2021 Spring Computer Architecture

Homework 2

Due date: 3/30 23:59

Description

In this homework, you are going to use Jupiter RISC-V simulator to develop a simple calculator which supports six operations, addition, subtraction, multiplication, integer division, power and factorial.

Requirement

The calculator should support the following operations: $+,\ -,\ \times,\ /,\ \hat{},\ !$.

Input format:	Output format:
A	[Result]
op	
B	

$0 \le A, B \le 1024, op \in \{0, 1, 2, 3, 4, 5\}$

If $op = 0$, calculate $A + B$ and output the result.

If $op = 1$, calculate $A - B$ and output the result.

If $op = 2$, calculate $A \times B$ and output the result.

If $op = 3$, calculate $A \ / \ B$ and output the result(Quotient).

If $op = 4$, calculate A^B and output the result.

If $op = 5$, calculate $A!$ and output the result. (In this case, $B = 0$)

If divided by zero, the program should print "$divided\ by\ zero$".

(Don't worry about overflow or underflow.)

Input

Every input file has three lines. The first line contains an integer A, the second line contains an integer op, the third line contains an integer B, which represent the first operand, the operation the calculator is going to do, and the second operand.

Output

The output should contain only one integer, that is the result of the input equation.

Sample Input 1

```
2
0
4
```

Sample Output 1

```
6
```

Sample Input 2

```
7
3
4
```

Sample Output 2

```
1
```

Sample Input 3

```
3
5
0
```

Sample Output 3

```
6
```

Grading policy

Every operation has 5 testcases, 3 points per testcase for the first four operations, 4 points per testcase for the last two operations. And we will judge the correctness of your program by running the following instruction on CSIE workstation.

```
$jupiter [student_id]_hw2.s < input_file
```

10 points off per day for late submission.

You will get zero points for plagiarism.

Submission

Due date: 3/30 23:59

Please name your program file [student_id]_hw2.s and upload it to NTUCOOL.

Reference

- Jupiter RISC-V simulator
  https://github.com/andrescv/Jupiter
- Jupiter RISC-V simulator docs
  https://github.com/JupiterSim/Docs