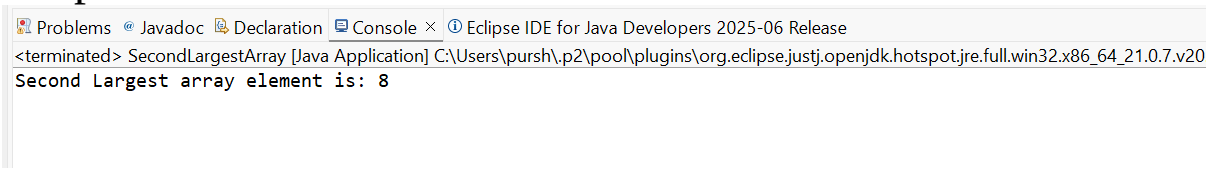
Output:



24] WAP to find the second largest element in an array.

```
package Assignment;

public class SecondLargestArray {

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

		int a[]= {4,8,1,2,7,9};
		int temp;

		for(int i=0; i<a.length; i++) {
			for(int j=i+1; j<a.length; j++) {
				if(a[i]<a[j]) {
					temp=a[i];
					a[i]=a[j];
					a[j]=temp;
				}
			}
		}
//		for(int i=0; i<a.length; i++) {
//			System.out.print(a[i]+" ");
//		}
		System.out.println("Second Largest array element is: "+a[1]);
	}
}
```

Output:

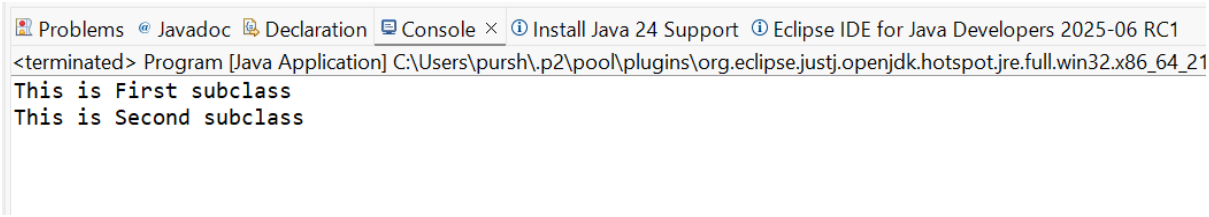


25] W.A.J.P. Create an abstract class 'Parent' with a method 'message'. It has two subclasses each having a method with the same name 'message' that prints "This is first subclass" and "This is second subclass" respectively.
Call the methods 'message' by creating an object for each subclass.

```
package Abstract;

abstract class Parent{
	abstract void message();
```

```
}

class sub1 extends Parent{
	void message() {
		System.out.println("This is First subclass");
	}
}

class sub2 extends Parent{
	void message() {
		System.out.println("This is Second subclass");
	}
}

public class Program {

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

		sub1 s1=new sub1();
		sub2 s2=new sub2();

		s1.message();
		s2.message();
	}
}
```

Output:



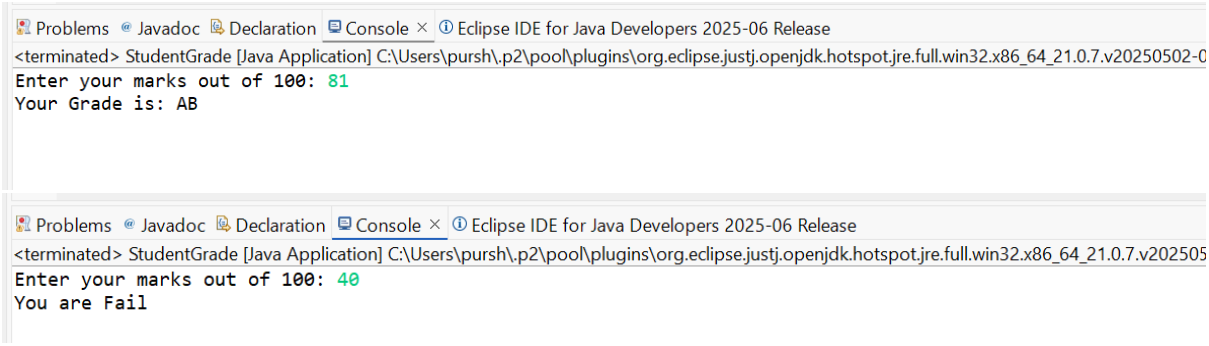
26] W.A.J.P. which will ask the user to enter his/her marks (out of 100). Define a method that will display grades according to the marks entered as below:

Marks	Grade
91-100	AA
81-90	AB
71-80	BB
61-70	BC
51-60	CD
41-50	DD
<=40	Fail

```
package Assignment;
import java.util.Scanner;

public class StudentGrade {
```

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

		Scanner sc=new Scanner(System.in);

		System.out.print("Enter your marks out of 100: ");
		int marks= sc.nextInt();

		if(marks>90 && marks<=100) {
			System.out.println("Grade is: AA");
		}else if(marks>80 && marks<=90) {
			System.out.println("Your Grade is: AB");
		}else if(marks>70 && marks<=80) {
			System.out.println("Your Grade is: BB");
		}else if(marks>60 && marks<=70) {
			System.out.println("Your Grade is: BC");
		}else if(marks>50 && marks<=60) {
			System.out.println("Your Grade is: CD");
		}else if(marks>40 && marks<=50) {
			System.out.println("Your Grade is: DD");
		}else {
			System.out.println("You are Fail");
		}
	}
}
```

Output:



27] **W.A.J.P. to create a custom exception if Customer withdraw amount which is greater than account balance then program will show custom exception otherwise amount will deduct from account balance.**

Account balance is:2000
Enter withdraw amount:2500
Sorry, insufficient balance, you need more 500 Rs.
To perform this transaction.

```
package Assignment;

import java.util.Scanner;

//Custom exception class
class InsufficientBalanceException extends Exception {
```

```
        InsufficientBalanceException(String message) {

            super(message);
        }
}

public class CustomExceptionATM {

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

             int balance = 2000;

         Scanner sc = new Scanner(System.in);
         System.out.println("Account balance is: " + balance);
         System.out.print("Enter withdraw amount: ");
         int amount = sc.nextInt();

         try {
             if (amount > balance) {
                 int diff = amount - balance;
                 throw new InsufficientBalanceException("Sorry, insufficient
balance, you need more " + diff + " Rs. to perform this transaction.");
             } else {
                 balance -= amount;
                 System.out.println("Withdrawal successful! Remaining balance: " +
balance + " Rs.");
             }
         } catch (InsufficientBalanceException e) {
             System.out.println(e.getMessage());
         }
       }
}
```

Output: