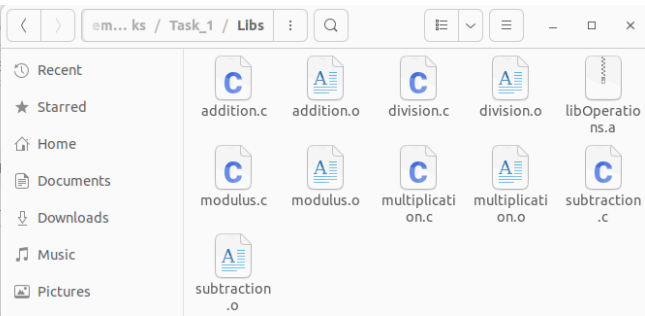
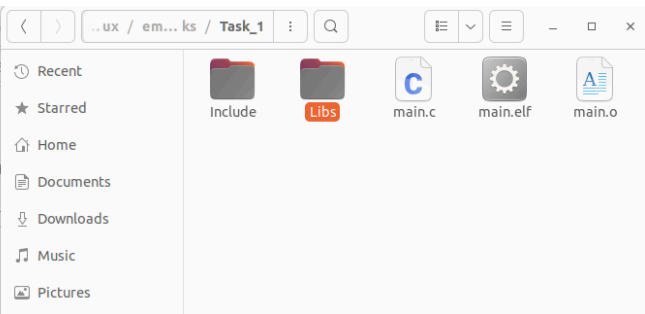


## Static Library

```
nada@nadakazamel: ~/ITI/EmbeddedLinux/...  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ ls  
addition.c division.c modulus.c multiplication.c subtraction.c  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ gcc  
-c *.c  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ ls  
*.o  
addition.o division.o modulus.o multiplication.o subtraction.o  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ ar  
-r cs libOperations.a *.o  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$
```

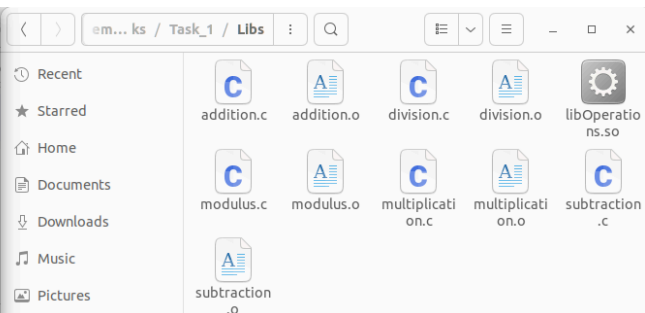


```
nada@nadakazamel: ~/ITI/EmbeddedLinux/...  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ ls  
Include Libs main.c  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ gcc -c m  
ain.c -I ./Include/  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ gcc -sta  
tic -o main.elf main.o -L ./Libs/ -lOperations  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ ./main.e  
lf  
a + b = 44.000000  
a - b = 0.000000  
a / b = 1.000000  
a mod b = 0  
a * b = 484.000000  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$
```

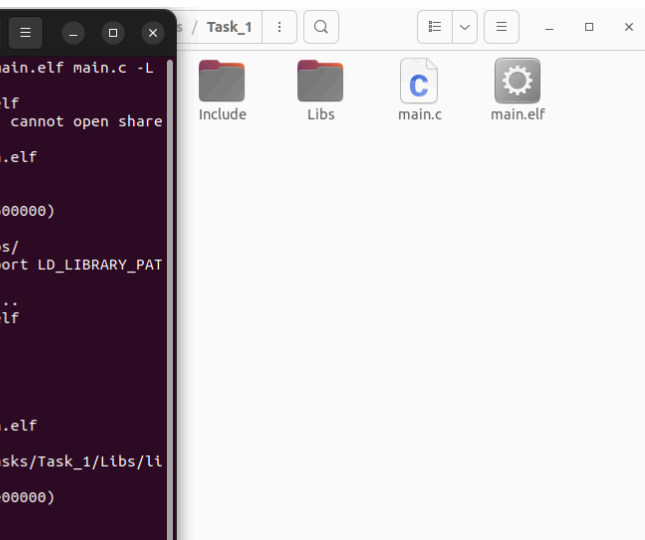


## Dynamic Library

```
nada@nadakazamel: ~/ITI/EmbeddedLinux/...  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ ls  
addition.c division.c modulus.c multiplication.c subtraction.c  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ gcc  
-c -g -Wall -fPIC *.c  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ gcc  
-shared -o libOperations.so *.o  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$
```



```
nada@nadakazamel: ~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ gcc -o main.elf main.c -L  
./Libs/ -lOperations -I ./Include/  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ ./main.elf  
./main.elf: error while loading shared libraries: libOperations.so: cannot open share  
d object file: No such file or directory  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ ldd main.elf  
linux-vdso.so.1 (0x00007ffd723db000)  
libOperations.so => not found  
libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007fa1e7600000)  
/lib64/ld-linux-x86-64.so.2 (0x00007fa1e7964000)  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ cd ./Libs/  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ export LD_LIBRARY_PAT  
H=$(pwd)  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs$ cd ..  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ ./main.elf  
a + b = 44.000000  
a - b = 0.000000  
a / b = 1.000000  
a mod b = 0  
a * b = 484.000000  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$ ldd main.elf  
linux-vdso.so.1 (0x00007ffec17eb000)  
libOperations.so => /home/nada/ITI/EmbeddedLinux/emblinuxTasks/Task_1/Libs/li  
bOperations.so (0x00007f76c01f7000)  
libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007f76bfe00000)  
/lib64/ld-linux-x86-64.so.2 (0x00007f76c0203000)  
nada@nadakazamel:~/ITI/EmbeddedLinux/emblinuxTasks/Task_1$
```



## 1) Ldd command

```
nada@nadakazamel: ~/ITI/EmbeddedLinux/embLinuxTasks/Task_1
nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$ ldd mainS.elf
not a dynamic executable
nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$ ldd main.elf
linux-vdso.so.1 (0x00007ffffb22d4000)
libOperations.so => /home/nada/ITI/EmbeddedLinux/embLinuxTasks/Task_1/Libs/li
bOperations.so (0x00007fb93199e000)
libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007fb931600000)
/lib64/ld-linux-x86-64.so.2 (0x00007fb9319aa000)
nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$
```

## 2) File command

```
nada@nadakazamel: ~/ITI/EmbeddedLinux/embLinuxTasks/Task_1
nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$ file mainS.elf
mainS.elf: ELF 64-bit LSB executable, x86-64, version 1 (GNU/Linux), statically linked
, BuildID[sha1]=afc8e2a210f64c1d59bf91c9a4f24c7682eb6a34, for GNU/Linux 3.2.0, with de
bug_info, not stripped
nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$ file main.elf
main.elf: ELF 64-bit LSB pie executable, x86-64, version 1 (SYSV), dynamically linked,
interpreter /lib64/ld-linux-x86-64.so.2, BuildID[sha1]=6b3816b6bfe2e5ead5ee323aa66e9d
8d618f8e4f, for GNU/Linux 3.2.0, not stripped
nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$
```

### 3) Objdump command

```
nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$ objdump -t mainS.elf

mainS.elf:      file format elf64-x86-64

SYMBOL TABLE:
0000000000000000 l      df *ABS* 0000000000000000 crt1.o
000000000004002c4 l      O  .note.ABI-tag 0000000000000020 __abi_tag
0000000000000000 l      df *ABS* 0000000000000000 assert.o
00000000000498570 l      O  .rodata      0000000000000013 errstr.o
000000000004011c0 l      F  .text 000000000000000f __assert_fail_base.cold
0000000000000000 l      df *ABS* 0000000000000000 loadmsgcat.o
000000000004c7cb0 l      O  .bss 0000000000000010 lock.o
000000000004011cf l      F  .text 0000000000000005 _nl_load_domain.cold
0000000000000000 l      df *ABS* 0000000000000000 abort.o
```

“Small screenshot”

```
nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$ objdump -T main.elf

main.elf:      file format elf64-x86-64

DYNAMIC SYMBOL TABLE:
0000000000000000 DF *UND* 0000000000000000 (GLIBC_2.34) __libc_start_main
0000000000000000 w D *UND* 0000000000000000 Base      _ITM_deregisterTMCloneTable
0000000000000000 DF *UND* 0000000000000000 Base      add
0000000000000000 DF *UND* 0000000000000000 Base      multiply
0000000000000000 DF *UND* 0000000000000000 (GLIBC_2.2.5) printf
0000000000000000 DF *UND* 0000000000000000 Base      modulus
0000000000000000 DF *UND* 0000000000000000 Base      division
0000000000000000 w D *UND* 0000000000000000 Base      __gmon_start__
0000000000000000 DF *UND* 0000000000000000 Base      subtract
0000000000000000 w D *UND* 0000000000000000 Base      _ITM_registerTMCloneTable
0000000000000000 w DF *UND* 0000000000000000 (GLIBC_2.2.5) __cxa_finalize

nada@nadakazamel:~/ITI/EmbeddedLinux/embLinuxTasks/Task_1$
```