

## F. Minimize Fixed Points

time limit per test: 3 seconds  
 memory limit per test: 256 megabytes

Call a permutation\*  $p$  of length  $n$  *good* if  $\gcd(p_i, i)^\dagger > 1$  for all  $2 \leq i \leq n$ . Find a good permutation with the *minimum* number of **fixed points**<sup>‡</sup> across all good permutations of length  $n$ . If there are multiple such permutations, print any of them.

\* A permutation of length  $n$  is an array that contains every integer from 1 to  $n$  exactly once, in any order.

<sup>†</sup>  $\gcd(x, y)$  denotes the [greatest common divisor \(GCD\)](#) of  $x$  and  $y$ .

<sup>‡</sup> A **fixed point** of a permutation  $p$  is an index  $j$  ( $1 \leq j \leq n$ ) such that  $p_j = j$ .

### Input

The first line contains an integer  $t$  ( $1 \leq t \leq 10^4$ ) — the number of test cases.

The only line of each test case contains an integer  $n$  ( $2 \leq n \leq 10^5$ ) — the length of the permutation.

It is guaranteed that the sum of  $n$  over all test cases does not exceed  $10^5$ .

### Output

For each test case, output on a single line an example of a good permutation of length  $n$  with the minimum number of fixed points.

### Example

input	Copy
4 2 3 6 13	
output	Copy
1 2 1 2 3 1 4 6 2 5 3 1 12 9 6 10 8 7 4 3 5 11 2 13	

### Note

In the third sample, we construct the permutation

$i$	$p_i$	$\gcd(p_i, i)$
1	1	1
2	4	2
3	6	3
4	2	2
5	5	5
6	3	3

Then we see that  $\gcd(p_i, i) > 1$  for all  $2 \leq i \leq 6$ . Furthermore, we see that there are only two fixed points, namely, 1 and 5. It can be shown that it is impossible to build a good permutation of length 6 with fewer fixed points.

### Codeforces Round 1034 (Div. 3)

Contest is running

00:10:02

Out of competition



### → Submit?

Language: GNU G++23 14.2 (64 bit, ms) ▼

Choose file:  No file chosen

### → Last submissions

Submission	Time	Verdict
<a href="#">326966523</a>	Jul/01/2025 19:39	Accepted
<a href="#">326963091</a>	Jul/01/2025 19:34	Wrong answer on test 1
<a href="#">326960764</a>	Jul/01/2025 19:31	Wrong answer on test 1
<a href="#">326956821</a>	Jul/01/2025 19:25	Wrong answer on test 1
<a href="#">326943845</a>	Jul/01/2025 19:09	Wrong answer on test 1
<a href="#">326941074</a>	Jul/01/2025 19:06	Wrong answer on test 1
<a href="#">326937955</a>	Jul/01/2025 19:02	Wrong answer on test 1
<a href="#">326905169</a>	Jul/01/2025 18:31	Wrong answer on test 1
<a href="#">326898291</a>	Jul/01/2025 18:26	Wrong answer on test 1

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