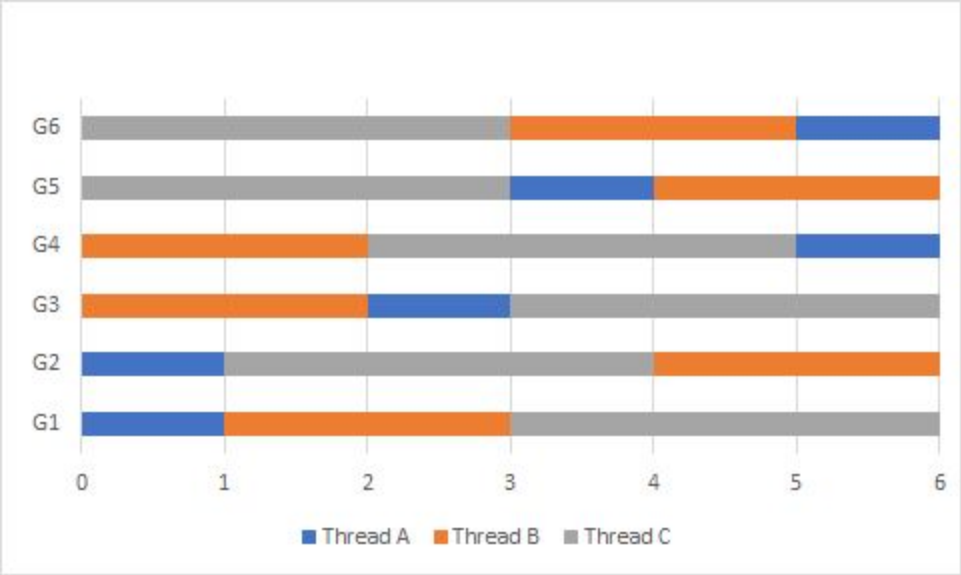
Donovan Moini, Ian Lizarda, Serena Zafiris
Operating Systems Homework1

1. What is the difference between an operating system and middleware?
    a. While both the operating system and the middleware are used to support other software, the operating system uses features form the hardware while the middleware uses features from the operating system. The middleware is dependent on the operating system while the operating system is dependent on the hardware. Middleware can be thought of as the in between for an application and the operating system. It utilizes the operating system to provide services and abilities to an application.
2. What is the relationship between threads and processes?
    a. A thread is a fundamental unit of concurrency, which is defined as any one sequence of programmed actions. A process is a container that holds the thread(s) that were running and protects them from any unwanted interactions with other unrelated threads running on that same computer.
3. Of all the topics previewed in chapter one of the textbook, which one are you most looking forward to learning more about? Why?
    a. We are looking forward to learning how to code multithreaded programs because it's a big buzzword in the industry, but we're unsure of how to actually go about programming them.
4. Thread
    a. 100 * (10 + 1) + 1 + 1000 = **2101** milliseconds
    b. (1 * 100) + (10 * 100) + (1 * 100) + (1 * 100) = 100 + 1000 + 100 + 100 = **1300** milliseconds
        i. We believe B is more efficient because the allowance of interleaving saves time by using A's disk operation time to run B
5.
    a. Yes, the program can continue to print the message until the user presses the enter key.
    b. Yes, the program can cancel the thread before it even prints out it's first message.
6.



a. Compute the average turnaround time for each order

	T1 Turnaround Time (sec)	T2 Turnaround Time (sec)	T3 Turnaround Time (sec)	Average Turnaround Time (sec)
G6 (3, 2, 1)	6	5	3	4.67
G5 (3, 1, 2)	4	6	3	4.33
G4 (2, 3, 1)	6	2	5	4.33
G3 (2, 1, 3)	3	2	6	3.67
G2 (1, 3, 2)	1	6	4	3.67
G1 (1, 2, 3)	1	3	6	3.33

b. Order G1 has the shortest average turnaround time.
c. The name of the scheduling policy that produces this order is a weighted round-robin.