

PART A:

GCC

SuperScalar Width $\rightarrow 1$ && No Forwarding && Perfect Prediction

| | | |
|---------------------|---|----------|
| LAB2_NUM_INST | : | 10000000 |
| LAB2_NUM_CYCLES | : | 11412411 |
| LAB2_CPI | : | 1.141 |
| LAB2_branch_mispred | : | 0 |
| LAB2_num_branches | : | 964441 |

Superscalar Width $\rightarrow 2$

| | | |
|---------------------|---|----------|
| LAB2_NUM_INST | : | 10000000 |
| LAB2_NUM_CYCLES | : | 6720461 |
| LAB2_CPI | : | 0.672 |
| LAB2_branch_mispred | : | 0 |
| LAB2_num_branches | : | 964441 |

Superscalar Width $\rightarrow 2$ && Forwarding

| | | |
|---------------------|---|----------|
| LAB2_NUM_INST | : | 10000000 |
| LAB2_NUM_CYCLES | : | 5206917 |
| LAB2_CPI | : | 0.521 |
| LAB2_branch_mispred | : | 0 |
| LAB2_num_branches | : | 964441 |

Part B (With Branch Prediction)

Always Taken

| | | |
|---------------------|---|----------|
| LAB2_NUM_INST | : | 10000000 |
| LAB2_NUM_CYCLES | : | 6124593 |
| LAB2_CPI | : | 0.612 |
| LAB2_branch_mispred | : | 265253 |
| LAB2_num_branches | : | 964441 |

GShare

| | | |
|---------------------|---|----------|
| LAB2_NUM_INST | : | 10000000 |
| LAB2_NUM_CYCLES | : | 5251368 |
| LAB2_CPI | : | 0.525 |
| LAB2_branch_mispred | : | 12831 |
| LAB2_num_branches | : | 964441 |