Results for the final version of the firmware experiment with 512KB total, processed in 8KB chunks

For this experiment, the optimization level used for the speed analysis was -O3 (which generates the fastest code), and for the size it was -Oz (which generates the smallest code).

Below, we can see only the values needed to execute only the sha256 algorithm. (the vector declaration and initialization was subtracted from the final results – see the section *Raw Output*)

Note: All the commands used are listed in the section *Commands used*.

Cycle count

Difference: **320 cycles**

Without the function MatchSET1CLR1: **351,745,920**

With the function MatchSET1CLR1: **351,745,600**

Size

Difference:

text	data	bss	dec	hex
8	0	0	8	8

Without the function MatchSET1CLR1:

text	data	bss	dec	hex

1,996	288	128	2,412	96C

With the function MatchSET1CLR1:

text	data	bss	dec	hex
1,988	288	128	2,404	964

Raw output

Speed

- without the function MatchSET1CLR1:

Full Code: 364395577

Only Vector Generation: 12649657

Difference: **351,745,920**

- with the function MatchSET1CLR1:

Full Code: 364395257

Only Vector Generation: 12649657

Difference: **351,745,600**

Size

- without the function MatchSET1CLR1:

Full Code:

text data bss dec hex

2736 294 8446 11476 2cd4

Only Vector Generation:

text data bss dec hex

740 6 8318 9064 2368

Difference:

text data bss dec hex

1,996 288 128 2,412 96C

- with the function MatchSET1CLR1:

Full Code:

text data bss dec hex

2728 294 8446 11468 2ccc

Only Vector Generation:

text data bss dec hex

740 6 8318 9064 2368

Difference:

text data bss dec hex

1,988 288 128 2,404 964

Commands used

--- Subsection without the function MatchSET1CLR1 ---

Full Code

---------- Speed ----------

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>clang -fsim -O3 8KB-chunks-full-code.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 8KB-chunks-full-code-without-function-speed-O3.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>rl78-elf-sim -v 8KB-chunks-full-code-without-function-speed-O3.out Exit code: 0 total clocks: 364395577

---------- Size ----------

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>clang -Oz 8KB-chunks-full-code.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 8KB-chunks-full-code-without-function-size-Oz.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>llvm-size 8KB-chunks-full-code-without-function-size-Oz.out

text data bss dec hex filename

2736 294 8446 11476 2cd4 8KB-chunks-full-code-without-function-size-Oz.out

Only vector generation

---------- Speed ----------

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>clang -fsim -O3 8KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 8KB-chunks-only-vector-generation-without-function-speed-O3.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>rl78-elf-sim -v 8KB-chunks-only-vector-generation-without-function-speed-O3.out Exit code: 0 total clocks: 12649657

---------- Size ----------

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>clang -Oz 8KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 8KB-chunks-only-vector-generation-without-function-size-Oz.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>llvm-size 8KB-chunks-only-vector-generation-without-function-size-Oz.out

text data bss dec hex filename

740 6 8318 9064 2368 8KB-chunks-only-vector-generation-without-function-size-Oz.out

--- Subsection with the function MatchSET1CLR1 ---

Full Code

---------- Speed ----------

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>clang -fsim -O3 8KB-chunks-full-code.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 8KB-chunks-full-code-with-function-speed-O3.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>rl78-elf-sim -v 8KB-chunks-full-code-with-function-speed-O3.out Exit code: 0 total clocks: 364395257

---------- Size ----------

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>clang -Oz 8KB-chunks-full-code.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 8KB-chunks-full-code-with-function-size-Oz.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>llvm-size 8KB-chunks-full-code-with-function-size-Oz.out

text data bss dec hex filename

2728 294 8446 11468 2ccc 8KB-chunks-full-code-with-function-size-Oz.out

Only vector generation

---------- Speed ----------

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>clang -fsim -O3 8KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -Wl,--

gc-sections -Tlinker_script.ld -o 8KB-chunks-only-vector-generation-with-function-speed-O3.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>rl78-elf-sim -v 8KB-chunks-only-vector-generation-with-function-speed-O3.out Exit code: 0 total clocks: 12649657

---------- Size ----------

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>clang -Oz 8KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 8KB-chunks-only-vector-generation-with-function-size-Oz.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\8KB>llvm-size 8KB-chunks-only-vector-generation-with-function-size-Oz.out

text data bss dec hex filename

740 6 8318 9064 2368 8KB-chunks-only-vector-generation-with-function-size-Oz.out