

sys32200327@embedded: ~/sysprogramming

login as: sys32200327

sys32200327@220.149.236.4's password:

Welcome to Ubuntu 16.04.6 LTS (GNU/Linux 4.15.0-45-generic x86_64)

- * Documentation: <https://help.ubuntu.com>
- * Management: <https://landscape.canonical.com>
- * Support: <https://ubuntu.com/advantage>

251 packages can be updated.

194 updates are security updates.

New release '18.04.6 LTS' available.

Run 'do-release-upgrade' to upgrade to it.

Last login: Sun Oct 3 13:50:42 2021 from 112.187.240.124

sys32200327@embedded:~\$ ls

data_structure examples.desktop sysprogramming

sys32200327@embedded:~\$ cd sysprogramming/

sys32200327@embedded:~/sysprogramming\$ ls

sys32200327@embedded:~/sysprogramming\$ vi good_poem.c

sys32200327@embedded:~/sysprogramming\$ ls

good_poem.c

sys32200327@embedded:~/sysprogramming\$ ls -l

total 4

-rw-rw-r-- 1 sys32200327 sys32200327 465 10월 3 14:35 good_poem.c

sys32200327@embedded:~/sysprogramming\$ gcc -S good_poem.c

sys32200327@embedded:~/sysprogramming\$ ls

good_poem.c good_poem.s

sys32200327@embedded:~/sysprogramming\$ as -o good_poem.o good_poem.c

good_poem.c: Assembler messages:

good_poem.c:3: Error: unknown vector operation: `{'

good_poem.c:5: Error: invalid character '(' in mnemonic

good_poem.c:6: Error: no such instruction: `return 0'

good_poem.c:7: Error: junk at end of line, first unrecognized character is `}'

sys32200327@embedded:~/sysprogramming\$ as -o good_poem.o good_poem.s

good_poem.s: Assembler messages:

good_poem.s:17: Error: invalid instruction suffix for `push'

sys32200327@embedded:~/sysprogramming\$ as--32 -o good_poem.o good_poem.c

as--32: command not found

sys32200327@embedded:~/sysprogramming\$ as --32 -o good_poem.o good_poem.s

sys32200327@embedded:~/sysprogramming\$ ls

good_poem.c good_poem.o good_poem.s

sys32200327@embedded:~/sysprogramming\$ ls -l

total 12

-rw-rw-r-- 1 sys32200327 sys32200327 465 10월 3 14:35 good_poem.c

-rw-rw-r-- 1 sys32200327 sys32200327 1236 10월 3 14:37 good_poem.o

-rw-rw-r-- 1 sys32200327 sys32200327 1850 10월 3 14:35 good_poem.s

sys32200327@embedded:~/sysprogramming\$ gcc -o good_poem.out good_poem.o

sys32200327@embedded:~/sysprogramming\$ ls

good_poem.c good_poem.o good_poem.out good_poem.s

sys32200327@embedded: ~/sysprogramming

sys32200327@embedded:~/sysprogramming\$./good_poem.out

비밀번호

문현식

우리 집 비밀번호

□□□□□□□□

누르는 소리로 알아요

□□□□□□□□는 엄마

□□□□□□□□는 아빠

□□□□□□□□는 누나

할머니는

□□□□

□□□□

제일 천천히 눌러도

제일 빨리 나를 부르던

이제 기억으로만 남은 소리

보고 싶은

할머니

sys32200327@embedded:~/sysprogramming\$ vi good_poem.c

sys32200327@embedded:~/sysprogramming\$ gcc -o good_poem.out good_poem.c

sys32200327@embedded:~/sysprogramming\$./good_poem.out

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제일 빨리 나를 부르던

이제 기억으로만 남은 소리

보고 싶은

할머니

sys32200327@embedded:~/sysprogramming\$ gcc -g -o gdb_test.out good_poem.c

sys32200327@embedded:~/sysprogramming\$ ls

gdb_test.out good_poem.c good_poem.o **good_poem.out** good_poem.s

sys32200327@embedded:~/sysprogramming\$./gdb_test.out

비밀번호

문현식

우리 집 비밀번호

□□□□□□□□

누르는 소리로 알아요

□□□□□□□□는 엄마

sys32200327@embedded: ~/sysprogramming

```
할 머 니
sys32200327@embedded:~/sysprogramming$ gdb gdb_test.out
GNU gdb (Ubuntu 7.11.1-0ubuntu1~16.5) 7.11.1
Copyright (C) 2016 Free Software Foundation, Inc.
License GPLv3+: GNU GPL version 3 or later <http://gnu.org/licenses/gpl.html>
This is free software: you are free to change and redistribute it.
There is NO WARRANTY, to the extent permitted by law.  Type "show copying"
and "show warranty" for details.
This GDB was configured as "x86_64-linux-gnu".
Type "show configuration" for configuration details.
For bug reporting instructions, please see:
<http://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 gdb_test.out...done.
(gdb)
(gdb) run
Starting program: /home/3-class/sys32200327/sysprogramming/gdb_test.out
비 밀 번 호
    문 현 식

우리 집 비 밀 번 호
□ □ □ □ □ □ □ □
누 르 는 소 리 로 알 아 요
□ □ □ □ □ □ □ □ 는 엄 마
□ □ □ □ □ □ □ □ 는 아 빠
□ □ □ □ □ □ □ □ 는 누 나
할 머 니 는
□ □ □ □ □
□ □ □ □

제 일 천 천 히 놀 러 도
제 일 빨 리 나 를 부 르 던
이 제 기 억 으 로 만 남 은 소 리
보 고 싶 은
할 머 니
[Inferior 1 (process 32378) exited normally]
(gdb) Quit
(gdb) list
1      #include <stdio.h>
2
3      int main() {
4          //printf("Hello World ");
5          printf("비 밀 번 호 \n\t문 현 식 \n\n우리 집 비 밀 번 호 \n□ □ □ □ □ □ □ □ \n누 르 는 소 리 로 알 아 요 \n
□ □ \n□ □ □ □ \n\n제 일 천 천 히 놀 러 도 \n제 일 빨 리 나 를 부 르 던 \n이 제 기 억 으 로 만 남 은 소 리 \n보 고 싶 은 \n
6          return 0;
7      }
(gdb) quit
```

sys32200327@embedded: ~/sysprogramming

```
sys32200327@embedded:~/sysprogramming$ ls -l
total 28
-rwxrwxr-x 1 sys32200327 sys32200327 6088 10월  3 14:47 gdb_test.out
-rw-rw-r-- 1 sys32200327 sys32200327  469 10월  3 14:40 good_poem.c
-rw-rw-r-- 1 sys32200327 sys32200327 1236 10월  3 14:37 good_poem.o
-rwxrwxr-x 1 sys32200327 sys32200327 5040 10월  3 14:40 good_poem.out
-rw-rw-r-- 1 sys32200327 sys32200327 1850 10월  3 14:35 good_poem.s
sys32200327@embedded:~/sysprogramming$ ls -l | sort
-rw-rw-r-- 1 sys32200327 sys32200327 1236 10월  3 14:37 good_poem.o
-rw-rw-r-- 1 sys32200327 sys32200327 1850 10월  3 14:35 good_poem.s
-rw-rw-r-- 1 sys32200327 sys32200327  469 10월  3 14:40 good_poem.c
-rwxrwxr-x 1 sys32200327 sys32200327 5040 10월  3 14:40 good_poem.out
-rwxrwxr-x 1 sys32200327 sys32200327 6088 10월  3 14:47 gdb_test.out
total 28
sys32200327@embedded:~/sysprogramming$ ls -l | sort -k5n
total 28
-rw-rw-r-- 1 sys32200327 sys32200327  469 10월  3 14:40 good_poem.c
-rw-rw-r-- 1 sys32200327 sys32200327 1236 10월  3 14:37 good_poem.o
-rw-rw-r-- 1 sys32200327 sys32200327 1850 10월  3 14:35 good_poem.s
-rwxrwxr-x 1 sys32200327 sys32200327 5040 10월  3 14:40 good_poem.out
-rwxrwxr-x 1 sys32200327 sys32200327 6088 10월  3 14:47 gdb_test.out
sys32200327@embedded:~/sysprogramming$ good_poem.c > good_poem.txt
good_poem.c: command not found
sys32200327@embedded:~/sysprogramming$ cat good_poem.c > good_poem.txt
sys32200327@embedded:~/sysprogramming$ ls
gdb_test.out good_poem.c good_poem.o good_poem.out good_poem.s good_poem.txt
sys32200327@embedded:~/sysprogramming$ cat good_poem.c>good_poem.txt
sys32200327@embedded:~/sysprogramming$ ls
gdb_test.out good_poem.c good_poem.o good_poem.out good_poem.s good_poem.txt
sys32200327@embedded:~/sysprogramming$ grep -o □ good_poem.txt | wc -l
35
sys32200327@embedded:~/sysprogramming$ vi good_poem.txt
sys32200327@embedded:~/sysprogramming$ hexdump good_poem.out
00000000 457f 464c 0101 0001 0000 0000 0000 0000
00000010 0002 0003 0001 0000 82e0 0804 0034 0000
00000020 0f00 0000 0000 0000 0034 0020 0008 0028
00000030 001e 001b 0006 0000 0034 0000 8034 0804
00000040 8034 0804 0100 0000 0100 0000 0005 0000
00000050 0004 0000 0003 0000 0134 0000 8134 0804
00000060 8134 0804 0013 0000 0013 0000 0004 0000
00000070 0001 0000 0001 0000 0000 0000 8000 0804
00000080 8000 0804 0684 0000 0684 0000 0005 0000
00000090 1000 0000 0001 0000 0684 0000 9684 0804
000000a0 9684 0804 0100 0000 0104 0000 0006 0000
000000b0 1000 0000 0002 0000 0698 0000 9698 0804
000000c0 9698 0804 00c8 0000 00c8 0000 0006 0000
000000d0 0004 0000 0004 0000 0148 0000 8148 0804
000000e0 8148 0804 0020 0000 0020 0000 0004 0000
000000f0 0004 0000 e550 6474 05c0 0000 85c0 0804
00001000 85c0 0804 0024 0000 0024 0000 0004 0000
```



```
sys32200327@embedded:~/sysprogramming$ ps
```

```
PID TTY          TIME CMD
31951 pts/4        00:00:00 bash
```

```
32589 pts/4      00:00:00 ps
```

```
sys32200327@embedded:~/sysprogramming$ more good_poem.c
```

```
#include <stdio.h>
```

```
int main() {
```

```
//printf("Hello World ");
```

```
printf("비밀 번호 \n\t문현식 \n\n우리 집 비밀번호 \n□□□□□□ \n누르는 소리로 알아요 \n□□□ □□
```

```

    □ □ □ \n제 일 천 천 히 놀 러 도 \n제 일 빨 리 나 를 부 르 던 \n이 제 기 억 으 로 만 남 은 소 리 \n보 고 싶 은 \n할 머 니 \n"
    return 0;

```

}

```
sys32200327@embedded:~/sysprogramming$ cat good_poem.c
```

```
#include <stdio.h>
```

```
int main() {
```

```
//printf("Hello World ");
```

```
printf("비밀번호 \n\t문현식 \n\n우리 집 비밀번호 \n□□□□□□ \n누르는 소리로 알아요 \n□□□ □□
```

```

    □ □ □ \n\n제 일 천 천 히 놀 러 도 \n제 일 빨 리 나 를 부 르 드 \n이 제 기 억 으 로 만 남 은 소 리 \n보 고 싶 은 \n할 머 니 \n"
    return 0;

```

}

```
sys32200327@embedded:~/sysprogramming$ objdump good poem.o
```

```
Usage: objdump <option(s)> <file(s)>
```

```
Display information from object <file(s)>.
```

At least one of the following switches must be given:

```

-a, --archive-headers    Display archive header information
-f, --file-headers       Display the contents of the overall file header
-p, --private-headers    Display object format specific file header contents
-P, --private=OPT,OPT... Display object format specific contents
-h, --[section-]headers  Display the contents of the section headers
-x, --all-headers         Display the contents of all headers
-d, --disassemble        Display assembler contents of executable sections
-D, --disassemble-all   Display assembler contents of all sections
-S, --source              Intermix source code with disassembly
-s, --full-contents       Display the full contents of all sections requested
-g, --debugging           Display debug information in object file
-e, --debugging-tags      Display debug information using ctags style
-G, --stabs               Display (in raw form) any STABS info in the file

```

`-W[lLaprmfFsoRt]` or

```
--dwarf[=rawline,=dcode,=info,=abbrev,=pubnames,=aranges,=macro,=frames,  
=frames-interp,=str,=loc,=Ranges,=pubtypes,  
=gdb_index,=trace_info,=trace_abbrev,=trace_aranges,  
=addr,=cu_index]
```

```
Display DWARF info in the file
```

```
-t, --syms      Display the contents of the symbol table(s)
```

```
-T, --dynamic-syms    Display the contents of the dynamic symbol table
```

```
-r, --reloc      Display the relocation entries in the file
```

```
@<file>      Read options from <file>
```

sys32200327@embedded: ~/sysprogramming

sys32200327@embedded:~/sysprogramming\$ objdump -d good_poem.o

good_poem.o: file format elf32-i386

Disassembly of section .text:

00000000 <main>:

```

0: 55          push    %ebp
1: 89 e5       mov     %esp,%ebp
3: 83 ec 08    sub     $0x8,%esp
6: 83 e4 f0    and     $0xffffffff0,%esp
9: b8 00 00 00 00 mov     $0x0,%eax
e: 83 c0 0f    add     $0xf,%eax
11: 83 c0 0f    add     $0xf,%eax
14: c1 e8 04    shr     $0x4,%eax
17: c1 e0 04    shl     $0x4,%eax
1a: 29 c4       sub     %eax,%esp
1c: c7 04 24 00 00 00 00 movl    $0x0, (%esp)
23: e8 fc ff ff ff call    24 <main+0x24>
28: b8 00 00 00 00 mov     $0x0,%eax
2d: c9         leave  %eax
2e: c3         ret
```

sys32200327@embedded:~/sysprogramming\$ ls

gdb test.out good_poem.c good_poem.o good_poem.out good_poem.s good_poem.txt

sys32200327@embedded:~/sysprogramming\$ good_poem.s

good_poem.s: command not found

sys32200327@embedded:~/sysprogramming\$ cat good_poem.s

```

.file "good_poem.c"
.section .rodata
.align 4
.LC0:
.ascii "\353\271\204\353\260\200\353\262\210\355\230\270\n\t\353\254"
.ascii "\270\355\230\204\354\213\235\n\354\232\260\353\246\254 \354\247"
.ascii "\221 \353\271\204\353\260\200\353\262\210\355\230\270\n\343\205"
.ascii "\201\343\205\201\343\205\201\343\205\201\343\205\201\343\205"
.ascii "\201\343\205\201\n\353\210\204\353\245\264\353\212\224 \354\206"
.ascii "\214\353\246\254\353\241\234 \354\225\214\354\225\204\354\232"
.ascii "\224\n\343\205\201\343\205\201"
.string "\343\205\201 \343\205\201\343\205\201\343\205\201\343\205\201\353\212\22
01\343\205\201\353\212\224 \354\225\204\353\271\240\n\343\205\201\343\205\201\343\205\201
\353\250\270\353\213\210\353\212\224\n\343\205\201\343\205\201 \343\205\201 \343\205\201\
\210 \353\210\214\353\237\254\353\217\204\n\354\240\234\354\235\274 \353\271\250\353\246\
\260\354\226\265\354\234\274\353\241\234\353\247\214 \353\202\250\354\235\200 \354\206\21
3\210"
.text
.globl main
.type main, @function
main:
pushl %ebp
```

sys32200327@embedded: ~/sysprogramming

```
2e:      c3                ret
sys32200327@embedded:~/sysprogramming$ ls
gdb_test.out  good_poem.c  good_poem.o  good_poem.out  good_poem.s  good_poem.txt
sys32200327@embedded:~/sysprogramming$ good_poem.s
good_poem.s: command not found
sys32200327@embedded:~/sysprogramming$ cat good_poem.s
        .file      "good_poem.c"
        .section   .rodata
        .align 4
.LC0:
        .ascii    "\353\271\204\353\260\200\353\262\210\355\230\270\n\t\353\254"
        .ascii    "\270\355\230\204\354\213\235\n\354\232\260\353\246\254 \354\247"
        .ascii    "\221 \353\271\204\353\260\200\353\262\210\355\230\270\n\343\205"
        .ascii    "\201\343\205\201\343\205\201\343\205\201\343\205\201\343\205"
        .ascii    "\201\343\205\201\n\353\210\204\353\245\264\353\212\224 \354\206"
        .ascii    "\214\353\246\254\353\241\234 \354\225\214\354\225\204\354\232"
        .ascii    "\224\n\343\205\201\343\205\201"
        .string   "\343\205\201 \343\205\201\343\205\201\343\205\201\343\205\201\353\212\224 \354\225\204\353\212\224 \354\225\204\353\271\240\n\343\205\201\343\205\201\343\205\201\343\205\201\343\205\201\343\205\201\n\343\205\210 \353\210\214\353\237\254\353\217\204\n\354\240\234\354\235\274 \353\271\250\353\246\254 \353\260\354\226\265\354\234\274\353\241\234\353\247\214 \353\202\250\354\235\200 \354\206\214\353\246\3210"
        .text
.globl main
        .type      main, @function
main:
        pushl      %ebp
        movl       %esp, %ebp
        subl       $8, %esp
        andl       $-16, %esp
        movl       $0, %eax
        addl       $15, %eax
        addl       $15, %eax
        shrl       $4, %eax
        sall       $4, %eax
        subl       %eax, %esp
        movl       $.LC0, (%esp)
        call       printf
        movl       $0, %eax
        leave
        ret
        .size      main, .-main
        .section   .note.GNU-stack,"",@progbits
        .ident     "GCC: (GNU) 3.4.6 (Ubuntu 3.4.6-6ubuntu3)"
sys32200327@embedded:~/sysprogramming$ whoami
sys32200327
sys32200327@embedded:~/sysprogramming$ date
2021. 10. 03. (일) 15:02:25 KST
sys32200327@embedded:~/sysprogramming$
```