

High Performance Computing

Assignment-3

Report

Team No: 9

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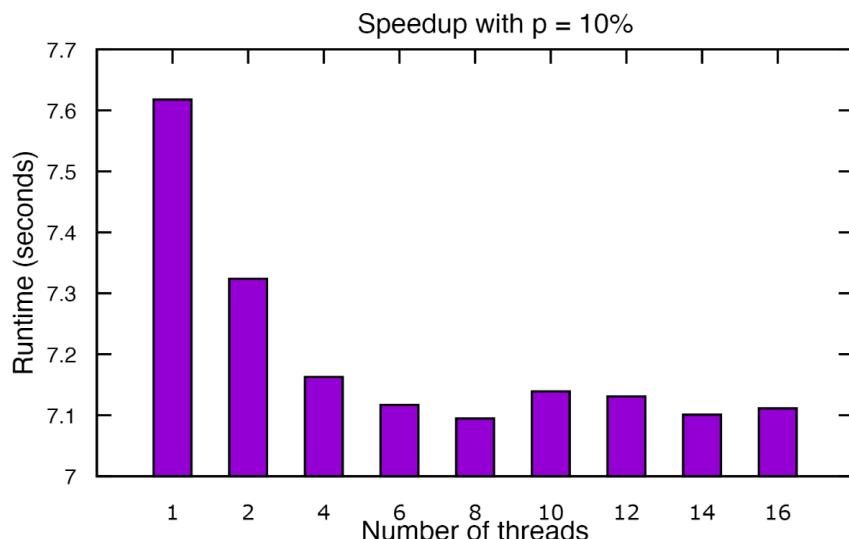
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Q1) Threshold

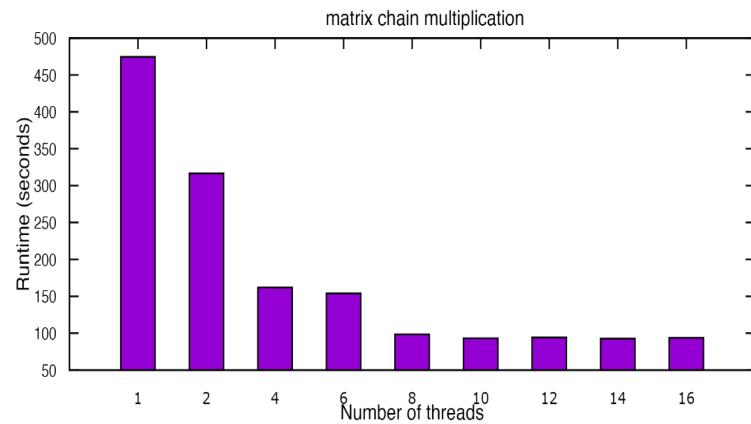
Speedup of threshold on varying the number of threads



Here, we can observe that by keeping the size of the array of the rows and columns as 1024, 2048, 4096 and 8192 and keeping the threshold value as 10, we can notice the speed up when changing the threads from 1, 2, 4; however, once we make the number of threads close to 8, 10, 12, 14, 16 we don't see much of a speed up as the graph remains almost constant.

Q2) Matrix Chain Multiplication

Speedup of matrix chain multiplication by varying the number of threads

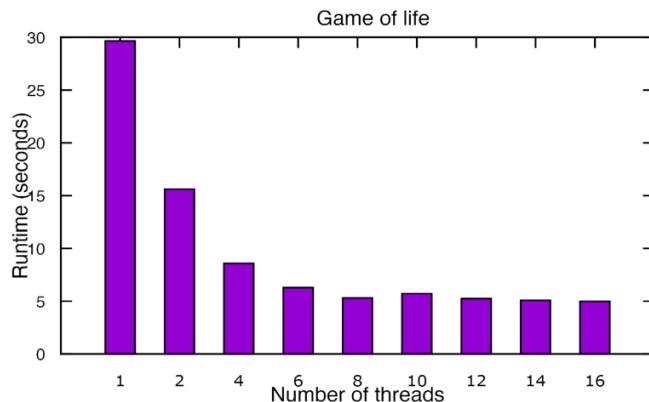


Here we took the number of matrices(n) as ten and the dimension as 1000.

The graph shown above shows that the speed-up is tremendous across threads 1 and 2. However, as we come towards threads 4, 6, 8, 10, 12, 14, 16 there is a marginal difference, and this was done as the main objective to achieve this speed up was to try and increase and maximize the number of cache hits possible.

Q3) Game of Life

Speedup of Game of life varying the number of threads



First, for the input, we created a file that would make a random seed file based on the user input of the rows and the columns.

Then using that seed file as the input, we then take in and apply the game of life rules onto the board and return the final answer.

From the graph, we can see that the speed-up is exponential (near threads 1, 2, 4, 6) and flatlines out towards 8, 10, 12, 14, 16 and this is because the space allocation takes time, and it becomes difficult to achieve more speed-up.