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 on a single line then print two non-negative integer numbers a and b, such that $a^2 - b^2 = N$. If the number cannot be expressed in such a format then print the line '`Bachelor Number.`' on a single line if it is even or else print '`Spinster Number.`' on a single line if it is odd. Note that $-2^{31} \leq N < 2^{31}$.

If there are two numbers n_1 and n_2 in the input then print how many bachelor numbers are in the interval $[n_1, n_2]$. Note that $0 \leq n_1 \leq n_2$ and $(n_2 - n_1) \leq 1,000,000$.

Sample Input

```
6
12
3
```

Sample Output

```
Bachelor Number.
4 2
2 1
```