I1 – Snowflakes

Snowflakes can be symmetrical both vertically and horizontally. Snowflakes that aren't symmetrical are useless. A snowflake is essentially a two dimensional array of features. A feature is a single digit between 0 and 9. Horizontal symmetry occurs if you flip the snowflake horizontally. It is still the same snowflake. Likewise, vertical symmetry is defined in the same way. A snowflake is "Beautiful" if its horizontally symmetrical, "Graceful" if its vertically symmetrical, and "Magnificent" if it is both. Otherwise it is "Useless". For each snowflake, print what kind of snowflake it is.

Input

Each data set starts with a single integer k, $k \leq 20$, denoting the dimension of the square snowflake. Then k lines follow with each line containing a string of length k denoting the digits in the snowflake.

Output

Print the type of snowflake.

Example

Input:
3
123
321
143

Output:
Useless

Input:
2
11
11

Output:
Magnificent

Input:
3
121
232
343

Output:
Graceful