

Power Of Two

Lili challenged Jojo back, he is tasked to print (N+1) numbers with A as the first number. For each iteration, the next number is obtained by adding 2 to the power of (K-1), where K is the K-th number that must be printed. Because the number can get so big, print the number modulo 1000000007.

Format Input

The first line of the input will contain an integer T, the number of test cases.

Each test case will contain two integers, A as the first number and N, the number of numbers that have to be printed.

Format Output

For each test case, print "Case #X:" (X starts with 1).

Then on the next line, print the numbers as stated above.

Constraints

$1 \leq T \leq 10$

$1 \leq A \leq 1000000000000$

$1 \leq N \leq 100$

Sample Input	Sample Output
3 2 10 10 10 103 30	Case #1: 2 3 5 9 17 33 65 129 257 513 1025 Case #2: 10 11 13 17 25 41 73 137 265 521 1033 Case #3: 103 104 106 110 118 134 166 230 358 614 1126 2150 4198 8294 16486 32870 65638 131174 262246 524390 1048678 2097254 4194406 8388710 16777318 33554534 67108966 134217830 268435558 536871014 73741919

Explanation:

In the first case, the number starts from 2, then for each loop:

k-th loop	number to print	$2^{(k-1)}$	next number
1	2	1	$2+1 = 3$
2	3	2	$3+2 = 5$
3	5	4	$5+4 = 9$
4	9	8	$9+8 = 17$
5	17	16	$17+16 = 33$
6	33	32	$33+32 = 65$
7	65	64	$65+65 = 129$
8	129	128	$129+128 = 257$
9	257	256	$257+256 = 513$
10	513	512	$513+512 = 1025$
11	1025	1024	$1025+1024 = 2049$