

```
1 // COS30008
2 // Created by Nur E Siam
3
4 #include "FibonacciSequenceGenerator.h"
5 #include <cassert>
6
7 // Constructor initializes the Fibonacci sequence generator
8 FibonacciSequenceGenerator::FibonacciSequenceGenerator(const std::string&    ↴
9               aID) noexcept
10              : fID(aID), fPrevious(0), fCurrent(1) {}
11
12 // Getter for the generator ID
13 const std::string& FibonacciSequenceGenerator::id() const noexcept {
14     return fID;
15 }
16
17 // Dereference operator overload to retrieve the current Fibonacci number
18 const long long& FibonacciSequenceGenerator::operator*() const noexcept {
19     return fCurrent;
20 }
21
22 // Conversion operator to bool to check if there are more Fibonacci numbers
23 FibonacciSequenceGenerator::operator bool() const noexcept {
24     return hasNext();
25 }
26
27 // Reset the generator to the initial state
28 void FibonacciSequenceGenerator::reset() noexcept {
29     fPrevious = 0;
30     fCurrent = 1;
31 }
32
33 // Check if there are more Fibonacci numbers in the sequence
34 bool FibonacciSequenceGenerator::hasNext() const noexcept {
35     return fCurrent <= LLONG_MAX - fPrevious;
36 }
37
38 // Generate the next Fibonacci number in the sequence
39 void FibonacciSequenceGenerator::next() noexcept {
40     long long temp = fCurrent;
41     fCurrent += fPrevious;
42     fPrevious = temp;
43 }
```