Link: <https://github.com/Ryterex/hw4cs392/commits/master>

1.

For 2048 X 2048, a block of 8X8 is the best.

|  |  |
| --- | --- |
| BLOCK WIDTH | TIME in MICROSECONDS |
| 2 | 59359 |
| 4 | 36479 |
| 8 | 35619 |
| 16 | 80439 |
| 32 | 76848 |
| 64 | 73887 |
| 128 | 77024 |
| 256 | 78331 |
| 512 | 83638 |

For 4096 X 4096, a block of 8X8 is the best.

|  |  |
| --- | --- |
| BLOCK SIZE | TIME in MICROSECONDS |
| 4 | 145506 |
| 8 | 131935 |
| 16 | 266295 |
| 32 | 264082 |
| 64 | 282494 |
| 128 | 293160 |
| 512 | 294192 |

For 8192 X 8192, a block of 8X8 is the best.

|  |  |
| --- | --- |
| BLOCK SIZE | TIME in MICROSECONDS |
| 4 | 574405 |
| 8 | 519452 |
| 16 | 1025659 |
| 32 | 1100577 |
| 64 | 1036245 |
| 128 | 1136235 |

The code becomes faster due to cache hits because there is less jumping around the 1d array, so the code can operate much faster by just going down the line.

2.

For 2048 X 2048, a block of 8X8 is the best.

|  |  |
| --- | --- |
| BLOCK WIDTH | TIME in MICROSECONDS |
| 4 | 37029 |
| 8 | 35801 |
| 16 | 67501 |
| 32 | 71017 |
| 64 | 74224 |
| 128 | 79139 |
| 256 | 80777 |
| 512 | 79025 |

For 4096 X 4096, a block of 8X8 is the best.

|  |  |
| --- | --- |
| BLOCK SIZE | TIME in MICROSECONDS |
| 4 | 145977 |
| 8 | 131443 |
| 16 | 248864 |
| 32 | 258861 |
| 64 | 276488 |
| 128 | 284884 |
| 512 | 292320 |

For 8192 X 8192, a block of 8X8 is the best.

|  |  |
| --- | --- |
| BLOCK SIZE | TIME in MICROSECONDS |
| 2 | 776713 |
| 4 | 545045 |
| 8 | 519931 |
| 16 | 1019946 |
| 32 | 1024068 |
| 64 | 1091786 |