

# Lab2

There is a specific template for you guys to start coding.  
You can add other members in your class, but please follow the rules shown below.

Make sure that your class name is PrimeFactorization.

You should use "vector" to implement this program.

For this problem, you need to calculate the prime factorization of two numbers and GCD(Greatest Common Divisor).

Four specific functions you should implement are:

- a. The constructor with two integers as arguments.
- b. The function: Get\_Prime\_Factorization().
- c. The function: Print\_Prime\_Factorization().
- d. The function: Print\_GCD().

You must use the result of Get\_Prime\_Factorization() to find the GCD.  
See the template for the details.

## Input Format

The first line shows the number of test cases.  
Each of the following lines contains two integers: a, b.

## Output Format

The output format should contain the prime factorization of two numbers and GCD.  
See the sample output for the details.  
The printed result must be in order (small to large).  
If the two integers are "co-prime", then just print "1".

## Sample Input (in input.txt)

```
5
123456 661152
51284 12387
3254 9182
2813291 870090
1043115528 1201746
```

## Sample Output

```
num1 = 123456
num2 = 661152
num1_Prime_factor : " 2 2 2 2 2 2 3 643 "
num2_Prime_factor : " 2 2 2 2 2 3 71 97 "
GCD : 96
```

num1 = 51284  
num2 = 12387  
num1\_Prime\_factor : " 2 2 12821 "  
num2\_Prime\_factor : " 3 4129 "  
GCD : 1

num1 = 3254  
num2 = 9182  
num1\_Prime\_factor : " 2 1627 "  
num2\_Prime\_factor : " 2 4591 "  
GCD : 2

num1 = 2813291  
num2 = 870090  
num1\_Prime\_factor : " 13 23 97 97 "  
num2\_Prime\_factor : " 2 3 5 13 23 97 "  
GCD : 29003

num1 = 1043115528  
num2 = 1201746  
num1\_Prime\_factor : " 2 2 2 3 7 7 13 31 31 71 "  
num2\_Prime\_factor : " 2 3 7 13 31 71 "  
GCD : 1201746