

COMP3230 – Tutorial 1

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Exercise 1.1:

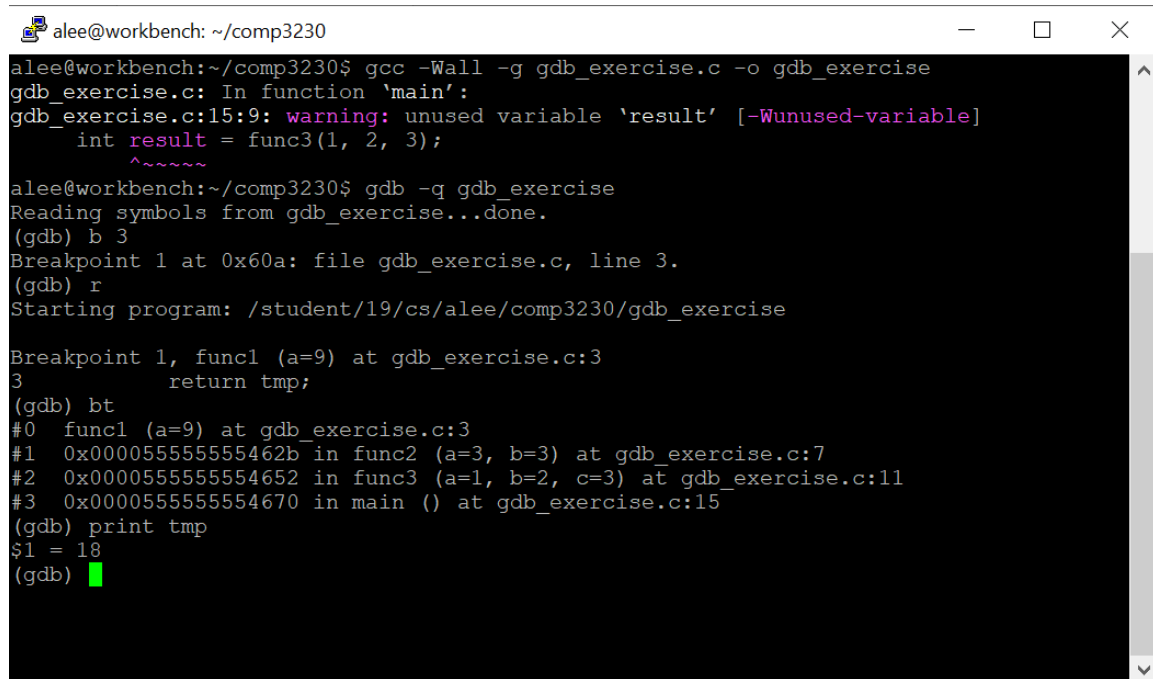
```
alee@workbench: ~  
alee@workbench:~$ ps -fu alee  
UID          PID     PPID  C  STIME TTY          TIME CMD  
alee        44603         1  0  12:23 ?           00:00:00 /lib/systemd/systemd --user  
alee        44604    44603  0  12:23 ?           00:00:00 (sd-pam)  
alee        44693    44601  0  12:23 ?           00:00:00 sshd: alee@pts/6  
alee        44694    44693  0  12:23 pts/6       00:00:00 -bash  
alee        46229    44694  0  12:26 pts/6       00:00:00 ps -fu alee  
alee@workbench:~$
```

Exercise 1.2:

```
alee@workbench: ~  
alee@workbench:~$ free -s 2 -c 5 -g  
              total        used        free      shared  buff/cache   available  
Mem:           376            0          375            0            0          376  
Swap:           0            0            0  
  
              total        used        free      shared  buff/cache   available  
Mem:           376            0          375            0            0          376  
Swap:           0            0            0  
  
              total        used        free      shared  buff/cache   available  
Mem:           376            0          375            0            0          376  
Swap:           0            0            0  
  
              total        used        free      shared  buff/cache   available  
Mem:           376            0          375            0            0          376  
Swap:           0            0            0  
  
              total        used        free      shared  buff/cache   available  
Mem:           376            0          375            0            0          376  
Swap:           0            0            0  
  
alee@workbench:~$ free -mt  
              total        used        free      shared  buff/cache   available  
Mem:        385650          440       384698            4           510       385209  
Swap:           0            0            0  
Total:        385650          440       384698  
alee@workbench:~$
```

The swap in second line means the swap space on any computer running Linux or Unix type operating system. Swap space will be used when the amount of RAM is full. Swap space is located in the hard drives, so it requires more time to access the items in the swap space. However, if we needed more memories, we can move the inactive items to the swap space in order to have more memories.

Exercise 4:



```
alee@workbench: ~/comp3230
alee@workbench:~/comp3230$ gcc -Wall -g gdb_exercise.c -o gdb_exercise
gdb_exercise.c: In function 'main':
gdb_exercise.c:15:9: warning: unused variable 'result' [-Wunused-variable]
    int result = func3(1, 2, 3);
        ^~~~~~
alee@workbench:~/comp3230$ gdb -q gdb_exercise
Reading symbols from gdb_exercise...done.
(gdb) b 3
Breakpoint 1 at 0x60a: file gdb_exercise.c, line 3.
(gdb) r
Starting program: /student/19/cs/alee/comp3230/gdb_exercise

Breakpoint 1, func1 (a=9) at gdb_exercise.c:3
3      return tmp;
(gdb) bt
#0  func1 (a=9) at gdb_exercise.c:3
#1  0x000055555555462b in func2 (a=3, b=3) at gdb_exercise.c:7
#2  0x0000555555554652 in func3 (a=1, b=2, c=3) at gdb_exercise.c:11
#3  0x0000555555554670 in main () at gdb_exercise.c:15
(gdb) print tmp
$1 = 18
(gdb) █
```