

הגדרת אפשרות ליצירת קבצי Core, והצגה שלהם בתיקייה בה הם נמצאים:

```
eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ ulimit -c unlimited
eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ ulimit -c
unlimited
eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ ls /var/lib/apport/coredump
core.eylon.Desktop.Projects.OperatingSystems.OperatingSystem_Ex1.Ex1_division_by_zero.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.21223.7454227
core.eylon.Desktop.Projects.OperatingSystems.OperatingSystem_Ex1.Ex1_stack_overflow.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.21188.7453480
core.eylon.Desktop.Projects.OperatingSystems.OperatingSystem_Ex1.Ex1_undefined_memory.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.21093.7450497
```

הרצת שלוש התוכניות תוך שימוש בדגל -g:

```
eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ gdb ./undefined_memory /var/lib/apport/coredump/core.eylon.Desktop.Projects.OperatingSystems.OperatingSystem_Ex1.Ex1_undefined_memory.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.21093.7450497
GNU gdb (Ubuntu 15.0.50.20240403-0ubuntu1) 15.0.50.20240403-git
Copyright (C) 2024 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:
<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 ./undefined_memory...
[New LWP 21093]

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]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './undefined_memory'.
Program terminated with signal SIGSEGV, Segmentation fault.
#0 0x0000621c2fccf145 in main (argc=1, argv=0x7fff26ab3a88) at undefined_memory.c:4
4      *p = 1;
(gdb) where
#0 0x0000621c2fccf145 in main (argc=1, argv=0x7fff26ab3a88) at undefined_memory.c:4
(gdb)
```

```
eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ gdb ./division_by_zero /var/lib/apport/coredump/core.eylon.Desktop.Projects.OperatingSystems.OperatingSystem_Ex1.Ex1_division_by_zero.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.21223.7454227
GNU gdb (Ubuntu 15.0.50.20240403-0ubuntu1) 15.0.50.20240403-git
Copyright (C) 2024 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:
<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 ./division_by_zero...
[New LWP 21223]

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 0x7fff89f3b000
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './division_by_zero'.
Program terminated with signal SIGFPE, Arithmetic exception.
#0 0x00005b0059f8214a in main (argc=1, argv=0x7fff89e30668) at division_by_zero.c:5
5      int c = a / b;
(gdb) where
#0 0x00005b0059f8214a in main (argc=1, argv=0x7fff89e30668) at division_by_zero.c:5
```

```

eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ gdb ./stack_overflow /var/lib/apport/coredump/core_eylon_Desktop_Projects_OperatingSystems_OperatingSystem_Ex1_Ex1_stack_overflow.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.21188.7453480
GNU gdb (Ubuntu 15.0.50.20240403-0ubuntu1) 15.0.50.20240403-git
Copyright (C) 2024 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:
<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 ./stack_overflow...
[New LWP 21188]

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]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './stack_overflow'.
Program terminated with signal SIGSEGV, Segmentation fault.
#0  foo () at stack_overflow.c:3
3      foo();
(gdb) where
#0  foo () at stack_overflow.c:3
#1  0x00005d9cbd985136 in foo () at stack_overflow.c:3
#2  0x00005d9cbd985136 in foo () at stack_overflow.c:3
#3  0x00005d9cbd985136 in foo () at stack_overflow.c:3
#4  0x00005d9cbd985136 in foo () at stack_overflow.c:3
#5  0x00005d9cbd985136 in foo () at stack_overflow.c:3
#6  0x00005d9cbd985136 in foo () at stack_overflow.c:3
#7  0x00005d9cbd985136 in foo () at stack_overflow.c:3

```

הרצת שלוש התוכניות ללא שימוש בדגל -g:

```

eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ gdb ./undefined_memory /var/lib/apport/coredump/core_eylon_Desktop_Projects_OperatingSystems_OperatingSystem_Ex1_Ex1_undefined_memory.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.23895.7556686
GNU gdb (Ubuntu 15.0.50.20240403-0ubuntu1) 15.0.50.20240403-git
Copyright (C) 2024 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:
<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 ./undefined_memory...

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/eylon/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1/undefined_memory
[No debugging symbols found in ./undefined_memory]
[New LWP 23895]
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './undefined_memory'.
Program terminated with signal SIGSEGV, Segmentation fault.
#0  0x00005acfb4ca1145 in main ()
(gdb) where
#0  0x00005acfb4ca1145 in main ()

```

```

eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ gdb ./stack_overflow /var/lib/apport/coredump/core_eylon.Desktop.Projects.OperatingSystems.OperatingSystem_Ex1_Ex1_stack_overflow.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.23848.7555872
GNU gdb (Ubuntu 15.0.50.20240403-0ubuntu1) 15.0.50.20240403-git
Copyright (C) 2024 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:
<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 ./stack_overflow...

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/eylon/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1/stack_overflow
(No debugging symbols found in ./stack_overflow)
[New LWP 23848]
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './stack_overflow'.
Program terminated with signal SIGSEGV, Segmentation fault.
#0 0x00005edf9e727131 in foo ()
(gdb) where
#0 0x00005edf9e727131 in foo ()
#1 0x00005edf9e727136 in foo ()
#2 0x00005edf9e727136 in foo ()
#3 0x00005edf9e727136 in foo ()
#4 0x00005edf9e727136 in foo ()
#5 0x00005edf9e727136 in foo ()
#6 0x00005edf9e727136 in foo ()

```

```

eylon@eylon-VirtualBox:~/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1$ gdb ./division_by_zero /var/lib/apport/coredump/core_eylon.Desktop.Projects.OperatingSystems.OperatingSystem_Ex1_Ex1_division_by_zero.1000.67b1a9c2-2152-4fdf-aa26-7b82bd4660fe.23811.7555063
GNU gdb (Ubuntu 15.0.50.20240403-0ubuntu1) 15.0.50.20240403-git
Copyright (C) 2024 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:
<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 ./division_by_zero...

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/eylon/Desktop/Projects/OperatingSystems/OperatingSystem_Ex1/Ex1/division_by_zero
(No debugging symbols found in ./division_by_zero)
[New LWP 23811]
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Core was generated by './division_by_zero'.
Program terminated with signal SIGFPE, Arithmetic exception.
#0 0x000062104024a14a in main ()
(gdb) where
#0 0x000062104024a14a in main ()
(gdb) █

```

הרצת שלוש התוכניות תוך שימוש בדיבאגר גרפי ddd:





