

# BÁO CÁO THỰC HÀNH

## Buổi 5

<b>Môn:</b>	Nhập môn Hệ điều hành
<b>Nhóm:</b>	N3T01
<b>Họ và tên:</b>	Lưu Hữu Trí
<b>MSSV:</b>	52200167
<b>Số bài hoàn thành:</b>	4/4 (100%)

## Câu 1:

```
bai1.c x
1 #include <stdio.h>
2 #include <pthread.h>
3 #include <stdlib.h>
4 #include <sys/types.h>
5 #include <unistd.h>
6
7 struct arr {
8     int n;
9     int a[10];
10 };
11
12 void* thr1(void* ar) {
13     int count, sum = 0;
14     struct arr *ap = (struct arr*) ar;
15
16     for (count = 0; count < ap->n; count++)
17         sum += ap->a[count];
18
19     float tbc = (float)sum/ap->n;
20     printf("TrungBinhCong: %4.3f\n", tbc);
21 }
22
23 void* thr2(void* ar) {
24     struct arr *ap = (struct arr*)ar;
25     int count, min = ap->a[0];
26
27     for (count = 1; count < ap->n; count++) {
28         if (min > ap->a[count])
29             min = ap->a[count];
30     }
31
32     printf("Min: %d\n", min);
33 }
34
35 void* thr3(void* ar) {
36     struct arr *ap = (struct arr*)ar;
37     int count, max = ap->a[0];
38
39     for (count = 1; count < ap->n; count++) {
40         if (max < ap->a[count])
41             max = ap->a[count];
42     }
43
44     printf("Max: %d\n", max);
45 }
46
47 int main(int argc, char * argv[]) {
48     struct arr ar;
49     ar.n = argc - 1;
50     int i;
```

```

51
52     for (i = 1; i < argc; i++) {
53         ar.a[i - 1] = atoi(argv[i]);
54     }
55
56     pthread_t tid[3];
57     pthread_create(&tid[0], NULL, thr1, (void*)&ar);
58     sleep(2);
59     pthread_create(&tid[1], NULL, thr2, (void*)&ar);
60     sleep(2);
61     pthread_create(&tid[2], NULL, thr3, (void*)&ar);
62     sleep(2);
63
64     return 0;
65 }

```

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INS

```

root@ubuntu: /home/lab4
root@ubuntu:/home/lab4# gcc -c bai1.c
root@ubuntu:/home/lab4# gcc -o bai1.out bai1.o -lpthread
root@ubuntu:/home/lab4# bai1.out 12
bai1.out: command not found
root@ubuntu:/home/lab4# ./bai1.out 12
TrungBinhCong: 12.000
Min: 12
Max: 12
root@ubuntu:/home/lab4# |

```

## Câu 2:

```

bai2.c x
1 #include <stdio.h>
2 #include <pthread.h>
3 #include <stdlib.h>
4 #include <sys/types.h>
5 #include <unistd.h>
6
7 int isPrimeNumber(int n) {
8     int i;
9     for (i = 2; i < n/2; i++) {
10         if (n % i == 0)
11             return 0;
12     }
13
14     return 1;
15 }
16

```

```

16
17 void* thr(void *ar) {
18     int n = *((int *)ar);
19
20     if (isPrimeNumber(n)) {
21         printf("%d ", n);
22     }
23 }
24
25 int main(int argc, char ** argv) {
26     int n = atoi(argv[1]);
27     int i = 2, num = 0;
28
29     pthread_t tid[2];
30
31     while (i < n) {
32         num = i;
33         pthread_create(&tid[0], NULL, thr, (void*)&num);
34         pthread_join(tid[0], NULL);
35
36         num = i + 1;
37         pthread_create(&tid[1], NULL, thr, (void*)&num);
38         pthread_join(tid[1], NULL);
39
40         i += 2;
41     }
42
43     printf("\n");
44     return 0;
45 }

```

```

root@ubuntu: /home/lab4
root@ubuntu:/home/lab4# gcc -c bai2.c
root@ubuntu:/home/lab4# gcc -o bai2.out bai2.o -lpthread
root@ubuntu:/home/lab4# ./bai2.out 12
2 3 4 5 7 11
root@ubuntu:/home/lab4# ./bai2.out 15
2 3 4 5 7 11 13
root@ubuntu:/home/lab4# ./bai2.out 40
2 3 4 5 7 11 13 17 19 23 29 31 37
root@ubuntu:/home/lab4# ./bai2.out 200
2 3 4 5 7 11 13 17 19 23 29 31 37 41 43 47 53 59 61 67 71 73 79 83 89 97
101 103 107 109 113 127 131 137 139 149 151 157 163 167 173 179 181 191 1
93 197 199
root@ubuntu:/home/lab4#

```

### Câu 3:

```
bai2.c x bai3.c x bai4.c x
1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <pthread.h>
4 #include <sys/time.h>
5
6 typedef struct {
7     char* source_file1;
8     char* source_file2;
9     char* result_file;
10 } file_t;
11
12 void* thr(void* ar) {
13     file_t *ap = (file_t*)ar;
14     FILE *f1, *f2, *result;
15     int row, column, i, j;
16
17     f1 = fopen(ap->source_file1, "r");
18     f2 = fopen(ap->source_file2, "r");
19     result = fopen(ap->result_file, "w");
20
21     fscanf(f1, "%d\n", &row);
22     fscanf(f1, "%d\n", &column);
23     fscanf(f2, "%d\n", &row);
24     fscanf(f2, "%d\n", &column);
25
26     int A[row][column], B[row][column], C[row][column];
27     for (i = 0; i < row; i++) {
28         for (j = 0; j < column; j++) {
29             fscanf(f1, "%d", &A[i][j]);
30             fscanf(f2, "%d", &B[i][j]);
31             C[i][j] = A[i][j] + B[i][j];
32         }
33         fscanf(f1, "\n");
34     }
35
36     for (i = 0; i < row; i++) {
37         for (j = 0; j < column; j++) {
38             fprintf(result, "%d ", C[i][j]);
39         }
40         fprintf(result, "\n");
41     }
42 }
43
44 int main(int argc, char *argv[]) {
45     file_t f;
46     struct timeval tv;
47     time_t curtime;
48     char buffer[30];
49 }
```

```
49
50     gettimeofday(&tv, NULL);
51     curtime = tv.tv_sec;
52     strftime(buffer, 30, "%m-%d-%Y %T.", localtime(&curtime));
53     printf("%s and %ld\n", buffer, tv.tv_usec);
54
55     f.source_file1 = argv[1];
56     f.source_file2 = argv[2];
57     f.result_file = argv[3];
58
59     pthread_t tid;
60     pthread_create(&tid, NULL, thr, (void*)&f);
61     pthread_join(tid, NULL);
62
63     return 0;
64 }
65
```

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```
root@ubuntu: /home/lab4
root@ubuntu:/home/lab4# gcc -c bai3.c
root@ubuntu:/home/lab4# gcc -o bai3.out bai3.o -lpthread
root@ubuntu:/home/lab4# ./bai3.out A.txt B.txt C.txt
04-01-2023 09:45:20. and 395711
root@ubuntu:/home/lab4# cat A.txt
2
3
1 2 3
4 5 6
root@ubuntu:/home/lab4# cat B.txt
2
3
1 2 3
4 5 6
root@ubuntu:/home/lab4# cat C.txt
2 4 6
8 10 12
root@ubuntu:/home/lab4#
```

## Câu 4:

```
1 #include <stdio.h>
2 #include <stdlib.h>
3 #include <pthread.h>
4 #include <unistd.h>
5
6 static long all_char;
7
8 typedef struct {
9     char* source_file;
10    char* target_file;
11 } file_t;
12
13 void* thr(void* ar) {
14     file_t * ap = (file_t*)ar;
15     FILE *f0, *f1;
16     int count = 0;
17     char c;
18
19     f0 = fopen(ap->source_file, "r");
20     f1 = fopen(ap->target_file, "w");
21
22     while (c != EOF) {
23         c = fgetc(f0);
24         if (c != EOF) {
25             fputc(c, f1);
26         }
27         count++;
28     }
29
30     all_char = count;
31 }
32
33 int main(int argc, char ** argv) {
34     pthread_t tid;
35     file_t f;
36
37     f.source_file = argv[1];
38     f.target_file = argv[2];
39
40     pthread_create(&tid, NULL, thr, (void*)&f);
41     pthread_join(tid, NULL);
42     printf("Sao chep thanh cong %ld ki tu\n", all_char);
43
44     printf("\n");
45     return 0;
46 }
```



```
root@ubuntu: /home/lab4
root@ubuntu:/home/lab4# gcc -c bai4.c
root@ubuntu:/home/lab4# gcc -o bai4.out bai4.o -lpthread
root@ubuntu:/home/lab4# ./bai4.out source.txt target.txt
Sao chep thanh cong 44 ki tu

root@ubuntu:/home/lab4# cat source.txt
Luu Huu Tri - 22050301 - Khoa hoc May tinh
root@ubuntu:/home/lab4# cat target.txt
Luu Huu Tri - 22050301 - Khoa hoc May tinh
root@ubuntu:/home/lab4# |
```