

A. Bachgold Problem

time limit per test: 1 second
 memory limit per test: 256 megabytes
 input: standard input
 output: standard output

Bachgold problem is very easy to formulate. Given a positive integer n represent it as a sum of **maximum possible** number of prime numbers. One can prove that such representation exists for any integer greater than 1.

Recall that integer k is called *prime* if it is greater than 1 and has exactly two positive integer divisors — 1 and k .

Input

The only line of the input contains a single integer n ($2 \leq n \leq 100\,000$).

Output

The first line of the output contains a single integer k — maximum possible number of primes in representation.

The second line should contain k primes with their sum equal to n . You can print them in any order. If there are several optimal solution, print any of them.

Examples

input	
5	
output	
2	
2 3	

input	
6	
output	
3	
2 2 2	

Codeforces Round #388 (Div. 2)

Finished

Practice



→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Submit?

Language: Microsoft Visual C++ 2010 ▾

Choose file: Choose File No file chosen

Be careful: there is 50 points penalty for submission which fails the pretests or resubmission (except failure on the first test, denial of judgement or similar verdicts). "Passed pretests" submission verdict doesn't guarantee that the solution is absolutely correct and it will pass system tests.


Submit

→ Problem tags

[greedy](#) [implementation](#) [math](#)
[number theory](#)

No tag edit access

→ Contest materials

- Announcement 
- Tutorial 