Scenario 3:

a): Venus setup for Scenario 2 showing Program parameters, Cache parameters etc

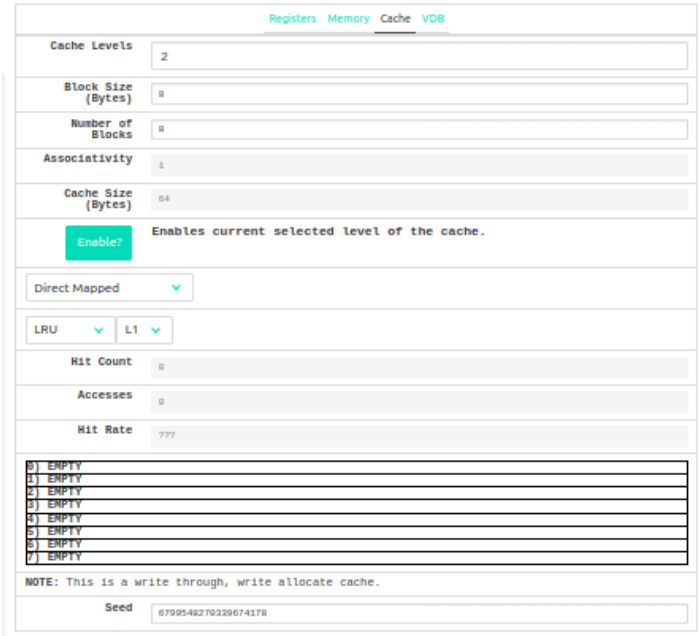
Active File: null Save Close

```
#      /* Step through the selected array segment with the given step size. */
#      for (index = 0; index < arraysize; index += stepsize) {
#        if(option==0)
#          array[index] = 0;                    // Option 0: One cache access - write
#        else
#          array[index] = array[index] + 1; // Option 1: Two cache accesses - read AND write
#      }
#    }

.data
array:  .word   2048                            # max array size specified in BYTES (DO NOT CHANGE)

.text
##################################################################################################
main:   li  a0, 128     # array size in BYTES (power of 2 < array size)
    li  a1, 1       # step size  (power of 2 > 0)
    li  a2, 1       # rep count  (int > 0)
    li  a3, 0       # 0 - option 0, 1 - option 1
# You MAY change the code above this section
##################################################################################################
```

Level 1 cache parameters are:



Level 2 cache parameters are:

b): Answers to tasks 1, 2, 3, 4, 5

1): What is the hit rate of the L1 cache? The L2 cache? Overall? Each hit rate is a decimal rounded to two places.

hit rate of L1: 0.50

hit rate of L2: 0.00

Overall hit rate: (0+16)/32 = 0.50

……

2): How many accesses do we have to the L1 cache total? How many of them are misses?

Accesses of L1 cache: 32

Misses Count: 16

……

3): How many accesses do we have to the L2 cache total? HINT: Think about what the L1 cache has to do in order to make us access the L2 cache.

Accesses of L2 cache: 16

……

4): What program parameter would allow us to increase the L2 hit rate, but keep the L1 hit rate the same?

Rep Count (a2) is the parameter. Because in next iteration L2 cache is already filled with the data which was not available in first iteration and thus hit rate of L2 increases.

……

5): Do our L1 and L2 hit rates decrease (-), stay the same (=), or increase (+) as we (1) increase the number of blocks in L1, or (2) increase the L1 block size?

Increasing the number of blocks in L1:

L1 = ; L2 =

If we increase number of blocks as the block size is same so there will be no effect on hit rate.

Increasing block size in L1:

L1+ ; L2 =

L1 will increase because more no. of words are fetched from the memory as a result of a miss.