

PAIL

ASSIGNMENT 1 – LAB 1

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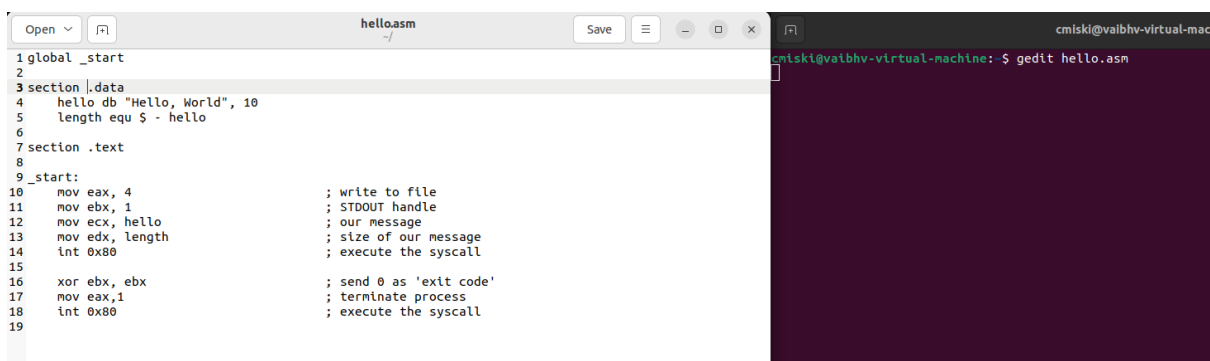
Class: SY-06

RollNo: 09

EnrollmentNo: ADT24SOCB0090

GitHub Repo: <https://github.com/CheeseCakeyy/PAIL-ASSIGNMENTS.git>

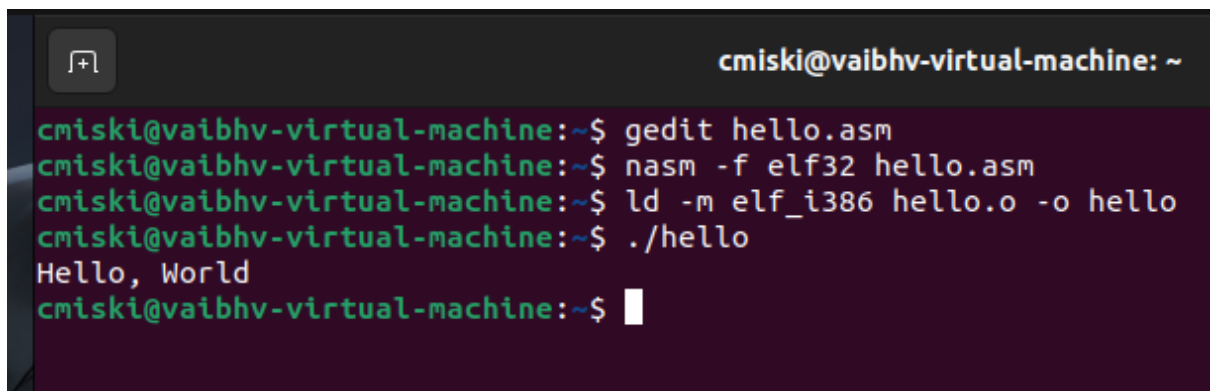
1. Hello World : A simple assembly program that prints “Hello, World!”.



The screenshot shows a code editor window titled 'hello.asm' with the following assembly code:

```
1 global _start
2
3 section .data
4     hello db "Hello, World", 10
5     length equ $ - hello
6
7 section .text
8
9 _start:
10    mov eax, 4          ; write to file
11    mov ebx, 1          ; STDOUT handle
12    mov ecx, hello      ; our message
13    mov edx, length     ; size of our message
14    int 0x80            ; execute the syscall
15
16    xor ebx, ebx        ; send 0 as 'exit code'
17    mov eax, 1          ; terminate process
18    int 0x80            ; execute the syscall
19
```

To the right, a terminal window shows the command 'gedit hello.asm' being executed.



The screenshot shows a terminal window with the following commands and output:

```
cmiski@vaibhv-virtual-machine: ~
cmiski@vaibhv-virtual-machine:~$ gedit hello.asm
cmiski@vaibhv-virtual-machine:~$ nasm -f elf32 hello.asm
cmiski@vaibhv-virtual-machine:~$ ld -m elf_i386 hello.o -o hello
cmiski@vaibhv-virtual-machine:~$ ./hello
Hello, World
cmiski@vaibhv-virtual-machine:~$
```

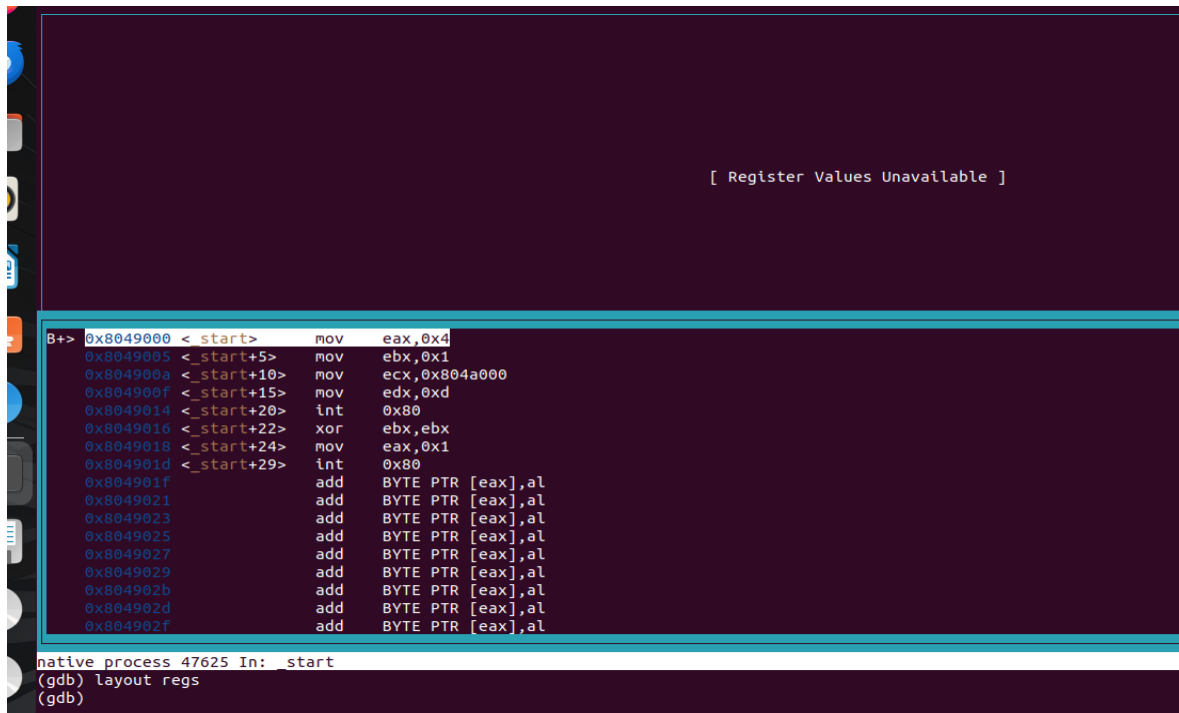
```

cmiski@vaibhv-virtual-machine:~$ gedit hello.asm
cmiski@vaibhv-virtual-machine:~$ nasm -f elf32 -g hello.asm -o hello.o
cmiski@vaibhv-virtual-machine:~$ ld -m elf_i386 hello.o -o hello
cmiski@vaibhv-virtual-machine:~$ ./hello
Hello, World
cmiski@vaibhv-virtual-machine:~$ gdb ./hello
GNU gdb (Ubuntu 12.1-0ubuntu1~22.04.2) 12.1
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This GDB was configured as "x86_64-linux-gnu".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<https://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ./hello...
(gdb)
(gdb) break _start
Breakpoint 1 at 0x8049000: file hello.asm, line 10.
(gdb) run
Starting program: /home/cmiski/hello

Breakpoint 1, _start () at hello.asm:10
10      mov eax, 4                ; write to file
(gdb) set disassembly-flavor intel
(gdb) disassemble _start
Dump of assembler code for function _start:
=> 0x8049000 <+0>:    mov     eax,0x4
      0x8049005 <+5>:    mov     ebx,0x1
      0x804900a <+10>:   mov     ecx,0x804a000
      0x804900f <+15>:   mov     edx,0xd
      0x8049014 <+20>:   int     0x80
      0x8049016 <+22>:   xor     ebx,ebx
      0x8049018 <+24>:   mov     eax,0x1
      0x804901d <+29>:   int     0x80
End of assembler dump.
(gdb) layout asm

```



```

Register group: general
eax      0x1      1      ecx      0x804a000      134520832      edx      0xd      13
ebx      0x0      0      esp      0xffffd2b0      0xffffd2b0      ebp      0x0      0x0
esi      0x0      0      edi      0x0      0      eip      0x804901d      0x804901d <_start+29>
eflags   0x246    [ PF ZF IF ]      cs      0x23      35      ss      0x2b      43
ds       0x2b     43      es      0x2b      43      fs       0x0      0
gs       0x0      0

0> 0x8049000 <_start> mov     eax,0x4
0x8049005 <_start+5> mov     ebx,0x1
0x804900a <_start+10> mov     ecx,0x804a000
0x804900f <_start+15> mov     edx,0xd
0x8049014 <_start+20> int     0x80
0x8049016 <_start+22> xor     ebx,ebx
0x8049018 <_start+24> mov     eax,0x1
> 0x804901d <_start+29> int     0x0
0x804901f add     BYTE PTR [eax],al
0x8049021 add     BYTE PTR [eax],al
0x8049023 add     BYTE PTR [eax],al
0x8049025 add     BYTE PTR [eax],al
0x8049027 add     BYTE PTR [eax],al
0x8049029 add     BYTE PTR [eax],al
0x804902b add     BYTE PTR [eax],al
0x804902d add     BYTE PTR [eax],al
0x804902f add     BYTE PTR [eax],al

native process 47625 In: start
(gdb) layout regs
(gdb) nexti
(gdb)

```

```

Register group: general
eax      0x1      1      ecx      0x804a000      134520832      edx      0xd      13
ebx      0x0      0      esp      0xffffd2b0      0xffffd2b0      ebp      0x0      0x0
esi      0x0      0      edi      0x0      0      eip      0x804901d      0x804901d <_start+29>
eflags   0x246    [ PF ZF IF ]      cs      0x23      35      ss      0x2b      43
ds       0x2b     43      es      0x2b      43      fs       0x0      0
gs       0x0      0

0x804901d <_start+29> int     0x80

native No process In:
(gdb) layout regs
(gdb) nexti
[Inferior 1 (process 47625) exited normally]
(gdb) quit

```

2: Print Name & Surname - Prints my name on the first line and my surname on the second line.

```
global _start

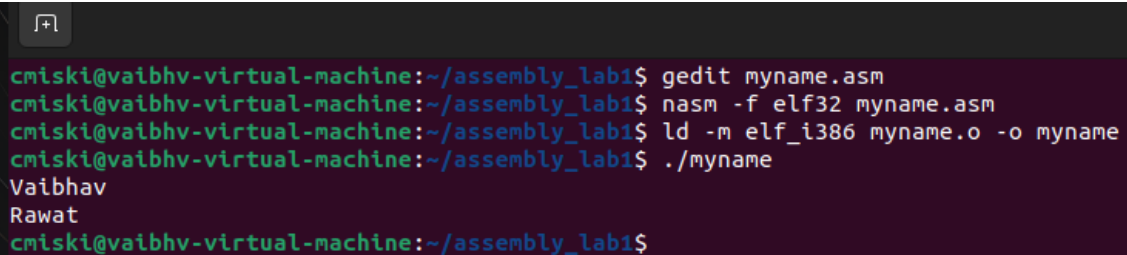
section .data
    name db "Adwait",10
    len_name equ $ - name
    surname db "Tagalpallewar",10
    len_surname equ $ - surname

section .text

_start:
    mov eax, 4
    mov ebx, 1
    mov ecx, name
    mov edx, len_name
    int 0x80

    mov eax, 4
    mov ebx, 1
    mov ecx, surname
    mov edx, len_surname
    int 0x80

    mov eax,1
    xor ebx, ebx
    int 0x80
```



```
cmiski@vaibhv-virtual-machine:~/assembly_lab1$ gedit myname.asm
cmiski@vaibhv-virtual-machine:~/assembly_lab1$ nasm -f elf32 myname.asm
cmiski@vaibhv-virtual-machine:~/assembly_lab1$ ld -m elf_i386 myname.o -o myname
cmiski@vaibhv-virtual-machine:~/assembly_lab1$ ./myname
Vaibhav
Rawat
cmiski@vaibhv-virtual-machine:~/assembly_lab1$
```

```
cmiski@vaibhv-virtual-machine:~/assembly_lab1$ nasm -f elf32 -g myname.asm -o myname.o
cmiski@vaibhv-virtual-machine:~/assembly_lab1$ ld -m elf_i386 myname.o -o myname
cmiski@vaibhv-virtual-machine:~/assembly_lab1$ ./myname
```

Vaibhav

Rawat

```
cmiski@vaibhv-virtual-machine:~/assembly_lab1$ gdb ./myname
```

GNU gdb (Ubuntu 12.1-0ubuntu1~22.04.2) 12.1

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Find the GDB manual and other documentation resources online at:

<<http://www.gnu.org/software/gdb/documentation/>>.

For help, type "help".

Type "apropos word" to search for commands related to "word"...

Reading symbols from ./myname...

(gdb)

(gdb) break _start

Breakpoint 1 at 0x08049000: file myname.asm, line 12.

(gdb) run

Starting program: /home/cmiski/assembly_lab1/myname

Breakpoint 1, _start () at myname.asm:12

12 mov eax, 4

(gdb) set disassembly-flavor intel

(gdb) disassemble _start

Dump of assembler code for function _start:

```
=> 0x08049000 <+0>: mov    eax,0x4
    0x08049005 <+5>: mov    ebx,0x1
    0x0804900a <+10>: mov    ecx,0x804a000
    0x0804900f <+15>: mov    edx,0x8
    0x08049014 <+20>: int    0x80
    0x08049016 <+22>: mov    eax,0x4
    0x0804901b <+27>: mov    ebx,0x1
    0x08049020 <+32>: mov    ecx,0x804a008
    0x08049025 <+37>: mov    edx,0x6
    0x0804902a <+42>: int    0x80
    0x0804902c <+44>: mov    eax,0x1
    0x08049031 <+49>: xor    ebx,ebx
    0x08049033 <+51>: int    0x80
```

End of assembler dump.

(gdb) layout asm

```

B+> 0x8049000 <_start>    mov     eax,0x4
0x8049005 <_start+5>    mov     ebx,0x1
0x804900a <_start+10>   mov     ecx,0x804a000
0x804900f <_start+15>   mov     edx,0x8
0x8049014 <_start+20>   int      0x80
0x8049016 <_start+22>   mov     eax,0x4
0x804901b <_start+27>   mov     ebx,0x1
0x8049020 <_start+32>   mov     ecx,0x804a008
0x8049025 <_start+37>   mov     edx,0x6
0x804902a <_start+42>   int      0x80
0x804902c <_start+44>   mov     eax,0x1
0x8049031 <_start+49>   xor      ebx,ebx
0x8049033 <_start+51>   int      0x80
0x8049035             add     BYTE PTR [eax],al
0x8049037             add     BYTE PTR [eax],al
0x8049039             add     BYTE PTR [eax],al
0x804903b             add     BYTE PTR [eax],al
0x804903d             add     BYTE PTR [eax],al
0x804903f             add     BYTE PTR [eax],al
0x8049041             add     BYTE PTR [eax],al
0x8049043             add     BYTE PTR [eax],al
0x8049045             add     BYTE PTR [eax],al
0x8049047             add     BYTE PTR [eax],al
0x8049049             add     BYTE PTR [eax],al
0x804904b             add     BYTE PTR [eax],al
0x804904d             add     BYTE PTR [eax],al
0x804904f             add     BYTE PTR [eax],al
0x8049051             add     BYTE PTR [eax],al
0x8049053             add     BYTE PTR [eax],al
0x8049055             add     BYTE PTR [eax],al
0x8049057             add     BYTE PTR [eax],al
0x8049059             add     BYTE PTR [eax],al
0x804905b             add     BYTE PTR [eax],al
0x804905d             add     BYTE PTR [eax],al

```

```

native process 48713 In: _start
(gdb)

```

[Register Values Unavailable]

```

B+> 0x8049000 <_start>    mov     eax,0x4
0x8049005 <_start+5>    mov     ebx,0x1
0x804900a <_start+10>   mov     ecx,0x804a000
0x804900f <_start+15>   mov     edx,0x8
0x8049014 <_start+20>   int      0x80
0x8049016 <_start+22>   mov     eax,0x4
0x804901b <_start+27>   mov     ebx,0x1
0x8049020 <_start+32>   mov     ecx,0x804a008
0x8049025 <_start+37>   mov     edx,0x6
0x804902a <_start+42>   int      0x80
0x804902c <_start+44>   mov     eax,0x1
0x8049031 <_start+49>   xor      ebx,ebx
0x8049033 <_start+51>   int      0x80
0x8049035             add     BYTE PTR [eax],al
0x8049037             add     BYTE PTR [eax],al
0x8049039             add     BYTE PTR [eax],al
0x804903b             add     BYTE PTR [eax],al

```

```

native process 48713 In: _start
(gdb) layout regs
(gdb)

```

```
--Register group: general
eax      0x1      1      ecx      0x804a008      134520840      edx      0x6      6
ebx      0x0      0      esp      0xffffd270      0xffffd270      ebp      0x0      0x0
esi      0x0      0      edi      0x0      0      eip      0x8049033      0x8049033 < start+51>
eflags   0x246     [ PF ZF IF ]      cs      0x23      35      ss      0x2b      43
ds       0x2b      43      es      0x2b      43      fs       0x0      0
gs       0x0      0

0x8049033 < start+51> int 0x80

Native No process in:
(gdb) layout regs
(gdb) nexti
[Inferior 1 (process 48713) exited normally]
(gdb) quit
```