Yacine Manseur
11/17/15
Operating Systems
Problem Set 8

OUTPUT:

Problem 2:

```
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ as --64 -o a.o problem2.S
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ ld -m elf_x86_64 a.o
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ ./a.out
Hello World.
Segmentation fault
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ strace ./a.out
execve("./a.out", ["./a.out"], [/* 52 vars */]) = 0
write(1, "Hello World.\n", 13Hello World.
)       = 13
--- SIGSEGV {si_signo=SIGSEGV, si_code=SI_KERNEL, si_addr=0} ---
+++ killed by SIGSEGV +++
Segmentation fault
```

Problem 3:

```
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ as --64 -o a.o problem3.S
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ ld -m elf_x86_64 a.o
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ ./a.out
Hello World.
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ strace ./a.out
execve("./a.out", ["./a.out"], [/* 52 vars */]) = 0
write(1, "Hello World.\n", 13Hello World.
)       = 13
_exit(1)                        = ?
+++ exited with 1 +++
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ echo $?
1
```

Problem 4:

```
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ as --64 -o a.o problem4.S
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ ld -m elf_x86_64 a.o
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ ./a.out
yacine@yacine-N53SV ~/Documents/OS/OS/PS8 $ strace ./a.out
execve("./a.out", ["./a.out"], [/* 52 vars */]) = 0
write(1, 0x1, 13)                       = -1 EFAULT (Bad address)
_exit(1)                        = ?
+++ exited with 1 +++
```

APPENDIX:

```
// Yacine Manseur
// Cooper Union Fall 2015
// ECE 357: Operating Systems
// Problem Set 8
// Problem 1
// hello.c
// gcc hello.c -o p1
// strace ./p1

#include <stdio.h>

int main(int argc, char *argv[])
{
        printf("Hello World.\n");
        return 0;
}
```

```
# Yacine Manseur
# PS8
# Problem 2
# >as --64 -o a.o problem2.S
# >ld -m elf_x86_64 a.o

.global _start
.text
_start:
        movq    $1, %rax
        movq    $1, %rdi
        movq    $msg, %rsi
        movq    $len, %rdx
        syscall

.data

msg:
        .ascii "Hello World.\n"
        len = . - msg
```

```
# Yacine Manseur
# PS8
# Problem 3
# >as --64 -o a.o problem3.S
# >ld -m elf_x86_64 a.o

# ANSWER TO THE QUESTION:
# After the write, a seg fault occurred.
#  This is because there was no return
#  value when the program exited.

.global _start
.text
_start:
        movq    $1, %rax
        movq    $1, %rdi
        movq    $msg, %rsi
        movq    $len, %rdx
        syscall

        movq    $60, %rax
        movq    $1, %rdi
        syscall

.data

msg:
        .ascii "Hello World.\n"
        len = . - msg
```

```
# Yacine Manseur
# PS8
# Problem 4
# >as --64 -o a.o problem4.S
# >ld -m elf_x86_64 a.o

.global _start
.text
_start:
        movq    $1, %rax
        movq    $1, %rdi
        movq    $1, %rsi
        movq    $len, %rdx
        syscall

        movq    $60, %rax
        movq    $1, %rdi
        syscall

.data
msg:
        .ascii "Hello World.\n"
        len = . - msg
```