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HOME   TOP   CATALOG   CONTESTS   GYM   **PROBLEMSET**   GROUPS   RATING   EDU   API   CALENDAR   HELP   RAYAN 🏆

PROBLEMS   SUBMIT   STATUS   STANDINGS   CUSTOM TEST

C. Minimum Ties

time limit per test: 1 second
memory limit per test: 256 megabytes

A big football championship will occur soon! n teams will compete in it, and each pair of teams will play exactly one game against each other.

There are two possible outcomes of a game:

- the game may result in a tie, then both teams get 1 point;
- one team might win in a game, then the winning team gets 3 points and the losing team gets 0 points.

The score of a team is the number of points it gained during all games that it played.

You are interested in a hypothetical situation when all teams get the same score at the end of the championship. A simple example of that situation is when all games result in ties, but you want to minimize the number of ties as well.

Your task is to describe a situation (choose the result of each game) so that all teams get the same score, and the number of ties is the minimum possible.

Input

The first line contains one integer t ($1 \le t \le 100$) — the number of test cases.

Then the test cases follow. Each test case is described by one line containing one integer n ($2 \le n \le 100$) — the number of teams.

Output

For each test case, print $\frac{n(n-1)}{2}$ integers describing the results of the games in the following order: the first integer should correspond to the match between team 1 and team 2, the second — between team 1 and team 3, then 1 and 4, ..., 1 and n, 2 and 3, 2 and 4, ..., 2 and n, and so on, until the game between the team $n - 1$ and the team n.

The integer corresponding to the game between the team x and the team y should be 1 if x wins, -1 if y wins, or 0 if the game results in a tie.

All teams should get the same score, and the number of ties should be the minimum possible. If there are multiple optimal answers, print any of them. It can be shown that there always exists a way to make all teams have the same score.

Example

input	Copy

```
2
2
3
```

output	Copy

```
0
1 -1 1
```

Note

In the first test case of the example, both teams get 1 point since the game between them is a tie.

In the second test case of the example, team 1 defeats team 2 (team 1 gets 3 points), team 1 loses to team 3 (team 3 gets 3 points), and team 2 wins against team 3 (team 2 gets 3 points).

Educational Codeforces Round 104 (Rated for 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 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]

→ Clone Contest to Mashup ⌄

You can clone this contest to a mashup.

[Clone Contest]

→ Submit?

Language: [GNU G++17 7.3.0   ⌄]

Choose file: [Choose File] No file chosen

[Submit]

→ Contest materials

- Announcement   ✕
- Tutorial   ✕