A Comparison of Python Implementation to C Implementation

Python Hetoredyning

No. of Run	time [ms]
1st run	522,43
2nd run	532,83
3rd run	500,74
4th run	546,97
5th run	546,43
avg	**529,88**

C Hetoredyning - Sequential [float = 32 bit]

No. of Run	time [ms]
1st run	9,84
2nd run	10,61
3rd run	8,79
4th run	8,92
5th run	8,85
avg	**9,40**

The Optimisation of the C Code through Parallelization

C Hetoredyning - Threaded [threads = 2]

No. of Run	time [ms]
1st run	18,63
2nd run	22,86
3rd run	18,01
4th run	24,14
5th run	25,17
avg	**21,76**

C Hetoredyning - Threaded [threads = 4]

No. of Run	time [ms]
1st run	18,89
2nd run	26,68
3rd run	26,81
4th run	24,62
5th run	24,78
avg	**24,36**

C Hetoredyning - Threaded [threads = 8]

No. of Run	time [ms]
1st run	27,34
2nd run	27,94
3rd run	28,06
4th run	26,84
5th run	20,44
avg	**26,12**

C Hetoredyning - Threaded [threads = 16]

No. of Run	time [ms]
1st run	1,29
2nd run	0,98
3rd run	2,87
4th run	1,37
5th run	1,18
avg	**1,54**

C Hetoredyning - Threaded [threads = 32]

No. of Run	time [ms]
1st run	6,69
2nd run	2,26
3rd run	6,87
4th run	2,80
5th run	5,43
avg	**5,26**

The Optimisation of the C Code through Flag Compilers

Flags Sequential 32 Bit-O0

No. of Run	time [s]
1st run	8,96
2nd run	10,82
3rd run	11,03
4th run	10,85
5th run	8,94
avg	**10,12**

Flags Sequential 32 Bit-O1

No. of Run	time [s]
1st run	8,01
2nd run	7,71
3rd run	6,97
4th run	6,66
5th run	6,43
avg	**7,16**

Flags Sequential 32 Bit-O2

No. of Run	time [s]
1st run	5,48
2nd run	7,96
3rd run	6,84
4th run	7,67
5th run	6,40
avg	**6,87**

Flags Sequential 32 Bit-O3

No. of Run	time [s]
1st run	6,63
2nd run	6,92
3rd run	6,60
4th run	8,11
5th run	7,63
avg	**7,18**

Flags Sequential 32 Bit-Ofast

No. of Run	time [s]
1st run	6,80
2nd run	6,45
3rd run	6,23
4th run	6,99
5th run	6,26
avg	**6,55**

Flags Sequential 32 Bit-Os

No. of Run	time [s]
1st run	5,59
2nd run	6,91
3rd run	6,71
4th run	6,33
5th run	5,62
avg	**6,23**

Flags Sequential 32 Bit-Og

No. of Run	time [s]
1st run	6,87
2nd run	9,11
3rd run	8,94
4th run	8,17
5th run	8,96
avg	**8,41**

Flags Sequential 32 Bit-funroll-loops

No. of Run	time [s]
1st run	8,53
2nd run	10,86
3rd run	9,91
4th run	10,87
5th run	9,90
avg	**10,01**

Flags Sequential 32 Bit O1 -O2 -O3

No. of Run	time [s]
1st run	6,22
2nd run	6,52
3rd run	6,31
4th run	5,99
5th run	5,65
avg	**6,14**

Flags Sequential 32 Bit-O1 -Og -O2

No. of Run	time [s]
1st run	6,90
2nd run	6,75
3rd run	6,43
4th run	7,01
5th run	6,24
avg	**6,67**

Flags Sequential 32 Bit-Os -O2

No. of Run	time [s]
1st run	5,42
2nd run	6,73
3rd run	6,77
4th run	6,76
5th run	5,68
avg	**6,27**

Flags Sequential 32 Bit-Og -O3

No. of Run	time [s]
1st run	6,90
2nd run	6,75
3rd run	6,43
4th run	7,01
5th run	6,24
avg	**6,67**

Flags Sequential 32 Bit-Ofast -O2

No. of Run	time [s]
1st run	6,31
2nd run	6,22
3rd run	6,89
4th run	6,60
5th run	5,45
avg	**6,29**

Flags Sequential 32 Bit-Ofast -Os

No. of Run	time [s]
1st run	6,99
2nd run	6,21
3rd run	7,94
4th run	7,31
5th run	6,65
avg	**7,02**

Flags Sequential 32 Bit O1 -O2 -O3-ofast

No. of Run	time [s]
1st run	6,02
2nd run	6,10
3rd run	6,35
4th run	6,48
5th run	5,48
avg	**6,08**

Flags Sequential 32 Bit-Ofast -Og

No. of Run	time [s]
1st run	10,03
2nd run	9,12
3rd run	8,14
4th run	9,84
5th run	10,44
avg	**9,51**

Flags Sequential 32 Bit-funroll-loops-O2

No. of Run	time [s]
1st run	10,05
2nd run	7,36
3rd run	7,63
4th run	7,54
5th run	7,22
avg	**7,96**

Flags Sequential 32 Bit-funroll-loops-Ofast

No. of Run	time [s]
1st run	8,09
2nd run	7,68
3rd run	9,45
4th run	8,62
5th run	7,73
avg	**8,31**

Flags Sequential 32 Bit-funroll-loops-Og

No. of Run	time [s]
1st run	7,19
2nd run	6,33
3rd run	7,51
4th run	8,31
5th run	9,33
avg	**7,74**

The Optimisation of the C Code through Different Bit Widths

C Hetoredyning - Sequential [__fp16 16bit]

No. of Run	time [ms]
1st run	43,72
2nd run	30,50
3rd run	44,32
4th run	31,46
5th run	30,11
avg	**36,02**

C Hetoredyning - Sequential [float = 32 bit]

No. of Run	time [ms]
1st run	9,84
2nd run	10,61
3rd run	8,79
4th run	8,92
5th run	8,85
avg	**9,40**

C Hetoredyning - Sequential [double = 64 bit]

No. of Run	time [ms]
1st run	10,73
2nd run	13,58
3rd run	16,34
4th run	16,48
5th run	12,98
avg	**14,02**