SIENAcollege
Computer Science

34th Annual High School Programming Contest

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Gold Problem #7: Postage Stamps

Background Information: Suppose you can purchase a total of n postage stamps, but can only have them in two distinct integer denominations, a_1 and a_2. What is the highest postage amount, h, such that you can represent every positive integer amount 1 through h using a total of at most n stamps of denominations a_1 and a_2? Well, it definitely depends on which values you choose for a_1 and a_2!

Your program will take as input the value n, and it will output the highest number h, such that the optimal choices for stamp values a_1 and a_2 will produce combinations of at most n stamps that add up to all integers on the interval [1, h]. You will also output the stamp values a_1 and a_2, where $a_1 < a_2$, which can be used to produce those postage values on the interval [1, h].

Programming Problem:

Input: The maximum number of stamps that can be used, $n <= 75$.
Output: The highest number, h, such that each total of stamp values [1, h] can be produced. The stamp values a_1 and a_2, both integers are also outputted on the next line.

Example 1:
Input:
```
1
```
Output:
```
2
1 2
```

Example 2:
Input:
```
3
```
Output:
```
7
1 3
```

Example 3:
Input:
```
5
```
Output:
```
14
1 4
```

Example 4:
Input:
```
7
```
Output:
```
23
1 5
```