重要公告

一、112 年 4 月 10 日起，為了讓修習進階程式設計課程同學有更多可以面對面諮詢老師及助教的機會，特別安排每周二晚上 7~9 點可以登入老師的 WebEX 個人會議室（網址：https://moe-tw.webex.com/meet/hsiaojy），線上請老師及助教解決你程式的相關問題

二、請自備耳機、麥克風及 webcam 方便順暢溝通，也請用姓名+學號登入會議室以利人員辨識

三、要除錯的程式務必先送上評測平台評分，助教方能下載你的程式幫你除錯以及線上說明可能的錯誤原因

四、若有多人同時上線要解決程式問題，原則上以程式作業編號較小者優先被處理，所以請同學上線之後務必公開留言要解決第幾個程式作業問題

五、這是老師自己付助教鐘點費請他幫忙額外喬出時間幫大家解惑，請大家多加利用不用不好意思問，若成效良好，我們就一直實施到學期結束，若大家都沒有程式作業問題待助教解惑，只要有一周都沒有人上線來偵錯程式問題，那這個補救教學措施就終止

六、班上也有許多程式設計高手，若你願意在這個時段上線無償協助其他同學解決程式作業問題，老師非常歡迎也會根據你的績效酌加學期總成績

進階程式設計課程作業#11

（請使用 C 或 C++語言撰寫解決下列問題之程式）

SBN

Given a positive integer *P*, we name another positive integer *Q* as the SBN prime number of *P*. If the following conditions are true:

(1) The number of 1's digit in binary form of *P* and *Q* is the same.
(2) *Q* is less or equal than *P*.
(3) *Q* is a prime number.
(4) *Q* is the largest number in accordance with the above conditions.

For example: If *P* = 10, we can transfer *P* into binary form as 00001010_2. We can find that *Q* (the SBN prime number) of *P* is 5 (00000101_2). 7 (00000111_2) is a prime number but the number of 1's digit in binary form is not matched. 3 (00000011_2) is a prime number and the number of 1's digit in binary form is also matched but it is not the largest number.

Input Format

The input of this problem is a sequence of unsigned integers (decimal form) as *P*. Each line represents a *P*. The range of *P* is the same with the range of a 32-bits unsigned integer (**0** ~ **4294967295**).

Output Format

You need to output the SBN prime number of each *P* in decimal form and exactly in a line. If you cannot find out any SBN prime number of *P*, please output 0 in a line.

Sample Input:

10
3
1024
5998

Sample Output:

5
3
2
5981