Q2.

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