

CS 1632 - DELIVERABLE 4: Performance Testing Using VisualVM

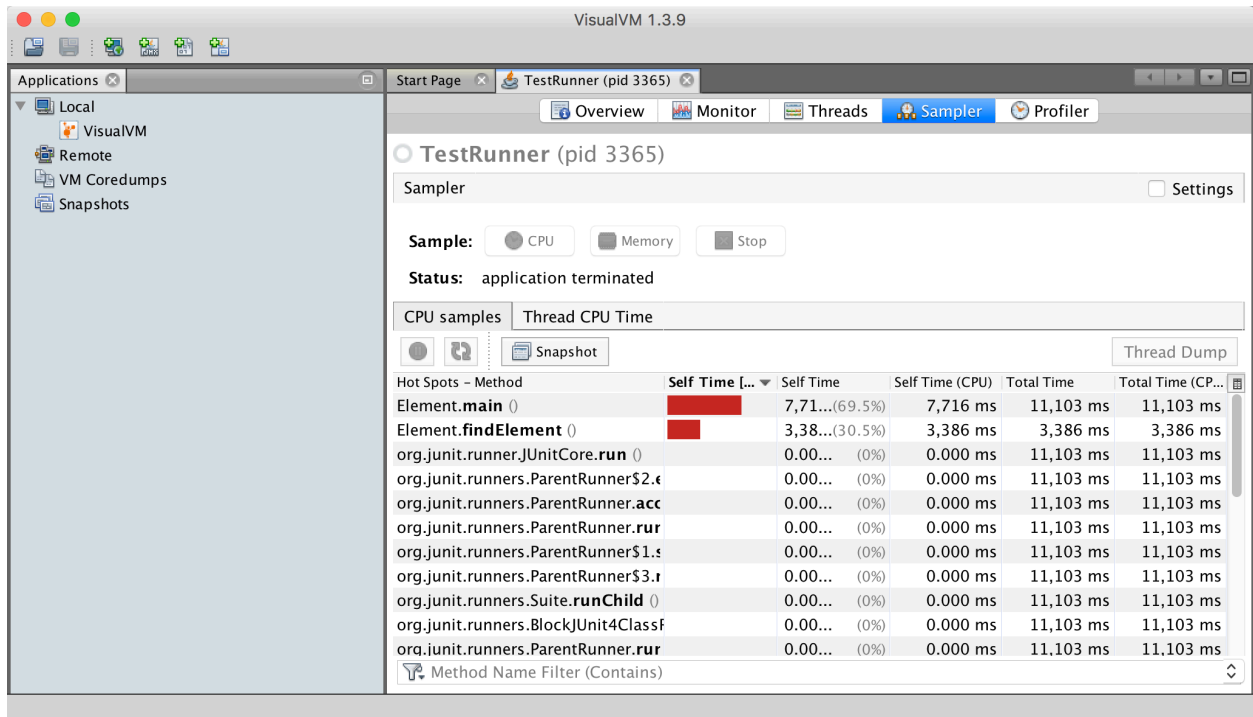
Siming Zheng

Github URL: [https://github.com/Ningyou134679/
CS1632_Deliverable4](https://github.com/Ningyou134679/CS1632_Deliverable4)

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CS1632_Deliverable4.git](https://github.com/Ningyou134679/CS1632_Deliverable4.git)

VisualVM Screenshot

Note: The screenshot blow is taken by running large.txt, all other files are too fast that they do not show on VisualVM



Summary

As you can tell from the screenshot, most runtime are spent on main and a method called findElement, which accepts a string, determines if it can be group into abbreviations of elements, and return the sequence if found, or not found if at most two consecutive characters do not match a key.

Since most work is done in main, where it contains the io, and calls findElement for every line read from the file. The runtime is still mainly caused by the findElements method. Since it requires comparing substrings for all permutations in a string, I expect it to be slow. I did some improvements by, instead of adding string using the “+” operator, I use a StringBuffer to store any elements being found, and in the end return it as a string. In addition, in order to reduce time finding they 1 or 2 character elements by searching through the txt file, I store the abbreviation as a key, and the whole name as a value into a hash map, which will reduce runtime when I try to find the abbreviations.

Runtime

Mean: 0.117

Median: 0.078

Runtime screenshot

```
CS1632_Deliverable4 — -bash — 80x24
P - O - W - P - O - W - Er - S - O - N
Phosphorus - Oxygen - Tungsten - Phosphorus - Oxygen - Tungsten - Erbium - Sulfu
r - Oxygen - Nitrogen
Could not create name "Nick Nickelback" out of elements.
N - I - C - K - P - O - W - Er - S
Nitrogen - Iodine - Carbon - Potassium - Phosphorus - Oxygen - Tungsten - Erbium
- Sulfur
N - I - C - K - At - As
Nitrogen - Iodine - Carbon - Potassium - Astatine - Arsenic
Ti - N - Y - N - I - C - K
Titanium - Nitrogen - Yttrium - Nitrogen - Iodine - Carbon - Potassium
B - O - B - C - Re - At
Boron - Oxygen - Boron - Carbon - Rhenium - Astatine
Could not create name "Loopy Creat" out of elements.
Could not create name "Tsar Bomba" out of elements.
Ts - Ar - B - O - O
Tennessine - Argon - Boron - Oxygen - Oxygen
Ts - Ar - Ts - Ar
Tennessine - Argon - Tennessine - Argon

real    0m0.117s
user    0m0.083s
sys      0m0.025s
ZhengSimings-MacBook-Pro:CS1632_Deliverable4 zhengsiming$
```

```
CS1632_Deliverable4 — -bash — 80x24
P - O - W - P - O - W - Er - S - O - N
Phosphorus - Oxygen - Tungsten - Phosphorus - Oxygen - Tungsten - Erbium - Sulfu
r - Oxygen - Nitrogen
Could not create name "Nick Nickelback" out of elements.
N - I - C - K - P - O - W - Er - S
Nitrogen - Iodine - Carbon - Potassium - Phosphorus - Oxygen - Tungsten - Erbium
- Sulfur
N - I - C - K - At - As
Nitrogen - Iodine - Carbon - Potassium - Astatine - Arsenic
Ti - N - Y - N - I - C - K
Titanium - Nitrogen - Yttrium - Nitrogen - Iodine - Carbon - Potassium
B - O - B - C - Re - At
Boron - Oxygen - Boron - Carbon - Rhenium - Astatine
Could not create name "Loopy Creat" out of elements.
Could not create name "Tsar Bomba" out of elements.
Ts - Ar - B - O - O
Tennessine - Argon - Boron - Oxygen - Oxygen
Ts - Ar - Ts - Ar
Tennessine - Argon - Tennessine - Argon

real    0m0.120s
user    0m0.087s
sys      0m0.024s
ZhengSimings-MacBook-Pro:CS1632_Deliverable4 zhengsiming$
```

```

CS1632_Deliverable4 — -bash — 80x24
P - O - W - P - O - W - Er - S - O - N
Phosphorus - Oxygen - Tungsten - Phosphorus - Oxygen - Tungsten - Erbium - Sulfu
r - Oxygen - Nitrogen
Could not create name "Nick Nickelback" out of elements.
N - I - C - K - P - O - W - Er - S
Nitrogen - Iodine - Carbon - Potassium - Phosphorus - Oxygen - Tungsten - Erbium
- Sulfur
N - I - C - K - At - As
Nitrogen - Iodine - Carbon - Potassium - Astatine - Arsenic
Ti - N - Y - N - I - C - K
Titanium - Nitrogen - Yttrium - Nitrogen - Iodine - Carbon - Potassium
B - O - B - C - Re - At
Boron - Oxygen - Boron - Carbon - Rhenium - Astatine
Could not create name "Loopy Creat" out of elements.
Could not create name "Tsar Bomba" out of elements.
Ts - Ar - B - O - O
Tennessine - Argon - Boron - Oxygen - Oxygen
Ts - Ar - Ts - Ar
Tennessine - Argon - Tennessine - Argon

real    0m0.115s
user    0m0.081s
sys      0m0.021s
ZhengSimings-MacBook-Pro:CS1632_Deliverable4 zhengsiming$ time java Element samp]

```

Test screenshot

```
ZhengSimings-MacBook-Pro-CS1632_Deliverable4 zhengsiming$ javac -cp ../junit-4.12.jar:/hamcrest-core-1.3.jar:/mockito-core-1.10.19.jar:/objenesis-2.4.jar *.java
ZhengSimings-MacBook-Pro-CS1632_Deliverable4 zhengsiming$ time java -cp ../junit-4.12.jar:/hamcrest-core-1.3.jar:/mockito-core-1.10.19.jar:/objenesis-2.4.jar TestRunner
C
Carbon
C
Carbon
C
Carbon
C
Carbon
C
Carbon
C
Carbon
C
Carbon
C
Carbon
C
Carbon
C
Carbon
C
Carbon
C
Carbon
ALL TESTS PASSED
real    0m0.421s
user    0m0.536s
sys      0m0.069s
ZhengSimings-MacBook-Pro-CS1632_Deliverable4 zhengsiming$
```