|  |  |  |
| --- | --- | --- |
| Parallel and Distributed Computing ( 6E / 6F )  Quiz 03 (Spring 2022). Instructor: Dr. Syed M. Irteza | | Name: |
| Date: 2022/04/25 | | Roll Number: |
| Total Marks: 15 (5\*2m + 5m) | Time Allowed: 10 mins |

1. If we use the schedule(dynamic, 3) clause within the #pragma omp parallel for, we are enabling:
   1. Each thread is assigned 1/3rd of the total iterations of the *for* loop in round-robin manner
   2. Each idle thread is dynamically assigned 1/3rd of the remaining iterations of the *for* loop
   3. Each thread is assigned 3 contiguous iterations of the *for* loop in round-robin manner
   4. ***Each idle thread is dynamically assigned the 3 leftmost contiguous remaining iterations of the for loop***
2. If we use the schedule(static, 4) clause within the #pragma omp parallel for, we are enabling:
   1. Each thread is assigned 1/4th of the total iterations of the *for* loop in round-robin manner
   2. Each idle thread is dynamically assigned 1/4th of the remaining iterations of the *for* loop
   3. ***Each thread is assigned 4 contiguous iterations of the for loop in round-robin manner***
   4. Each idle thread is dynamically assigned the 4 leftmost contiguous remaining iterations of the *for* loop
3. With the schedule(guided, 2) clause within the #pragma omp parallel for, we are enabling:
   1. A scheduling mechanism where chunk sizes vary, but will not exceed 2 iterations
   2. ***A scheduling mechanism where chunk sizes decrease, but don’t go below 2 iterations***
   3. A scheduling mechanism where the fixed chunk size is 2 iterations
   4. A scheduling mechanism where the maximum chunk size is 2 iterations
4. When the OMP\_NESTED environment variable is set to TRUE, this indicates that OpenMP will:
   1. ***Create a new team of threads with each layer of nested parallel pragma code***
   2. Not create a new team of threads with each layer of nested parallel pragma code,
   3. Consider each new nested *for* loop to be an OpenMP *for* loop construct
   4. Not parallelize any for loops mentioned in the code
5. The OMP\_DYNAMIC environment variable when set to FALSE, indicates that OpenMP will:
   1. Always use static scheduling
   2. Always use guided scheduling
   3. ***Generate the same number of threads as requested by the num\_threads() clause***
   4. Create threads according to its dynamic adjustment algorithm
6. When parallelizing linked list traversal, why was the #pragma omp single clause used in one of the solutions? Can you explain the purpose of this clause in that context? [5m]

*When written within a parallel region, the simple clause makes sure that the subsequent block or region will only be executed by a single thread (this may any one of the already created threads). This was necessary when we wanted to do linked list traversal using the original while loop along with the OpenMP task construct. Traversal of the list must be done by only one thread, but with the task construct, we are creating a unique task for applying the complex\_func() on each node.*