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‹ **Dynamic Programming Challenges**

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Fibonacci Modified 🔖

by **PRASHANTB1984**

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We define a *modified* Fibonacci sequence using the following definition:

Given terms t_i and t_{i+1} where $i \in [1, \infty)$, term t_{i+2} is computed using the following relation:

$$t_{i+2} = t_i + (t_{i+1})^2$$

For example, if term $t_1 = 0$ and $t_2 = 1$, term $t_3 = 0 + 1^2 = 1$, term $t_4 = 1 + 1^2 = 2$, term $t_5 = 1 + 2^2 = 5$, and so on.

Given three integers, t_1, t_2, and n, compute and print term t_n of a *modified Fibonacci sequence*.

Note: The value of t_n may far exceed the range of a **64**-bit integer. Many submission languages have libraries that can handle such large results but, for those that don't (e.g., C++), you will need to be more creative in your solution to compensate for the limitations of your chosen submission language.

Input Format

A single line of three space-separated integers describing the respective values of t_1, t_2, and n.

Constraints

- $0 \le t_1, t_2 \le 2$
- $3 \le n \le 20$
- t_n may far exceed the range of a **64**-bit integer.

Output Format

Print a single integer denoting the value of term t_n in the modified Fibonacci sequence where the first two terms are t_1 and t_2.

Sample Input

```
0 1 5
```

Sample Output

```
5
```

Explanation

The first two terms of the sequence are $t_1 = 0$ and $t_2 = 1$, which gives us a modified Fibonacci sequence of $\{0, 1, 1, 2, 5, 27, \ldots\}$. Because $n = 5$, we print term t_5, which is **5**.

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```csharp
1   using System;
2   using System.Collections.Generic;
3   using System.Linq;
4   using System.Text;
5   using System.Numerics;
6
7   class Solution {
8       static void Main(String[] args) {
9           /* Enter your code here. Read input from STDIN. Print output to STDOUT. Your class should be named Solution
        */
10
11
12          string[] input = Console.ReadLine().Split(' ');
13          //int t1 = 0, t2 = 1, n = 5;
14          int t1 = int.Parse(input[0].ToString());
15          int t2 = int.Parse(input[1].ToString());
16          int n = int.Parse(input[2].ToString());
17
18          List<BigInteger> fib = new List<BigInteger>();
19          fib.Add(t1);
20          fib.Add(t2);
21
22          for (int i = 2; i <= n; i++)
23          {
24              fib.Add(fib[i - 2] + (fib[i - 1] * fib[i - 1]));
25          }
26
27          //for (int i = 0; i < fib.Count; i++)
28          //{
29          //    Console.Write(fib[i] + " ");
30          //}
31
32          Console.WriteLine(fib[n - 1]);
33
34      }
35   }
```

Line: 6 Col: 1

⬆ Upload Code as File   ☐ Test against custom input   [Run Code]   [Submit Code]

Congrats, you solved this challenge!

✔ Test Case #0	✔ Test Case #1	✔ Test Case #2
✔ Test Case #3	✔ Test Case #4	✔ Test Case #5
✔ Test Case #6	✔ Test Case #7	✔ Test Case #8
✔ Test Case #9		

[Next Challenge]

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