Memory leaks and errors practice session

Typographical conventions

We use the following conventions in this guide:

emacs The name of a specific command or file

file You should replace file with a specific name

Exit abc Output that you see on the screen

valgrind command

valgrind --tool=memcheck –-leak-check=yes ./sample1

valgrind –-leak-check=yes ./sample1

1. Login into the Linux server with your login Ids

2. Create a new directory called mem\_errors in your home directory <home>

mkdir mem\_errors

3. Go inside the directory you have created in (2) /<home>/mem\_errors

cd mem\_errors

4. Copy the following files from the path as mentioned by the trainer:

a. sample1.c

b. sample2.c

c. sample3.c

d. sample4.c

e. sample5.c

5. Take a look at the example programs and observe if you can find any errors.

Compilation

6. Compile the files

gcc –o sample1 –g sample1.c

gcc –o sample2 –g sample2.c

gcc –o sample3 –g sample3.c

gcc –o sample4 –g sample4.c

gcc –o sample5 –g sample5.c

A screenshot of a computer program

Description automatically generated

Execution

7. Execute the file sample1

valgrind –-leak-check=yes sample1

After quitting the program Valgrind displays a list of memory errors in the program. Analyze these errors.

A screenshot of a computer program

Description automatically generated

8. Execute the file sample2

valgrind –-leak-check=yes ./sample2

After quitting the program Valgrind displays a list of memory errors in the program. Analyze these errors.

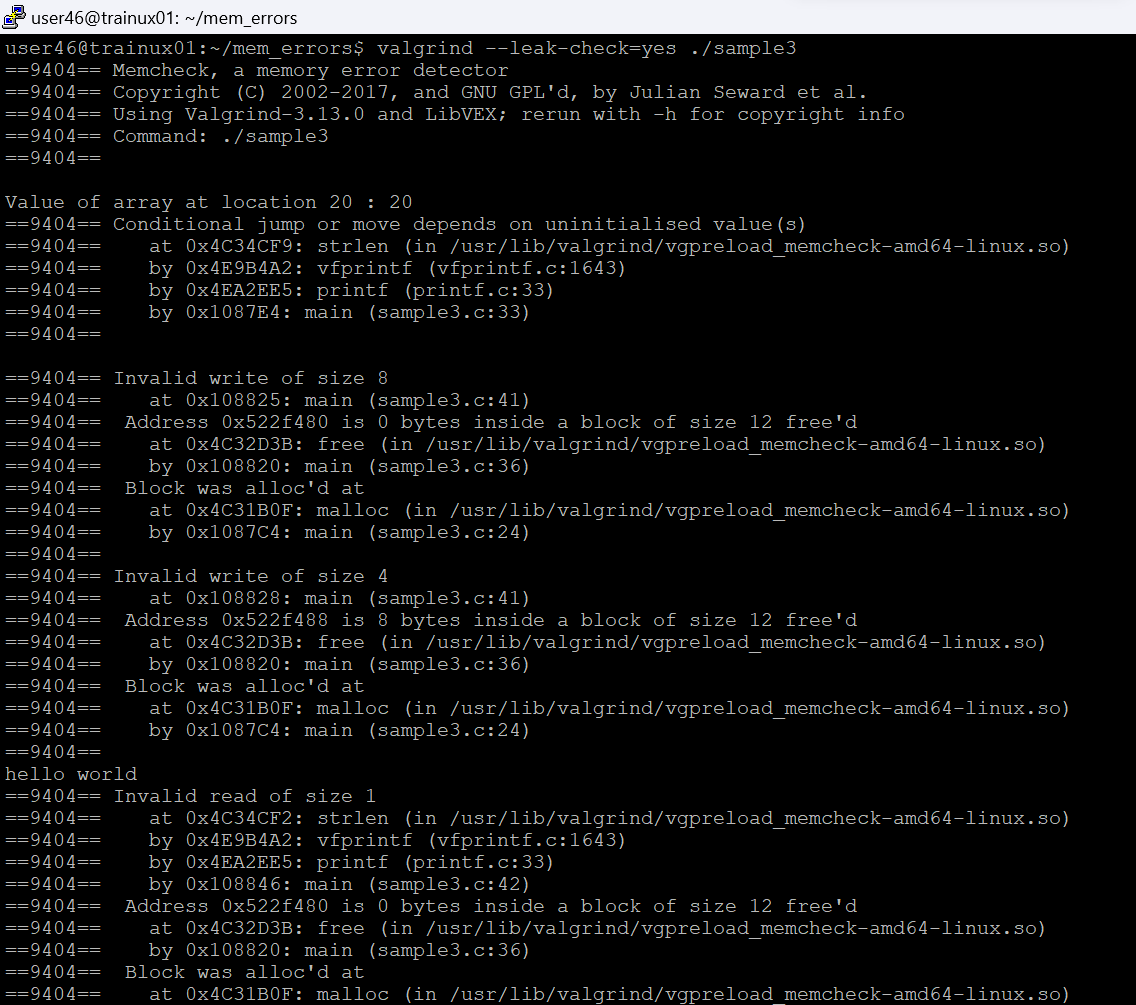
A computer screen with white text

Description automatically generated

9. Execute the file sample3

Valgrind –-leak-check=yes ./sample3

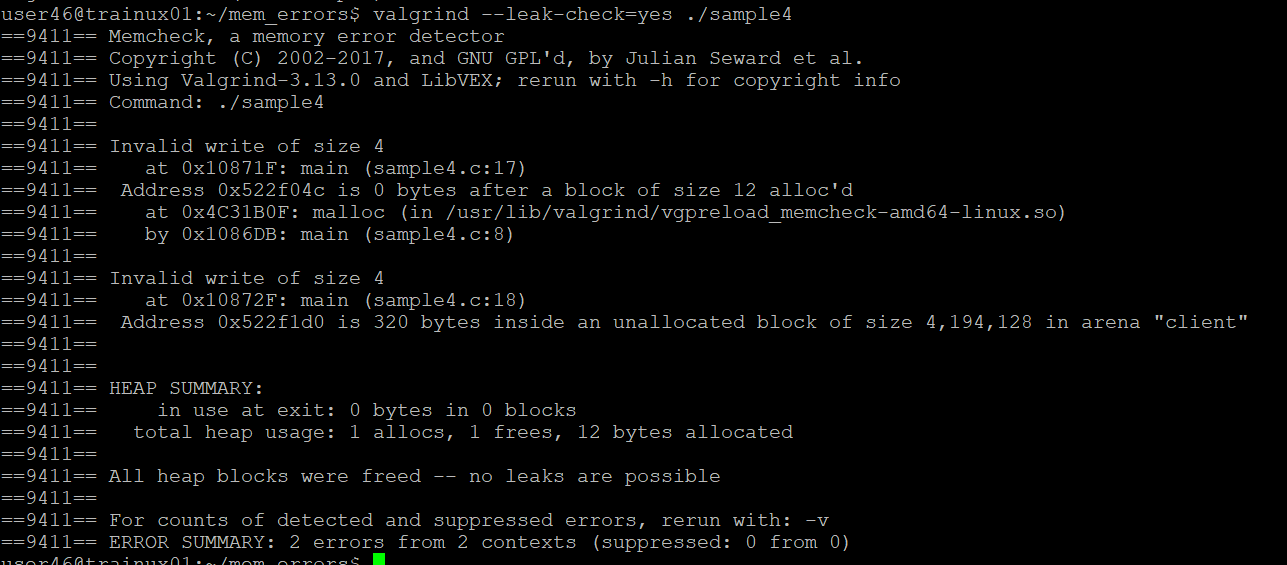
After quitting the program Valgrind displays a list of memory errors in the program. Analyze these errors.



10. Execute the file sample4

Valgrind –-leak-check=yes ./sample4

After quitting the program Valgrind displays a list of memory errors in the program. Analyze these errors.



11. Execute the file sample5

Valgrind –-leak-check=yes ./sample5

After quitting the program Valgrind displays a list of memory errors in the program. Analyze these errors.

A screenshot of a computer error

Description automatically generated

12. Compile and execute the program in queue\_linked\_list\_memory\_leak

valgrind –leak-check=yes ./queue\_llist

After quitting the program Valgrind displays a list of memory errors in the program. Analyze these errors.