LAB 4

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2.1

2.1.3

代码略

<mark>特别补充</mark>

在 `nsmap.cc` 文件中，对 `remove` 函数的设计，原本采用和 `nsvector.cc` 相同逻辑，但研究 `erase` 函数后发现，可以直接将键值作为参数进行删除，效果相同。两种实现方式时间复杂度相同，但后者表达更简洁明了。

`naumap.cc` 同上。

```cpp
bool remove(const HostName& hostname){
    //auto it = vns.find(hostname);
    //if (it != vns.end()) {
    //    vns.erase(it); // 删除元素
    //    return true;
    //}
    //return false;

    return vns.erase(hostname); // 使用erase直接删除键值的方法-->返回删除数量：成功删除=1，失败删除=0
}
```

2.1.4

运行截图如下

<mark>直接运行</mark> `run.bat`

```
D:\Archive\subject\two two\OOP\lab\lab4\lab4>run
test create:                using time 19123.6359 ms
test contains:              using time   173.9071 ms
test not contains:          using time   216.6215 ms
test insert/lookup/remove: using time   492.4571 ms
test create:                using time   456.3796 ms
test contains:              using time     0.2965 ms
test not contains:          using time     0.2867 ms
test insert/lookup/remove: using time     0.6430 ms
test create:                using time   484.4483 ms
test contains:              using time     0.1317 ms
test not contains:          using time     0.1182 ms
test insert/lookup/remove: using time     0.2391 ms
```

按照 `nsvector` `nsmap` `nsumap` 顺序，依次执行20、40、80、160、224k的数据文件截图

```
D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsvector < ns20k.txt 1 >log.txt
test create:                using time   227.5509 ms
test contains:              using time    23.4589 ms
test not contains:          using time    11.1988 ms
test insert/lookup/remove: using time    39.1914 ms

D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsmap    < ns20k.txt 1 >log.txt
test create:                using time    52.6475 ms
test contains:              using time     0.6710 ms
test not contains:          using time     0.7155 ms
test insert/lookup/remove: using time     1.0612 ms

D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsumap   < ns20k.txt 1 >log.txt
test create:                using time    51.6682 ms
test contains:              using time     0.4320 ms
test not contains:          using time     0.2362 ms
test insert/lookup/remove: using time     0.2336 ms
```

```
D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsvector < ns40k.txt 1 >log.txt
test create:                using time  1037.8826 ms
test contains:              using time    59.8474 ms
test not contains:          using time    46.6411 ms
test insert/lookup/remove: using time   105.9961 ms

D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsmap    < ns40k.txt 1 >log.txt
test create:                using time   110.9532 ms
test contains:              using time     0.7644 ms
test not contains:          using time     0.5136 ms
test insert/lookup/remove: using time     1.0802 ms

D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsumap   < ns40k.txt 1 >log.txt
test create:                using time   114.7984 ms
test contains:              using time     0.2111 ms
test not contains:          using time     0.5601 ms
test insert/lookup/remove: using time     0.5239 ms
```

```
D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsvector < ns80k.txt 1 >log.txt
test create:               using time  4587.0901 ms
test contains:             using time   126.5995 ms
test not contains:         using time   109.9271 ms
test insert/lookup/remove: using time   207.4586 ms


D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsmap    < ns80k.txt 1 >log.txt
test create:               using time   234.6961 ms
test contains:             using time     0.6656 ms
test not contains:         using time     0.3174 ms
test insert/lookup/remove: using time     0.5882 ms


D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsumap   < ns80k.txt 1 >log.txt
test create:               using time   229.2835 ms
test contains:             using time     0.2201 ms
test not contains:         using time     0.1228 ms
test insert/lookup/remove: using time     0.2901 ms


D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsvector < ns160k.txt 1 >log.txt
test create:               using time 18818.2264 ms
test contains:             using time   179.7721 ms
test not contains:         using time   226.7687 ms
test insert/lookup/remove: using time   425.2553 ms


D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsmap    < ns160k.txt 1 >log.txt
test create:               using time   503.5414 ms
test contains:             using time     0.2424 ms
test not contains:         using time     0.5033 ms
test insert/lookup/remove: using time     5.4318 ms


D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsumap   < ns160k.txt 1 >log.txt
test create:               using time   474.4430 ms
test contains:             using time     0.1958 ms
test not contains:         using time     0.1262 ms
test insert/lookup/remove: using time     0.3178 ms


D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsvector < ns224k.txt 1 >log.txt
test create:               using time 37803.3598 ms
test contains:             using time   183.6810 ms
test not contains:         using time   325.3645 ms
test insert/lookup/remove: using time   627.4762 ms


D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsmap    < ns224k.txt 1 >log.txt
test create:               using time   702.9669 ms
test contains:             using time     0.3577 ms
test not contains:         using time     0.9154 ms
test insert/lookup/remove: using time     1.4170 ms


D:\Archive\subject\two two\OOP\lab\lab4\lab4>nsumap   < ns224k.txt 1 >log.txt
test create:               using time   657.8436 ms
test contains:             using time     0.1993 ms
test not contains:         using time     0.1074 ms
test insert/lookup/remove: using time     0.2462 ms
```