Practice Arena

Practice problems aimed to improve your coding skills.

- PRACTICE-02_SCAN-PRINT
- PRACTICE-03_TYPES
- LAB-PRAC-02_SCAN-PRINT
- LAB-PRAC-01
- PRACTICE-04_COND
- BONUS-PRAC-02
- LAB-PRAC-03_TYPES
- PRACTICE-05_COND-LOOPS
- LAB-PRAC-04_COND
- LAB-PRAC-05_CONDLOOPS
  - Forgetful Mr C
  - Rich Mr C
  - Perfect Numbers
  - Mr C builds a Calculator
  - Love for Primes
  - Tryst with Taylor
  - Mr C is very busy
  - Fabulous Fibonacci
  - Digit Debacle
  - May the fourth be with you
  - Phone a friend
  - The legend of Chess
- PRACTICE-07_LOOPS-ARR
- LAB-PRAC-06_LOOPS
- LAB-PRAC-07_LOOPS-ARR
- LABEXAM-PRAC-01_MIDSEM
- PRACTICE-09_PTR-MAT
- LAB-PRAC-08_ARR-STR
- PRACTICE-10_MAT-FUN
- LAB-PRAC-09_PTR-MAT
- LAB-PRAC-10_MAT-FUN
- PRACTICE-11_FUN-PTR
- LAB-PRAC-11_FUN-PTR
- LAB-PRAC-12_FUN-STRUC
- LABEXAM-PRAC-02_ENDSEM
- LAB-PRAC-13_STRUC-NUM
- LAB-PRAC-14_SORT-MISC

Fabulous Fibonacci

LAB-PRAC-05_CONDLOOPS

Fabulous Fibonacci [20 marks]

Problem Statement
The Fibonacci sequence forms one of the most important number series in the nature. Many natural phenomenon follows this sequence. However, we will look at an even more general class of sequences known as Lucas sequences in this question. You will be given three **integers**, P, Q, n. n will always be non-negative.

Given P, Q, the Lucas numbers of the first kind are defined as follows

$$
\begin{aligned}
L_0 &= 0 \\
L_1 &= 1 \\
L_n &= P \cdot L_{n-1} - Q \cdot L_{n-2}, \qquad \text{for } n \geq 2
\end{aligned}
$$

You will first have to output L_5 for the given value of P and Q. In **the next line** you will have to output L_n for the given value of P and Q.

Caution

1. Be careful about extra/missing lines and extra/missing spaces.
2. Remember that n can be 0 or 1 too
3. Remember that P, Q can be negative or positive integers too
4. Lucas numbers can grow very very quickly. Use a long datatype to perform all your computations.
5. All Lucas numbers are integers. Using float or double variables will result in errors.
6. You may use copy-paste to avoid typing code to the print the first and second lines twice. However, be careful not to make typing errors while doing so.
7. Warning: if you use try to use recursion to solve this problem, you may land up with a TLE error

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INPUT:
P Q n

OUTPUT:
L_5
L_n

EXAMPLE:
INPUT

OUTPUT:

Grading Scheme:
Total marks: **[20 Points]**

There will be partial grading in this question. There are two lines in your output. Printing each line correctly, in the correct order, carries 50% weightage. Each visible test case is worth 2 points and each hidden test case is worth 4 points. There are 2 visible and 4 hidden test cases.

Please remember, however, that when you press Submit/Evaluate, you will get a green bar only if all parts of your answer are correct. Thus, if your answer is only partly correct, Prutor will say that you have not passed that test case completely, but when we do autograding afterwards, you will get partial marks.

Start Solving! (/editor/practice/6084)