nth fibonacci number is given by:

$$f_n = f_{n-1} + f_{n-2}$$

Similarly (n+1)th fibonacci number is given by:

$$f_{n+1} = f_n + f_{n-1}$$

The first fibonacci number is 1
The second fibonacci number is 2

```
Third fibonacci numbe         1        +       2        =       3
                         an odd number + an even number = an odd number
Fourth fibonacci number:       2        +      3        =       5
                         an even number + an odd number = an odd number
Fifth fibonacci number:        3        +      5        =       8
                          an odd number + an odd number = an even number
```

From observation, we can see that every third fibonacci number is an even number.

Let $f_{n-2} = a(odd)\ AND\ f_{n-1} = b(even)$

$$f_n = f_{n-1} + f_{n-2} = a + b$$
$$f_{n+1} = f_n + f_{n-1} = a + b + b = a + 2b$$
$$f_{n+2} = f_{n+1} + f_n = a + 2b + a + b = 2a + 3b$$

Again, from observation, we can see that if $f_{n-2} = a(odd)\ AND\ f_{n-1} = b(even)$,
then $f_{n+1} = a + 2b(odd) AND\ f_{n+2} = 2a + 3b(even)$

Thus, we can calculate fibonacci numbers until b(even) $\leq$ 4 000 000,
adding b to sum on every iteration