A) Branch Prediction

```
# branch predictor type {nottaken|taken|perfect|bimod|2lev|comb}
-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

# combining predictor config (<meta_table_size>)
-bpred:comb             1024

# 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 like "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:l

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

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

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

# instruction TLB config, i.e., {<config>|none}
-tlb:itlb               itlb:16:4096:4:l

# data TLB config, i.e., {<config>|none}
-tlb:dtlb               dtlb:32:4096:4:l
```

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 (explain it in your report)!