

# Prime number-large number factorization 2

Seung-pyo Hong\*

## DESCRIPTION

The contents of an existing document have invalid entries. First upload the proof, and a week later upload a Java source that handles 53 large numbers of factorizations. The content is not difficult to write. I will write it so that anyone can easily solve it.

The positive integer is successively put into 9 buckets and the number of buckets adds the large number until it becomes one place and one place becomes the corresponding bucket (Tables 1 and 2).

Table 1: Bucket configuration

1Bucket	2Bucket	3Bucket	4Bucket	5Bucket	6Bucket	7Bucket	8Bucket	9Bucket
1	2	3	4	5	6	7	8	9
10	11	12	13	14	15	16	17	18
19	20	21	22	23	24	25	26	27
28	29	30	31	32	33	34	35	36
:	:	:	:	:	:	:	:	:
100	101	102	103	104	105	106	107	108
:	:	:	:	:	:	:	:	:

Table 2: Example bucket configuration

1Bucket	2Bucket	4Bucket	5Bucket	7Bucket	8Bucket
1Bucket* 1Bucket	1Bucket* 2Bucket	1Bucket* 4Bucket	1Bucket* 5Bucket	1Bucket* 7Bucket	1Bucket* 8Bucket
2Bucket* 5Bucket	2Bucket* 1Bucket	4Bucket* 1Bucket	5Bucket* 1Bucket	7Bucket* 1Bucket	8Bucket* 1Bucket
5Bucket* 2Bucket	4Bucket* 5Bucket	2Bucket* 2Bucket	2Bucket* 7Bucket	2Bucket* 8Bucket	2Bucket* 4Bucket
4Bucket* 7Bucket	5Bucket* 4Bucket	7Bucket* 7Bucket	7Bucket* 2Bucket	8Bucket* 2Bucket	4Bucket* 2Bucket
7Bucket* 4Bucket	7Bucket* 8Bucket	5Bucket* 8Bucket	4Bucket* 8Bucket	4Bucket* 4Bucket	5Bucket* 7Bucket
8Bucket* 8Bucket	8Bucket* 7Bucket	8Bucket* 5Bucket	8Bucket* 4Bucket	5Bucket* 5Bucket	7Bucket* 5Bucket

9 buckets are multiples of 9, 3 buckets and 6 buckets are multiples of 3, so 1, 6 and 9 buckets are multiples of 3, so they can be divided by 3.

The number 33,385,279 is not so large. In large numbers, the factorization value is unknown, but the number 33,385,279 is the multiplication of two numbers 3571 and 9349.

The number 33,385,279 is included in 4 bucket. The multiplication 4 bucket of two numbers is one among the two numbers is 1 bucket\* 4 bucket, 4 bucket\* 1 bucket, 2 bucket\* 2 bucket, 7 bucket\* 7 bucket, 5 bucket\* 8 bucket and 8 bucket\* 5 bucket. 3571 is a 7-bucket and 9349 is a 7-bucket.

$33,385,279 \cdot 3570 \cdot 9340 = 41,479 \Rightarrow$  4 buckets-6 buckets\* 9+4 buckets because it should not be negative in 7 buckets  $\Rightarrow$  13-6=7 (41,479 is 7 buckets)

$33,385,279 \cdot 3500 \cdot 9300 = 835,279 \Rightarrow$  4 buckets-8 buckets\* 9+4 buckets because it should not be negative in 3 buckets  $\Rightarrow$  13-6=7 (835,279 is 7 buckets)

A large number of factorizations do not know the two numbers. x Bucket\* y Bucket= 33,385,279 x Bucket, y Bucket is one of 1 bucket\* 4 bucket, 4 bucket\* 1 bucket, 2 bucket\* 2 bucket, 7 bucket\* 7 bucket, 5 bucket\* 8 bucket and 8 bucket\* 5 bucket.

$(x \text{ bucket}-1) (y \text{ bucket}-9) = x \text{ bucket} \cdot y \text{ bucket} - y \text{ bucket} - 9 \cdot x \text{ bucket} + 9 = 33,343,800 [6 \text{ bucket}]$  only 7 buckets\* 7 buckets are processed.

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Department of Mathematics, University of Wisconsin, Madison

**Correspondence:** Seung-pyo Hong, Department of Mathematics, University of Wisconsin, Madison; E-mail: hongsp11@naver.com

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