Design of Parallel and High Performance Computing
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Homework 5
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Locks and Lock-Free

Exercise 1

Implement the following locks in C for the x86 architecture: TAS, TAS+Backoff, TATAS.

Exercise 2

Implement a parallel stack datastructure in C. Use a single lock to provide mutual exclusion when accessing the stack from multiple threads.

Exercise 3

Implement a lock-free variant of the parallel stack datastructure.

Exercise 4

Benchmark both variants, for the lock implementation try all variants implemented in Exercise 1.