

SimpleScalar Parameter List

This file presents the list with all the parameters that you can tune during this assignment. These parameters are here pre-categorized into four groups, i.e., Branch Prediction, Memory System, Function Units, and Data Path and Others. The left column shows the names of the parameters, and the right column shows the default settings.

A) Branch Prediction

branch predictor type {nottaken|taken|perfect|bimod|2lev}
-bpred bimod

bimodal predictor config (<table size>)
-bpred:bimod 2048

2-level predictor config (<l1size> <l2size> <hist_size> <xor>)
-bpred:2lev 1 1024 8 0

return address stack size (0 for no return stack)
-bpred:ras 8

BTB config (<num_sets> <associativity>)
-bpred:btb 512 4

Note: Besides the textbook and slides, please also refer to:

- 1) wiki (http://en.wikipedia.org/wiki/Branch_predictor)
- 2) Yale N. Patt's papers such as "A comparison of dynamic branch predictors that use two levels of branch history", "Using Hybrid Branch Predictors to Improve Branch Prediction in the Presence of Context Switches".

B) Memory System

l1 data cache config, i.e., {<config>|none}
-cache:dl1 dl1:128:32:4:1

l2 data cache config, i.e., {<config>|none}
-cache:dl2 ul2:1024:64:4:1

l1 inst cache config, i.e., {<config>|dl1|dl2|none}
-cache:il1 il1:512:32:1:1

l2 instruction cache config, i.e., {<config>|dl2|none}
-cache:il2 dl2

C) Function Units

total number of integer ALUs available

-res:ialu 4

total number of integer multiplier/dividers available

-res:imult 1

total number of floating point ALUs available

-res:fpalu 4

total number of floating point multiplier/dividers available

-res:fpmult 1

D) Data Path & Others

instruction fetch queue size (in insts)

-fetch:ifqsize 4

instruction decode B/W (insts/cycle)

-decode:width 4

instruction issue B/W (insts/cycle)

-issue:width 4

run pipeline with in-order issue

-issue:inorder false

issue instructions down wrong execution paths

-issue:wrongpath true

instruction commit B/W (insts/cycle)

-commit:width 4

register update unit (RUU) size

-ruu:size 16

load/store queue (LSQ) size

-lsq:size 8

Note: These are the parameters (with their default values) you can tune. Please keep the values of **other parameters **unchanged** unless you have good reasons!**