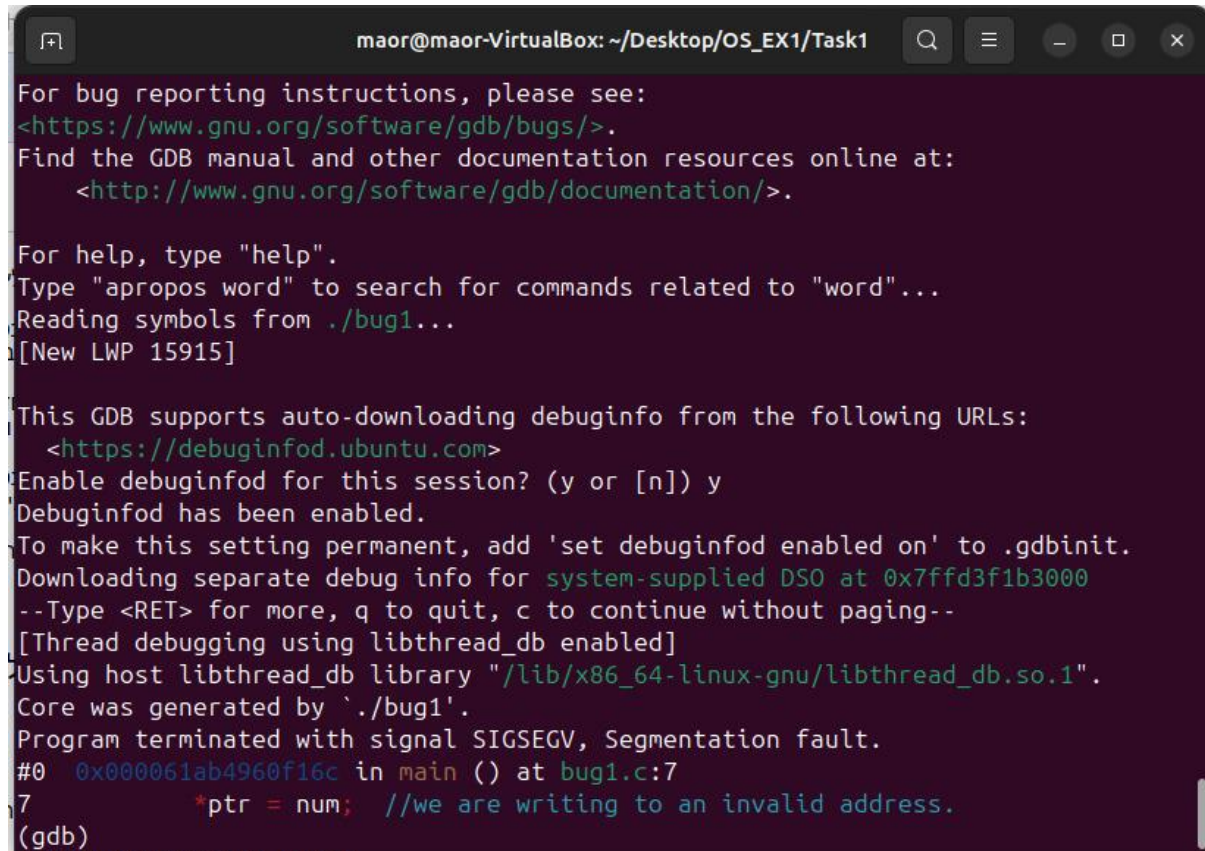


Task 1:

Bug1: invalid address 0xdeadbeef bug



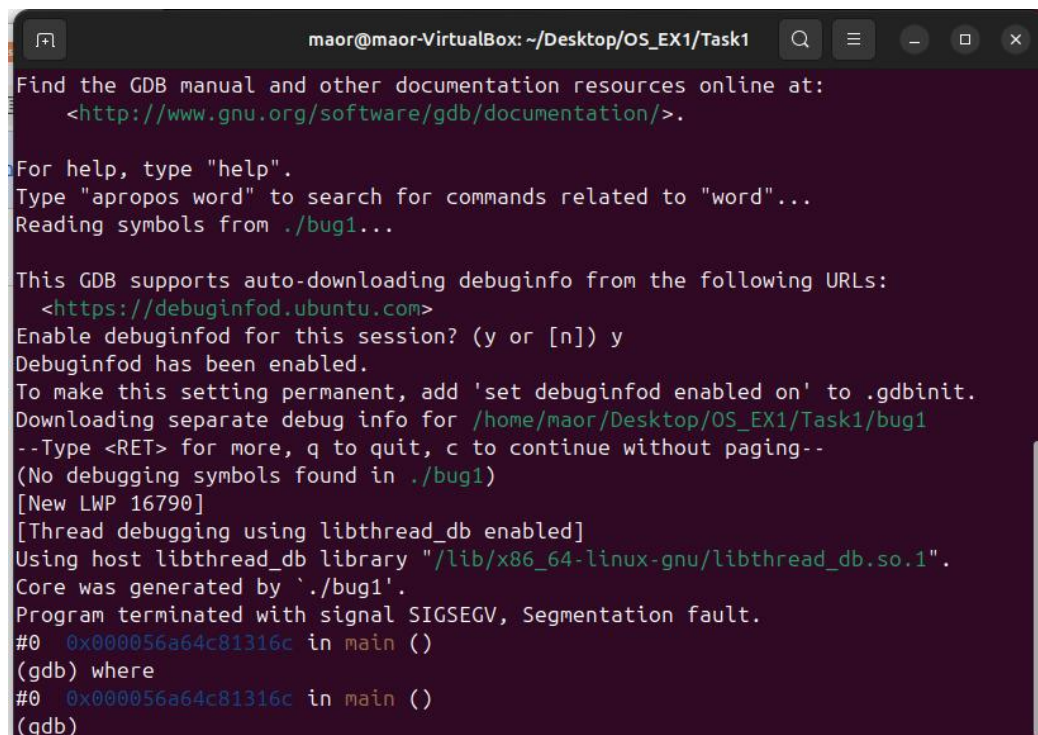
```
maor@maor-VirtualBox: ~/Desktop/OS_EX1/Task1
For bug reporting instructions, please see:
<https://www.gnu.org/software/gdb/bugs/>.
Find the GDB manual and other documentation resources online at:
<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ./bug1...
[New LWP 15915]

This GDB supports auto-downloading debuginfo from the following URLs:
<https://debuginfod.ubuntu.com>
Enable debuginfod for this session? (y or [n]) y
Debuginfod has been enabled.
To make this setting permanent, add 'set debuginfod enabled on' to .gdbinit.
Downloading separate debug info for system-supplied DSO at 0x7ffd3f1b3000
--Type <RET> for more, q to quit, c to continue without paging--
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './bug1'.
Program terminated with signal SIGSEGV, Segmentation fault.
#0  0x000061ab4960f16c in main () at bug1.c:7
7      *ptr = num; //we are writing to an invalid address.
(gdb)
```

Without the -g flag:

As we can see there is no detailed information as with the -g flag that gives us debugging information.

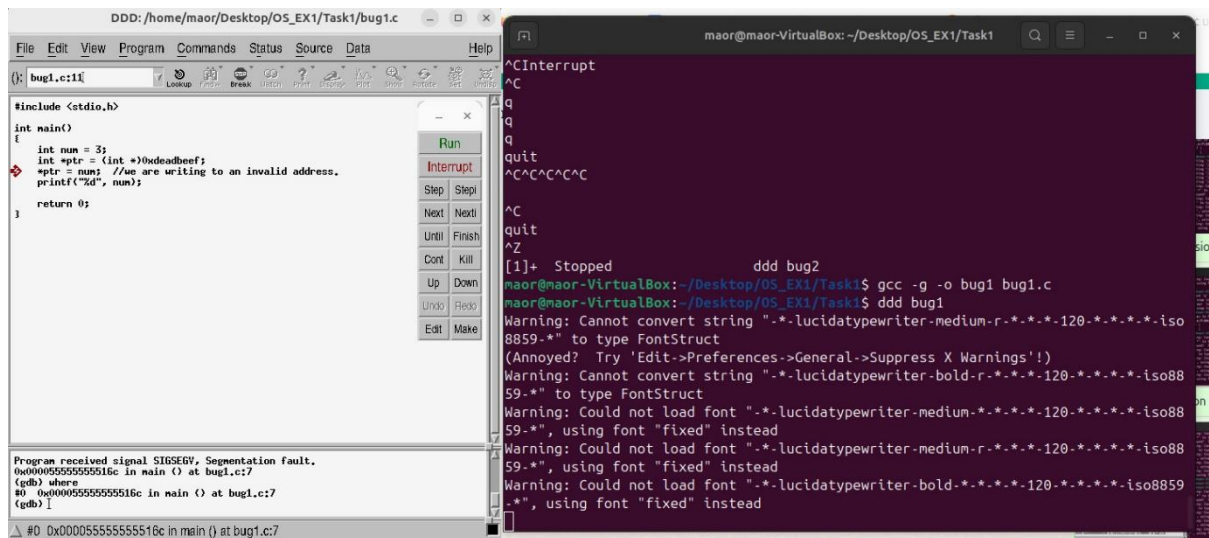


```
maor@maor-VirtualBox: ~/Desktop/OS_EX1/Task1
Find the GDB manual and other documentation resources online at:
<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ./bug1...

This GDB supports auto-downloading debuginfo from the following URLs:
<https://debuginfod.ubuntu.com>
Enable debuginfod for this session? (y or [n]) y
Debuginfod has been enabled.
To make this setting permanent, add 'set debuginfod enabled on' to .gdbinit.
Downloading separate debug info for /home/maor/Desktop/OS_EX1/Task1/bug1
--Type <RET> for more, q to quit, c to continue without paging--
(No debugging symbols found in ./bug1)
[New LWP 16790]
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './bug1'.
Program terminated with signal SIGSEGV, Segmentation fault.
#0  0x000056a64c81316c in main ()
(gdb) where
#0  0x000056a64c81316c in main ()
(gdb)
```

Bug 1 DDD Graphical Debugger (with the -g flag of course)



Bug2: infinite recursion

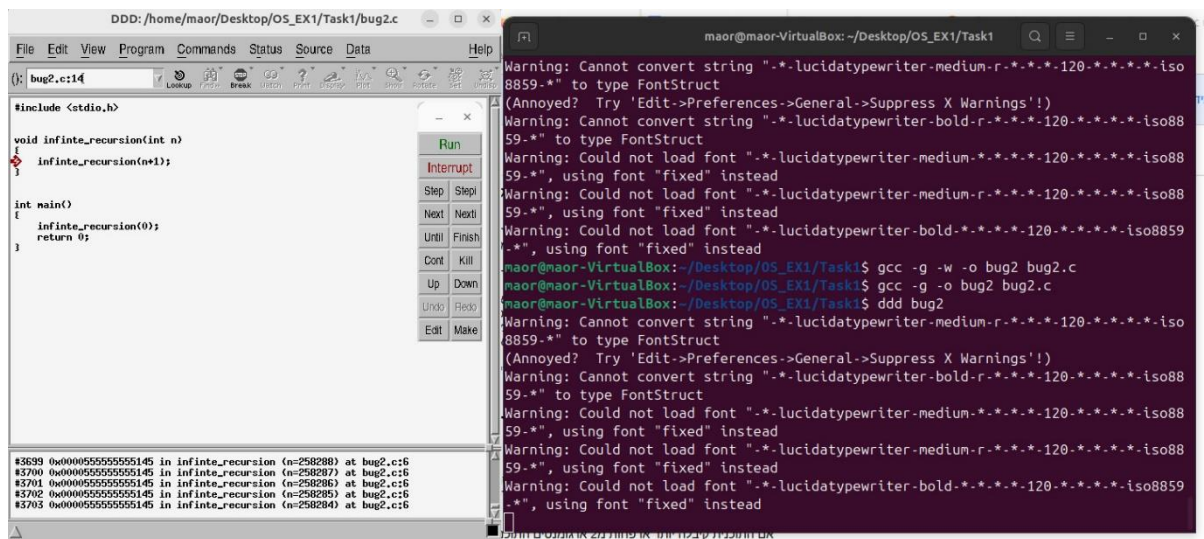
with the -g flag

```
maor@maor-VirtualBox: ~/Desktop/OS_EX1/Task1
--Type <RET> for more, q to quit, c to continue without paging--
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './bug2'.
Program terminated with signal SIGSEGV, Segmentation fault.
#0  0x00005f408fc3e135 in infinte_recursion (
    n=<error reading variable: Cannot access memory at address 0x7fff7cb38ffc>)
    at bug2.c:5
5      {
(gdb) where
#0  0x00005f408fc3e135 in infinte_recursion (
    n=<error reading variable: Cannot access memory at address 0x7fff7cb38ffc>)
    at bug2.c:5
#1  0x00005f408fc3e145 in infinte_recursion (n=261829) at bug2.c:6
#2  0x00005f408fc3e145 in infinte_recursion (n=261828) at bug2.c:6
#3  0x00005f408fc3e145 in infinte_recursion (n=261827) at bug2.c:6
#4  0x00005f408fc3e145 in infinte_recursion (n=261826) at bug2.c:6
#5  0x00005f408fc3e145 in infinte_recursion (n=261825) at bug2.c:6
#6  0x00005f408fc3e145 in infinte_recursion (n=261824) at bug2.c:6
#7  0x00005f408fc3e145 in infinte_recursion (n=261823) at bug2.c:6
#8  0x00005f408fc3e145 in infinte_recursion (n=261822) at bug2.c:6
#9  0x00005f408fc3e145 in infinte_recursion (n=261821) at bug2.c:6
#10 0x00005f408fc3e145 in infinte_recursion (n=261820) at bug2.c:6
#11 0x00005f408fc3e145 in infinte_recursion (n=261819) at bug2.c:6
#12 0x00005f408fc3e145 in infinte_recursion (n=261818) at bug2.c:6
```

Without the -g flag:

```
maor@maor-VirtualBox: ~/Desktop/OS_EX1/Task1
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './bug2'.
Program terminated with signal SIGSEGV, Segmentation fault.
#0  0x0000652851b6a140 in infinte_recursion ()
(gdb) where
#0  0x0000652851b6a140 in infinte_recursion ()
#1  0x0000652851b6a145 in infinte_recursion ()
#2  0x0000652851b6a145 in infinte_recursion ()
#3  0x0000652851b6a145 in infinte_recursion ()
#4  0x0000652851b6a145 in infinte_recursion ()
#5  0x0000652851b6a145 in infinte_recursion ()
#6  0x0000652851b6a145 in infinte_recursion ()
#7  0x0000652851b6a145 in infinte_recursion ()
#8  0x0000652851b6a145 in infinte_recursion ()
#9  0x0000652851b6a145 in infinte_recursion ()
#10 0x0000652851b6a145 in infinte_recursion ()
#11 0x0000652851b6a145 in infinte_recursion ()
#12 0x0000652851b6a145 in infinte_recursion ()
#13 0x0000652851b6a145 in infinte_recursion ()
#14 0x0000652851b6a145 in infinte_recursion ()
#15 0x0000652851b6a145 in infinte_recursion ()
#16 0x0000652851b6a145 in infinte_recursion ()
#17 0x0000652851b6a145 in infinte_recursion ()
```


Graphic DDD Debugger:



Bug 3: dividing by 0

With the -g flag:

Showing "where" and "print"

```
maor@maor-VirtualBox: ~/Desktop/OS_EX1/Task1
<http://www.gnu.org/software/gdb/documentation/>.

For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ./bug3...
[New LWP 17232]

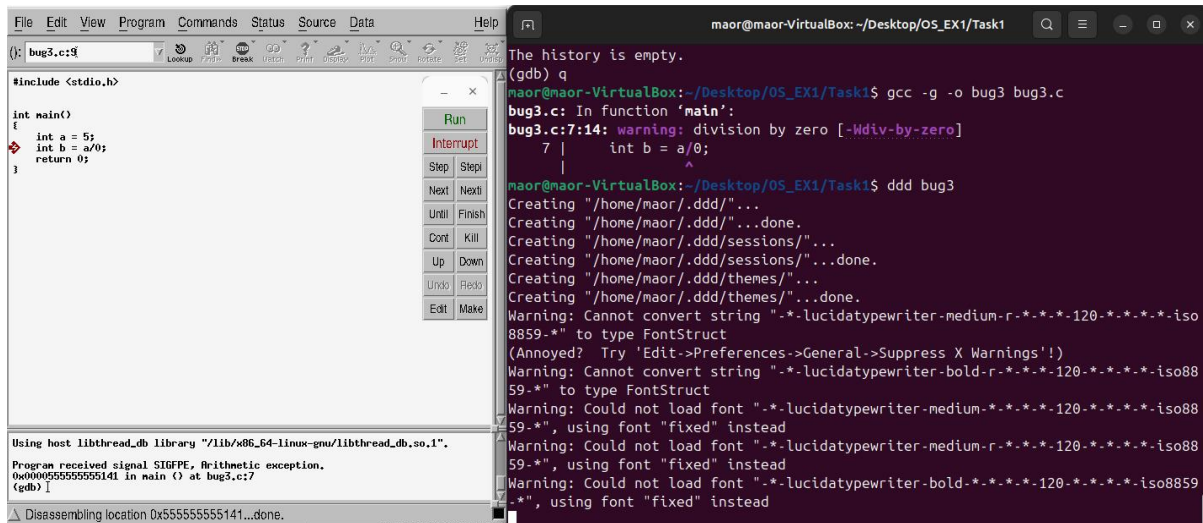
This GDB supports auto-downloading debuginfo from the following URLs:
  <https://debuginfod.ubuntu.com>
Enable debuginfod for this session? (y or [n]) y
Debuginfod has been enabled.
To make this setting permanent, add 'set debuginfod enabled on' to .gdbinit.
[Thread debugging using libthread_db enabled]
--Type <RET> for more, q to quit, c to continue without paging--
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './bug3'.
Program terminated with signal SIGFPE, Arithmetic exception.
#0  0x0000629488dde141 in main () at bug3.c:7
7      int b = a/0;
(gdb) where
#0  0x0000629488dde141 in main () at bug3.c:7
(gdb) print
The history is empty.
(gdb)
```

Without the -g flag:

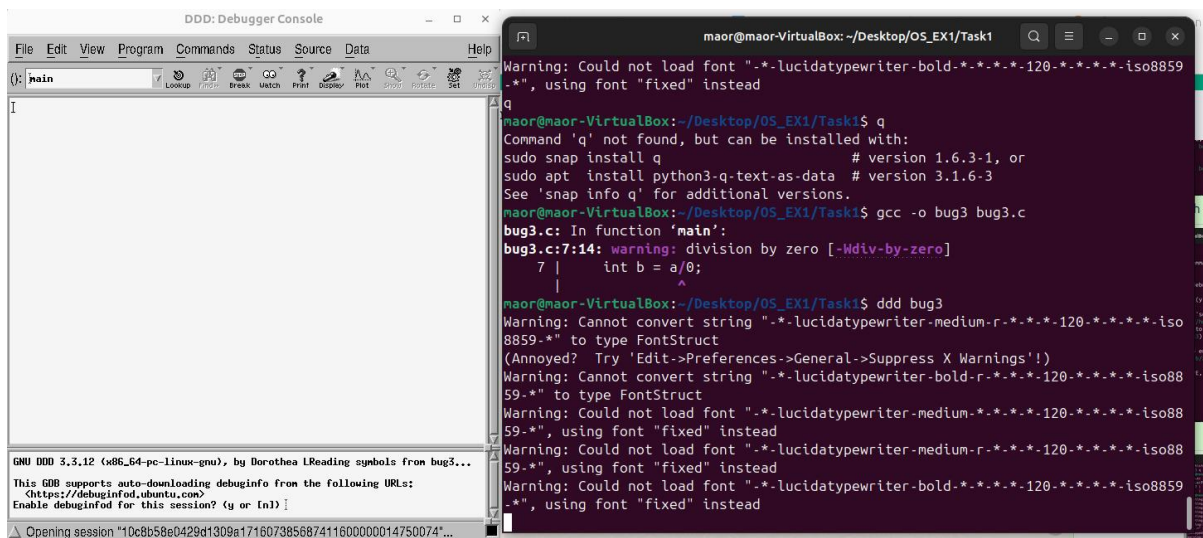
```
maor@maor-VirtualBox: ~/Desktop/OS_EX1/Task1
For help, type "help".
Type "apropos word" to search for commands related to "word"...
Reading symbols from ./bug3...

This GDB supports auto-downloading debuginfo from the following URLs:
  <https://debuginfod.ubuntu.com>
Enable debuginfod for this session? (y or [n]) y
Debuginfod has been enabled.
To make this setting permanent, add 'set debuginfod enabled on' to .gdbinit.
Downloading separate debug info for /home/maor/Desktop/OS_EX1/Task1/bug3
--Type <RET> for more, q to quit, c to continue without paging--
(No debugging symbols found in ./bug3)
[New LWP 17307]
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './bug3'.
Program terminated with signal SIGFPE, Arithmetic exception.
#0  0x000061d5b0c46141 in main ()
(gdb) where
#0  0x000061d5b0c46141 in main ()
(gdb) print
The history is empty.
(gdb)
```

Graphical Debugger with -g Flag:



Without the -g flag in the graphic debugger:



We can see that without the -g flag there is no information for debugging.