

Problem Sheet #2

Problem 2.1: *check unit test library and malloc errors*

(5 points)

The `check` library¹ provides a unit testing framework for C programmers. Read about how to use this library and write some unit tests for the C library functions `malloc(3)`, `free(3)`, and `realloc(3)`. Your test cases should at a minimum produce buffer overruns, buffer underruns, or double frees. How does the standard C library implementation of these functions react to your test cases?

Problem 2.2: *malloc wrapper library for load-time interpositioning*

(5 points)

Write your own wrapper implementation for the C library functions `malloc(3)`, `free(3)`, and `realloc(3)` that can detect at a minimum buffer overruns, buffer underruns, or double frees. Produce a shared library that can be used for load-time interpositioning. Extend your test cases to automatically test whether your wrapper functions manage to catch at a minimum buffer overruns, buffer underruns, or double frees.

¹<https://libcheck.github.io/check/>