Problem F - Free Leftover Pizza

Daniel ordered too many pizzas so there's a bunch of pizza left. He doesn't want to throw them away (because that's a waste) but everybody already at ACM practice are already stuffed full of pizza.

Fortunately a group of m math majors were walking by and expressed their interest in the pizza. Daniel gladly offered to give all the pizza to them, but the math majors told Daniel that they wouldn't take the pizza unless Daniel gave each person a **prime** number of slices, with the youngest one getting the least number of slices, the second youngest getting strictly more slices, and so on with the oldest getting the most number of slices.

David was wondering how many ways there are to satisfy their demands, but Daniel just wants to know any arrangements that satisfies their demands so he can get rid of the pizza. There may be a lot of ways to satisfy their demands, so output the number of ways mod $1e9 + 7$.

Input

The first line contains a single integer T specifying the number of test cases.

Each test is a line with two space seperated integers $n(1 \leq n \leq 2000)$ denoting the number of slices Daniel has, and $(1 \leq m \leq 20)$ denoting the number of math majors.

Output

For each test case, output two lines. On the first line output the number of ways to satisfy the demands of the math majors mod $1e9 + 7$. On the second line ouput any way to satisfy their demands as m space seperated integers in strictly increasing order, or output the single integer `-1` if there is no way to satisfy their demands.

Sample Input

```
3
1 1
5 2
18 3
```

Sample Output

```
0
-1
1
2 3
2
2 5 11
```