Practice 4

In this practice, you'll be using Java Streams to perform simple data analysis. Specifically, we provide a `cities.txt` and an incomplete `Practice4.java` which reads `cities.txt`. You need to complete the three **TODOs** in `Practice4.java`, which:

1. Count how many cities there are for each state. The result is `Map<String, Long>`, where the key is the name of the state while the value is the number of cities in that state.
2. Count the total population for each state. The result is `Map<String, Integer>`, where the key is the name of the state while the value is the population of that state (i.e., sum of the population of each city in that state).
3. For each state, get the set of cities with >500,000 population. The result is `Map<String, Set<City>>`.

Tips: Check out `Collectors.groupingBy`.

Sample Output

```
# of cities per state:
{DE=1, HI=1, TX=63, MA=22, MD=5, ME=1, IA=10, ID=5, MI=24, UT=12, MN=17, MO=16, IL=29, IN=17, MS

population per state:
{DE=71292, HI=345610, TX=13748465, MA=2403297, MD=869891, ME=66214, IA=897519, ID=489295, MI=267

cities with >500,000 population for each state:
DE: []
HI: []
TX: [City{name='San Antonio', state='TX', population=1382951}, City{name='El Paso', state='TX',
MA: [City{name='Boston', state='MA', population=636479}]
MD: [City{name='Baltimore', state='MD', population=621342}]
ME: []
IA: []
ID: []
MI: [City{name='Detroit', state='MI', population=701475}]
UT: []
MN: []
MO: []
IL: [City{name='Chicago', state='IL', population=2714856}]
IN: [City{name='Indianapolis', state='IN', population=834852}]
```

Evaluation

The practice will be checked before Oct.12 by teachers or SAs. What will be tested:

1. That you understand every line of your own code, not just copy from somewhere
2. That your program compiles correctly (javac)
3. Correctness of the program logic
4. That the result is obtained in a reasonable time

Late submissions after Oct.12 will incur a 20% penalty, meaning that you can only get 80% of this practice's score.