

3. How expensive are threads? Write a program that times how long it takes to create and then join 1000 threads, where each thread simply calls `thread_exit(0)` as soon as it starts running.

5. Write a program that uses threads to perform a parallel matrix multiply. To multiply two matrices,  $C = A * B$ , the result entry  $C_{(i,j)}$  is computed by taking the dot product of the  $i$ th row of  $A$  and the  $j$ th column of  $B$ :  $C_{i,j} = \sum_{k=0}^{N-1} A_{(i,k)} B_{(k,j)}$ . We can divide the work by creating one thread to compute each value (or each row) in  $C$ , and then executing those threads on different processors in parallel, as shown in Figure 4.19.