

PARALLEL COMPUTING

Cilk



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Cilk Introduction

- parallel programming is hard
 - try to use existing programming structures for parallelization
 - including data parallelism in nested loops
 - and task parallelism in recursive divide-and-conquer algorithms
- simple extension of C/C++
 - adds “spawn” and “sync” primitives
 - for automatic work-load balancing
- will see how this is implemented later
- in practice need “leaf coarsening”

Recursive Task Parallel Fibonacci

```
int fib (int n) {  
1  if (n < 2) return n;  
2  int x = cilk_spawn fib (n - 1);  
3  int y = cilk_spawn fib (n - 2);  
4  cilk_sync;  
5  int r = x + y;  
6  return r;  
}
```

