**主题：饱和反向波兰符号（SRPN）计算器（The Saturated Reverse Polish Notation (SRPN) Calculator ）**

**使用语言： Java**

任务情景：在旧系统上执行某些维护时，您会发现它使用了名为SRPN（srpn）的程序。 SRPN没有记录，似乎没有人知道它是谁编写的，因此您的老板告诉您用Java重写它。 SRPN是反向波兰表示法计算器，具有所有算术都饱和的额外功能，即当达到可存储在变量中的最大值时，它保持最大值而不是环绕。

Context: Whilst performing some maintenance on a legacy system you find that it makes use of a program called SRPN (srpn). SRPN is not documented and no one seems to know who wrote it, so your boss tells you to rewrite it in Java. SRPN is a reverse Polish notation calculator with the extra feature that all arithmetic is saturated, i.e. when it reaches the maximum value that can be stored in a variable, it stays at the maximum rather than wrapping around.

任务要求：

1.您的任务是编写一个与SRPN的功能尽可能匹配的程序。请注意，这包括不添加或增强现有功能。

（1. Your task is to write a program which matches the functionality of SRPN as closely as possible. Note that this includes not adding or enhancing existing features. ）

2.下面提供了需要编辑的旧版程序和示例代码。  
（2. The legacy program and the example code you need to edit are available below.）

3. SRPN代码在下面的repl.it窗口中可用。这使您可以运行srpn程序并与之交互.（3.The SRPN code is available below in the repl.it window. This allows you to run and interact with the srpn program.）  
  
4. 您应该在以下4个任务中开始写程序，然后观察结果，然后它们将实现您的代码以复制此功能。You should start by typing in the 4 tests below, observe the output and them implement your code to replicate this functionality.  
  
5.您的程序将在下面的4个相同测试中进行测试。成功完成每个步骤将给您15分。剩余的40分是用于良好编程实践的，包括注释，程序结构等，总计100分。

（5. Your program will be tested on the same 4 tests below and others that are similar. Successfully completing each step will give you 15 marks each. The remaining marks 40 marks are for good programming practice include, commenting, program structure etc. for a total of 100.）  
  
6. Submit your completed solution on Monday.

Test 1：

该程序必须能够输入至少两个数字并正确执行一个操作并输出。

Input :  
10  
2  
+  
=

Input :  
11  
3  
-  
=

Input :  
9  
4  
\*  
=

Input :  
11  
3  
/  
=

Input :  
11  
3  
%  
=

Test 2；

该程序必须能够处理多个数字和多个操作。

（The program must be able to handle multiple numbers and multiple operations.）

Input :  
3  
3  
\*  
4  
4  
\*  
+  
=

Input :  
1234  
2345  
3456  
d  
+  
d  
+  
d  
=

Test 3:

该程序必须能够正确处理饱和度。

(The program must be able to correctly handle saturation.)

Input :  
2147483647  
1  
+  
=

Input :  
-2147483647  
1  
-  
=  
20  
-  
=

Input :  
100000  
0  
-  
d  
\*  
=

Test 4:

该程序包括SRPN不太明显的功能。 这些包括但不限于...  
(The program includes the less obvious features of SRPN. These include but are not limited to...)

Input :  
1  
+

Input :  
10  
5  
-5  
+  
/

Input :  
11+1+1+d

Input :  
# This i s a comment #  
1 2 + # And so i s t h i s #  
d

Input :  
3 3 ^ 3 ^ 3 ^=

Input :  
r r r r r r r r r r r r r r r r r r r r r r d r r r d

这是旧版SRPN程序（请记住单击“运行”）：

Here's the legacy SRPN program (remember to click Run):

链接1：

<https://repl.it/@bathuniversity/sprn-to-emulate>

链接2：

<https://repl.it/@bathuniversity/Coursework1-SRPN>