

Problem 3.1

1. `scc@LAPTOP-GBP3I3R0:/mnt/c/Users/scc/Desktop/CS-Challenge-Program/6.087/作业/assn03$./probl.o`
Avg. execution time: 5.74527e-05 msec
2. `scc@LAPTOP-GBP3I3R0:/mnt/c/Users/scc/Desktop/CS-Challenge-Program/6.087/作业/assn03$./probl.o`
Avg. execution time: 4.67113e-05 msec
3. `scc@LAPTOP-GBP3I3R0:/mnt/c/Users/scc/Desktop/CS-Challenge-Program/6.087/作业/assn03$./probl.o`
Avg. execution time: 1.68498e-05 msec
4. 比较玄学，有时候会有明显提高。有时候则没有。

Problem 3.2

1. 将dict.h文件中的 `char* the_dictionary[1000];` 变为 `extern char* the_dictionary[1000];`
2. 可以访问，在main.c文件中使用 `extern char* the_dictionary[1000];`。在dict.c文件中
`static char* the_dictionary[1000];`
3. `g++ -g O0 -Wall main.c dict.c -o dictionary.o`

Problem 3.3

(a)

```
int factorial(int n) {
    int i = 2, ret = 1;
    while(i <= n) {
        ret *= i;
        i++;
    }
    return ret;
}
```

(b)

```
int sample_geometric_rv(double p) {
    double q = rand_double();
    int n = 1;
    while(q >= p) {
        q = rand_double();
        n++;
    }

    return n;
}
```

Problem 3.4

```
while((c=getc(fp))!=EOF)
{
    if(c == '\n') {
        nl++;
    } else if(isspace(c)) {
        currstate = OUTSIDE;
    } else {
        if(currstate == OUTSIDE) {
            currstate = INSIDE;
            ++nw;
        }
    }
}
```

```

    }
    currstate = INSIDE;
}
++nc;
}

```

Problem 3.5

```

#include <stdio.h>
#include <stdlib.h>
#include <string.h>

#define STRSIZE 100
#define NUM 9

int main(int argc, char* argv[]) {
    FILE* fp1 = fopen("stateoutflow0708.txt", "r");

    if(fp1 == NULL) return 0;

    FILE* fp2 = fopen("record.txt", "w");

    if(fp2 == NULL) return 0;

    char stateCodeOrigin[STRSIZE];
    char countyCodeOrigin[STRSIZE];
    char stateCodeDest[STRSIZE];
    char countyCodeDest[STRSIZE];
    char stateAbbrev[STRSIZE];
    char stateName[STRSIZE];
    char returnNum[STRSIZE];
    char exmptNum[STRSIZE];
    int aggrAgi;

    char line1[STRSIZE * NUM];
    char line2[STRSIZE * NUM];

    fputs("STATE\tTOTAL\n", fp2);
    fputs("-----\n", fp2);
    int total = 0;

    while(fgets(line1, STRSIZE * NUM, fp1)) {
        sscanf(line1, "%s %s %s %s %s %s %s %s %d", stateCodeOrigin,
        countyCodeOrigin, stateCodeDest,
        countyCodeDest, stateAbbrev,
        stateName, returnNum,
        exmptNum, &aggrAgi);

        if(strcmp(stateCodeOrigin, "\"25\"") == 0) {
            sprintf(line2, "%s\t%d\n", stateName, aggrAgi);
            total += aggrAgi;
            fputs(line2, fp2);
        }
    }

    fputs("-----\n", fp2);
    sprintf(line2, "Total\t%d", total);
    fputs(line2, fp2);
}

```

```
fclose(fp1);  
fclose(fp2);  
  
return 0;  
}
```