On two problems concerning two Smarandache P-partial digital subsequences

Felice Russo
Via A. Infante 67051
Avezzano (Aq) Italy
felice.russo@katamail.com

Abstract

In this paper the solution of two problems posed in [1] and concerning the Smarandache Lucas-partial subsequence and the Smarandache Fibonacci-partial subsequence is reported.

Introduction

In [1] the Smarandache P-digital subsequence is defined as the sequence obtained screening a starting sequence $\{a_n\}$, $n \geq 1$ defined by a property P, selecting only the terms whose digits satisfy the property P.

In the same way, The Smarandache P-partial digital subsequence is the sequence obtained screening a given sequence $\{a_n\}$, $n \geq 1$ defined by a property P, selecting only the terms whose groups of digits satisfy the property P.

Two examples of Smarandache P-partial subsequence reported in [1] are:

1. The Smarandache Lucas-partial digital subsequence

2. The Smarandache Fibonacci-partial digital subsequence

Results

1. Smarandache Lucas-partial digital subsequence

The Smarandache Lucas-partial digital subsequence is the sequence of Lucas numbers [2] whose sum of the first two groups of digits is equal to the last group of digits.

For example 123 is a Lucas number that can be partitioned as 1, 2 and 3 where 1+2=3.

In [1] M. Bencze formulated the following problem:

Is 123 the only Lucas number that verifies a Smarandache type partition?

In order to analyse this problem a computer program with Ubasic software package has been written.
We have checked the first 3000 terms of Lucas sequence finding one more number beside 123 that verifies a Smarandache type partition, i.e. the number 20633239 that can be partitioned as 206, 33, 239 where 206+33=239.

2. *Smarandache Fibonacci-partial digital subsequence*

The Smarandache Fibonacci-partial digital subsequence is the sequence of the Fibonacci numbers [2] whose sum of the first two groups of digits is equal to the last group of digits.
Always in [1] the following problem has been posed:

No Fibonacci number verifying a Smarandache type partition has been found for the first terms of the Fibonacci sequence. Can you investigate larger Fibonacci numbers and determine if someone belongs to the Smaradache Fibonacci-partial digital subsequence?

Modifing slightly the computer program written for the problem on Lucas numbers we have found, among the first 3000 terms of the Fibonacci sequence, a number that verify a Smarandache type partition : 832040 that can be partitioned as   8, 32,   040   where 8+32=40.

New questions

According to the previous results the following two conjectures can be formulated:

- The Smarandache Lucas-partial digital subsequence is upper limited

  Unsolved question: find that upper limit

- The Smarandache Fibonacci-partial digital subsequence is upper limited

  Unsolved question: find that upper limit

References:

[1] M. Bencze, *Smarandache relationships and subsequences*, SNJ Vol. 11 N. 1-2-3,
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[2] E. Weisstein, *CRC Concise Encyclopedia of Mathematics*, CRC Press, 1999