Problem G Couple-Bachelor-Spinster Numbers

Input: standard input Output: standard output Time Limit: 2 seconds

Can any number be expressed as a subtraction of two squares? The numbers, which can be expressed in such a way, are called **square-couple** numbers. Your job is to find out

- a) If a number is **square couple** number.
- b) If the number is **square couple** then find that format.
- c) Find out how many square couple numbers are there within a certain range (including the terminal numbers).

Input

Each set of input is given in a single line. Each input set may contain one or two signed 32 bit integer numbers. Input is terminated by end of file.

Output

If there is only a single number N in a single line then print two non-negative integer numbers a and b, such that a*a-b*b = N. If the number cannot be expressed in such a format then print the line "Bachelor Number." in a single line if such number is even and print the line "Spinster Number." if the number is odd.

If there are two numbers **n1** and **n2** in the input then print how many bachelor numbers are within **n1** and **n2** (including **n1** and **n2**). Note that (**n1**<**n2**) and (**n1**-**n2**)<1000000).

Sample Input:

6

12

3

Sample Output:

Bachelor Number.

4 2

2 1

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"If all the sides of a cube were identical, how could we tell which side is face up?"