Assignment 3 Design Document: Memory Allocation

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1 Goal / Purpose

The purpose of this project is to implement and test a memory allocation user library that uses several different allocation mechanisms. This library will be used to test several memory allocation workloads.

2 Available Resources

The available resources we have for this project includes the GNU C compiler (gcc), the available system calls in Minix, and the dynamic memory allocation functions in C (malloc, realloc, calloc, free). Some of these resources that are integral to the completion of the project are discussed.

2.1 void *malloc(size_t size)

This function allocates uninitialized storage with size specified by size. If the allocation succeeds, then a pointer to the first byte in the allocated space is returned. However, the pointer return is null if malloc() was unsuccessful.

3 Design

The implementation of this project is divided into three major components, each reflecting one of the necessary memory allocation functions: meminit(), memalloc(), and memfree(). After implementing the functions, the object files that are produced during compilation of the functions are packaged together in a static library. The resulting library is a ".a" file.