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matanbn@matanbn-VirtualBox: ~/Dropbox/Ariel University/...  
matanbn@matanbn-VirtualBox:~/Dropbox/Ariel University/myGit/operating_systems/Ex1/task_a$ make clean  
rm -f *.o *.a *.so *.exe main1_1 main1_2 main1_3  
matanbn@matanbn-VirtualBox:~/Dropbox/Ariel University/myGit/operating_systems/Ex1/task_a$ make  
gcc -Wall -g main1_1.c hello_ariel.c -o main1_1  
gcc -shared hello_ariel.c -fPIC -o libHello.so  
export LD_LIBRARY_PATH=.  
gcc -Wall -g main1_2.c -L. -l Hello -o main1_2  
gcc -Wall -g main1_3.c -fPIC -ldl -o main1_3  
matanbn@matanbn-VirtualBox:~/Dropbox/Ariel University/myGit/operating_systems/Ex1/task_a$ ldd main1_2  
linux-vdso.so.1 (0x00007ffea63bf000)  
libHello.so => not found  
libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007fad34328000)  
/lib64/ld-linux-x86-64.so.2 (0x00007fad34537000)
```

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matanbn@matanbn-VirtualBox:~/Dropbox/Ariel University/myGit/operating_systems/Ex1/task_a$ ltrace ./main1_2  
Hello Ariel  
+++ exited (status 0) +++
```

```
matanbn@matanbn-VirtualBox: ~/Dropbox/Ariel University/...  
matanbn@matanbn-VirtualBox:~/Dropbox/Ariel University/myGit/operating_systems/Ex1/task_a$ file libHello.so  
libHello.so: ELF 64-bit LSB shared object, x86-64, version 1 (SYSV), dynamically linked, BuildID[sha1]=722ae05f122409b8894415c37be3ec116d1995fa, not stripped  
matanbn@matanbn-VirtualBox:~/Dropbox/Ariel University/myGit/operating_systems/Ex1/task_a$
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```
matanbn@matanbn-VirtualBox: ~/Dropbox/Ariel University/...  
1/task_a$ nm libHello.so  
0000000000004028 b completed.8060  
w __cxa_finalize@@GLIBC_2.2.5  
0000000000001060 t deregister_tm_clones  
00000000000010d0 t __do_global_dtors_aux  
0000000000003e18 d __do_global_dtors_aux_fini_array_entry  
0000000000004020 d __dso_handle  
0000000000003e20 d _DYNAMIC  
0000000000001130 t _fini  
0000000000001110 t frame_dummy  
0000000000003e10 d __frame_dummy_init_array_entry  
00000000000020c8 r __FRAME_END__  
0000000000004000 d _GLOBAL_OFFSET_TABLE_  
w __gmon_start__  
000000000000200c r __GNU_EH_FRAME_HDR  
0000000000001000 t _init  
w _ITM_deregisterTMCloneTable  
w _ITM_registerTMCloneTable  
0000000000001119 T printGreeting  
U puts@@GLIBC_2.2.5  
0000000000001090 t register_tm_clones  
0000000000004028 d __TMC_END__  
matanbn@matanbn-VirtualBox:~/Dropbox/Ariel University/myGit/operating_systems/Ex1/task_a$
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mmap(NULL, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7eff53c39000
getcwd("/home/matanbn/Dropbox/Ariel University/myGit/operating_systems/Ex1/task_a", 128) = 74
mmap(NULL, 16432, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7eff53c34000
mmap(0x7eff53c35000, 4096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1000) = 0x7eff53c35000
mmap(0x7eff53c36000, 4096, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) = 0x7eff53c36000
mmap(0x7eff53c37000, 8192, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x2000) = 0x7eff53c37000
close(3) = 0
openat(AT_FDCWD, "./tls/x86_64/x86_64/libc.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "./tls/x86_64/libc.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "./tls/x86_64/libc.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "./tls/libc.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "./x86_64/x86_64/libc.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "./x86_64/libc.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "./x86_64/libc.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "./libc.so.6", O_RDONLY|O_CLOEXEC) = -1 ENOENT (No such file or directory)
openat(AT_FDCWD, "/etc/ld.so.cache", O_RDONLY|O_CLOEXEC) = 3
fstat(3, {st_mode=S_IFREG|0644, st_size=88339, ...}) = 0
mmap(NULL, 88339, PROT_READ, MAP_PRIVATE, 3, 0) = 0x7eff53c1e000
close(3) = 0
openat(AT_FDCWD, "/lib/x86_64-linux-gnu/libc.so.6", O_RDONLY|O_CLOEXEC) = 3
read(3, "\177ELF\2\1\1\3\0\0\0\0\0\0\0\3\0\0\0\1\0\0\0\360q\2\0\0\0\0"... , 832) = 832
pread64(3, "\6\0\0\0\4\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0"... , 784, 64) = 784
pread64(3, "\4\0\0\0\20\0\0\0\5\0\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0\0"... , 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0\0GNU\0\t\233\222%\274\260\320\31\331\326\10\204\276X>\263"... , 68, 880) = 68
fstat(3, {st_mode=S_IFREG|0755, st_size=2029224, ...}) = 0
pread64(3, "\6\0\0\0\4\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0\0"... , 784, 64) = 784
pread64(3, "\4\0\0\0\20\0\0\0\5\0\0\0\0GNU\0\2\0\0\300\4\0\0\0\3\0\0\0\0\0\0\0\0"... , 32, 848) = 32
pread64(3, "\4\0\0\0\24\0\0\0\3\0\0\0\0GNU\0\t\233\222%\274\260\320\31\331\326\10\204\276X>\263"... , 68, 880) = 68
mmap(NULL, 2036952, PROT_READ, MAP_PRIVATE|MAP_DENYWRITE, 3, 0) = 0x7eff53a2c000
mprotect(0x7eff53a51000, 1847296, PROT_NONE) = 0
mmap(0x7eff53a51000, 1540096, PROT_READ|PROT_EXEC, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x25000) = 0x7eff53a51000
mmap(0x7eff53bc9000, 303104, PROT_READ, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x19d000) = 0x7eff53bc9000
mmap(0x7eff53c14000, 24576, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_DENYWRITE, 3, 0x1e7000) = 0x7eff53c14000
mmap(0x7eff53c1a000, 13528, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_FIXED|MAP_ANONYMOUS, -1, 0) = 0x7eff53c1a000
close(3) = 0
mmap(NULL, 12288, PROT_READ|PROT_WRITE, MAP_PRIVATE|MAP_ANONYMOUS, -1, 0) = 0x7eff53a29000
arch_prctl(ARCH_SET_FS, 0x7eff53a29740) = 0
mprotect(0x7eff53c14000, 12288, PROT_READ) = 0
mprotect(0x7eff53c37000, 4096, PROT_READ) = 0
mprotect(0x5650ef5ca000, 4096, PROT_READ) = 0
mprotect(0x7eff53c68000, 4096, PROT_READ) = 0
munmap(0x7eff53c1e000, 88339) = 0
fstat(1, {st_mode=S_IFCHR|0620, st_rdev=makedev(0x88, 0x1), ...}) = 0
brk(NULL) = 0x5650f12ee000
brk(0x5650f130f000) = 0x5650f130f000
write(1, "Hello Ariel\n", 12Hello Ariel
) = 12
exit_group(0) = 0

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