***18.2** (*Fibonacci numbers*) Rewrite the `fib` method in Listing 18.2 using iterations.

Hint: To compute `fib(n)` without recursion, you need to obtain `fib(n - 2)` and `fib(n - 1)` first. Let `f0` and `f1` denote the two previous Fibonacci

numbers. The current Fibonacci number would then be `f0 + f1`. The algor can be described as follows:

```
f0 = 0; // For fib(0)
f1 = 1; // For fib(1)

for (int i = 1; i <= n; i++) {
  currentFib = f0 + f1;
  f0 = f1;
  f1 = currentFib;
}
// After the loop, currentFib is fib(n)
```

Write a test program that prompts the user to enter an index and display Fibonacci number.

***18.3** (*Compute greatest common divisor using recursion*) The `gcd(m, n)` can be defined recursively as follows:

- If `m % n` is `0`, `gcd(m, n)` is `n`.
- Otherwise, `gcd(m, n)` is `gcd(n, m % n)`.

Write a recursive method to find the GCD. Write a test program that prompt user to enter two integers and displays their GCD.

18.4 (*Sum series*) Write a recursive method to compute the following series:

$$m(i) = 1 + \frac{1}{2} + \frac{1}{3} + \ \ldots \ + \frac{1}{i}$$

Write a test program that displays `m(i)` for `i` = `1`, `2`, . . ., `10`.

18.5 (*Sum series*) Write a recursive method to compute the following series:

$$m(i) = \frac{1}{3} + \frac{2}{5} + \frac{3}{7} + \frac{4}{9} + \frac{5}{11} + \frac{6}{13} + \ \ldots \ + \frac{i}{2i + 1}$$

Write a test program that displays `m(i)` for `i` = `1`, `2`, . . ., `10`.

***18.6** (*Sum series*) Write a recursive method to compute the following series:

$$m(i) = \frac{1}{2} + \frac{2}{3} + \ \ldots \ + \frac{i}{i + 1}$$