Results for the final version of the firmware experiment with 512KB total, processed in 4KB 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: **640 cycles**

Without the function MatchSET1CLR1: **354,570,048**

With the function MatchSET1CLR1: **354,569,408**

Size

Difference:

text	**data**	**bss**	**dec**	**hex**
8	**0**	**0**	**8**	**8**

Without the function MatchSET1CLR1:

text	data	bss	dec	hex
2,012	288	128	2,428	97C

With the function MatchSET1CLR1:

text	data	bss	dec	hex
2,004	288	128	2,420	974

Raw output

Speed

- without the function MatchSET1CLR1:

Full Code: 367219833

Only Vector Generation: 12649785

Difference: **354,570,048**

- with the function MatchSET1CLR1:

Full Code: 367219193

Only Vector Generation: 12649785

Difference: **354,569,408**

Size

- without the function MatchSET1CLR1:

Full Code:

text data bss dec hex

2758 294 8446 11498 2cea

Only Vector Generation:

text data bss dec hex

746 6 8318 9070 236e

Difference:

text data bss dec hex

2,012 288 128 2,428 97C

Full Code:

text data bss dec hex

2750 294 8446 11490 2ce2

Only Vector Generation:

text data bss dec hex

746 6 8318 9070 236e

Difference:

text data bcss dec hex

2,004 288 128 2,420 974

Commands used

--- Subsection without the function MatchSET1CLR1 ---

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

Full Code

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>clang -fsim -O3 4KB-chunks-full-code.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 4KB-chunks-full-code-without-function-speed-O3.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>rl78-elf-sim -v 4KB-chunks-full-code-without-function-speed-O3.out Exit code: 0 total clocks: 367219833

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>

Only vector generation

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>clang -fsim -O3 4KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 4KB-chunks-only-vector-generation-without-function-speed-O3.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>rl78-elf-sim -v 4KB-chunks-only-vector-generation-without-function-speed-O3.out Exit code: 0 total clocks: 12649785

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

Full Code

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>clang -Oz 4KB-chunks-full-code.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 4KB-chunks-full-code-without-function-size-Oz.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>llvm-size 4KB-chunks-full-code-without-function-size-Oz.out text data bss dec hex filename 2758 294 8446 11498 2cea 4KB-chunks-full-code-without-function-size-Oz.out

Only vector generation

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>clang -Oz 4KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 4KB-chunks-only-vector-generation-without-function-size-Oz.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>llvm-size 4KB-chunks-only-vector-generation-without-function-size-Oz.out text data bss dec hex

filename 746 6 8318 9070 236e 4KB-chunks-only-vector-generation-without-function-size-Oz.out

--- Subsection with the function MatchSET1CLR1 ---

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

Full Code

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>clang -fsim -O3 4KB-chunks-full-code.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 4KB-chunks-full-code-with-function-speed-O3.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>rl78-elf-sim -v 4KB-chunks-full-code-with-function-speed-O3.out Exit code: 0 total clocks: 367219193

Only vector generation

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>clang -fsim -O3 4KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 4KB-chunks-only-vector-generation-with-function-speed-O3.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>rl78-elf-sim -v 4KB-chunks-only-vector-generation-with-function-speed-O3.out Exit code: 0 total clocks: 12649785

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

Full Code

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>clang -Oz 4KB-chunks-full-code.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 4KB-chunks-full-code-with-function-size-Oz.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>llvm-size 4KB-chunks-full-code-with-function-size-Oz.out text data bss dec hex filename 2750 294 8446 11490 2ce2 4KB-chunks-full-code-with-function-size-Oz.out

Only vector generation

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>clang -Oz 4KB-chunks-only-vector-generation.c -fdata-sections -ffunction-sections -Wl,--gc-sections -Tlinker_script.ld -o 4KB-chunks-only-vector-generation-with-function-size-Oz.out

D:\Repos\llvm-rl78\tests\lit\tests\tickets\ticket_3126\many-vectors\512KB\4KB>llvm-size 4KB-chunks-only-vector-generation-with-function-size-Oz.out text data bss dec hex filename 746 6 8318 9070 236e 4KB-chunks-only-vector-generation-with-function-size-Oz.out