

# 17级并行与分布式计算

## HW2 17341137 宋震鹏（补交实验部分）

### ToDo部分代码填充

```
void* workerThreadStart(void* threadArgs) {
    WorkerArgs* args = static_cast<WorkerArgs*>(threadArgs);
    // TODO: Implement worker thread here.
    int start_row = args->threadId * (args->height / args->numThreads);
    int end_row = start_row + (args->height / args->numThreads);
    mandelbrotSerial(args->x0, args->y0, args->x1, args->y1,
                    args->width, args->height, start_row, end_row,
                    args->maxIterations, args->output);
    printf("Hello world from thread %d\n", args->threadId);
    return NULL;
}
```

```
for (int i=0; i<numThreads; i++) {
    // TODO: Set thread arguments here.
    args[i].x0 = x0;
    args[i].y0 = y0;
    args[i].x1 = x1;
    args[i].y1 = y1;
    args[i].width = width;
    args[i].height = height;
    args[i].maxIterations = maxIterations;
    args[i].output = output;
    args[i].numThreads = numThreads;
    args[i].threadId = i;
}
```

### 实验截图

```
szp@szp-virtual-machine:/mnt/hgfs/ShareVmware/Homework-asst-2 (2)/Homework-asst-2/prog1_mandelbrot_threads$ make
/bin/mkdir -p objs/
g++ -m64 -I../common -Iobjs/ -O3 -Wall -o mandelbrot objs/main.o objs/mandelbrot.o objs/ppm.o -lm -lpthread
szp@szp-virtual-machine:/mnt/hgfs/ShareVmware/Homework-asst-2 (2)/Homework-asst-2/prog1_mandelbrot_threads$ ./mandelbrot
[mandelbrot serial]:          [344.076] ms
Wrote image file mandelbrot-serial.ppm
Hello world from thread 1
Hello world from thread 0
Hello world from thread 0
Hello world from thread 1
Hello world from thread 0
Hello world from thread 1
Hello world from thread 0
Hello world from thread 1
Hello world from thread 0
Hello world from thread 1
[mandelbrot thread]:          [354.408] ms
Wrote image file mandelbrot-thread.ppm
+++++ (0.97x speedup from 2 threads)
```

```
szp@szp-virtual-machine:/mnt/hgfs/ShareVmware/Homework-asst-2 (2)/Homework-asst-2/prog1_mandelbrot_threads$ ./mandelbrot -t 4
[mandelbrot serial]: [338.715] ms
Wrote image file mandelbrot-serial.ppm
Hello world from thread 3
Hello world from thread 0
Hello world from thread 1
Hello world from thread 2
Hello world from thread 0
Hello world from thread 3
Hello world from thread 1
Hello world from thread 2
Hello world from thread 0
Hello world from thread 3
Hello world from thread 2
Hello world from thread 1
Hello world from thread 0
Hello world from thread 3
Hello world from thread 2
Hello world from thread 1
Hello world from thread 0
Hello world from thread 3
Hello world from thread 2
Hello world from thread 1
Hello world from thread 0
Hello world from thread 3
Hello world from thread 2
[mandelbrot thread]: [378.815] ms
Wrote image file mandelbrot-thread.ppm
+++ (0.89x speedup from 4 threads)
```

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