

File

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL 1: bash
user@user-VirtualBox:~/operating systems$ file libHello.so
libHello.so: ELF 64-bit LSB shared object, x86-64, version 1 (SYSV), dynamically linked, BuildID[sha1]=0fcc53c0fecf3e
e77a225b3be0dead9cd880dde9, not stripped
user@user-VirtualBox:~/operating systems$

```

מראה מידע בסיסי על הקובץ, האם הוא ניתן להרצה או שהוא ספריה, גרסה ועוד..

Nm

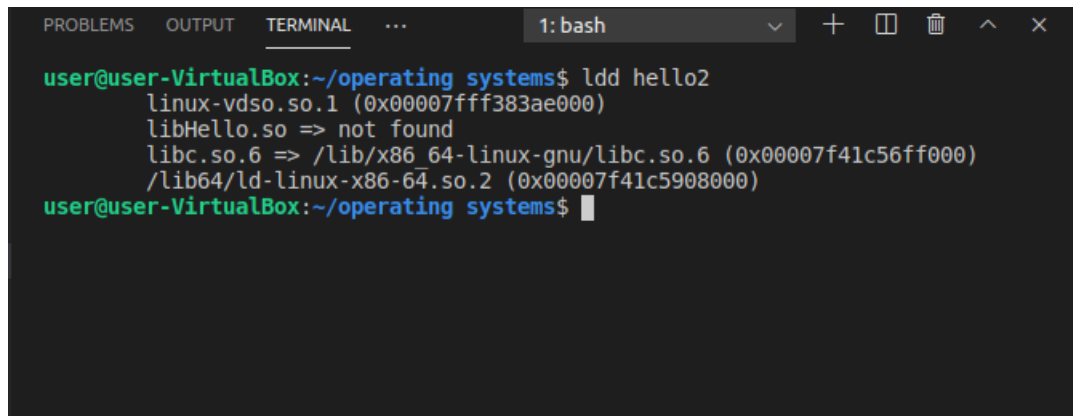
```

PROBLEMS OUTPUT TERMINAL ... 1: bash
user@user-VirtualBox:~/operating systems$ nm libHello.so
00000000000004028 b completed.8060
                w _cxa_finalize@@GLIBC_2.2.5
00000000000001060 t deregister_tm_clones
000000000000010d0 t __do_global_ctors_aux
00000000000003e18 d __do_global_ctors_aux_fini_array_entry
00000000000004020 d __dso_handle
00000000000003e20 d DYNAMIC
00000000000001138 t fini
00000000000001110 t frame_dummy
00000000000003e10 d __frame_dummy_init_array_entry
000000000000020c8 r FRAME_END
00000000000004000 d GLOBAL_OFFSET_TABLE
                w _gmon_start
0000000000000200c r GNU_EH_FRAME_HDR
00000000000001119 T hello_ariel
00000000000001000 t init
                w _ITM_deregisterTMCloneTable
                w _ITM_registerTMCloneTable
                U printf@@GLIBC_2.2.5
00000000000001090 t register_tm_clones
00000000000004028 d __TMC_END
user@user-VirtualBox:~/operating systems$

```

מראה אלו סמלים יש

Ldd

A terminal window titled '1: bash' showing the command 'ldd hello2' and its output. The output lists shared libraries: 'linux-vdso.so.1 (0x00007fff383ae000)', 'libHello.so => not found', 'libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007f41c56ff000)', and '/lib64/ld-linux-x86-64.so.2 (0x00007f41c5908000)'. The prompt is 'user@user-VirtualBox:~/operating systems\$'.

מציג את התלויות של קובץ ההרצה . בתמונה- מציג את התלויות של hello2

Ltrace

מציג את הקריאות של הספריה ..יכול לשמש לדיבוג

strace

[illegible]

מציג את הקריאות של המערכת

Processes-tools

Echo

```
user@user-VirtualBox:~/operating systems/task1/part_B$ echo stam  
stam  
user@user-VirtualBox:~/operating systems/task1/part_B$
```

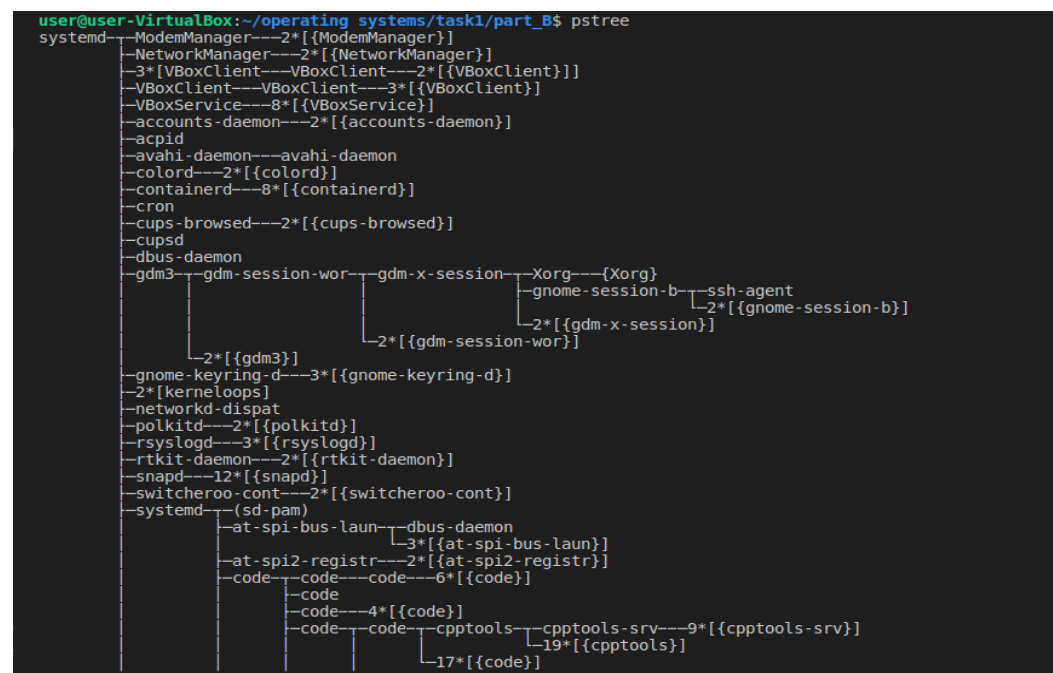
Redirect output

Ps -xj

```
user@user-VirtualBox:~/operating_systems/task1/part_B$ ps -xj
```

PPID	PID	PGID	SID	TTY	TPGID	STAT	UID	TIME	COMMAND
1	1395	1395	1395	?	-1	Ss	1000	0:01	/lib/systemd/systemd -
1395	1396	1395	1395	?	-1	S	1000	0:00	(sd-pam)
1395	1401	1401	1401	?	-1	S<sl	1000	0:00	/usr/bin/pulseaudio --
1395	1403	1403	1403	?	-1	SnsL	1000	0:00	/usr/libexec/tracker-m
1	1406	1405	1405	?	-1	Sl	1000	0:00	/usr/bin/gnome-keyring
1386	1411	1411	1411	tty2	1411	Ssl+	1000	0:00	/usr/lib/gdm3/gdm-x-se
1395	1413	1413	1413	?	-1	Ss	1000	0:01	/usr/bin/dbus-daemon -
1411	1415	1411	1411	tty2	1411	RL+	1000	2:30	/usr/lib/xorg/Xorg vt2
1395	1419	1419	1419	?	-1	Ssl	1000	0:00	/usr/libexec/gvfsd
1395	1435	1419	1419	?	-1	Sl	1000	0:00	/usr/libexec/gvfsd-fus
1395	1446	1446	1446	?	-1	Ssl	1000	0:00	/usr/libexec/gvfs-udis
1395	1453	1453	1453	?	-1	Ssl	1000	0:00	/usr/libexec/gvfs-gpho
1395	1457	1457	1457	?	-1	Ssl	1000	0:00	/usr/libexec/gvfs-goa-
1395	1461	1413	1413	?	-1	Sl	1000	0:00	/usr/libexec/goa-daemo
1411	1465	1411	1411	tty2	1411	Sl+	1000	0:00	/usr/libexec/gnome-ses
1395	1483	1413	1413	?	-1	Sl	1000	0:00	/usr/libexec/gnome-ident
1395	1498	1498	1498	?	-1	Ssl	1000	0:01	/usr/libexec/gvfs-afc-
1395	1516	1516	1516	?	-1	Ssl	1000	0:00	/usr/libexec/gvfs-mtp-
1	1560	1556	1556	?	-1	S	1000	0:00	/usr/bin/VBoxClient --
1560	1562	1556	1556	?	-1	Sl	1000	0:00	/usr/bin/VBoxClient --
1	1570	1567	1567	?	-1	S	1000	0:00	/usr/bin/VBoxClient --
1570	1572	1567	1567	?	-1	Sl	1000	0:00	/usr/bin/VBoxClient --
1	1577	1573	1573	?	-1	S	1000	0:00	/usr/bin/VBoxClient --
1577	1579	1573	1573	?	-1	Sl	1000	1:17	/usr/bin/VBoxClient --
1	1584	1580	1580	?	-1	S	1000	0:00	/usr/bin/VBoxClient --
1584	1586	1580	1580	?	-1	Sl	1000	0:00	/usr/bin/VBoxClient --
1465	1587	1587	1587	?	-1	Ss	1000	0:00	/usr/bin/ssh-agent /us
1395	1609	1609	1609	?	-1	Ssl	1000	0:00	/usr/libexec/at-spi-bu
1609	1611	1609	1609	?	-1	S	1000	0:00	/usr/bin/dbus-daemon

Pstree



צילומי מסך של pstree בחלק של main4

<pre>user@user-VirtualBox:~/operating systems/task1/part_B\$ echo \$\$ 4457 user@user-VirtualBox:~/operating systems/task1/part_B\$./main4 main p 4795 daemon pid 4799 pid of child1 = 4800 pid of child2 = 4801 pid of parent = 4797 ----- hello from parent starting daemon hello from child hello from friend child</pre>	<pre>user@user-VirtualBox:~/operating systems/task1/part_B\$ pstree 4457 bash---main4---main2_1---main2_1---friend ---3*[main2_2] ---main2_3---main2_3 user@user-VirtualBox:~/operating systems/task1/part_B\$</pre>
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צילום מסך של pstree של main2_3

<pre>user@user-VirtualBox:~/operating systems/task1/part_B\$ echo \$\$ 4863 user@user-VirtualBox:~/operating systems/task1/part_B\$./main2_3 daemon pid 4881 starting daemon user@user-VirtualBox:~/operating systems/task1/part_B\$</pre>	<pre>user@user-VirtualBox:~/operating systems/task1/part_B\$ pstree 4863 bash---main2_3---main2_3 user@user-VirtualBox:~/operating systems/task1/part_B\$</pre>
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צילום של pstree של main2_2

<pre>user@user-VirtualBox:~/operating systems/task1/part_B\$ echo \$\$ 4863 user@user-VirtualBox:~/operating systems/task1/part_B\$./main2_2 pid of child1 = 4943 pid of child2 = 4944 pid of parent = 4942 ----- hello from parent hello from child2 hello from child1 hello from parent hello from child1</pre>	<pre>user@user-VirtualBox:~/operating systems/task1/part_B\$ pstree 4863 bash---3*[main2_2] user@user-VirtualBox:~/operating systems/task1/part_B\$</pre>
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צילום של pstree של main2_1

<pre>user@user-VirtualBox:~/operating systems/task1/part_B\$ echo \$\$ 4863 user@user-VirtualBox:~/operating systems/task1/part_B\$./main2_1 hello from parent hello from child hello from friend child hello from parent hello from child hello from friend child hello from parent hello from child hello from friend child</pre>	<pre>user@user-VirtualBox:~/operating systems/task1/part_B\$ pstree 4863 bash---main2_1---main2_1---friend user@user-VirtualBox:~/operating systems/task1/part_B\$</pre>
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