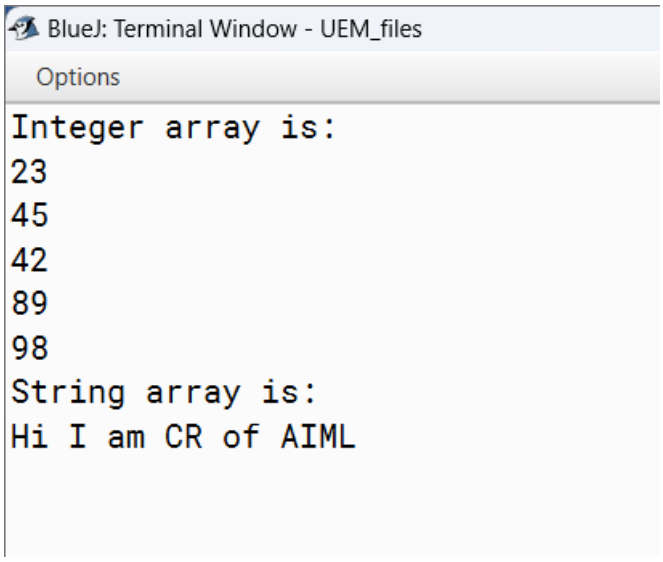
Assignment 2 using Java

1. Write a java program to create a simple array and access array element.

```
// to create a simple array and access array element.
class Assignment_2
{
    public static void main(String args[])
    {
        int []a={23,45,42,89,98};
        System.out.println("Integer array is: ");
        for(int i=0; i<5; i++)
        {
            System.out.println(a[i]+" ");
        }
        String []str={"Hi","I","am","CR","of","AIML"};
        System.out.println("String array is: ");
        for(int i=0; i<6; i++)
        {
            System.out.print(str[i]+" ");
        }
    }
}
```

Output:



2. Write a java program to create 2D array and access the array element.

Assignment_2 - UEM_files

Class Edit Tools Options

Assignment_2

Compile Undo Cut Copy Paste Find... Close

```
// to create a simple array and access array element.
class Assignment_2
{
    public static void main(String args[])
    {
        int [][]a={{23,45,42},{12,23,34},{12,9,87}};
        System.out.println("Integer array is: ");
        for(int i=0; i<a.length; i++)
        {
            for(int j=0; j<a[i].length; j++)
            {
                System.out.print(a[i][j]+" ");
            }
            System.out.println();
        }
        String [][]str={{"Hi","I","am","CR","of","AIML"},{"I","do","my", "work","diligently"}};
        System.out.println();
        System.out.println("String array is: ");
        for(int i=0; i<str.length; i++)
        {
            for(int j=0; j<str[i].length; j++)
            {
                System.out.print(str[i][j]+" ");
            }
            System.out.println();
        }
    }
}
```

Output:

BlueJ: Terminal Window - UEM_files

Options

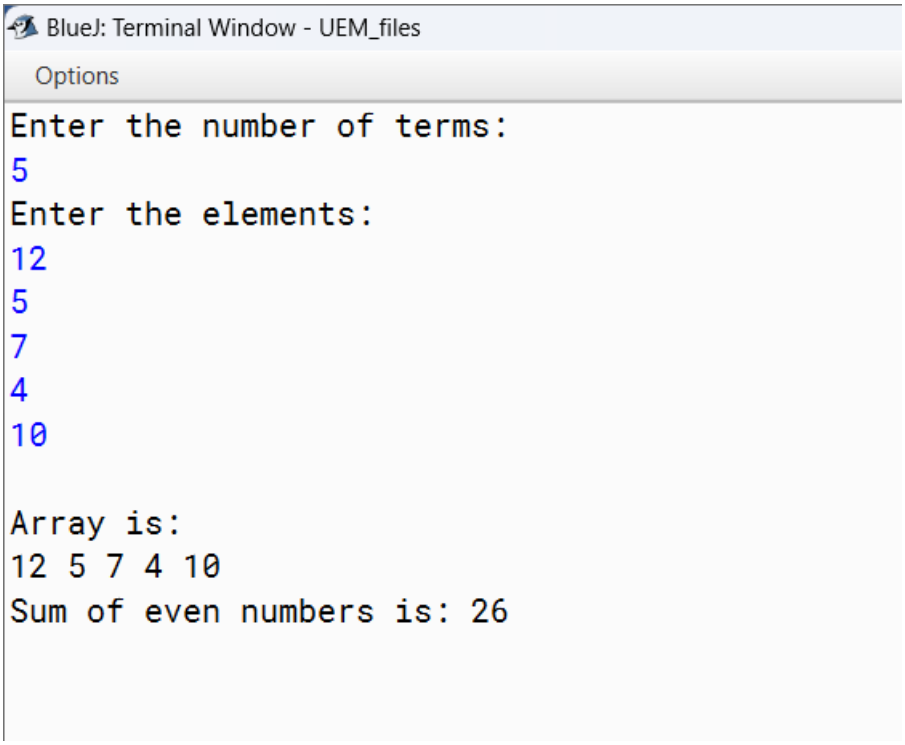
```
Integer array is:
23 45 42
12 23 34
12 9 87

String array is:
Hi I am CR of AIML
I do my work diligently
```

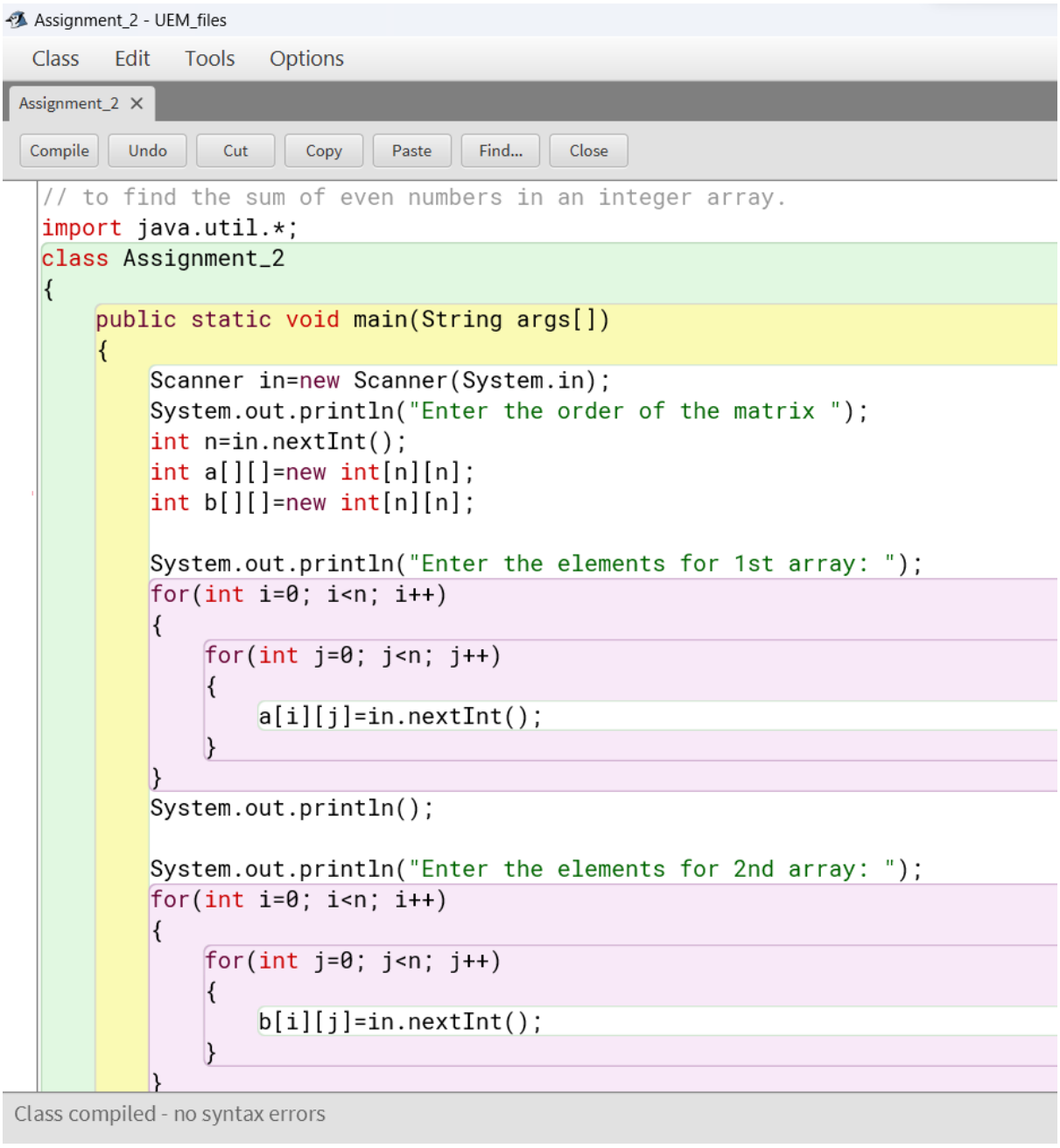
3. Write a Java program to find the sum of even numbers in an integer array.

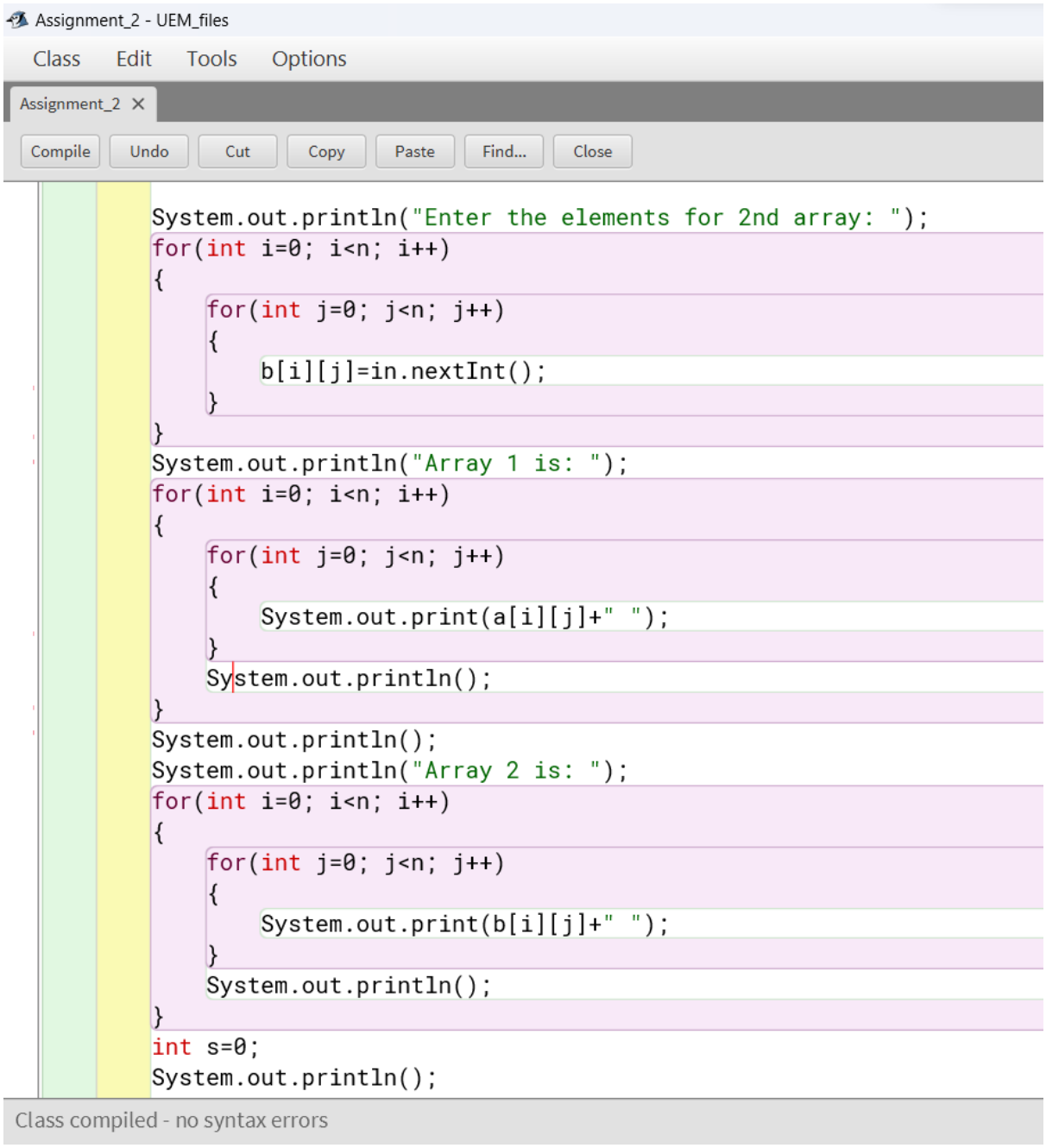
```java
import java.util.*;
class Assignment_2
{
    public static void main(String args[])
    {
        Scanner in=new Scanner(System.in);
        System.out.println("Enter the number of terms: ");
        int n=in.nextInt();
        int a[]=new int[n];
        System.out.println("Enter the elements: ");
        for(int i=0; i<n; i++)
        {
            a[i]=in.nextInt();
        }
        System.out.println();
        System.out.println("Array is: ");
        for(int i=0; i<n; i++)
        {
            System.out.print(a[i]+" ");
        }
        int s=0;
        System.out.println();
        for(int i=0; i<n; i++)
        {
            if (a[i]%2==0)
                s=s+a[i];
        }
        System.out.println("Sum of even numbers is: "+s);
    }
}
```

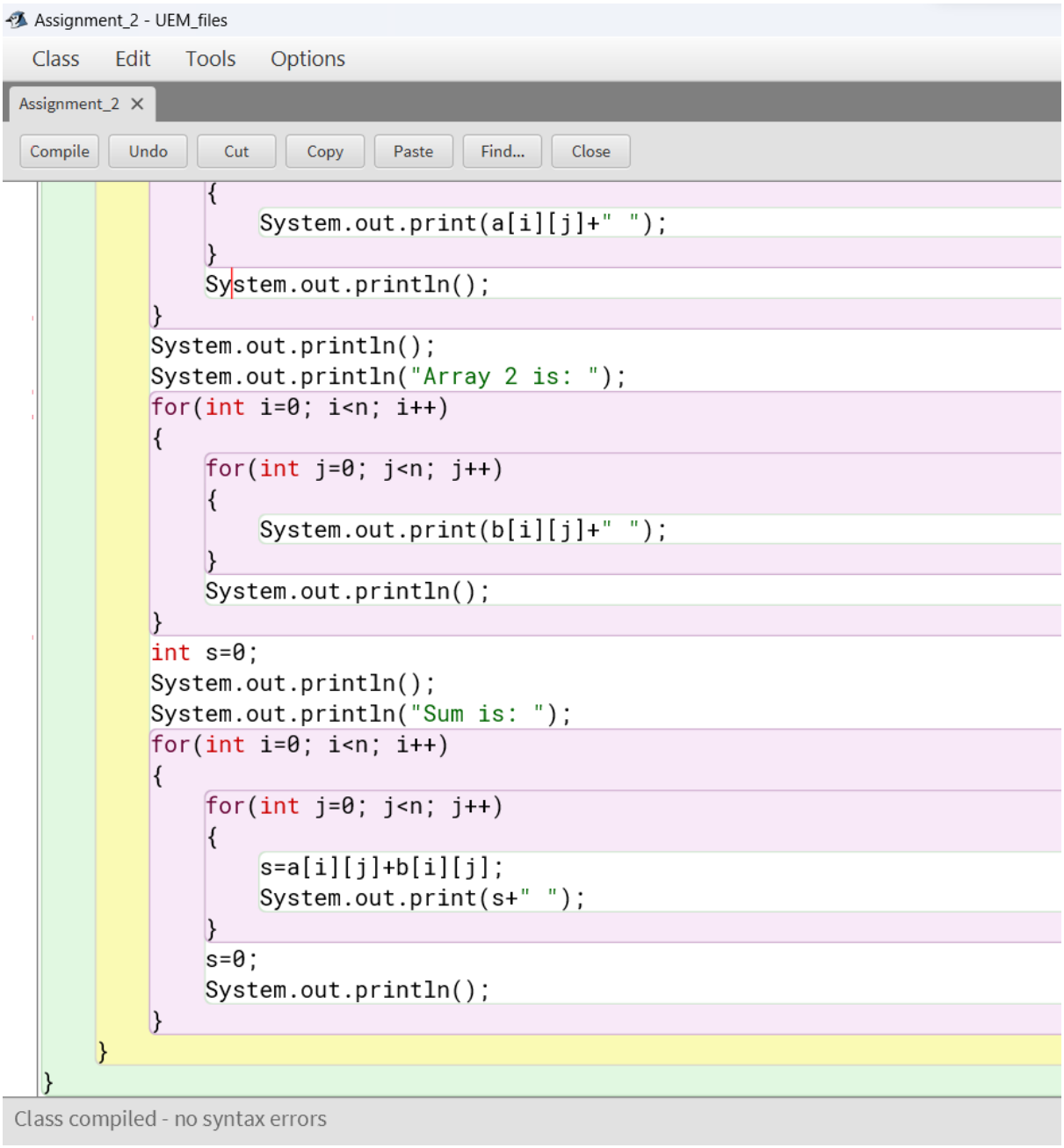
Output:



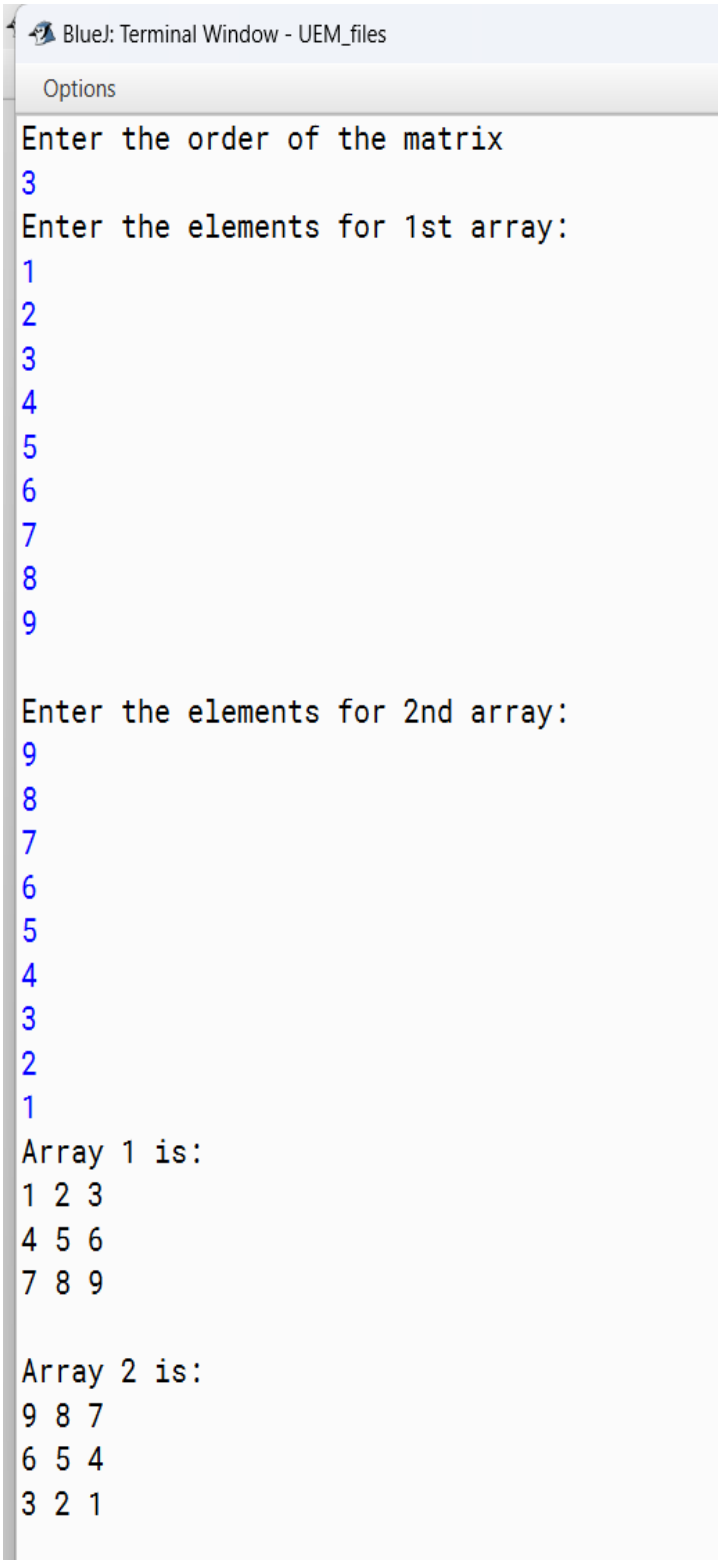
4. Write a Java program to calculate Sum of two 2-dimensional arrays.


Assignment_2 - UEM_files
Class Edit Tools Options
Assignment_2
Compile Undo Cut Copy Paste Find... Close
// to find the sum of even numbers in an integer array.
import java.util.*;
class Assignment_2
{
public static void main(String args[])
{
Scanner in=new Scanner(System.in);
System.out.println("Enter the order of the matrix ");
int n=in.nextInt();
int a[][]=new int[n][n];
int b[][]=new int[n][n];
System.out.println("Enter the elements for 1st array: ");
for(int i=0; i<n; i++)
{
for(int j=0; j<n; j++)
{
a[i][j]=in.nextInt();
}
}
System.out.println();
System.out.println("Enter the elements for 2nd array: ");
for(int i=0; i<n; i++)
{
for(int j=0; j<n; j++)
{
b[i][j]=in.nextInt();
}
}
Class compiled - no syntax errors


Assignment_2 - UEM_files
Class Edit Tools Options
Assignment_2
Compile Undo Cut Copy Paste Find... Close
System.out.println("Enter the elements for 2nd array: ");
for(int i=0; i<n; i++)
{
for(int j=0; j<n; j++)
{
b[i][j]=in.nextInt();
}
}
System.out.println("Array 1 is: ");
for(int i=0; i<n; i++)
{
for(int j=0; j<n; j++)
{
System.out.print(a[i][j]+" ");
}
System.out.println();
}
System.out.println();
System.out.println("Array 2 is: ");
for(int i=0; i<n; i++)
{
for(int j=0; j<n; j++)
{
System.out.print(b[i][j]+" ");
}
System.out.println();
}
int s=0;
System.out.println();
Class compiled - no syntax errors


Assignment_2 - UEM_files
Class Edit Tools Options
Assignment_2
Compile Undo Cut Copy Paste Find... Close
{
System.out.print(a[i][j]+" ");
}
System.out.println();
}
System.out.println();
System.out.println("Array 2 is: ");
for(int i=0; i<n; i++)
{
for(int j=0; j<n; j++)
{
System.out.print(b[i][j]+" ");
}
System.out.println();
}
int s=0;
System.out.println();
System.out.println("Sum is: ");
for(int i=0; i<n; i++)
{
for(int j=0; j<n; j++)
{
s=a[i][j]+b[i][j];
System.out.print(s+" ");
}
s=0;
System.out.println();
}
}
}
Class compiled - no syntax errors

Output:


BlueJ: Terminal Window - UEM_files
Options
Enter the order of the matrix
3
Enter the elements for 1st array:
1
2
3
4
5
6
7
8
9
Enter the elements for 2nd array:
9
8
7
6
5
4
3
2
1
Array 1 is:
1 2 3
4 5 6
7 8 9
Array 2 is:
9 8 7
6 5 4
3 2 1

```
Enter the elements for 2nd array:
9
8
7
6
5
4
3
2
1
Array 1 is:
1 2 3
4 5 6
7 8 9

Array 2 is:
9 8 7
6 5 4
3 2 1

Sum is:
10 10 10
10 10 10
10 10 10
```

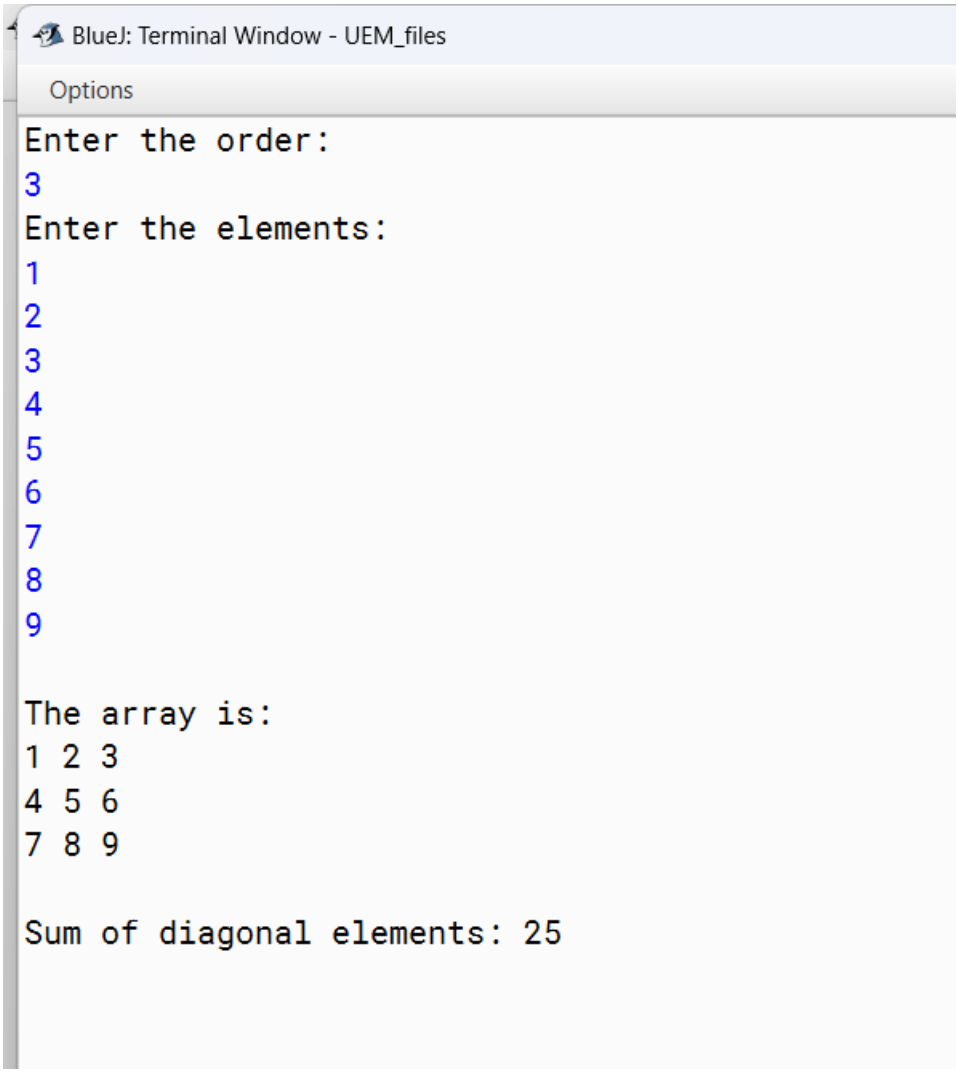
5. Write a Java program to find the sum of diagonal elements in a 2D array.

```java
//to calculate the sum of diagonal elements in a 2D array.
import java.util.*;
public class Assignment_2
{
    public static void main(String args[])
    {
        Scanner in=new Scanner(System.in);
        System.out.println("Enter the order: ");
        int n=in.nextInt();
        int a[][]=new int[n][n];
        System.out.println("Enter the elements: ");
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                a[i][j]=in.nextInt();
            }
        }
        System.out.println();
        System.out.println("The array is: ");
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                System.out.print(a[i][j]+" ");
            }
            System.out.println();
        }
        System.out.println();
        int s=0;
```

Class compiled - no syntax errors

```
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                a[i][j]=in.nextInt();
            }
        }
        System.out.println();
        System.out.println("The array is: ");
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                System.out.print(a[i][j]+" ");
            }
            System.out.println();
        }
        System.out.println();
        int s=0;
        for(int i=0; i<n; i++)
        {
            for(int j=0; j<n; j++)
            {
                if(i==j || i+j==n-1)
                    s=s+a[i][j];
            }
        }
        System.out.println("Sum of diagonal elements: "+s);
    }
}
```

Output:



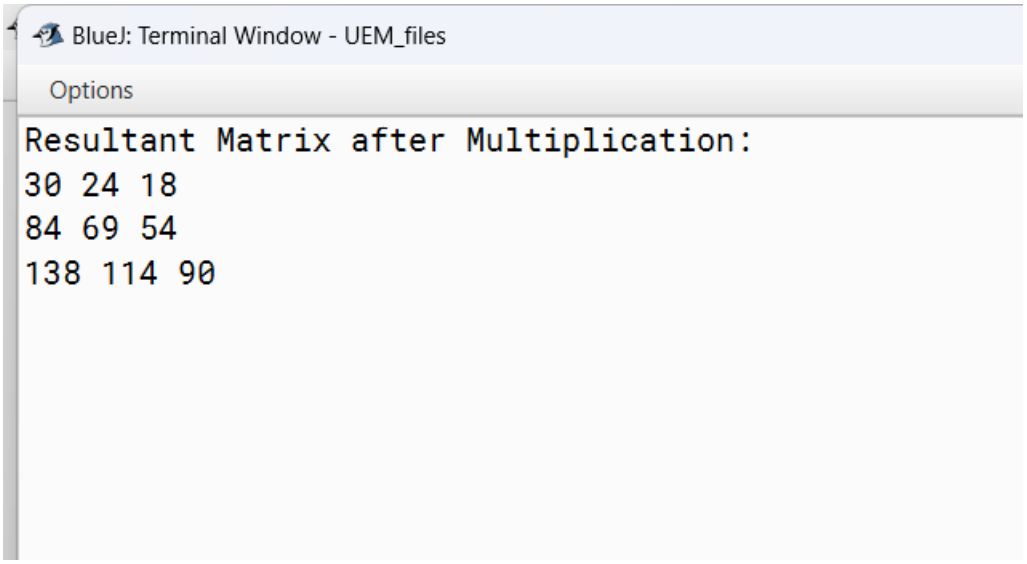
6. WAP in Java to multiply two matrices.

```java
public class Assignment_1
{
    public static void main(String[] args)
    {
        int[][] matrixA = {{1, 2, 3}, {4, 5, 6}, {7, 8, 9}};
        int[][] matrixB = {{9, 8, 7}, {6, 5, 4}, {3, 2, 1}};

        multiplyAndDisplay(matrixA, matrixB);
    }
    public static void multiplyAndDisplay(int[][] A, int[][] B) {
        int rowsA = A.length;
        int colsA = A[0].length;
        int colsB = B[0].length;
        int[][] result = new int[rowsA][colsB];
        for (int i = 0; i < rowsA; i++) {
            for (int j = 0; j < colsB; j++) {
                for (int k = 0; k < colsA; k++) {
                    result[i][j] += A[i][k] * B[k][j];
                }
            }
        }
        System.out.println("Resultant Matrix after Multiplication:");
        for (int i = 0; i < rowsA; i++) {
            for (int j = 0; j < colsB; j++) {
                System.out.print(result[i][j] + " ");
            }
            System.out.println();
        }
    }
}
```

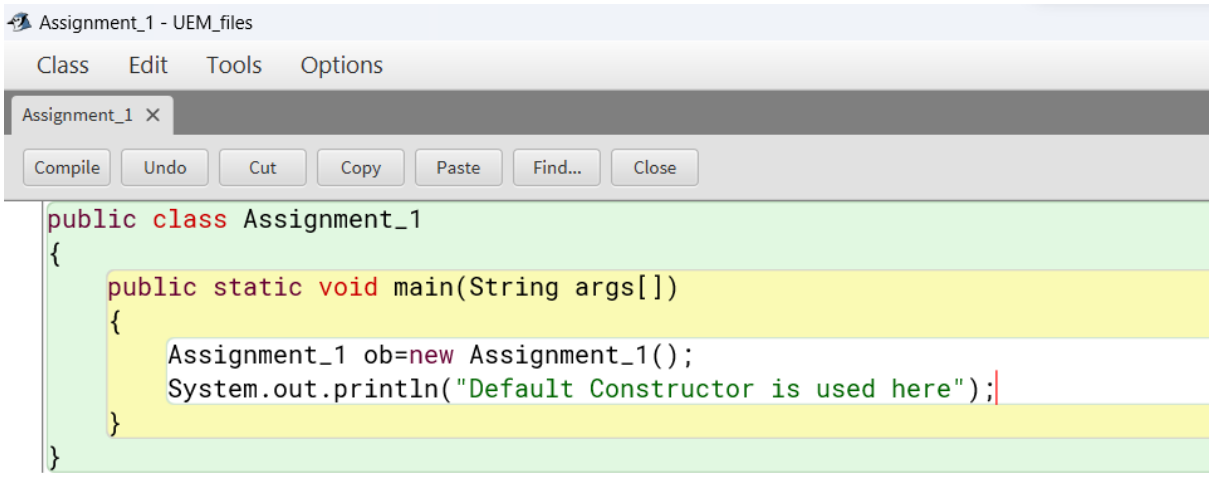
Class compiled - no syntax errors

Output:

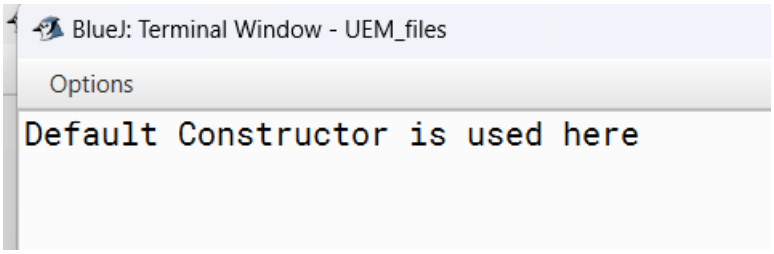


7. WAP in Java implementing default and no argument constructor.

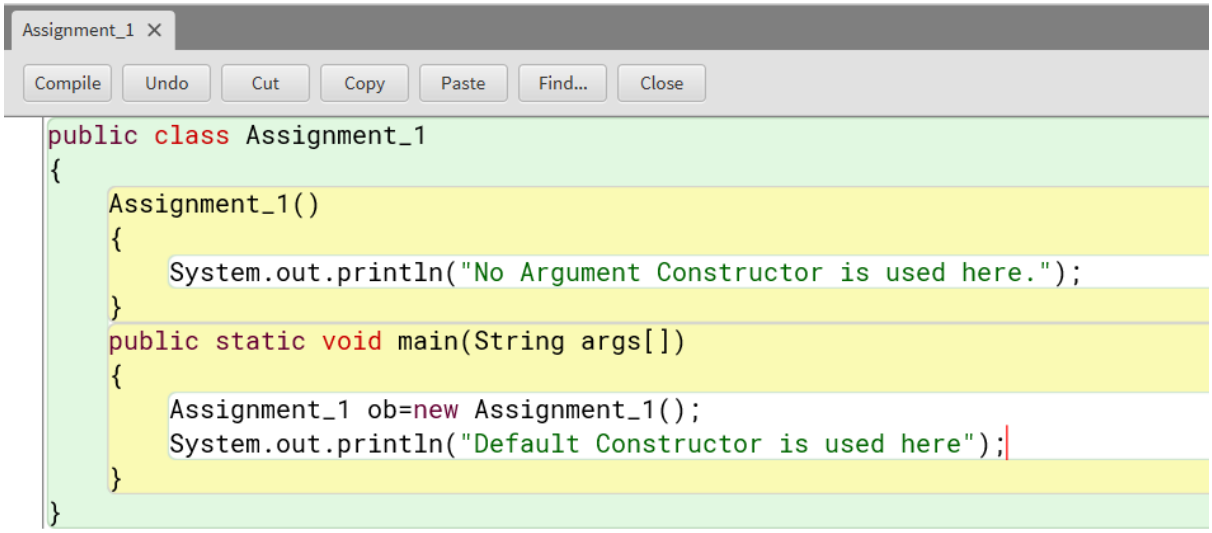
Default Constructor:



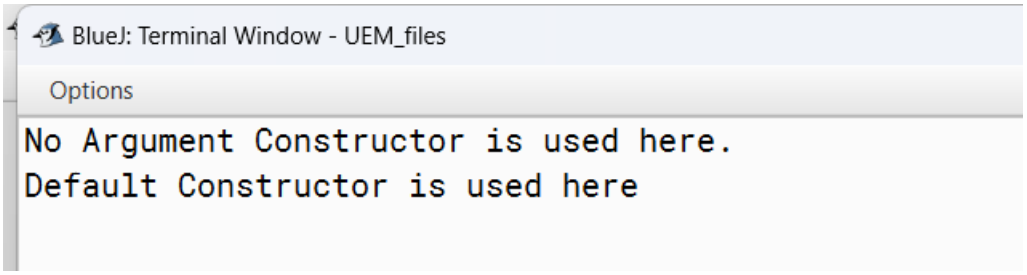
Output:



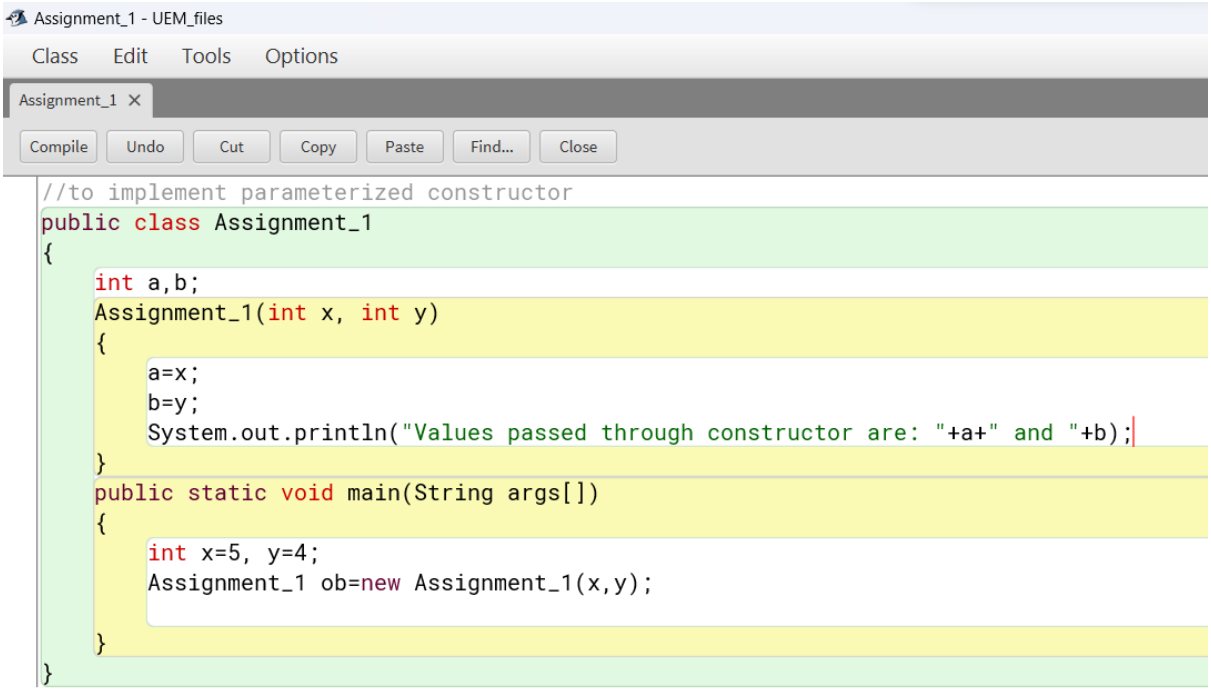
No Argument Constructor:



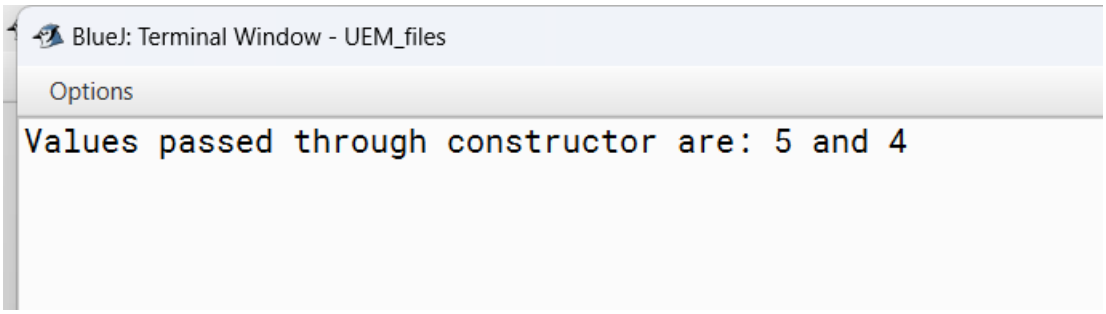
Output:



8. WAP in Java to implement parameterized constructor.



Output:



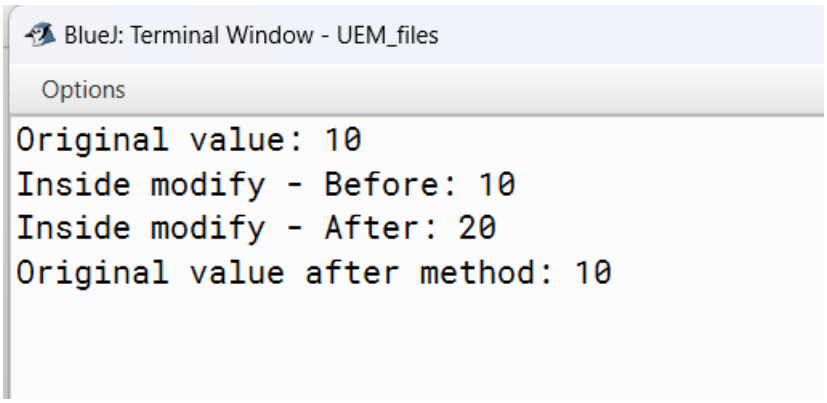
9. WAP in Java to implement call by value method.

```java
public class Assignment_2
{
    void modify(int value)
    {
        System.out.println("Inside modify - Before: " + value);
        value = value * 2;

        System.out.println("Inside modify - After: " + value);
    }
    public static void main(String[] args)
    {
        int num = 10;
        System.out.println("Original value: " + num);
        Assignment_2 ob=new Assignment_2();
        // Call the method and pass the value by value
        ob.modify(num);

        System.out.println("Original value after method: " + num);
    }
}
```

Output:



10. WAP in Java to implement call by reference.

Assignment_2 - UEM_files

Class Edit Tools Options

Assignment_2

Compile Undo Cut Copy Paste Find... Close

```
class Person
{
    String name;
    public Person(String name) {
        this.name = name;
    }
}
public class Assignment_2
{
    public static void modifyName(Person p)
    {
        System.out.println("Before: " + p.name);
        p.name = "UEM";
        System.out.println("After: " + p.name);
    }

    public static void main(String[] args)
    {
        Person person = new Person("Sayan");
        System.out.println("Original name: " + person.name);
        modifyName(person);
        System.out.println("Modified name: " + person.name);
    }
}
```

Output:

BlueJ: UEM_files

BlueJ: Terminal Window - UEM_files

Options

```
Original name: Sayan
Before: Sayan
After: UEM
Modified name: UEM
```