Q1. Write a Java program to print the result of the following operations.

Code:

```
import java.util.Scanner;
import java.util.Stack;

public class temp
{
  public static int evaluate(String expression)
  {
      char[] tokens = expression.toCharArray();


      Stack<Integer> values = new Stack<Integer>();


      Stack<Character> ops = new Stack<Character>();

      for (int i = 0; i < tokens.length; i++)
      {

          if (tokens[i] == ' ')
              continue;


          if (tokens[i] >= '0' && tokens[i] <= '9')
          {
              StringBuffer sbuf = new StringBuffer();

              while (i < tokens.length && tokens[i] >= '0' && tokens[i] <= '9')
                  sbuf.append(tokens[i++]);
              values.push(Integer.parseInt(sbuf.toString()));
          }


          else if (tokens[i] == '(')
              ops.push(tokens[i]);


          else if (tokens[i] == ')')
          {
              while (ops.peek() != '(')
                  values.push(applyOp(ops.pop(), values.pop(), values.pop()));
              ops.pop();
          }

          else if (tokens[i] == '+' || tokens[i] == '-' ||
```

```
                tokens[i] == '*' || tokens[i] == '/'|| tokens[i]=='%')
        {

            while (!ops.empty() && hasPrecedence(tokens[i], ops.peek()))
                values.push(applyOp(ops.pop(), values.pop(), values.pop()));


            ops.push(tokens[i]);
        }
    }

    while (!ops.empty())
        values.push(applyOp(ops.pop(), values.pop(), values.pop()));

    return values.pop();
}


public static boolean hasPrecedence(char op1, char op2)
{
    if (op2 == '(' || op2 == ')')
        return false;
    if ((op1 == '*' || op1 == '/'|| op1=='%') && (op2 == '+' || op2 == '-'))
        return false;
    else
        return true;
}


public static int applyOp(char op, int b, int a)
{
    switch (op)
    { case '%':
            return a % b;
        case '+':
            return a + b;
        case '-':
            return a - b;
        case '*':
            return a * b;
        case '/':
            if (b == 0)
            return a / b;
    }
    return 0;
}


public static void main(String[] args)
{
```

```
    System.out.println("Enter the string");
    Scanner s= new Scanner(System.in);
    String str= s.nextLine();
    System.out.println("The result of the expression is :");
    System.out.println(temp.evaluate(str));
  }
}
```

Output:

```
/Library/Java/JavaVirtualMachines/jdk-14.jdk/Contents/Home/b
Enter the string
5+15/3*2-8%3
The result of the expression is :
13

Process finished with exit code 0
```

```
/Library/Java/JavaVirtualMachines/jdk-14.jdk/Contents/Home/bin/java "-javaag
Enter the string
-5+8*6
The result of the expression is :
43
```

```
/Library/Java/JavaVirtualMachines/jdk-14.jdk/Contents/
Enter the string
(55+9)%9
The result of the expression is :
1
```

```
/Library/Java/JavaVirtualMachines/jdk-14.jdk/Contents/Home/bin/jav
Enter the string
20+-3*5/8
The result of the expression is :
19
```

Q2 . **Write a Java program to print an American flag on the screen.**

CODE:

```
import java.util.Scanner;

public class check {
  public static void main(String[] args) {
```

```java
    for(int j=0;j<15; j++) {
        for (int i = 0; i < 50; i++) {
            if(j<9){
            if (i < 6)
                System.out.print("* ");
            else
                System.out.print("- ");
        }
        else
            System.out.print("- ");
        }
        System.out.println("");
    }
  }
}
```

OUTPUT:

```
/Library/Java/JavaVirtualMachines/jdk-14.jdk/Contents/Home/bin/java "-javaagent:/Applications/IntelliJ IDEA CE.app/Contents/lib/idea_rt.jar=61238:/Ap
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
* * * * * * - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
- - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - - -
```