Sequences

Given a positive integer n, please find all sequences of positive integers $x_1, x_2, ..., x_k$ such that the sum of all k elements of the above sequence is equal to n and for each i, $1<=i<k$ we have $x_{i+1}-x_i$ in {-2, 0, 3}.

Input

The first line contains the number of test cases t. Each of the following t lines contains just one number $1<=n<=30$.

Output

For each test case print all possible sequences satisfying the problem criteria. Sequences must be given in the lexicographic order, with each sequence printed in a separate line.

Example

Input:
```
4
2
3
4
8
```

Output:
```
1 1
2

1 1 1
3

1 1 1 1
2 2
3 1
4

1 1 1 1 1 1 1 1
1 1 1 1 4
1 1 4 2
2 2 2 2
3 1 1 1 1 1
3 1 4
3 3 1 1
4 2 2
4 4
5 3
8
```

Scoring

By solving this problem you score 10 points.