Problem C. Espionage For Dummies

Input file:	`espionage.in`
Output file:	`espionage.out`
Time limit:	2 seconds
Memory limit:	256 megabytes

The government in a faraway land consists of n ministers. The king has discovered that exactly 2 (two) of the ministers are spies and tell everything to the enemies, but he doesn't know which ones.

He decided to find out by conducting a series of experiments. In each experiment, he tells a secret to some subset of his ministers. After some time, he checks if this secret is known to the enemies (through his own spies, of course). If it is, then he knows that at least one of the two spies was among the ministers that know the secret. If it isn't, then he knows that all ministers that know the secret are honest.

Of course, the king wants to find the spies in using as few experiments as possible. Each experiment is allowed to depend on the results of previous experiments. How many experiments is he going to need in the worst case? You also need to find the strategy to determine the spies using this many experiments.

Input

The input file contains one integer n, $3 \le n \le 64$.

Output

On the first line on the output file, print the number r of experiments needed in the worst case, and the number s of lines in the optimal strategy. On the next s lines describe the optimal strategy itself. t-th ($1 \le t \le s$) of those lines should be either "`CHECK` k a_1 a_2 ... a_k p q" or "`ANSWER` a b". The first one means "run an experiment by telling the secret to ministers a_1, a_2, ..., a_k ($1 \le a_i \le n$, $a_i \ne a_j$, $0 \le k \le n$), and if there are spies among them, go to line p, if not, go to line q ($t+1 \le p, q \le s$, so we're only allowed to jump forward in the strategy)". The second one means "declare ministers a and b ($1 \le a, b \le n$, $a \ne b$) the spies". The execution of the strategy starts from the first line. The ministers in each command may be printed in arbitrary order.

The number of lines s must not exceed 10^5. In case there are several strategies that need at most r experiments, output any.

Examples

espionage.in	espionage.out
4	3 11 CHECK 1 1 2 3 CHECK 1 2 4 5 CHECK 1 2 6 7 ANSWER 1 2 CHECK 1 3 8 9 CHECK 1 3 10 11 ANSWER 3 4 ANSWER 1 3 ANSWER 1 4 ANSWER 2 3 ANSWER 2 4

Note

The source code size limit is 262144 bytes.