Lawrence Naidu
Homework 1

Exercise 1.
User Level Threads – OS is not aware of it – only exist within the process and are scheduled to run within Process
Kernel Level Threads – Are scheduled by the OS algorithm, requires context switching
User Lever Thread is much faster to switch between because there isn't context switching

Exercise 2.
Seven process
$2^n - 1$ where n is the number of time fork() is called, which is 4
$2^4 - 1 = 7$

Exercise 3.
When threads are stopped, there are values in there – which is necessary and needs to be saved somewhere. Likewise, in multiprogramming, datas are saved in registers in each thread.

Exercise 4.
Each process has its own space, it needs to involve the kernel when dealing with other processes' address. Kernel has tracks the physical memory mapping of all process so it knows when certain memory can be used. On the other hand, threads do not need to use a system call to share memory because they shard their own address space with other threads on same process.

Exercise 5.
When a process context between two processes, process state, including register, memory mapping, program counter, accounting, and other resources information needed to be saved by the process context switch. When context switching is done between two threads in the same process only register and program counters needs to be saved.

Exercise 6.
A: 0
B: 2603
C: 2600
D: 2603

Exercise 7.
Line X: 0, -1, -4, -9, -16
Line Y: 0, 1 , 2, 3, 4

Exercise 8.
6 unique process are created
8 unique threads are created

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Exercise 9:
Round Robin

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
A	B	C	D	E	A	B	C*	D	E	A	B	D	E	A

16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
B	D*	E	A	B	E	A	B*	E	A	E	A	E*	A	A	A*

Average turnaround = (8 + 17 + 23 + 28 + 31)/5 = 107/5 = 21.4 minutes

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Priority Scheduling

1-6	7-14	15-25	26-27	28-31
B	E	A	C	D

Avg. turnaround = (6 + 14 + 25 + 27 + 31)/5 = 103/5 = 20.6 minutes

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First Come First Serve

1-11	12-17	18-19	20-23	24-31
A	B	C	D	E

Avg. turnaround = (11 + 17 + 19 + 23 + 31)/5 = 101/5 = 20.2 minutes

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Shortest Job First

1-2	3-6	7-12	13-20	21-31
C	D	B	E	A

Avg. turnaround = (2 + 6 + 12 + 20 + 31)/5 = 71/5 = 14.2 minutes

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Survey:
I spent about half a day on the homework

This homework was about 3.4/5

This was a good practice for the exam