CSE 4733-01 Operating Systems I
Assignment 01

Mark Hodge, mrh598
28 January, 2019

**Cost of Syscall:**

To measure the cost of a system call, first I performed multiple operations of the gettimeofday() function to test the precision of the time. Next, I implemented a C program to perform 100 system calls of zero-byte reads. The program begins by calling gettimeofday() to mark the start time of each loop. Then performs a read() of zero bytes. Then again calls gettimeofday() to mark the end time. Next, the program computes the total time taken in microseconds from start to end of each loop and prints it to the screen. Finally, the program adds the total time taken to the average value which is calculated at the end of the 100 iterations.

To run this code:

Use the gcc command on the assignment01_1_mrh598.c file then execute it.

**Cost of a context switch**:

To measure the cost of a context switch, the program makes use of two processes sending and receiving messages between two pipes. First, gettimeofday() is called to mark the start time of each context switch. Then pipes are created and messages initialized before the process is forked. Next, the processes write a message from parent to child, then the parent waits to receive a message from the child. Once the child receives the message through the first pipe, it then writes a message to the parent through the second pipe. Once the parent receives the message from the child through the second pipe, a context switch is complete. The program exits the forked process and calls gettimeofday() to mark the end of the completed context switch. The total time of each context switch is computed and printed to the screen in microseconds.

To run this code:

Use the gcc command on the assignment01_2_mrh598.c file then execute it.

**Reference:**

The out of class source used for this assignment was www.geeksforgeeks.com, the source was used to reference how to implement pipes and forks and as a guide.