CS 241
Section Week #4

9/14/11
Topics This Section

• MP3 overview
• Function Pointers
• pthreads
MP3

• Goal: Multi-threaded Merge Sort

• Two new programming concepts:
  • Function Pointers
  • Threads
MP3

• Input:
  • We provide you a program to generate input files.

• Two parts to the MP:
  • Sorting
  • Merging
MP3

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• Two parts to the MP:
  • Sorting
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Part 1: [Multi-threaded sorting]

Each input file is sorted by a different thread, and the output is saved to a file with the same name plus “.sorted”.

Ignore empty lines.

Numerical order.

Use `qsort`:

```c
void qsort(void *base, size_t nmemb, size_t size,
           int(*compar)(const void *, const void *));
```

Pointer to a function
Part 2: [Multi-threaded merging]
Each pair of files is merged until only one is left.
A new round is started when all files in the previous one are merged, removing duplicates along the way. (DON'T USE qsort() on MERGE)
Coding Examples

• We have 5 code examples to work on in:
  • ds/ds5/{1-5}.c

• To compile using threads, make sure to use:
  • gcc 2.c -lpthread

• (On 5.c, you need to include -lm as well)