

PENTA KILL!

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



OLO's global tournament, ISM, is in full swing and Shizuku is a big fan of GNR which is taking part in the tournament. OLO is a game where two teams of five players play against each other. PENTA KILL is considered an unbelievable achievement in the game, which means one player kills five pairwise distinct opponents in a row. We assume that a player will be resurrected immediately after his death, and the death will not affect the verdict of his PENTA KILL.

Normally, PENTA KILL will be displayed in the game. However, sometimes due to unintended disparity in latency between competing teams, it is not displayed properly in the game. After the game, Shizuku gets a chronological list of kills during the game. She wants to know whether a player has achieved PENTA KILL in this game.

Input

The first line contains an integer n ($1 \leq n \leq 1000$), indicating the number of kills in the game.

Each of the following n lines contains two strings a and b consisting of English letters and digital numbers, indicating that the player named a kills the player named b . The length of each string won't exceed 100. It is guaranteed that there are no kills between teammates and there are exactly five players per team.

Output

Output PENTA KILL! if a player has achieved PENTA KILL, or SAD:(otherwise.

Examples

standard input	standard output
10 Bin Guigo Grevthar Bin GALA Grevthar GALA TitaN GALA Guigo GALA Aegis GALA Jojo GALA Grevthar Xiaohu Grevthar GALA Aegis	PENTA KILL!
7 GALA Jojo GALA Jojo Aegis GALA GALA Grevthar GALA Aegis GALA Guigo GALA TitaN	PENTA KILL!
7 GALA Jojo Aegis Ming GALA Grevthar GALA Grevthar GALA Aegis GALA Guigo GALA TitaN	SAD: (

Note

In the second sample, GALA kills Jojo, Grevthar, Aegis, Guigo, and TitaN in a row so he gets PENTA KILL.

In the third sample, GALA kills Grevthar twice after he kills Jojo so he doesn't kill five distinct opponents in a row.