

CPSC 240: Computer Organization and Assembly Language

Assignment 01, Fall Semester 2023

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1. Download the “CPSC-240 Assignment01.docx” document.
2. Follow the “CPSC-240 Ex01 Hello World.pdf” slide to design a “hello.asm” Assembly program and generate. “hello.o”, “hello.lst”, and “hello” files.
3. Copy and paste the “hello.asm” file into the document.
4. Follow the “CPSC-240 Ex01 Debugger.pdf” slide to debug the “hello” file.
5. When the program runs to line 12, copy and paste the "Register" window into the document.
6. When the program runs to line 18, copy and paste the "Register" window into the document.
7. When running the "x/14db &text" and "x/s &text" commands, copy and paste the "DDD" window (including the gdb panel) into the document to display the memory results.
8. Save the file in pdf format and submit the pdf file to Canvas before deadline.
9. Deadline is 23:59 pm on 09/06/2023.

[\[Insert hello.asm file here\]](#)

```
; ex hello.asm
; char text[] = "Hello, World!\n"
; cout << text;

section .data
    text db "Hello, World!", 10

section .text
    global _start

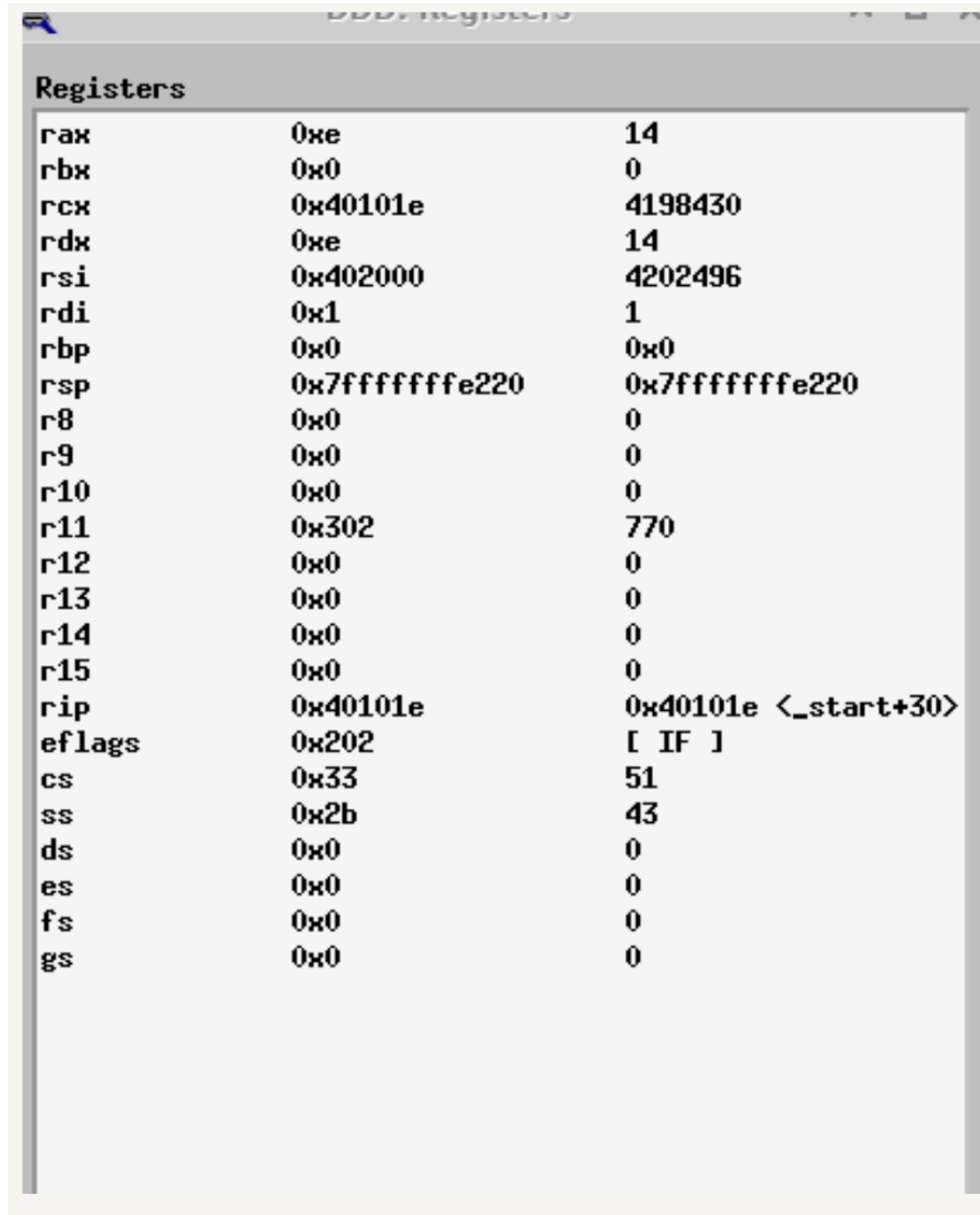
_start:
    mov rax, 1
    mov rdi, 1
    mov rsi, text
    mov rdx, 14
    syscall

    mov rax, 60
    mov rdi, 0
    syscall
```

[Insert 1st Register window here]

Registers		
rax	0x0	0
rbx	0x0	0
rcx	0x0	0
rdx	0x0	0
rsi	0x0	0
rdi	0x0	0
rbp	0x0	0x0
rsp	0x7fffffffefe220	0x7fffffffefe220
r8	0x0	0
r9	0x0	0
r10	0x0	0
r11	0x0	0
r12	0x0	0
r13	0x0	0
r14	0x0	0
r15	0x0	0
rip	0x401000	0x401000 <_start>
eflags	0x202	[IF]
cs	0x33	51
ss	0x2b	43
ds	0x0	0
es	0x0	0
fs	0x0	0
gs	0x0	0

[Insert 2nd Register window here]



Registers		
rax	0xe	14
rbx	0x0	0
rcx	0x40101e	4198430
rdx	0xe	14
rsi	0x402000	4202496
rdi	0x1	1
rbp	0x0	0x0
rsp	0x7fffffffef220	0x7fffffffef220
r8	0x0	0
r9	0x0	0
r10	0x0	0
r11	0x302	770
r12	0x0	0
r13	0x0	0
r14	0x0	0
r15	0x0	0
rip	0x40101e	0x40101e <_start+30>
eflags	0x202	[IF]
cs	0x33	51
ss	0x2b	43
ds	0x0	0
es	0x0	0
fs	0x0	0
gs	0x0	0

[Insert DDD window here]



File Edit View Program Commands Status Source Data

(): hello.asm:19

```

1 ; ex_hello.asm
2 ; char text[] = "Hello, World!\n"
3 ; cout << text;
4
5 section .data
6     text db "Hello, World!", 10
7
8 section .text
9     global _start
10
11 _start:
12     mov rax, 1
13     mov rdi, 1
14     mov rsi, text
15     mov rdx, 14
16     syscall
17
18     mov rax, 60
19     mov rdi, 0
20     syscall
21
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```

Hello, World!

(gdb) x/14db &text

0x402000:	72	101	108	108	111	44	32	87
0x402008:	111	114	108	100	33	10		

(gdb)

File Edit View Program Commands Status Source Data

{): hello.asm:19

```
1 ; ex_hello.asm
2 ; char text[] = "Hello, World!\n"
3 ; cout << text;
4
5 section .data
6     text db "Hello, World!", 10
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9     global _start
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11 _start:
12     mov rax, 1
13     mov rdi, 1
14     mov rsi, text
15     mov rdx, 14
16     syscall
17
18 [
19     mov rax, 60
20     mov rdi, 0
21     syscall
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```

```
0x402000:      72      101      108      108      111      44      32      87
0x402008:     111      114      108      100      33      10
(gdb) x/s %text
0x402000:      "Hello, World!\n"
(gdb)
```

0x402000: "Hello, World!\n"

