CS 307 HW3

my_malloc(int thread_id, int size):

Creating a temp node and then setting its values as given arguments. Then pushing into the queue.

dump_memory():

Basically just prints the memory in a for loop with memory size.

thread_function(int id):

It takes a void pointer and converts it to integer type. Then creates a random number with different seeds every time. Locks the mutex and does the allocation and unlocks. Acquires the semaphore, checks if the value is -1 or not then prints the appropriate message. Then changes the character value according to “ID”.

server_function():

Declaring an index variable to keep track of the memory. Locks the mutex and there is a loop unless the queue is empty. Creating a node and then assigning the front of the queue to it -in order to use the value of front which will be popped-. Then pops the queue. Checks if there is enough memory or not if there is then allocate, if not change message as -1 to indicate there is no available memory. Releases the semaphore and unlocks the mutex.

Main():

Creates an array of IDs. Then assigns values consecutively. Initialize. Creates a thread type array with number of threads(10). After, creates the threads and joins them. Dumps the memory with dump_memory(), prints memory indexes in a for loop.