EE257/GP 258 Extra Handout OpenMP – C example

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Here is a simple example:

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/*
  OpenMP example program that demonstrates the for construct
  Compile with: gcc -O3 -fopenmp omp_for.c -o omp_for
*/

#include <omp.h>
#include <stdio.h>
#include <stdlib.h>

int main (int argc, char *argv[]) {

  int i, tid, nthreads, n=20;
  double *A, *B, *C, *D;

  /* Allocate the arrays */
  A = (double *) malloc(n*sizeof(double));
  B = (double *) malloc(n*sizeof(double));
  C = (double *) malloc(n*sizeof(double));
  D = (double *) malloc(n*sizeof(double));

  /* Initialize the arrays A and C */
  for (i=0; i<n; i++) {
    A[i] = (double)(i+1);
    C[i] = (double)(i+1);
  }

  /* Fork a team of threads */
#pragma omp parallel private(tid, i) shared(n,A,B,C,D)
  {
    tid = omp_get_thread_num();
    /* Only master thread does this */
    if (tid == 0)
      {
      nthreads = omp_get_num_threads();
      printf("Number of threads = %d\n", nthreads);
      }
#pragma omp for
    for (i=0; i<n; i++) {
      B[i] = 2.0*A[i];
      D[i] = 1.0/C[i];
      printf("Thread %d does iteration %d\n", tid, i);
    }

  }  /* End of parallel region */

  /* Print out the result */
  printf("B: ");
  for (i=0; i<n; i++) {
```

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    printf("%3.2f ", B[i]);
  }
  printf("\n\nD: ");
  for (i=0; i<n; i++) {
    printf("%2.3f ", D[i]);
  }
  printf("\n");

  exit(0);
}
```