

21 Happy new year 2019!

13 points



Introduction

Although today we are already March 2nd we are still celebrating that 2019 is happy year. Probably you will ask yourself why? The answer is simple 2019: is a happy number.

A happy number is a number that, if you square its digits, add them together, and then take the result and square its digits and add them together, and keep repeating that over and over, your end result is the number 1.

If there are happy numbers, then there must be unhappy numbers. Those numbers for which this process does not end in 1 are considered unhappy numbers.

Input

An integer number greater than zero.

Output

Print out a string with the input number stating whether the number is happy or unhappy.

Example 1

Input

2

Output

2 is an unhappy number!

Example 2

Input

2019

Output

2019 is a happy number!