gcov

gcov is a test coverage program. Use it in concert with GCC to analyze your programs to help create more efficient, faster running code and to discover untested parts of your program. You can use gcov as a profiling tool to help discover where your optimization efforts will best affect your code. You can also use gcov along with the other profiling tool, gprof, to assess which parts of your code use the greatest amount of computing time.

commands:

```
Compile the program using gcc
$ gcc -fprofile-arcs -ftest-coverage -o final main.cpp

This will create .gcno file in addition to the executable.
$ ls final  main.cpp  final-main.gcno

run the executable
$ ./final

Now gcov can be run to get the coverage data.
$ gcov  final-main.cpp
```

```
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ g++ -fprofile-arcs -ftest-coverage -o final main.cpp
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ ls
Makefile        allocation.o          buddylibrary.h    deallocation.o  display.o   final-main.gcno  main.cpp              menu.cpp
allocation.cpp  buddy.h                                 deallocation.cpp display.cpp error.log   lib_binary.a     main.cpp:Zone.Identifier  menu.h
allocation.h    buddy.h:Zone.Identifier  deallocation.h  display.h       final       main             main.o                menu.o
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ ./fnal
-bash: ./fnal: No such file or directory
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ ./final


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                          BINARY BUDDY ALGORITHM

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 The Amount of memory we reserve will be in power of 2^x (For Example: 2^10 = 1024)
Enter the value of x (x<32): 34
Date TimeStamp:Wed Jan 18 13:37:01 2023
Memory value is huge (x >= 32), program terminated

shikha@DESKTOP-8UFNL3F:~/binary_buddy$ ls
Makefile        allocation.o          buddylibrary.h    deallocation.o  display.o   final-main.gcda  main             main.o    menu.o
allocation.cpp  buddy.h                                 deallocation.cpp display.cpp error.log   final-main.gcno  main.cpp          menu.cpp
allocation.h    buddy.h:Zone.Identifier  deallocation.h  display.h       final       lib_binary.a     main.cpp:Zone.Identifier  menu.h
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ ^C
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ gcov -b -c main.cpp
main.gcno:cannot open notes file
main.gcda:cannot open data file, assuming not executed
No executable lines
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ gcov final-main.cpp
File 'main.cpp'
Lines executed:66.67% of 3
Creating 'main.cpp.gcov'

File '/usr/include/c++/11/iostream'
No executable lines
Removing 'iostream.gcov'

File 'buddy.h'
```

```
shikha@DESKTOP-8UFNL3F: ~/binary_buddy                                                    —  □  ✕
Lines executed:0.00% of 1
Creating 'buddy.h.gcov'

File '/usr/include/c++/11/bits/stl_algobase.h'
Lines executed:0.00% of 61
Creating 'stl_algobase.h.gcov'

File '/usr/include/c++/11/bits/stl_iterator_base_types.h'
Lines executed:0.00% of 2
Creating 'stl_iterator_base_types.h.gcov'

File '/usr/include/c++/11/bits/stl_uninitialized.h'
Lines executed:0.00% of 15
Creating 'stl_uninitialized.h.gcov'

File '/usr/include/c++/11/ext/new_allocator.h'
Lines executed:10.53% of 19
Creating 'new_allocator.h.gcov'

File '/usr/include/c++/11/bits/stl_vector.h'
Lines executed:22.58% of 93
Creating 'stl_vector.h.gcov'

File '/usr/include/c++/11/bits/stl_iterator.h'
Lines executed:0.00% of 28
Creating 'stl_iterator.h.gcov'

File '/usr/include/c++/11/bits/alloc_traits.h'
Lines executed:20.00% of 15
Creating 'alloc_traits.h.gcov'

File '/usr/include/c++/11/bits/cpp_type_traits.h'
Lines executed:0.00% of 2
Creating 'cpp_type_traits.h.gcov'

File '/usr/include/c++/11/bits/stl_construct.h'
Lines executed:100.00% of 4
Creating 'stl_construct.h.gcov'
```

File '/usr/include/c++/11/bits/move.h'
Lines executed:0.00% of 4
Creating 'move.h.gcov'

File '/usr/include/c++/11/bits/vector.tcc'
Lines executed:0.00% of 52
Creating 'vector.tcc.gcov'

File '/usr/include/c++/11/bits/allocator.h'
Lines executed:50.00% of 4
Creating 'allocator.h.gcov'

File '/usr/include/c++/11/cmath'
Lines executed:0.00% of 6
Creating 'cmath.gcov'

File 'menu.cpp'
Lines executed:20.00% of 60
Creating 'menu.cpp.gcov'

File 'display.cpp'
Lines executed:0.00% of 24
Creating 'display.cpp.gcov'

File 'deallocation.cpp'
Lines executed:0.00% of 38
Creating 'deallocation.cpp.gcov'

File 'allocation.cpp'
Lines executed:0.00% of 52
Creating 'allocation.cpp.gcov'

File '/usr/include/c++/11/new'
Lines executed:0.00% of 2
Creating 'new.gcov'

Lines executed:9.48% of 485
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ ^C
shikha@DESKTOP-8UFNL3F:~/binary_buddy$ ./main