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Experiment : 7

1.) Write a C program that takes, as a command line argument, the number of megabytes of memory it will use and during execution it should consume that much memory. Observe memory usage during program execution using free command.

- C Program

```
GNU nano 6.2 Exp7.c
#include<stdio.h>
#include<stdlib.h>
#include<time.h>
#include<unistd.h>
int main (int argc, char* argv[])
{
printf("Current process ID = %d\n", getpid());
long long int size = ((long long int) atoi (argv[1]))*1024*1024; //in bytes
int* buffer = (int*)malloc(size);

//run the while loop for given amount of time
time_t endwait, seconds, start;
seconds=atoi(argv[2]);
start=time(NULL);
endwait = start + seconds;

while(start<endwait)
{
printf(".");
fflush(stdout);
for(long long int i=0; i<size/sizeof(int); i++)
{
buffer[i] = i;
}
start = time(NULL);
}
printf("done\n");
return 0;
}
```

- Shell

```
suresh@suresh-QEMU-Virtual-Machine: ~
suresh@suresh-QEMU-Virtual-Machine:~$ free
              total        used        free      shared  buff/cache   available
Mem:           4002172       780540       1963908         72040       1257724       2991684
Swap:          3297276           0         3297276
suresh@suresh-QEMU-Virtual-Machine:~$ gcc Exp7.c
suresh@suresh-QEMU-Virtual-Machine:~$ ./a.out
Current process ID = 3248
Segmentation fault (core dumped)
suresh@suresh-QEMU-Virtual-Machine:~$ gcc Exp7.c
suresh@suresh-QEMU-Virtual-Machine:~$ ls
a.out  Downloads  file.txt  Public  snap  strlen.c  unix.txt
Desktop  Exp7.c  Music  script2.sh  string.c  str.sh  Videos
Documents  file.sh  Pictures  script.sh  string.sh  Templates
suresh@suresh-QEMU-Virtual-Machine:~$ gcc Exp7.c -o Exp7
suresh@suresh-QEMU-Virtual-Machine:~$ ls
a.out  Downloads  file.sh  Pictures  script.sh  string.sh  Templates
Desktop  Exp7  file.txt  Public  snap  strlen.c  unix.txt
Documents  Exp7.c  Music  script2.sh  string.c  str.sh  Videos
suresh@suresh-QEMU-Virtual-Machine:~$ ./Exp7 3048 4
Current process ID = 3297
..done
suresh@suresh-QEMU-Virtual-Machine:~$ free
              total        used        free      shared  buff/cache   available
Mem:           4002172       692408       3078296         73860       231468       3088304
Swap:          3297276       91904       3205372
suresh@suresh-QEMU-Virtual-Machine:~$ free -m
              total        used        free      shared  buff/cache   available
Mem:           3908         676         2984          88         247         2999
Swap:          3219          89         3130
suresh@suresh-QEMU-Virtual-Machine:~$ free -m
              total        used        free      shared  buff/cache   available
Mem:           3908         675         3002          70         229         3018
Swap:          3219          89         3130
suresh@suresh-QEMU-Virtual-Machine:~$ gcc Exp7.c -o Exp7
suresh@suresh-QEMU-Virtual-Machine:~$ ./Exp7 3048 4
Current process ID = 3327
..done
suresh@suresh-QEMU-Virtual-Machine:~$ free -m
              total        used        free      shared  buff/cache   available
Mem:           3908         593         3121          70         193         3112
Swap:          3219         177         3042
suresh@suresh-QEMU-Virtual-Machine:~$ nano Exp7.c
suresh@suresh-QEMU-Virtual-Machine:~$
```