11. Spiral Galaxies

Program Name: Spiral.java **Input File: spiral.dat**

As an astronomer, Danielle has studied spiral galaxies for years. Spiral galaxies consist of a flat, rotating disk containing stars, gas, and dust around a central concentration of stars known as the bulge thought to host a supermassive black hole at its center.

A spiral galaxy is so-named because there are more young stars, which are brighter than old stars, that die out quickly leaving the remaining brighter stars standing out against a darker background. These waves of stars are more visible and appear to form a spiral, called spiral arms, within the galaxy, hence the name spiral galaxy.

Some astronomers refer to the location of a given star relative to the bulge where the bulge is at location 1 and the stars spiral counter-clockwise around the bulge as shown to the right in the order indicated by the numbers in black. The number 1 represents the location of the bulge and locations beginning with 2 represent the possible locations of the bright, young stars in the spiral arms of the galaxy.

	1	2	3	4	5
1	13	12	11	10	25
2	14	3	2	9	24
3	15	4	1	8	23
4	16	5	6	7	22
5	17	18	19	20	21

Sometimes, astronomers need to refer to the stars in the spiral arms in terms of a rectangular coordinate system as indicated respectively by the numbers in gray along the bottom and left side of the diagram. The square containing the rectangular coordinates will always be the smallest odd-numbered perfect square that will contain the star. For example, the star in spiral location 22 would be in a 5x5 square since 25 is the smallest odd-numbered perfect square greater than 22. Spiral star number 22 would have rectangular coordinates 4 5 as shown in the diagram above.

You have been asked to write a program that will print the rectangular coordinates of a star given its spiral location in a galaxy.

Input
The only line of input will contain a list of positive integers x (1 < x ≤ 625), separated by a single space. Each integer in the list will be spiral location of a star.

Output
For each spiral location input, you will print the star's location using rectangular coordinates, one star per line, and the specifications above.

Example Input File
```
22 33 13
```

Example Output to Screen
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4 5
3 1
1 1
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