Braeden Pope
Algorithm Design
Numerical Sequence Design

```
1 PROMPT user for a number
2 GET number
3 francois = [2, 1]
4 FOR index in range(2, number)
5     francois.append(francois[index - 1] + francois[index + 2])
6 PUT francois[number - 1] on the screen
```

The algorithmic efficiency of this program is O(n), as it performs a loop a set number of times dependent on the input from the user.

| Line | number | index | francois | francois[index] |
|---|---|---|---|---|
| **1** | / | / | / | / |
| **2** | 7 | / | / | / |
| **3** | 7 | / | [2, 1] | / |
| **4** | 7 | 2 | [2, 1] | / |
| **5** | 7 | 2 | [2, 1, 3] | 3 |
| **4** | 7 | 3 | [2, 1, 3] | / |
| **5** | 7 | 3 | [2, 1, 3, 4] | 4 |
| **4** | 7 | 4 | [2, 1, 3, 4] | / |
| **5** | 7 | 4 | [2, 1, 3, 4, 7] | 7 |
| **4** | 7 | 5 | [2, 1, 3, 4, 7] | / |
| **5** | 7 | 5 | [2, 1, 3, 4, 7, 11] | 11 |
| **4** | 7 | 6 | [2, 1, 3, 4, 7, 11] | / |
| **5** | 7 | 6 | [2, 1, 3, 4, 7, 11, 18] | 18 |
| **6** | 7 | / | [2, 1, 3, 4, 7, 11, 18] | / |