ECEN 5013 Spring 2017 Project 2

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Contents

Repository: https://bitbucket.org/bjandre/embedded-software-essentials

Tag of changeset: **project-2-rel**

NOTE : The screen shots are readable, but you must zoom in several times to see the details.

1 Goal

Creation of a binary logger that operates over a UART hardware abstraction layer. The UART HAL uses the microcontroller UART peripheral or a wrapper around printf and getc.

2 UART Logger

Figure 1 shows the high level software architecture diagram for the UART logger, including the resources shared between the main thread and the UART interrupt handler.

3 Unit Tests

Example screen shots of cmocka unit test results:

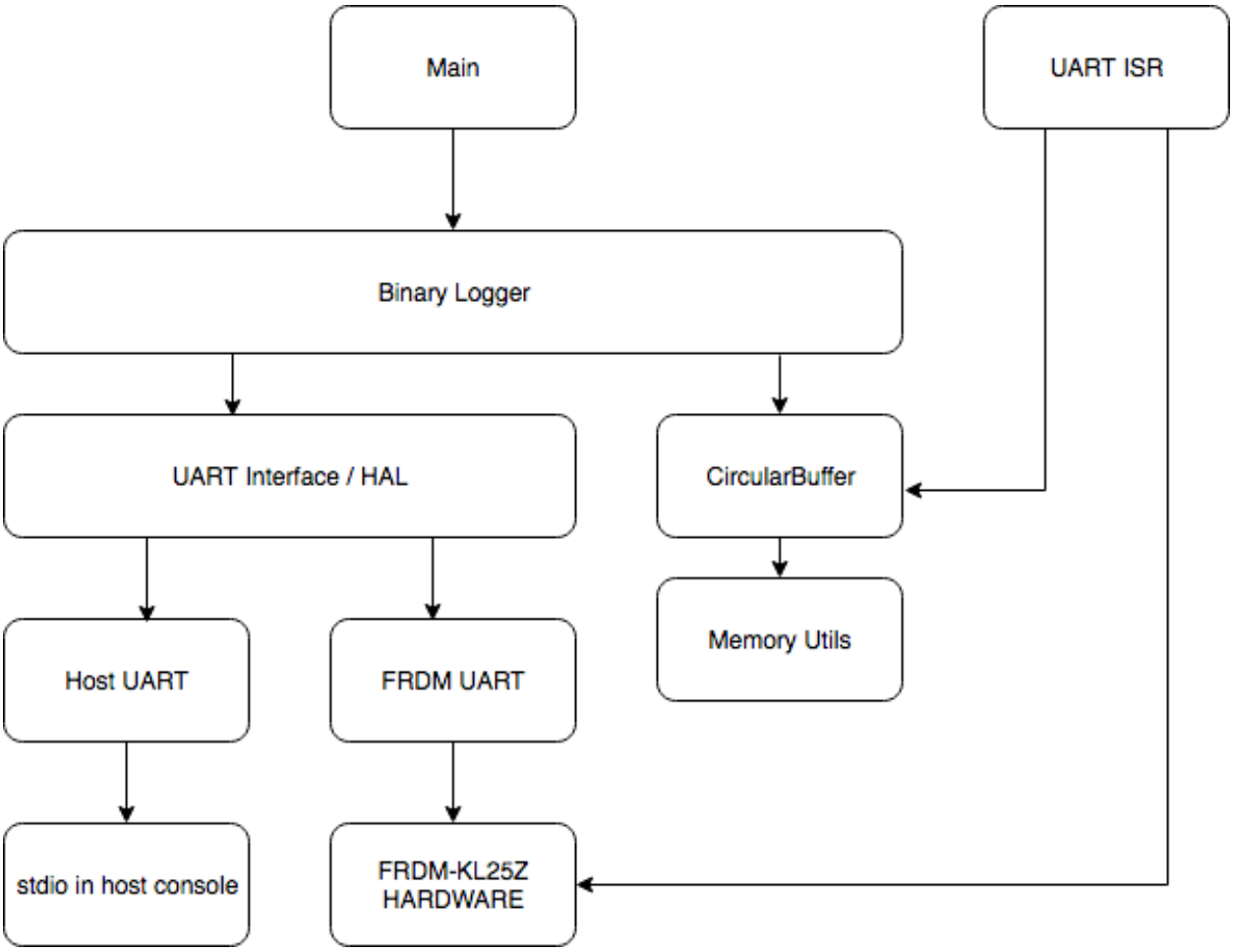

Figure 1: Software architecture diagram for the binary logger.

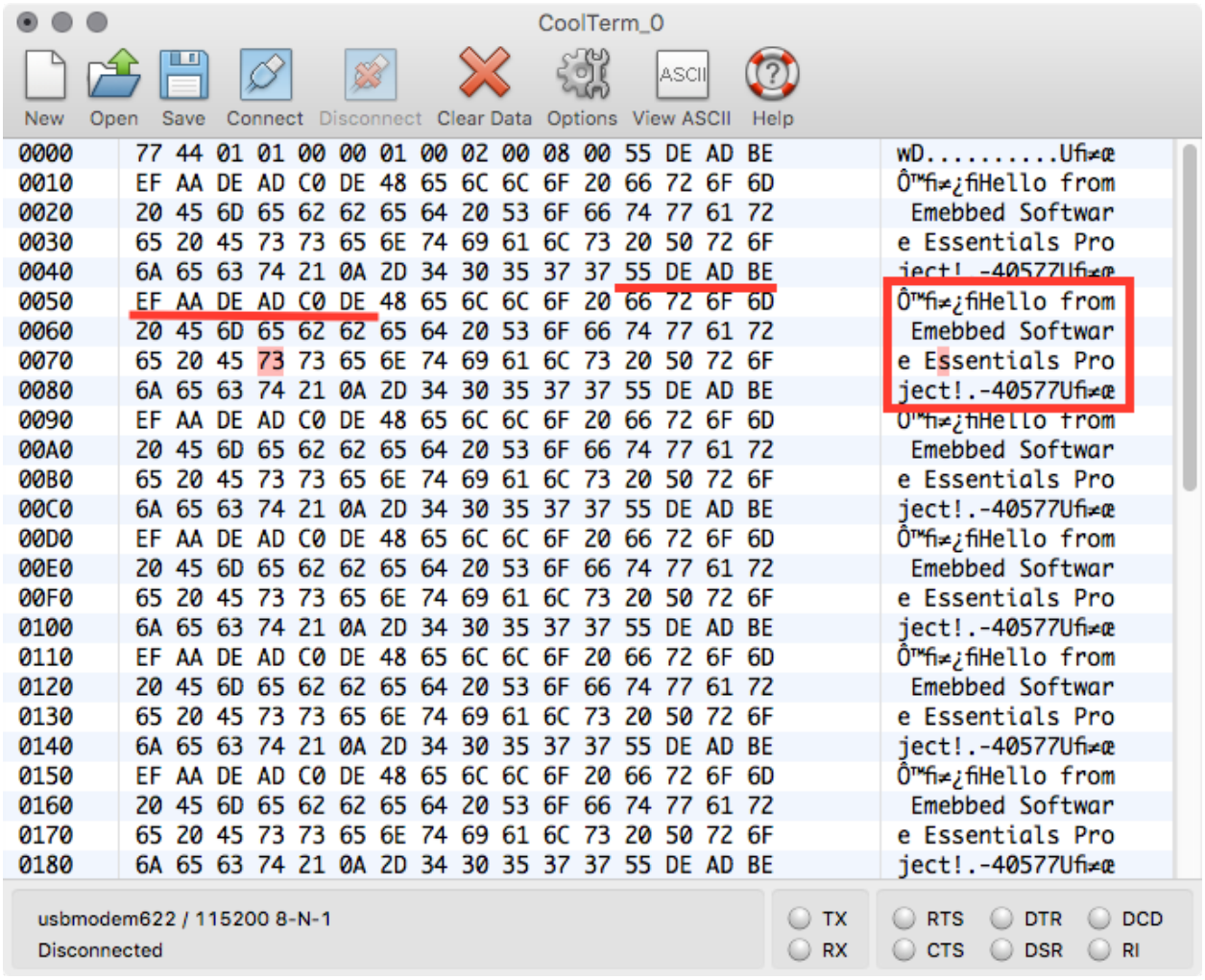

Figure 2: Intermediate stage debugging output of logger sending byte patterns (0x55 0xDEADBEEF 0xAA 0xDEADC0DE), a string (Hello from Embedded Software Essentials Project!), and a negative integer (-40577).

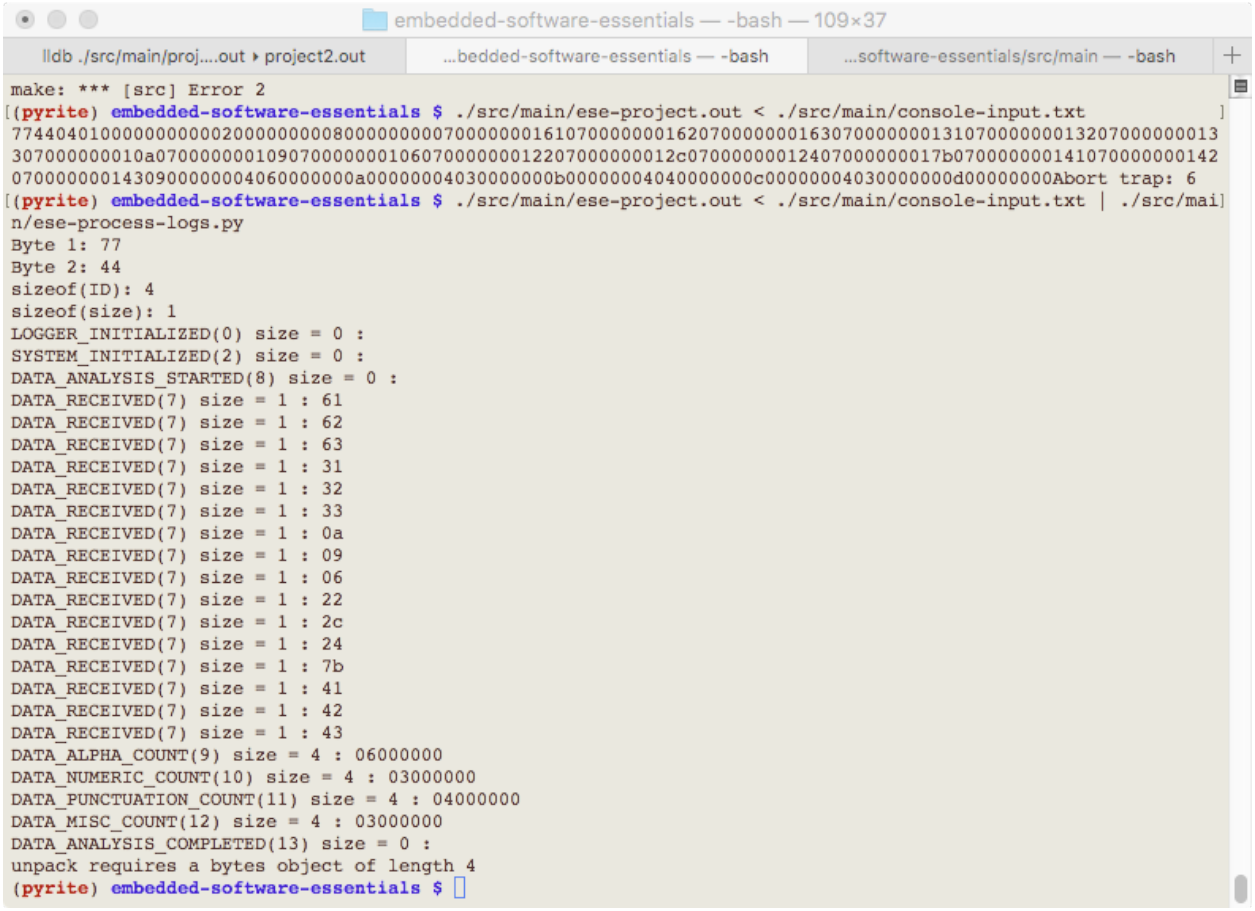

Figure 3: Finaly logger output running native on the host with printf/getc replacing UART. Raw hex output and translated output.

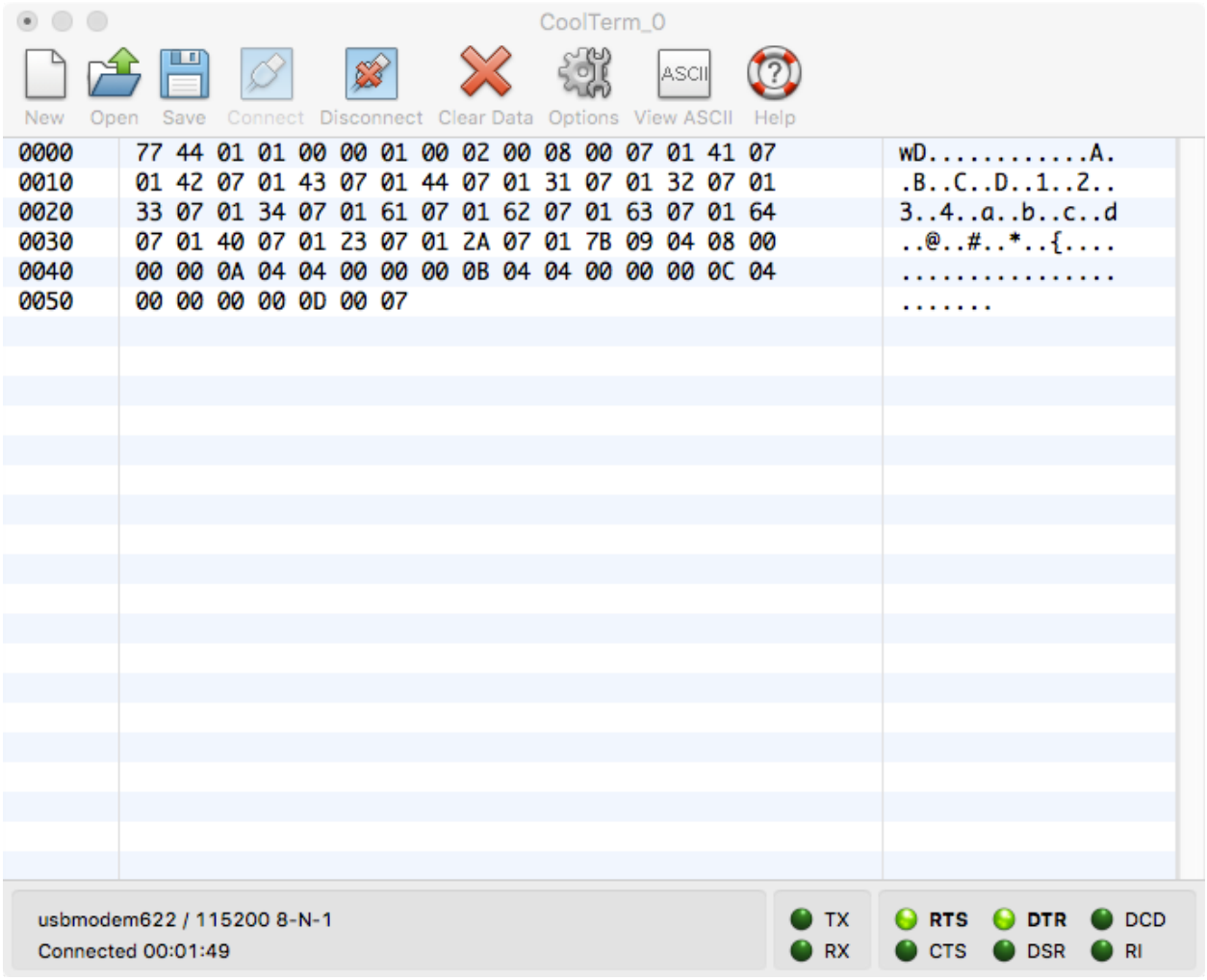

Figure 4: Final logger output in the serial console of the UART logger running on the FRDM-KL25Z:

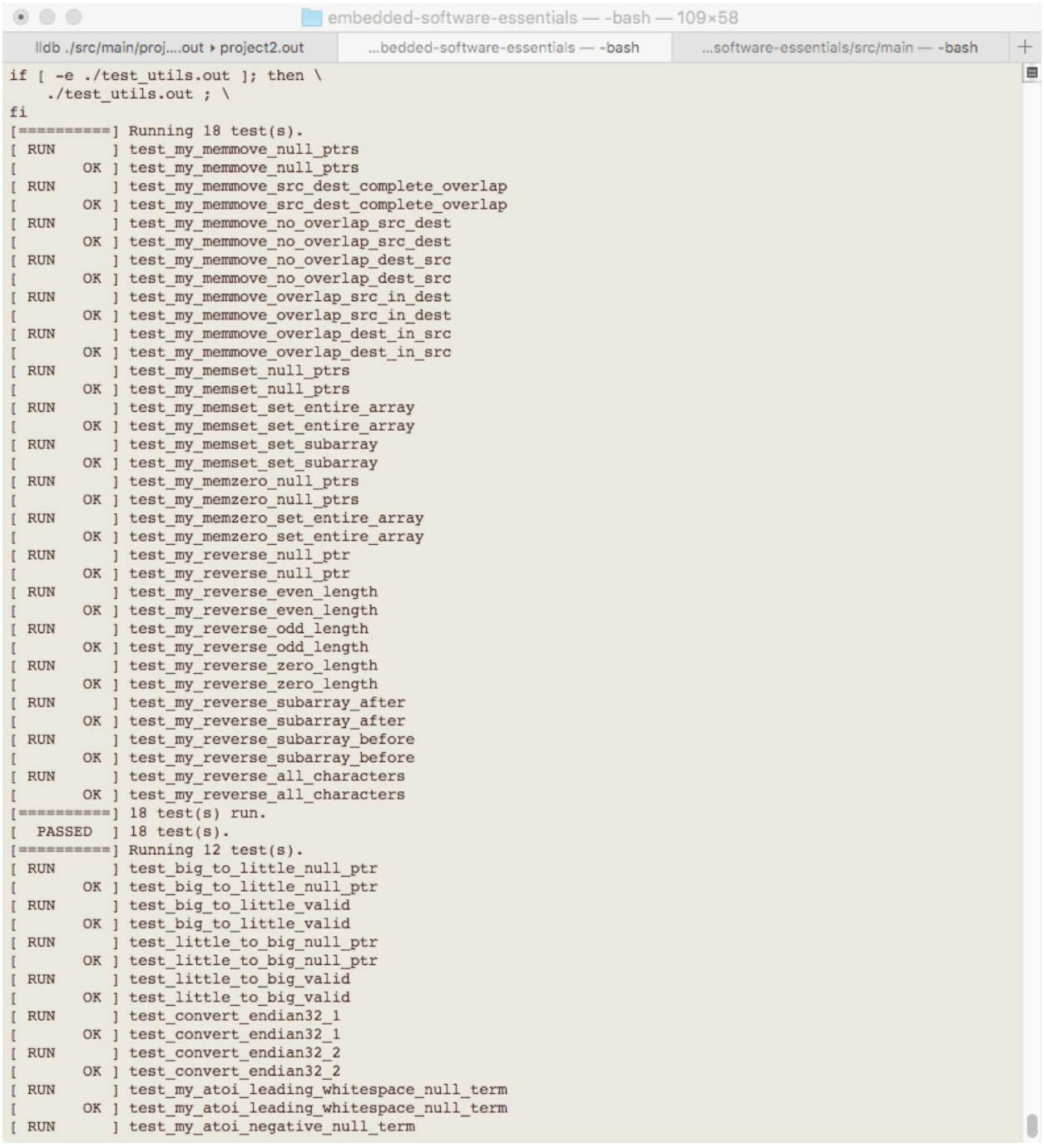

Figure 5: cmocka test results for memory utilites

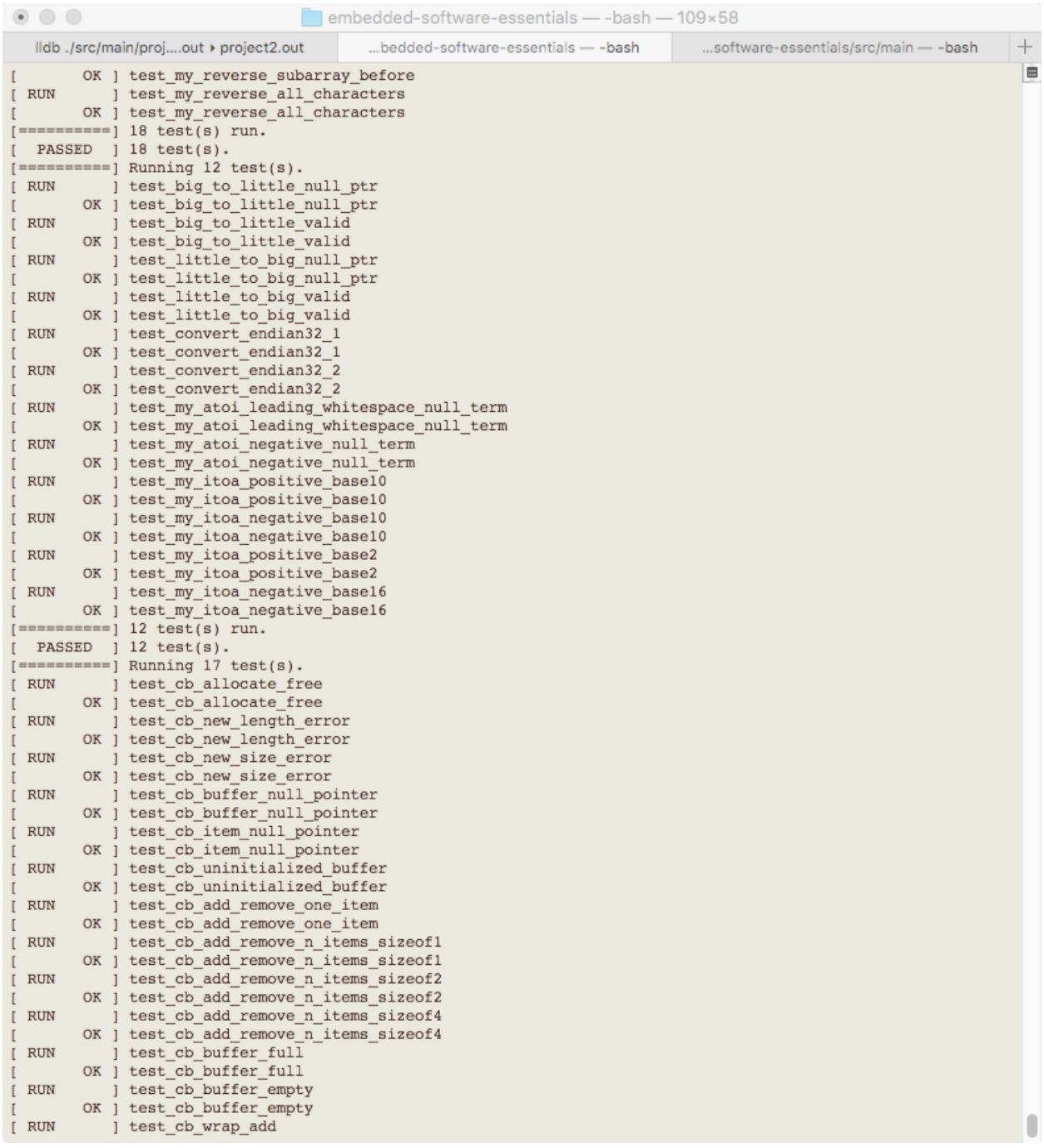

Figure 6: cmocka test results for data utilities

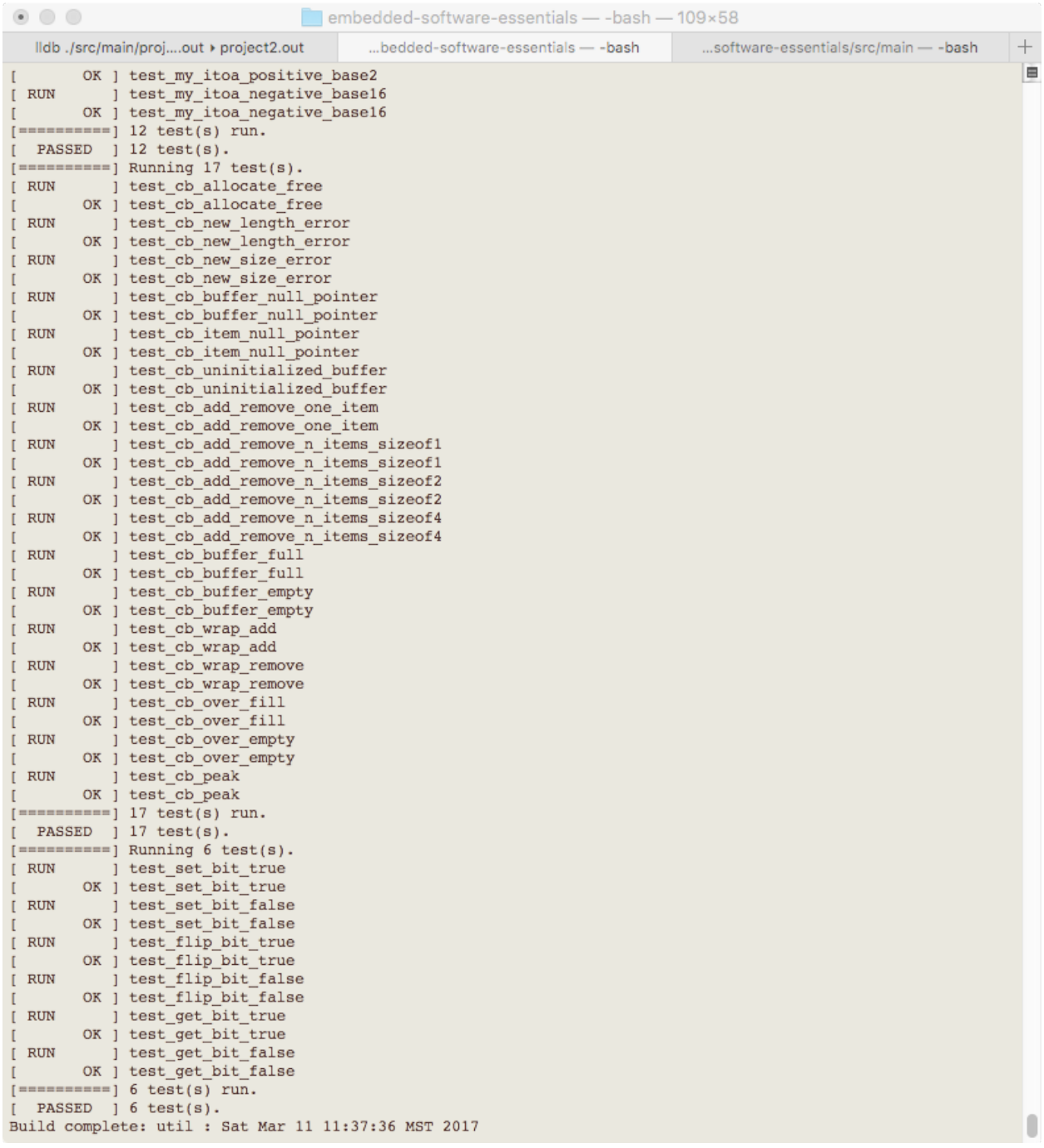

Figure 7: cmocka test results for circular buffer