

Simple OpenMP Experiment (Project # 0)

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Tell what machine you ran this on

I am running on my PC:

- CPU: **i5-4690K CPU**
- Operating System: **Arch Linux**
- GPU: **NVIDIA GeForce GTX 760**

To compile program, run `./runPro`

I have made the **number of tries** to be fixed at **100**.

What do you think the actual volume is?

kkk

Show the performances you achieved in tables and graphs as a function of NUMNODES and NUMT

kkk

What patterns are you seeing in the speeds?

Why do you think it is behaving this way?

kkk

What is the Parallel Fraction for this application, using the Inverse Amdahl equation?

kkk

Given that Parallel Fraction, what is the maximum speed-up you could ever get?

kkk

Output file of running the program

output.txt:

```
## _NUMT(Number of Threads) = 1
## |
## .---_NUMS(Number of subdivisions) = 10
##   Peak Performance =      6.69 MegaHeights/Sec
## Average Performance =      6.62 MegaHeights/Sec
## Average Elapsed Time =    15.20 microseconds
## |
## .---_NUMS(Number of subdivisions) = 20
##   Peak Performance =      6.85 MegaHeights/Sec
## Average Performance =      6.80 MegaHeights/Sec
## Average Elapsed Time =    58.87 microseconds
## |
## .---_NUMS(Number of subdivisions) = 40
##   Peak Performance =      6.90 MegaHeights/Sec
## Average Performance =      6.84 MegaHeights/Sec
## Average Elapsed Time =   233.99 microseconds
## |
## .---_NUMS(Number of subdivisions) = 80
##   Peak Performance =      7.14 MegaHeights/Sec
## Average Performance =      7.10 MegaHeights/Sec
## Average Elapsed Time =   901.21 microseconds
## |
## .---_NUMS(Number of subdivisions) = 160
##   Peak Performance =      7.13 MegaHeights/Sec
## Average Performance =      7.11 MegaHeights/Sec
## Average Elapsed Time = 3599.12 microseconds
## |
## .---_NUMS(Number of subdivisions) = 320
##   Peak Performance =     13.69 MegaHeights/Sec
## Average Performance =      9.28 MegaHeights/Sec
## Average Elapsed Time = 12089.73 microseconds
## |
## .---_NUMS(Number of subdivisions) = 640
##   Peak Performance =     13.69 MegaHeights/Sec
## Average Performance =     12.89 MegaHeights/Sec
## Average Elapsed Time = 32931.59 microseconds
## |
## .---_NUMS(Number of subdivisions) = 1280
##   Peak Performance =     13.27 MegaHeights/Sec
## Average Performance =     12.41 MegaHeights/Sec
## Average Elapsed Time = 136234.50 microseconds
## -----
## _NUMT(Number of Threads) = 2
## |
## .---_NUMS(Number of subdivisions) = 10
##   Peak Performance =     12.14 MegaHeights/Sec
## Average Performance =     11.71 MegaHeights/Sec
## Average Elapsed Time =    10.38 microseconds
## |
## .---_NUMS(Number of subdivisions) = 20
```

```

##      Peak Performance =      13.20 MegaHeights/Sec
## Average Performance =      12.71 MegaHeights/Sec
## Average Elapsed Time =      32.90 microseconds
## |
## .---_NUMS(Number of subdivisions) = 40
##      Peak Performance =      13.71 MegaHeights/Sec
## Average Performance =      10.77 MegaHeights/Sec
## Average Elapsed Time =     153.28 microseconds
## |
## .---_NUMS(Number of subdivisions) = 80
##      Peak Performance =      14.25 MegaHeights/Sec
## Average Performance =      13.69 MegaHeights/Sec
## Average Elapsed Time =     469.20 microseconds
## |
## .---_NUMS(Number of subdivisions) = 160
##      Peak Performance =      14.26 MegaHeights/Sec
## Average Performance =      13.74 MegaHeights/Sec
## Average Elapsed Time =    1884.28 microseconds
## |
## .---_NUMS(Number of subdivisions) = 320
##      Peak Performance =      14.26 MegaHeights/Sec
## Average Performance =      13.92 MegaHeights/Sec
## Average Elapsed Time =   7389.82 microseconds
## |
## .---_NUMS(Number of subdivisions) = 640
##      Peak Performance =      27.31 MegaHeights/Sec
## Average Performance =      21.92 MegaHeights/Sec
## Average Elapsed Time =  20448.96 microseconds
## |
## .---_NUMS(Number of subdivisions) = 1280
##      Peak Performance =      26.06 MegaHeights/Sec
## Average Performance =      23.82 MegaHeights/Sec
## Average Elapsed Time =  71530.82 microseconds
## -----
## _NUMT(Number of Threads) = 4
## |
## .---_NUMS(Number of subdivisions) = 10
##      Peak Performance =      29.61 MegaHeights/Sec
## Average Performance =      26.21 MegaHeights/Sec
## Average Elapsed Time =       5.03 microseconds
## |
## .---_NUMS(Number of subdivisions) = 20
##      Peak Performance =      24.51 MegaHeights/Sec
## Average Performance =      23.48 MegaHeights/Sec
## Average Elapsed Time =      18.50 microseconds
## |
## .---_NUMS(Number of subdivisions) = 40
##      Peak Performance =      26.84 MegaHeights/Sec
## Average Performance =      26.18 MegaHeights/Sec
## Average Elapsed Time =      62.48 microseconds
## |
## .---_NUMS(Number of subdivisions) = 80
##      Peak Performance =      28.34 MegaHeights/Sec
## Average Performance =      26.14 MegaHeights/Sec

```

```

## Average Elapsed Time = 251.37 microseconds
## |
## .---_NUMS(Number of subdivisions) = 160
##     Peak Performance = 28.52 MegaHeights/Sec
## Average Performance = 28.15 MegaHeights/Sec
## Average Elapsed Time = 909.95 microseconds
## |
## .---_NUMS(Number of subdivisions) = 320
##     Peak Performance = 28.48 MegaHeights/Sec
## Average Performance = 27.82 MegaHeights/Sec
## Average Elapsed Time = 3681.06 microseconds
## |
## .---_NUMS(Number of subdivisions) = 640
##     Peak Performance = 52.34 MegaHeights/Sec
## Average Performance = 42.02 MegaHeights/Sec
## Average Elapsed Time = 10670.42 microseconds
## |
## .---_NUMS(Number of subdivisions) = 1280
##     Peak Performance = 50.68 MegaHeights/Sec
## Average Performance = 46.70 MegaHeights/Sec
## Average Elapsed Time = 36847.66 microseconds
## -----
##           Speedup-2 = 1.83
##           Speedup-4 = 3.55
## Parallel Fraction-2 = 0.90
## Parallel Fraction-3 = 0.96

```