

### 1. Maximum number of semaphores per process (static)

Include files & system call:

```
#include <stdio.h>
```

```
#include <unistd.h>
```

```
#include <limits.h>
```

```
#include <errno.h>
```

```
long max_semaphores = sysconf(_SC_SEM_NSEMS_MAX)
```

```
● seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberOne.c
● seabass@Sebastians-MacBook-Air Lab 7 % ./a
  Static maximum number of semaphores per process: 87381
○ seabass@Sebastians-MacBook-Air Lab 7 %
```

### 2. Maximum value of a counting semaphore (static)

Include files & system call:

```
#include <stdio.h>
```

```
#include <unistd.h>
```

```
#include <limits.h>
```

```
#include <errno.h>
```

```
long max_sem_value = sysconf(_SC_SEM_VALUE_MAX)
```

```
● seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberTwo.c
● seabass@Sebastians-MacBook-Air Lab 7 % ./a
  Static maximum value of a counting semaphore: 32767
○ seabass@Sebastians-MacBook-Air Lab 7 %
```

### 3. Maximum value of a counting semaphore (empirical)

Include files & system call:

```
#include <stdio.h>
```

```
#include <stdlib.h>
```

```
#include <semaphore.h>
```

```
#include <sys/sem.h>
```

```
semId = semget(IPC_PRIVATE, 1, S_IRUSR | S_IWUSR)
```

```
● seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberThree.c
● seabass@Sebastians-MacBook-Air Lab 7 % ./a
  Maximum value of semaphore: 65535
○ seabass@Sebastians-MacBook-Air Lab 7 %
```

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

Include files & system call:

```
#include <stdio.h>
```

```
#include <sys/ipc.h>
```

```
#include <sys/shm.h>
```

```
shmId = shmget(IPC_PRIVATE, size, IPC_CREAT | 0666)
```

```
seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberFour.c
seabass@Sebastians-MacBook-Air Lab 7 % ./a
Maximum size of shared memory segment: 1 bytes
seabass@Sebastians-MacBook-Air Lab 7 %
```

#### 5. Page size in bytes (dynamic)

Include files & system call:

```
#include <stdio.h>
```

```
#include <unistd.h>
```

```
long page_size = sysconf(_SC_PAGE_SIZE)
```

```
seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberFive.c
seabass@Sebastians-MacBook-Air Lab 7 % ./a
Page size in bytes: 16384
seabass@Sebastians-MacBook-Air Lab 7 %
```

#### 6. Physical pages in a system (dynamic)

Include files & system call:

```
#include <stdio.h>
```

```
#include <sys/types.h>
```

```
#include <sys/sysctl.h>
```

```
sysctl(mib, 2, &physical_memory, &len, NULL, 0)
```

```
seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberSix.c
seabass@Sebastians-MacBook-Air Lab 7 % ./a
Total physical pages memory: 8589934592 bytes
seabass@Sebastians-MacBook-Air Lab 7 %
```

#### 7. Maximum number of processes per user (dynamic)

Include files & system call:

```
#include <stdio.h>
```

```
#include <sys/resource.h>
```

```
getrlimit(RLIMIT_NPROC, &limit)
```

```
seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberSeven.c
seabass@Sebastians-MacBook-Air Lab 7 % ./a
Maximum number of processes per user: 1333
seabass@Sebastians-MacBook-Air Lab 7 %
```

### 8. Maximum filesize in bytes (dynamic)

Include files & system call:

```
#include <sys/resource.h>
```

```
#include <stdio.h>
```

```
#include <unistd.h>
```

```
getrlimit(RLIMIT_FSIZE, &rlim)
```

```
seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberEight.c
seabass@Sebastians-MacBook-Air Lab 7 % ./a
Maximum File Size Limit: 9223372036854775807 bytes
seabass@Sebastians-MacBook-Air Lab 7 %
```

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

Include files & system call:

```
#include <sys/resource.h>
```

```
#include <stdio.h>
```

```
getrlimit(RLIMIT_NOFILE, &rlim)
```

```
seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberNine.c
seabass@Sebastians-MacBook-Air Lab 7 % ./a
Maximum number of open files (hard limit): 9223372036854775807
seabass@Sebastians-MacBook-Air Lab 7 %
```

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

Include files & system call:

```
#include <sys/resource.h>
```

```
#include <stdio.h>
```

```
getrlimit(RLIMIT_NOFILE, &rlim)
```

```
seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberTen.c
seabass@Sebastians-MacBook-Air Lab 7 % ./a
Maximum number of open files (soft limit): 10240
seabass@Sebastians-MacBook-Air Lab 7 %
```

### 11. Clock resolution in milliseconds (dynamic)

Include files & system call:

```
#include <time.h>
```

```
#include <stdio.h>
```

```
clock_getres(CLOCK_REALTIME, &res)
```

```
seabass@Sebastians-MacBook-Air Lab 7 % gcc -o a numberEleven.c
seabass@Sebastians-MacBook-Air Lab 7 % ./a
Clock Resolution: 0.001000 milliseconds
seabass@Sebastians-MacBook-Air Lab 7 %
```