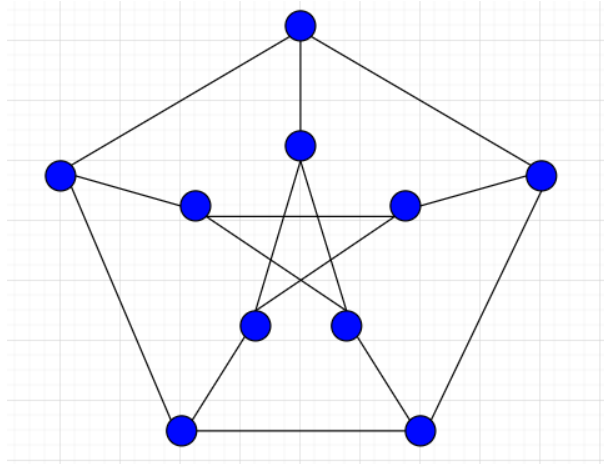


## Key Properties

Input file:            **standard input**  
Output file:          **standard output**  
Time limit:          1 second  
Memory limit:        256 megabytes

Dwarf the Aesthete is a well-known art connoisseur. In his house, he has a large collection of paintings. His favorite painting depicts a graph on 10 vertices that looks as follows:



An illustration of the output in the first example.

One day, while admiring his favorite painting, the dwarf figured out what properties make this graph so great: it is **connected**, each vertex has **exactly 3 incident edges**, and the graph **contains no cycles of length 4** (that is, there are no four edges  $(v_1, v_2)$ ,  $(v_2, v_3)$ ,  $(v_3, v_4)$ , and  $(v_4, v_1)$  for any set of four distinct vertices  $v_1, v_2, v_3, v_4$ ).

Shocked by this realization, Dwarf the Aesthete wondered whether there are other graphs with these properties. Since he wants to be a big figure in the art world, he is only interested in large graphs, namely those with **at least 42 vertices** (42 somehow seems like a cool number to him).

Help the dwarf: for a given number of vertices, produce an undirected simple graph (without loops or multiple edges between the same pair of vertices) with these properties, or determine that no such graph exists.

## Input

The first and only line of input contains a single integer  $N$ , the number of vertices.

## Output

If no solution exists, print **NO**.

Otherwise, in the first line, print a single integer  $M$ , the number of edges in the graph.

Each of the following  $M$  lines should contain two integers  $a_i$  and  $b_i$  ( $1 \leq a_i, b_i \leq N$ ), representing the endpoints of an edge.

If there are multiple valid solutions, you may print any of them.

## Limits

$42 \leq N \leq 10^6$ .

## Small examples

standard input	standard output
10	15 1 2 2 3 3 4 4 5 5 1 1 6 2 7 3 8 4 9 5 10 6 8 8 10 10 7 7 9 9 6

standard input	standard output
8	NO

Attention: the below examples do not satisfy the condition  $N \geq 42$ , so you are not required to pass them. The sample in the judge system has  $N = 42$ .