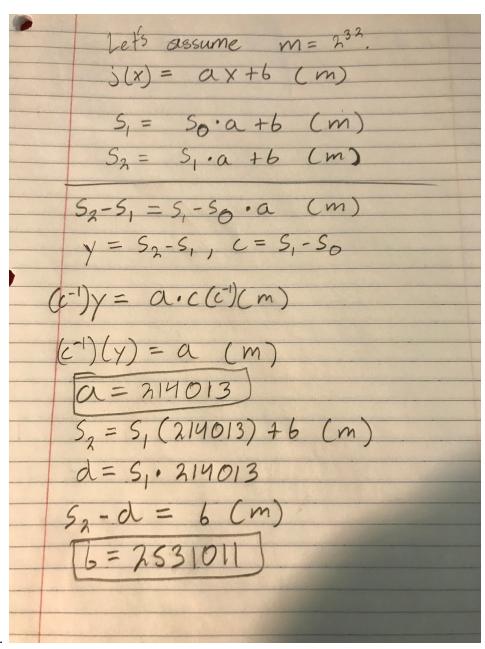
## **Andrew Burkus**

## 1. Done.



2

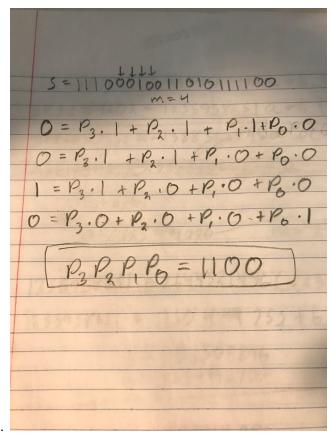


Here's the values being checked in Python.

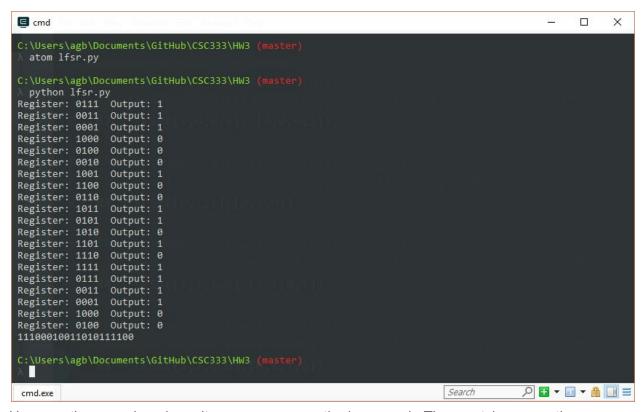
3.

```
cmd
                                                                                                                                                                               X
Register: 0001 Output: 1
00011000110001100011
C:\Users\agb\Documents\GitHub\CSC333\HW3 (master)
\( \text{python lfsr.py} \)
Register: 1000 Output: 0
Register: 1100 Output: 0
Register: 1110 Output: 0
Register: 0111 Output:
Register: 1011 Output:
Register: 0101 Output:
Register: 0010 Output:
Register: 1001 Output:
Register: 1100 Output: 0
Register: 1110 Output: 0
Register: 0111 Output:
Register: 1011 Output:
Register: 0101 Output: 1
Register: 0010 Output: 0
Register: 1001 Output: 1
Register: 1100 Output: 0
Register: 1100 Output: 0
Register: 0111 Output: 1
Register: 1011 Output: 1
Register: 0101 Output: 1
00011101001110100111
C:\Users\agb\Documents\GitHub\CSC333\HW3 (master)
   ı,
                                                                                                                                                               P - II - A II =
 cmd.exe
                                                                                                                                           Search
```

- B. The maximal period is 2<sup>m</sup> 1 where m is the number of registers or 'flip flops'. This means the period should be 2<sup>4</sup> 1, or 15.
- C. The first repeating sequence is 1110100, which is 7 bits long. The period is 7.
- D. Yes, there is a pre-period. It is 000. The LFSR will print out its initial input always. This means that regardless of the program, the initial output will be some arbitrary sequence of bits which may or may not be part of the period. If it is part of the period, it is by coincidence.



I did the algebra mentally. A lot of it zeroes out line by line, so you can find the values of the program that way quite easily.



Here are the reproduced results you gave us on the homework. They match up exactly.