Matrix Multiplication Assignment
By Rachit Rawat

q0)

LOOP	A	B	C
k	N/4	N	1
TOTAL	$N^3/4$	N^3	N^2

Cache miss analysis for innermost loop **k**

LOOP	A	B	C
j	1	N/4	N/4
TOTAL	N^2	$N^3/4$	$N^3/4$

Cache miss analysis for innermost loop **j**

LOOP	A	B	C
i	N	1	N
TOTAL	N^3	N^2	N^3

Cache miss analysis for innermost loop **i**

Theoretical peak FLOP/s = Number of Cores X Average frequency X Operations per cycle
For i5-5200U:
No. of cores = 2
Av. Freq = 2.20 GHz
Operations per cycle = 16
Therefore, peak FLOPS/s = 2 X 2.2 X 16 = 70.4 GFLOPS

q1) Please refer graph.

q2) yes. Please refer graph.
Loops with **j** as innermost loop are fastest because of lowest total cache misses.

q3) yes. Please refer graph.

q4) Please refer graph.

Note:
* For n < 128 (non-tiled) and n < 256 (tiled), calculation of FLOPS was not possible since computational time tended to 0.
* For n >= 2048, calculation of FLOPS was not possible due to high time complexity.