CIS 452 02 – Lab 7 – Gabrielle Munson and Gabe Baksa

1. Maximum number of semaphores per process (static)

256, this value was found by looking in the posix1_lib.h include file under the name _POSIX_SEM_NSEMS_MAX

2. Maximum value of a counting semaphore (static)

32767, this value was also found by looking in the posix1_lib.h include file under the name _POSIX_SEM_VALUE_MAX

```
root@gb_laptop:/usr/include/x86_64-linux-gnu/bits# cat posix1_lim.h | grep SEM
#define _POSIX_SEM_NSEMS_MAX    256
#define _POSIX_SEM_VALUE_MAX    32767
```

3. Maximum value of a counting semaphore (empirical)

2147483648, this was found by running a program we made called task3.c making use of the sem_init() command

```
gmunson@gabbis-laptop:/mnt/c/Users/munso/OneDrive/Desktop/OS/cis452/labs/lab7$ ./a.out
Max counting semaphore value: 2147483648
```

4. Maximum size of a shared memory segment (empirical)

4260364288 MB, this was found by running a program we made called task4.c making use of the shmget() command

```
gmunson@gabbis-laptop:/mnt/c/Users/munso/OneDrive/Desktop/OS/cis452/labs/lab7$ ./a.out
Max shared memory segment size: 4260364288 MB
```

5. Page size in bytes (dynamic)

4096 bytes, this was found by running a program we made called task5.c using sysconf() library function to find the page size

```
root@gb_laptop:/mnt/c/Users/gbaks/Downloads/cis452/labs/lab7# ./task5
Page size: 4096 bytes
```

6. Physical pages in a system (dynamic)

16760507 physical pages, this was found by running a program we made called task6.c using the sysconf() function call with the _SC_AVPHYS_PAGES variable

```
gmunson@gabbis-laptop:/mnt/c/Users/munso/OneDrive/Desktop/OS/cis452/labs/lab7$ ./a.out
Physical Pages in System: 1676507
```

7. Maximum number of processes per user (dynamic)

The maximum number of processes per user is 30338, which we found by running task7.c which utilizes the system call `getrlimit()`

```
root@gb_laptop:/mnt/c/Users/gbaks/Downloads/cis452/labs/lab7# ./task7
Soft limit (current): 30338
Hard limit (maximum): 30338
```

8. Maximum filesize in bytes (dynamic)

18446744073709551615, we found this by creating a program called task8.c which used the system call getrlimit() with the resource argument RLIMIT_FSIZE.

```
gmunson@gabbis-laptop:/mnt/c/Users/munso/OneDrive/Desktop/OS/cis452/labs/lab7$ ./a.out
Max File Size: 18446744073709551615
```

9. Maximum number of open files, hard limit (dynamic)

The maximum number of open files is 1048576, which we found by running task9.c which utilizes the system call `getrlimit()`,more specifically, `limit.rlim_max`.

```
root@gb_laptop:/mnt/c/Users/gbaks/Downloads/cis452/labs/lab7# ./task9
Hard limit (maximum number of open files): 1048576
```

10. Maximum number of open files, soft limit (dynamic)

```
root@gb_laptop:/mnt/c/Users/gbaks/Downloads/cis452/labs/lab7# ./task10
Soft limit (current number of open files): 1024
```

The maximum number of open files is 1024, which we found by running task10.c which utilizes the system call `getrlimit()`,more specifically, `limit.rlim_cur`.

11. Clock resolution in milliseconds (dynamic)

The clock resolution in milliseconds is 0.000001, we found this by creating a program called task11.c that used the clock_getres() system call and then converting the seconds and nanoseconds to milliseconds.

```
gmunson@gabbis-laptop:/mnt/c/Users/munso/OneDrive/Desktop/OS/cis452/labs/lab7$ ./a.out
Clock Resolution: 0.000001 milliseconds
```