QUESTION # 1

```
student@student-OptiPlex-9010:~$ cd Desktop
student@student-OptiPlex-9010:~/Desktop$ gcc -g -o lab11 lab11.c
student@student-OptiPlex-9010:~/Desktop$ gdb ./lab11
GNU gdb (Ubuntu 12.0.90-0ubuntu1) 12.0.90
Copyright (C) 2022 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 ./lab11...
(gdb) break 10
Breakpoint 1 at 0x11b1: file lab11.c, line 10.
(gdb) run 2 3
Starting program: /home/student/Desktop/lab11 2 3
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".

Breakpoint 1, main (argc=3, argv=0x7fffffffe128) at lab11.c:10
10      c=a*i;
(gdb) continue
Continuing.
2*1=2

Breakpoint 1, main (argc=3, argv=0x7fffffffe128) at lab11.c:10
10      c=a*i;
(gdb) continue
Continuing.
2*2=4

Breakpoint 1, main (argc=3, argv=0x7fffffffe128) at lab11.c:10
10      c=a*i;
(gdb) continue
Continuing.
2*3=6
[Inferior 1 (process 3270) exited normally]
(gdb) quit
student@student-OptiPlex-9010:~/Desktop$
```

QUESTION # 2

```
student@student-OptiPlex-9010:~/Desktop$ touch array_operations.c
student@student-OptiPlex-9010:~/Desktop$ gcc -g -o array_operations array_operations.c
student@student-OptiPlex-9010:~/Desktop$ gdb ./array_operations
GNU gdb (Ubuntu 12.0.90-0ubuntu1) 12.0.90
Copyright (C) 2022 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 ./array_operations...
(gdb) break 10
Breakpoint 1 at 0x1217: file array_operations.c, line 10.
(gdb) run
Starting program: /home/student/Desktop/array_operations
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Initial values of the array: 10 20 30 40 50

Breakpoint 1, main () at array_operations.c:10
10      for (i = 0; i < 5; i++) {
(gdb) run 2 3
The program being debugged has been started already.
Start it from the beginning? (y or n) y
Starting program: /home/student/Desktop/array_operations 2 3
[Thread debugging using libthread_db enabled]
Using host libthread_db library "/lib/x86_64-linux-gnu/libthread_db.so.1".
Initial values of the array: 10 20 30 40 50

Breakpoint 1, main () at array_operations.c:10
10      for (i = 0; i < 5; i++) {
(gdb) watch array
Hardware watchpoint 2: array
(gdb) continue
Continuing.
```

```
(gdb) continue
Continuing.

Hardware watchpoint 2: array

Old value = {10, 20, 30, 40, 50}
New value = {20, 20, 30, 40, 50}
main () at array_operations.c:10
10      for (i = 0; i < 5; i++) {
(gdb) continue
Continuing.

Hardware watchpoint 2: array

Old value = {20, 20, 30, 40, 50}
New value = {20, 40, 30, 40, 50}
main () at array_operations.c:10
10      for (i = 0; i < 5; i++) {
(gdb) continue
Continuing.

Hardware watchpoint 2: array

Old value = {20, 40, 30, 40, 50}
New value = {20, 40, 60, 40, 50}
main () at array_operations.c:10
10      for (i = 0; i < 5; i++) {
(gdb) continue
Continuing.

Hardware watchpoint 2: array

Old value = {20, 40, 60, 40, 50}
New value = {20, 40, 60, 80, 50}
main () at array_operations.c:10
10      for (i = 0; i < 5; i++) {
(gdb) continue
Continuing.

Hardware watchpoint 2: array

Old value = {20, 40, 60, 80, 50}
New value = {20, 40, 60, 80, 100}
main () at array_operations.c:10
10      for (i = 0; i < 5; i++) {
(gdb) continue
Continuing.
Modified values of the array: 20 40 60 80 100

Watchpoint 2 deleted because the program has left the block in
which its expression is valid.
0x00007ffff7c29d90 in __libc_start_call_main (main=main@entry=0x555555555189 <main>, argc=argc@entry=3, argv=a
58      ../sysdeps/nptl/libc_start_call_main.h: No such file or directory.
(gdb)
```