You may not use any internet devices. You will be graded on functionality – but good style saves time and helps graders understand what you were attempting. You have 180 minutes. We hope this exam is an exciting journey.

**Note:** Only work in this answer booklet will be graded. The backs of pages are available as space for each problem as well.

First Name: __________________________________________

Last Name: __________________________________________

SUNET ID (part before @stanford.edu): ___________________

By signing below, I commit to the letter and spirit of the honor code. I agree not to access any unauthorized resources or swap to any other applications for the duration of the exam.

____________________________________________________

*Sign here*
Problem 1B
Problem 1C
Problem 1D
Problem 2

// Blank 1

// Blank 2

// Blank 3
// Blank 4

// Blank 5
Problem 3

A) Fill in the blanks below

```c
int bar(long i, int *x) {
    return ________;
}

int foo(long max, int counter) {
    int sum = 0;
    int x = ________;
    for (long i = ________; i < ________; ________) {
        if (________) {
            sum += ________;
        } else {
            sum += ________;
        }
    }
    return ________;
}
```
Problem 4A
Problem 4B
Problem 4C
Problem 4D
Problem 5A

bool is_used(zone_header *header) {
    // your implementation here
Problem 5B

size_t get_size(zone_header *header) {
    // your implementation here
Problem 5C

void set_status(zone_header *header, int new_status) {
    // your implementation here
Problem 5D

zone_header *get_right_header(zone_header *header) {
    // your implementation here
Problem 5E

void *malloc_within_zone(zone_ptr *zone, size_t size) {
    // your implementation here
Problem 5F

void set_next(zone_header *free_header, zone_header *next) {
    // your implementation here
Problem 5G

// parameter 1

// parameter 2

// parameter 3
Problem 5H

size_t get_size(zone_header *header) {
    // your implementation here