```java
/*
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 * N!
 */

import javax.swing.*;
import java.awt.*;
import java.awt.event.ActionListener;
import java.awt.event.ActionEvent;

public class Main extends JFrame implements ActionListener{
    JTextArea txaOutput = new JTextArea("", 10, 30);
    JButton btnSum = new JButton("Sums");
    JButton btnSumOdd = new JButton("Odd Sums");
    JButton btnSumEven = new JButton("Even Sums");
    JButton btnFactorial = new JButton("Factorial");
    JTextField textFieldInput = new JTextField(10);
    JPanel panel = new JPanel();
    JPanel panel1 = new JPanel();
    private int count;
    private int sum;
    private String num = "";
    private int sumOdd;
    private String numOdd = "";
    private int sumEven;
    private String numEven = "";
    private int factorial = 1;
    private String numFactorial = "";
    public static void main(String[] args){
        Main frame = new Main();
        frame.setSize(500,500);
        frame.setVisible(true);
    }

    public Main(){
        super("N!");
        setDefaultCloseOperation(EXIT_ON_CLOSE);

        setLayout(new FlowLayout());



        add(panel1);
        panel1.add(txaOutput);
        add(textFieldInput);

        add(panel);
        panel.add(btnSum);
        panel.add(btnSumEven);
        panel.add(btnSumOdd);
        panel.add(btnFactorial);

        btnSum.addActionListener(this);
        btnSumOdd.addActionListener(this);
        btnSumEven.addActionListener(this);
        btnFactorial.addActionListener(this);

    }

    public void actionPerformed(ActionEvent event){
        Object objSource = event.getSource();
        String outputString = "";

        count = Integer.parseInt(textFieldInput.getText());
        if (objSource == btnSum){
            sum = 0;
            num = "";
            sum(count);
```

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70              txaOutput.setText("");
71              outputString = "Sum: " + returnSum() + "\n" + "Numbers:" + returnNum();
72              txaOutput.append(outputString);
73          }
74          else if(objSource == btnSumOdd){
75              sumOdd = 0;
76              numOdd = "";
77              sumOdd(count);
78              txaOutput.setText("");
79              outputString = "Sum (odds): " + returnSumOdd() + "\n" + "Numbers:" +
                returnNumOdd();
80              txaOutput.append(outputString);
81          }
82          else if(objSource == btnSumEven){
83              sumEven = 0;
84              numEven = "";
85              sumEven(count);
86              txaOutput.setText("");
87              outputString = "Sum (even): " + returnSumEven() + "\n" + "Numbers:" +
                returnNumEven();
88              txaOutput.append(outputString);
89          }
90          else if(objSource == btnFactorial){
91              factorial = 1;
92              numFactorial = "";
93              factorial(count);
94              txaOutput.setText("");
95              outputString = "Factorial: " + returnFactorial() + "\n" + "Numbers:" +
                returnNumFactorial();
96              txaOutput.append(outputString);
97          }
98      }
99
100     private void sum(int n){
101         int count = n;
102         for (int i = 1; i<=count;i++){
103             sum += i;
104             num += " " + i;
105         }
106     }
107
108     private void sumOdd(int n){
109         int count = n;
110         for (int i=0; i <= count*2; i ++){
111             if (i % 2 == 1){
112                 sumOdd += i;
113                 numOdd += " " + i;
114             }
115         }
116     }
117
118     private void sumEven(int n){
119         int count = n;
120         for (int i=1; i <= count*2; i ++){
121             if (i%2 == 0){
122                 sumEven += i;
123                 numEven += " " + i;
124             }
125         }
126     }
127
128     private void factorial(int n){
129         int count = n;
130         for (int i=1; i <= count; i ++){
131             factorial *= i;
132             numFactorial += " " + i;
133         }
134     }
135
```

```
136         public int returnSum(){
137             return sum;
138         }
139 
140         public String returnNum(){
141             return num;
142         }
143 
144         public int returnSumOdd(){
145             return sumOdd;
146         }
147 
148         public String returnNumOdd(){
149             return numOdd;
150         }
151 
152         public int returnSumEven(){
153             return sumEven;
154         }
155 
156         public String returnNumEven(){
157             return numEven;
158         }
159 
160         public int returnFactorial(){
161             return factorial;
162         }
163 
164         public String returnNumFactorial(){
165             return numFactorial;
166         }
167 
168 
169 
170     }
171 
```