PS-1 Problem 1 Write Up

1. Explain what the outputs in the screenshot tell you about the memory addresses used by different processes.

   The screenshot tells us that the different processes are actually using the same memory address. This is due to the fact that the processes are using virtual addressing. If they were directly addressing phyisical memory locations this would not be possible. The hardware is handling the layer of abstraction between the virtual memory and physical memory locations.

2.

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[bwilliams@blue PS1]$ cat /proc/26181/maps
00400000-00401000 r-xp 00000000 08:11 162864784                          /home/stu
dent/bwilliams/cs450f18/PS1/a.out
00600000-00601000 r--p 00000000 08:11 162864784                          /home/stu
dent/bwilliams/cs450f18/PS1/a.out
00601000-00602000 rw-p 00001000 08:11 162864784                          /home/stu
dent/bwilliams/cs450f18/PS1/a.out
01f2f000-01f50000 rw-p 00000000 00:00 0                                  [heap]
7fcd930c7000-7fcd93274000 r-xp 00000000 fd:02 1049464                    /usr/lib6
4/libc-2.26.so
7fcd93274000-7fcd93473000 ---p 001ad000 fd:02 1049464                    /usr/lib6
4/libc-2.26.so
7fcd93473000-7fcd93477000 r--p 001ac000 fd:02 1049464                    /usr/lib6
4/libc-2.26.so
7fcd93477000-7fcd93479000 rw-p 001b0000 fd:02 1049464                    /usr/lib6
4/libc-2.26.so
7fcd93479000-7fcd9347d000 rw-p 00000000 00:00 0
7fcd9347d000-7fcd934a2000 r-xp 00000000 fd:02 1049062                    /usr/lib6
4/ld-2.26.so
7fcd9365c000-7fcd9365e000 rw-p 00000000 00:00 0
7fcd936a1000-7fcd936a2000 r--p 00024000 fd:02 1049062                    /usr/lib6
4/ld-2.26.so
7fcd936a2000-7fcd936a3000 rw-p 00025000 fd:02 1049062                    /usr/lib6
4/ld-2.26.so
7fcd936a3000-7fcd936a4000 rw-p 00000000 00:00 0
7ffede576000-7ffede597000 rw-p 00000000 00:00 0                          [stack]
7ffede5dd000-7ffede5e0000 r--p 00000000 00:00 0                          [vvar]
7ffede5e0000-7ffede5e2000 r-xp 00000000 00:00 0                          [vdso]
ffffffffff600000-ffffffffff601000 r-xp 00000000 00:00 0                  [vsyscall
]
```

3. Name the part of memory you just highlighted in the prior step, using the terminology from Figure 2.6(p.53)

   The part of memory that is highlighted about would be the data part in the Process layout shown in Figure 2.6.