```java
1    package Part1;
2
3    import java.util.Scanner;
4
5    public class Driver {
6
7        public static void main(String[] args) {
8            int num = 0;
9            try{
10               num = inputNumber();
11               System.out.println("Factorial of " + num + " = " + getFactorial(num));
12           }catch (myNumberFormatException mynfe){
13               System.out.println(mynfe.toString());
14           }catch (FactorialException fe){
15               System.out.println(fe.toString());
16           }
17       }
18
19
20       // Get factorial of an integer
21       private static int getFactorial(int n){
22           int fact = 1;
23           while(n > 1){
24               fact *= n--;
25           }
26           return fact;
27       }
28
29
30       // Inputs a number and throws relevant custom exceptions
31       private static int inputNumber() throws FactorialException,
     myNumberFormatException {
32
33           Scanner sc = new Scanner(System.in);
34           System.out.println("Enter an integer:");
35           String s = sc.nextLine();
36
37           // check if input is integer
38           if(!isInteger(s)){
39               throw new myNumberFormatException(s);
40           }
41
42           int inputNum = Integer.parseInt(s);
43           // assert input range
44           if(inputNum < 0 || inputNum > 15){
45               throw new FactorialException(inputNum);
46           }
47           return inputNum;
48       }
49
50
51       // Check whether the passed string is an integer
52       private static boolean isInteger(String s) {
```

```java
53        char[] digits = {'1', '2', '3', '4', '5', '6', '7', '8', '9'};
54        for(char c: s.toCharArray()) {
55           boolean isInt = false;
56           for(char digit: digits) {
57              if(c == digit){
58                 isInt = true;
59                 break;
60              }
61           }
62           if(!isInt) {
63              return false;
64           }
65        }
66        return true;
67     }
68
69
70  }
71
```

```java
package Part1;

public class FactorialException extends Exception {
    private int num;

    public FactorialException(int num) {
        this.num = num;
    }

    public int getNum() {
        return num;
    }
    public void setNum(int num) {
        this.num = num;
    }

    @Override
    public String toString() {
        return "FactorialException:" + num + " is out of range (0-15)";
    }
}
```

```java
package Part1;

public class myNumberFormatException extends Exception{
    private String s;

    public myNumberFormatException(String s) {
        this.s = s;
    }

    public String getS() {
        return s;
    }

    public void setS(String s) {
        this.s = s;
    }

    @Override
    public String toString() {
        return "myNumberFormatException:" + s + " is not an integer.";
    }
}
```

```
1  "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program Files\
   JetBrains\IntelliJ IDEA Community Edition 2022.3.1\lib\idea_rt.jar=50694:C:\
   Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3.1\bin" -Dfile.
   encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-
   8 -classpath "D:\College\Fourth SEM\java\javA\out\production\javA;C:\Users\
   Abhishek\.m2\repository\org\jetbrains\annotations\24.0.0\annotations-24.0.0.
   jar" Part1.Driver
2  Enter an integer:
3  4
4  Factorial of 4 = 24
5
6  Process finished with exit code 0
7
```

```java
package aPart2;

import java.util.Scanner;
public class Demo {
    public static void main(String[] args) {
        try {
            String str = getInput();
        }catch (NoMatchException noMatchException){
            System.out.println(noMatchException.toString());
            noMatchException.printStackTrace();
        }

        System.out.println("Input matches 'India'. Program finished.");

    }

    private static String getInput() throws NoMatchException {
        Scanner sc = new Scanner(System.in);
        System.out.println("Enter String that matches 'India': ");
        String str = sc.nextLine();
        if(!str.equals("India")){
            throw new NoMatchException(str);
        }
        return str;
    }

}
```

```java
1   package Part2;
2
3   public class NoMatchException extends Exception{
4       private String str;
5       public NoMatchException(String str){
6           this.str = str;
7       }
8
9       public String getStr() {
10          return str;
11      }
12
13      public void setStr(String str) {
14          this.str = str;
15      }
16
17      @Override
18      public String toString() {
19          return "NoMatchException: " + str + " does not match 'India'.";
20      }
21  }
```

1 "C:\Program Files\Java\jdk-19\bin\java.exe" "-javaagent:C:\Program Files\
   JetBrains\IntelliJ IDEA Community Edition 2022.3.1\lib\idea_rt.jar=50697:C:\
   Program Files\JetBrains\IntelliJ IDEA Community Edition 2022.3.1\bin" -Dfile.
   encoding=UTF-8 -Dsun.stdout.encoding=UTF-8 -Dsun.stderr.encoding=UTF-
   8 -classpath "D:\College\Fourth SEM\java\javA\out\production\javA;C:\Users\
   Abhishek\.m2\repository\org\jetbrains\annotations\24.0.0\annotations-24.0.0.
   jar" Part2.Demo
2 Enter String that matches 'India':
3 India
4 Input matches 'India'. Program finished.
5
6 Process finished with exit code 0
7