Stream and Functional Programming

1. Write a Java program which implements following tasks using functional programming.

   i Find the artist with the longest name. You should implement this using a Collector and the reduce higher-order function. The following example should return "Stuart Sutcliffe".

   [20 Marks]

```
Stream<String> names = Stream.of("John Lennon", "Paul McCartney",
    "George Harrison", "Ringo Starr", "Pete Best", "Stuart Sutcliffe");
```

   ii Given a Stream where each element is a word, count the number of times each word appears. So, if you were given the following input, you would return a Map of [John → 3, Paul → 2, George

   → 1]. [20 Marks]

```
Stream<String> names = Stream.of("John", "Paul", "George", "John",
                                 "Paul", "John");
```

2. Efficiently calculate a Fibonacci sequence using just the computeIfAbsent method on a Map. By " efficiently," means that you don't repeatedly recalculate the Fibonacci sequence of smaller numbers.