

## 6. Ho-Jin

**Program Name:** Hojin.java

**Input File:** hojin.dat

Oh no! Your CS teacher gave you an assignment which extends code you wrote last semester! Unfortunately, you've purged all your old homework (it was a tough semester), but luckily your partner for this project, Ho-Jin, still has his. However, Ho-Jin hates writing comments, and always uses inane variable names. Here's the function he wrote for the last assignment:

```
public long pizza(long cat, long dog) {
    if (cat < dog) {
        return pizza(dog, cat);
    }

    if (dog == 0) {
        return cat;
    } else {
        return pizza(cat - dog, dog);
    }
}
```

This is not only difficult to read, but also very slow. Some of your teacher's data sets take minutes to execute, and neither of you will get a good grade if your code is too slow! Can you speed up this function?

**Input:** The first line is  $T$  ( $0 < T \leq 100$ ), the number of data sets. Each data set has two single space separated integers ( $1 \leq \text{cat}, \text{dog} \leq 10^{18}$ ). The first data set is Case #1, the second is Case #2, etc.

**Output:** For each data set, output on a single line the string "Case #", followed by the data set number, a colon symbol, space, and then the output of the "pizza" function when cat and dog are passed in as inputs, formatted as in the samples.

**Sample input:**

```
5
1 1
6 3
56 21
66 99
2 1000000000000000000
```

**Sample output:**

```
Case #1: 1
Case #2: 3
Case #3: 7
Case #4: 33
Case #5: 2
```