Output of all the programs

```
nortonbreads@raspberrypi:~/Desktop/EN605/module4/stuff $ ./userAge
Enter your age: 29
Your age is: 29
nortonbreads@raspberrypi:~/Desktop/EN605/module4/stuff $ ./tabPrinter
Number: 5        End
nortonbreads@raspberrypi:~/Desktop/EN605/module4/stuff $ ./quotePrinter
This is my output "Hello world"
nortonbreads@raspberrypi:~/Desktop/EN605/module4/stuff $ 
```

userAge screenshots
Address

nortonbreads@raspberrypi: ~/Desktop/EN605/module4/stuff

File   Edit   Tabs   Help

```
─Register group: general─
r0              0x1                1
r1              0xfffeef74         4294897524
r2              0xfffeef7c         4294897532
r3              0x10458            66648
r4              0xfffeef74         4294897524
r5              0x1                1
r6              0x2ff14            196372
r7              0xf7fef000         4160679936
```

[No Source Available]

```
multi-thre Thread 0xf7fe9ba0 ( (src) In: main                    L??    PC: 0x1045c
Using host libthread_db library "/lib/arm-linux-gnueabihf/libthread_db.so.1".

Temporary breakpoint 1, 0x0001045c in main ()
(gdb) info address userAge
Symbol "userAge" is at 0x30030 in a file compiled without debugging.
(gdb) info address promptMessage
Symbol "promptMessage" is at 0x30034 in a file compiled without debugging.
(gdb) info address outputMessage
Symbol "outputMessage" is at 0x30048 in a file compiled without debugging.
(gdb) 
```

Before and after

```
Breakpoint 1 at 0x10470: file userAge.s, line 22.
(gdb) break 29
Breakpoint 2 at 0x10480: file userAge.s, line 29.
(gdb) run
Starting program: /home/nortonbreads/Desktop/EN605/module4/stuff/userAge
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/arm-linux-gnueabihf/libthread_db.so.1".

Breakpoint 1, main () at userAge.s:22
22          BL scanf
(gdb) info registers r0 r1 r2 r3
r0              0x30045                 196677
r1              0x30030                 196656
r2              0x0                     0
r3              0x0                     0
(gdb) next
Enter your age: 29
26          LDR r0, =outputMessage
(gdb) info registers r0 r1 r2 r3
r0              0x1                     1
r1              0xfffeedf4              4294897140
r2              0x0                     0
r3              0x0                     0
(gdb)
```

```
Breakpoint 2 at 0x10480: file userAge.s, line 29.
(gdb) run
Starting program: /home/nortonbreads/Desktop/EN605/module4/stuff/userAge
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/arm-linux-gnueabihf/libthread_db.so.1".

Breakpoint 1, main () at userAge.s:22
22          BL scanf
(gdb) info registers r0 r1 r2 r3
r0              0x30045                 196677
r1              0x30030                 196656
r2              0x0                     0
r3              0x0                     0
(gdb) next
Enter your age: 29
26          LDR r0, =outputMessage
(gdb) info registers r0 r1 r2 r3
r0              0x1                     1
r1              0xfffeedf4              4294897140
r2              0x0                     0
r3              0x0                     0
(gdb) info address userAge
Symbol "userAge" is at 0x30030 in a file compiled without debugging.
(gdb)
```

tabPrinter screenshots
Before and after

File   Edit   Tabs   Help

```
Reading symbols from tabPrinter...
(gdb) break 15
Breakpoint 1 at 0x10438: file tabPrinter.s, line 15.
(gdb) run
Starting program: /home/nortonbreads/Desktop/EN605/module4/stuff/tabPrinter
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/arm-linux-gnueabihf/libthread_db.so.1".

Breakpoint 1, main () at tabPrinter.s:15
15              BL printf
(gdb) info registers r0 r1 r2 r3
r0              0x3002c              196652
r1              0x5                  5
r2              0xfffeef7c           4294897532
r3              0x10428              66600
(gdb) next
Number: 5       End
18              LDR lr, [sp, #0]
(gdb) info registers r0 r1 r2 r3
r0              0xe                  14
r1              0x0                  0
r2              0x0                  0
r3              0x0                  0
(gdb)
```

File   Edit   Tabs   Help

```
r0              0x3002c              196652
r1              0x5                  5
r2              0xfffeef7c           4294897532
r3              0x10428              66600
(gdb) next
Number: 5       End
18              LDR lr, [sp, #0]
(gdb) info registers r0 r1 r2 r3
r0              0xe                  14
r1              0x0                  0
r2              0x0                  0
r3              0x0                  0
(gdb) next
19              ADD sp, sp, #4
(gdb) info registers r0 r1 r2 r3
r0              0xe                  14
r1              0x0                  0
r2              0x0                  0
r3              0x0                  0
(gdb) info address tabMEssage
No symbol "tabMEssage" in current context.
(gdb) info address tabMessage
Symbol "tabMessage" is at 0x3002c in a file compiled without debugging.
(gdb)
```
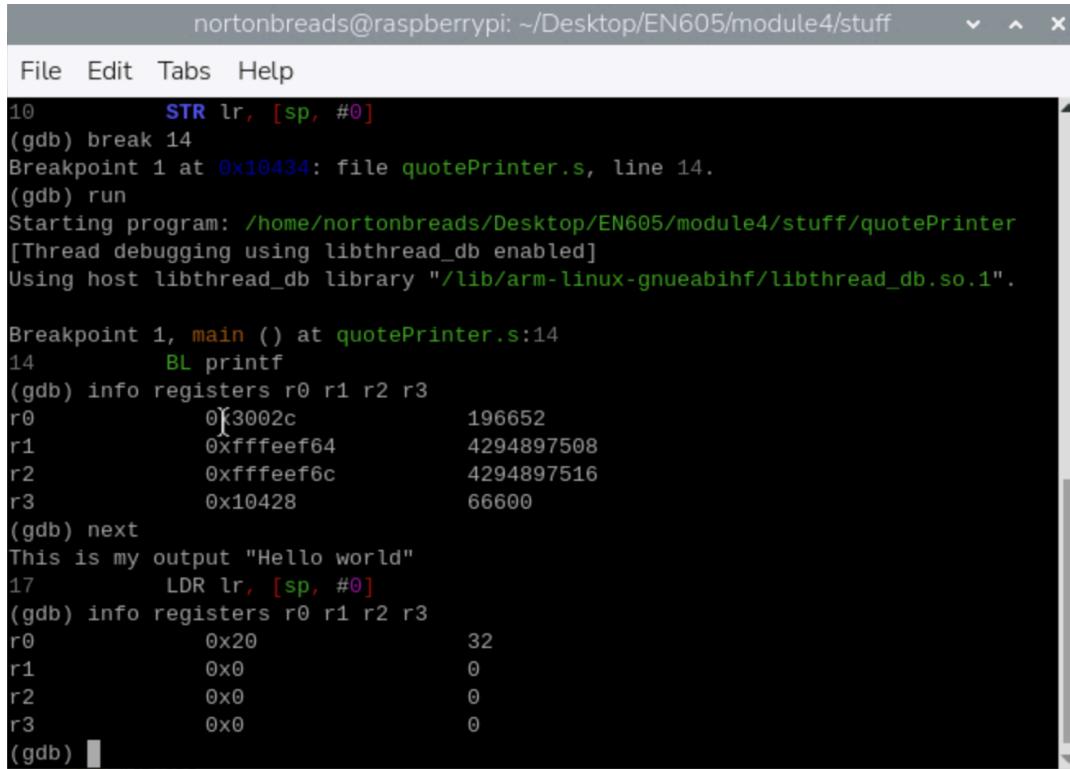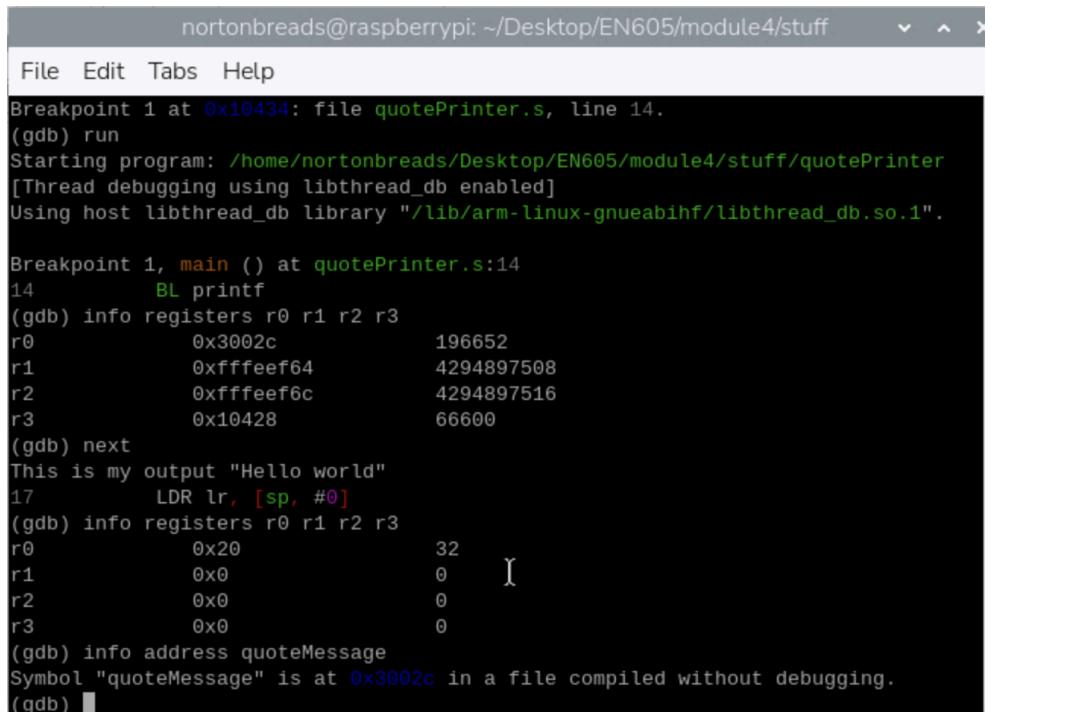
quotePrinter screenshots

BEFORE AND AFTER


```
nortonbreads@raspberrypi: ~/Desktop/EN605/module4/stuff        ∨  ∧  ✕

File  Edit  Tabs  Help

10             STR lr, [sp, #0]
(gdb) break 14
Breakpoint 1 at 0x10434: file quotePrinter.s, line 14.
(gdb) run
Starting program: /home/nortonbreads/Desktop/EN605/module4/stuff/quotePrinter
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/arm-linux-gnueabihf/libthread_db.so.1".

Breakpoint 1, main () at quotePrinter.s:14
14             BL printf
(gdb) info registers r0 r1 r2 r3
r0             0x3002c              196652
r1             0xfffeef64           4294897508
r2             0xfffeef6c           4294897516
r3             0x10428              66600
(gdb) next
This is my output "Hello world"
17             LDR lr, [sp, #0]
(gdb) info registers r0 r1 r2 r3
r0             0x20                 32
r1             0x0                  0
r2             0x0                  0
r3             0x0                  0
(gdb)
```



```
nortonbreads@raspberrypi: ~/Desktop/EN605/module4/stuff        ∨  ∧  ✕

File  Edit  Tabs  Help

Breakpoint 1 at 0x10434: file quotePrinter.s, line 14.
(gdb) run
Starting program: /home/nortonbreads/Desktop/EN605/module4/stuff/quotePrinter
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/arm-linux-gnueabihf/libthread_db.so.1".

Breakpoint 1, main () at quotePrinter.s:14
14             BL printf
(gdb) info registers r0 r1 r2 r3
r0             0x3002c              196652
r1             0xfffeef64           4294897508
r2             0xfffeef6c           4294897516
r3             0x10428              66600
(gdb) next
This is my output "Hello world"
17             LDR lr, [sp, #0]
(gdb) info registers r0 r1 r2 r3
r0             0x20                 32
r1             0x0                  0
r2             0x0                  0
r3             0x0                  0
(gdb) info address quoteMessage
Symbol "quoteMessage" is at 0x3002c in a file compiled without debugging.
(gdb)
```