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PADP lab Program 3

Code:

```c
#include<stdio.h>
#include<omp.h>
#include<ctype.h>
#include<string.h>
#define COUNT 10


char search_words[20][COUNT] = {"The","around","graphics","from","by","be","a","which","various","mount"};
long counts[COUNT];
int line_c = 0;


int is_equal(char* a,const char* key, int ignore_case){
//        char b[20];
//        strcpy(b,key);
int len_a = strlen(a),len_b = strlen(key);
if(len_a != len_b)
        return 0;
if(ignore_case)
        return strcasecmp(a,key)==0;
return strcmp(a,key)==0;
}


void read_word(char *temp, FILE *fp){
int i=0;
char ch;
while((ch = fgetc(fp)) != EOF && isalpha(ch) == 0){
```

```c
    }
    while(ch != EOF        &&isalpha(ch) != 0){
            temp[i++] = ch;
            ch = fgetc(fp);
    }
    temp[i] = '\0';
    //printf("%s\n",temp);
}


long determine_count(const char *file_name, const char *key, int ignore_case)
{
int key_index=0,key_len = strlen(key);
long word_count=0;
char ch;
FILE *fp = fopen(file_name,"r");
char temp[40];
int i=0;
while(feof(fp) == 0){
read_word(temp,fp);
if(is_equal(temp,key,ignore_case) != 0)
        word_count++;
//printf("%s ",temp);
   }
//printf("\nWord %s: %ld",key,word_count);

return word_count;
}
int main(){
int i;
for(i=0;i<COUNT;i++)
```

```c
            counts[i] = 0;
char* my_files[4]={"file1.txt","file2.txt","file3.txt","file4.txt"};
for(int iter=0; iter<4; iter++){
        FILE *fp = fopen(my_files[iter],"r");
        fseek(fp, 0L, SEEK_END);
        printf("File size: %ldKB\n",ftell(fp)/1024);
        fclose(fp);
        for(int t=1; t<=8; t*=2){
                omp_set_num_threads(t);
                double start = omp_get_wtime();
                #pragma omp parallel for
                for(i=0;i<COUNT;i++)
                        counts[i] = determine_count(my_files[iter],search_words[i],1);
                double time = omp_get_wtime() - start;
                for(i=0;i<COUNT;i++)
                        printf("%s: %ld  ",search_words[i],counts[i]);


                printf("\nTime Taken for %d threads: %lf\n",t,time);
        }
}
return 0;
}
```

Output:

```
Time Taken for 8 threads: 0.008390
mahesh@mahesh-VirtualBox:~/Desktop/padp$ cc -fopenmp prog3.c
mahesh@mahesh-VirtualBox:~/Desktop/padp$ ./a.out
File size: 0KB
The: 13  around: 1  graphics: 0  from: 0  by: 3  be: 2  a: 9  which: 2  various: 1  mount: 2
Time Taken for 1 threads: 0.000211
The: 13  around: 1  graphics: 0  from: 0  by: 3  be: 2  a: 9  which: 2  various: 1  mount: 2
Time Taken for 2 threads: 0.000654
The: 13  around: 1  graphics: 0  from: 0  by: 3  be: 2  a: 9  which: 2  various: 1  mount: 2
Time Taken for 4 threads: 0.000394
The: 13  around: 1  graphics: 0  from: 0  by: 3  be: 2  a: 9  which: 2  various: 1  mount: 2
Time Taken for 8 threads: 0.002590
File size: 4KB
The: 22  around: 0  graphics: 0  from: 1  by: 3  be: 2  a: 2  which: 0  various: 0  mount: 0
Time Taken for 1 threads: 0.001503
The: 22  around: 0  graphics: 0  from: 1  by: 3  be: 2  a: 2  which: 0  various: 0  mount: 0
Time Taken for 2 threads: 0.001291
The: 22  around: 0  graphics: 0  from: 1  by: 3  be: 2  a: 2  which: 0  various: 0  mount: 0
Time Taken for 4 threads: 0.000542
The: 22  around: 0  graphics: 0  from: 1  by: 3  be: 2  a: 2  which: 0  various: 0  mount: 0
Time Taken for 8 threads: 0.001205
File size: 13KB
The: 83  around: 3  graphics: 0  from: 2  by: 15  be: 10  a: 31  which: 6  various: 3  mount: 6
Time Taken for 1 threads: 0.003424
The: 83  around: 3  graphics: 0  from: 2  by: 15  be: 10  a: 31  which: 6  various: 3  mount: 6
Time Taken for 2 threads: 0.042542
The: 83  around: 3  graphics: 0  from: 2  by: 15  be: 10  a: 31  which: 6  various: 3  mount: 6
Time Taken for 4 threads: 0.010354
The: 83  around: 3  graphics: 0  from: 2  by: 15  be: 10  a: 31  which: 6  various: 3  mount: 6
Time Taken for 8 threads: 0.011280
File size: 1390KB
The: 15139  around: 14  graphics: 4  from: 683  by: 1883  be: 1482  a: 6509  which: 515  various: 130  mount: 0
Time Taken for 1 threads: 0.426196
The: 15139  around: 14  graphics: 4  from: 683  by: 1883  be: 1482  a: 6509  which: 515  various: 130  mount: 0
Time Taken for 2 threads: 0.257941
The: 15139  around: 14  graphics: 4  from: 683  by: 1883  be: 1482  a: 6509  which: 515  various: 130  mount: 0
Time Taken for 4 threads: 0.102556
The: 15139  around: 14  graphics: 4  from: 683  by: 1883  be: 1482  a: 6509  which: 515  various: 130  mount: 0
Time Taken for 8 threads: 0.107915
mahesh@mahesh-VirtualBox:~/Desktop/padp$
```

Graphs:

Execution Time vs No. of Threads

Legend: 0 KB, 4 KB, 13 KB, 1390 KB

Y-axis: Execution Time (0.0 to 0.5)
X-axis: No. of Threads (2, 4, 6, 8)

Execution Time vs Input Size

Legend: Thread 1, Thread 2, Thread 4, Thread 8

Y-axis: Execution Time (0.0 to 0.5)
X-axis: Input Size (0, 4, 13, 1390)