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Report:

We get the time for CPU and Map when we run the code.

- Without parallelizing:

  Image pixel = 480 * 640

  n_rows = 480, n_cols = 640, CPI = 9, L = 171

  $n_{cycles} = N_{rows}(N_{cols} + L - 1) = 480*(640 + 171 - 1) = 388,800$

  $P_A = 1/CPI * T_{clock}$ (lets take $T_{clock} = 4ns$)

  $= 1/ 9 * 4ns = 0.0278 * (10^9)$

  $= 27.8$ MIPS

- With parallelizing(delay queue):

  Image pixel = 480 * 640

  n_rows = 480, n_cols = 640, CPI = 1, L = 168

  $n_{cycles} = N_{rows}(N_{cols} + L - 1) = 480*(640 + 168 - 1) = 387,360$

  $P_B = 1/CPI * T_{clock}$ (lets take $T_{clock} = 4ns$)

  $= 1/ 1 * 4ns = 0.25 * (10^9)$

  $= 250$ MIPS

- With parallelizing(Streaming):

  Image pixel = 480 * 640

  n_rows = 480, n_cols = 640, CPI = 1, L = 141

  $n_{cycles} = N_{rows}(N_{cols} + L - 1) = 480*(640 + 141 - 1) = 374,400$

  $P_C = 1/CPI * T_{clock}$ (lets take $T_{clock} = 4ns$)

  $= 1/ 1 * 4ns = 0.25 * (10^9)$

  $= 250$ MIPS

- SpeedUp:

$S = Performance_x / Performance_y$

$= 250 / 27.8$

$= 8.9928$

Ie; **Stream = 9 X faster than (without parallelizing)**