

Linear Equations Application Using Java

```
import java.util.Scanner;

public class Linear {

    public static void main(String[] args)
    {
        Scanner s=new Scanner(System.in);
        System.out.println("1. (1×1) Matrix\t2. (2×2) Matrix\t3. (3×3) Matrix");
        System.out.println(" ");
        System.out.print("Select your choice: ");
        int n=s.nextInt();
        switch(n)
        {
            case 1:
                if (n==1)
                {
                    Scanner sc=new Scanner(System.in);
                    System.out.print("Enter a value: ");
                    double a=sc.nextDouble();
                    System.out.print("Enter b value: ");
                    double b=sc.nextDouble();
                    System.out.print("Enter c value: ");
                    double c=sc.nextDouble();
                    System.out.println("Equation is:"+a+"x"+"+"+b+"y"+"="+"c);
                    System.out.println("1.Find x value\t2.Find y value\t3.Default");
                    System.out.print("Select your choice: ");
                    int v=sc.nextInt();

                    switch(v)
                    {
```

case 1:

```
        if(v==1)
        {
            if(b>=0)
            {
                System.out.print(" y value: ");
                double y=sc.nextDouble();
                double x=(c-(b*y))/a;
                System.out.println("Equation is:"+a+"x"+"+"+b+"*"+y+"="+"c);
                System.out.print("x= "+x);
            }
        }
        break;
```

case 2:

```
        if(v==2)
        {
            if(a>=0)
            {
                System.out.print(" x value: ");
                double x=sc.nextDouble();
                double y=(c-(a*x))/b;
                System.out.println("Equation is:"+a+"*"+x+"+"+b+"y" +"="+"c);
                System.out.print("y= "+y);
            }
        }
        break;
```

case 3:

```
        System.out.println("Default");
        break;
    }    }
```

break;

case 2:

```
        if(n==2)
        {
            System.out.println(" ");
            Scanner sc=new Scanner(System.in);
            System.out.print("Enter the a value: ");
            double a=sc.nextInt();

            System.out.print("Enter the b value: ");
            double b=sc.nextInt();

            System.out.print("Enter the c value: ");
            double c=sc.nextInt();

            System.out.println(" ");
            System.out.print("Enter the d value: ");
            double d=sc.nextInt();

            System.out.print("Enter the e value: ");
            double e=sc.nextInt();

            System.out.print("Enter the f value: ");
            double f=sc.nextInt();
            System.out.println();
            System.out.println("The first Equation  "+a+"x+" +b+"y" +"="+c);
            System.out.println();
            System.out.println("The second Equation  "+d+"x+" +e+"y" +"="+f);
            if((a*d-(b*c)!=0))
            {
                double x=(e*c)-(b*f)/(a*e-b*d);
                double y=(a*f)-(d*c)/(a*e)-(b*d);
            }
            System.out.println();
```

```
System.out.println("x value: "+x);
System.out.println();
System.out.println("y value: "+y);
    }
    }
    else
    {
        System.out.println("No Solution");
    }
    break;
```

case 3:

```
        if(n==3)
        {
            System.out.println(" ");
            Scanner sc=new Scanner(System.in);
            System.out.print("Enter the a1 value: ");
            double a1=sc.nextInt();

            System.out.print("Enter the b1 value: ");
            double b1=sc.nextInt();

            System.out.print("Enter the c1 value: ");
            double c1=sc.nextInt();

            System.out.print("Enter the d1 value: ");
            double d1=sc.nextInt();

            System.out.println(" ");
            System.out.print("Enter the a2 value: ");
            double a2=sc.nextInt();

            System.out.print("Enter the b2 value: ");
```

```
double b2=sc.nextInt();  
System.out.print("Enter the c2 value: ");  
double c2=sc.nextInt();
```

```
System.out.print("Enter the d2 value: ");  
double d2=sc.nextInt();
```

```
System.out.println(" ");  
System.out.print("Enter the a3 value: ");  
double a3=sc.nextInt();
```

```
System.out.print("Enter the b3 value: ");  
double b3=sc.nextInt();
```

```
System.out.print("Enter the c3 value: ");  
double c3=sc.nextInt();
```

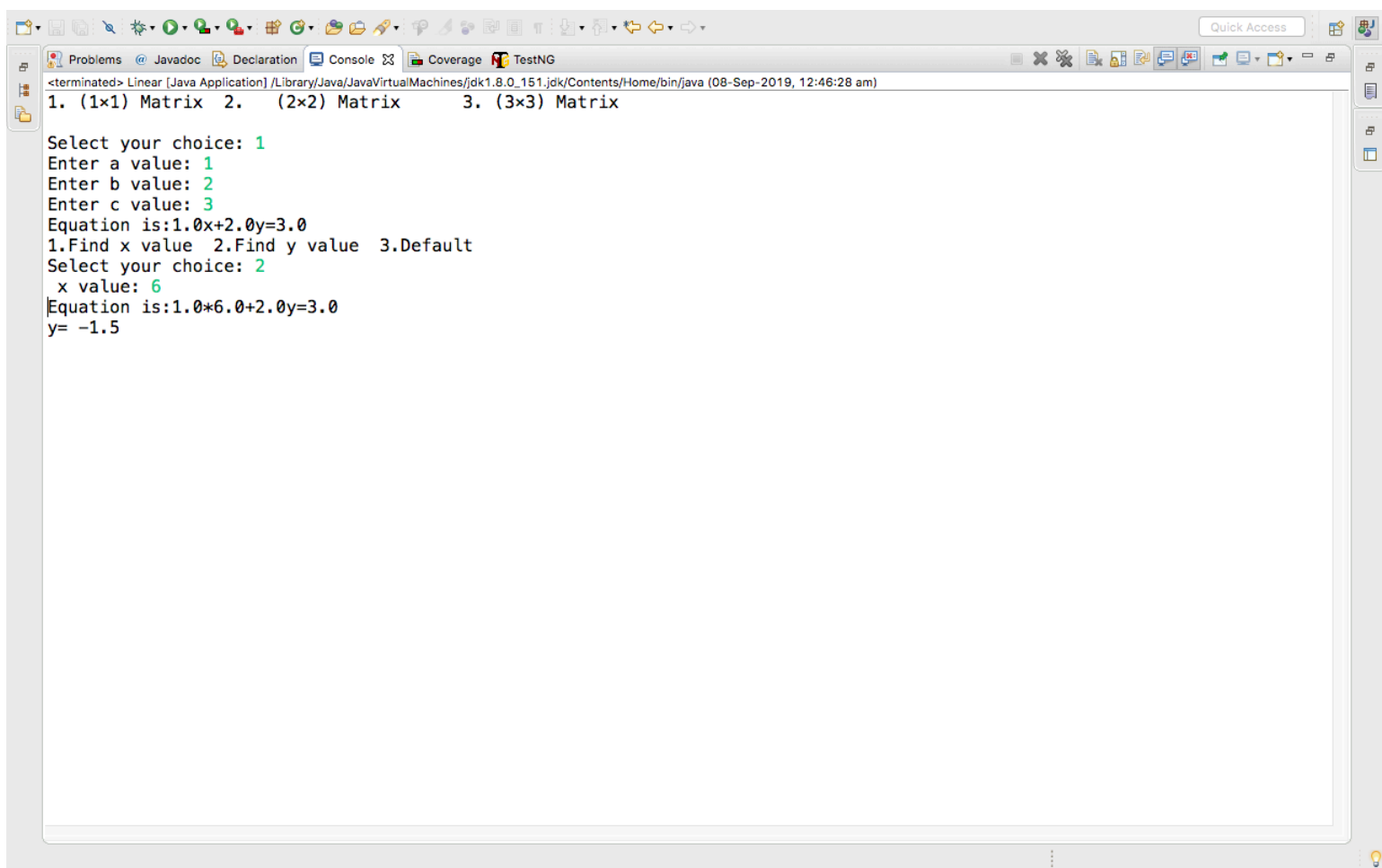
```
System.out.print("Enter the d3 value: ");  
double d3=sc.nextInt();
```

```
System.out.println("The first Equation  "+a1 +"x+" +b1 +"y"+"c2 +"z" +"="+"d1);  
System.out.println("The Second Equation  "+a2 +"x+" +b2 +"y"+"c3 +"z" +"="+"d2);  
System.out.println("The Third Equation  "+a3 +"x+" +b3 +"y"+"c3 +"z" +"="+"d3);
```

```
double n1=((d1*b2)-(b1*d2)) + ((b1*c2)-(c1*b2)) + ((d2*b3)-(b2*d3) + ((b2*c3)-(c2*b3))));  
double n2=((a1*b2)-(b1*d2)) + ((b1*c2)-(c1*b2)) + ((a2*b3)-(b2*a3) + ((b2*c3)-(c2*b3))));  
double x=(n1/n2);  
double m1=((a1*d2)-(d1*a2)) + ((d1*c2)-(c1*d2)) + ((a2*d3)-(d2*a3) + ((d2*c3)-(c2*d3))));  
double m2=((a1*b2)-(b1*d2)) + ((b1*c2)-(c1*b2)) + ((a2*b3)-(b2*a3) + ((b2*c3)-(c2*b3))));  
double y=(m1/m2);  
double l1=((a1*b2)-(b1*d2)) + ((b1*d2)-(d1*b2)) + ((a2*b3)-(b2*a3) + ((b2*d3)-(d2*b3))));  
double l2=((a1*b2)-(b1*d2)) + ((b1*c2)-(c1*b2)) + ((a2*b3)-(b2*a3) + ((b2*c3)-(c2*b3))));  
double z=(l1/l2);
```

```
System.out.println("x: "+x);  
System.out.println("y: "+y);  
System.out.println("z: "+z);  
break;  
}  
}  
}
```

Output:



```
<terminated> Linear [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_151.jdk/Contents/Home/bin/java (08-Sep-2019, 12:46:28 am)  
1. (1x1) Matrix  2. (2x2) Matrix  3. (3x3) Matrix  
Select your choice: 1  
Enter a value: 1  
Enter b value: 2  
Enter c value: 3  
Equation is:1.0x+2.0y=3.0  
1.Find x value  2.Find y value  3.Default  
Select your choice: 2  
x value: 6  
Equation is:1.0*6.0+2.0y=3.0  
y= -1.5
```

```
Problems @ Javadoc Declaration Console Coverage TestNG
<terminated> Linear [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_151.jdk/Contents/Home/bin/java (08-Sep-2019, 12:38:46 am)
1. (1x1) Matrix 2. (2x2) Matrix 3. (3x3) Matrix

Select your choice: 2

Enter the a value: 1
Enter the b value: 2
Enter the c value: 3

Enter the d value: 4
Enter the e value: 5
Enter the f value: 3

The first Equation 1.0x+2.0y=3.0

The second Equation 4.0x+5.0y=3.0

x value: 17.0
y value: -7.4
```

```
Problems @ Javadoc Declaration Console Coverage TestNG
<terminated> Linear [Java Application] /Library/Java/JavaVirtualMachines/jdk1.8.0_151.jdk/Contents/Home/bin/java (08-Sep-2019, 12:39:11 am)
1. (1x1) Matrix 2. (2x2) Matrix 3. (3x3) Matrix

Select your choice: 3

Enter the a1 value: 1
Enter the b1 value: 2
Enter the c1 value: 3
Enter the d1 value: 4

Enter the a2 value: 5
Enter the b2 value: 6
Enter the c2 value: 7
Enter the d2 value: 8

Enter the a3 value: 1
Enter the b3 value: 3
Enter the c3 value: 5
Enter the d3 value: 7
The first Equation 1.0x+2.0y+7.0z=4.0
The Second Equation 5.0x+6.0y+5.0z=8.0
The Third Equation 1.0x+3.0y+5.0z=7.0
x: -1.25
y: 2.5
z: 2.25
```