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