

Problem 1

Compile and run with valgrind

```
zhnegyl@zhnegyl-VirtualBox: ~/下载/hw7
zhnegyl@zhnegyl-VirtualBox:~/下载/hw7$ g++ Matrix.h Array.h main.cpp
zhnegyl@zhnegyl-VirtualBox:~/下载/hw7$ valgrind ./a.out
==21114== Memcheck, a memory error detector
==21114== Copyright (C) 2002-2015, and GNU GPL'd, by Julian Seward et al.
==21114== Using Valgrind-3.12.0 and libvex; rerun with -h for copyright info
==21114== Command: ./a.out
==21114==
0 0 0 0 0
0 1 2 3 4
0 2 4 6 8
0 3 6 9 12
0 4 8 12 16
0 5 10 15 20
0 6 12 18 24
0 7 14 21 28
0 8 16 24 32
0 9 18 27 36
0 0 0 0 0
0 1 2 3 4 5 6 7 8 9
0 2 4 6 8 10 12 14 16 18
0 3 6 9 12 15 18 21 24 27
0 4 8 12 16 20 24 28 32 36
0 5 10 15 20 25 30 35 40 45
0 6 12 18 24 30 36 42 48 54
0 7 14 21 28 35 42 49 56 63
0 8 16 24 32 40 48 56 64 72
0 9 18 27 36 45 54 63 72 81
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00
0.00 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00 18.00
0.00 3.00 6.00 9.00 12.00 15.00 18.00 21.00 24.00 27.00
0.00 4.00 8.00 12.00 16.00 20.00 24.00 28.00 32.00 36.00
0.00 5.00 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00
0.00 6.00 12.00 18.00 24.00 30.00 36.00 42.00 48.00 54.00
0.00 7.00 14.00 21.00 28.00 35.00 42.00 49.00 56.00 63.00
0.00 8.00 16.00 24.00 32.00 40.00 48.00 56.00 64.00 72.00
0.00 9.00 18.00 27.00 36.00 45.00 54.00 63.00 72.00 81.00
==21114==
==21114== HEAP SUMMARY:
==21114== in use at exit: 0 bytes in 0 blocks
==21114== total heap usage: 82 allocs, 82 frees, 76,520 bytes allocated
==21114==
==21114== All heap blocks were freed -- no leaks are possible
==21114==
==21114== For counts of detected and suppressed errors, rerun with: -v
==21114== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
zhnegyl@zhnegyl-VirtualBox:~/下载/hw7$
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Problem2

No memory leak, catch exceptions and handle them.

```
zhnegyl@zhnegyl-VirtualBox: ~/下载/hw7
zhnegyl@zhnegyl-VirtualBox:~/下载/hw7$ ls
Array.h main.cpp main2.cpp Matrix.h
zhnegyl@zhnegyl-VirtualBox:~/下载/hw7$ g++ Array.h Matrix.h main2.cpp
zhnegyl@zhnegyl-VirtualBox:~/下载/hw7$ valgrind ./a.out
==21630== Memcheck, a memory error detector
==21630== Copyright (C) 2002-2015, and GNU GPL'd, by Julian Seward et al.
==21630== Using Valgrind-3.12.0 and libvex; rerun with -h for copyright info
==21630== Command: ./a.out
==21630==
Starting...
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00
0.00 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00 18.00
0.00 3.00 6.00 9.00 12.00 15.00 18.00 21.00 24.00 27.00
0.00 4.00 8.00 12.00 16.00 20.00 24.00 28.00 32.00 36.00
0.00 5.00 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00
0.00 6.00 12.00 18.00 24.00 30.00 36.00 42.00 48.00 54.00
0.00 7.00 14.00 21.00 28.00 35.00 42.00 49.00 56.00 63.00
Index out of bounds
Done
Starting...
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00
0.00 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00 18.00
0.00 3.00 6.00 9.00 12.00 15.00 18.00 21.00 24.00 27.00
0.00 4.00 8.00 12.00 16.00 20.00 24.00 28.00 32.00 36.00
0.00 5.00 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00
0.00 6.00 12.00 18.00 24.00 30.00 36.00 42.00 48.00 54.00
0.00 7.00 14.00 21.00 28.00 35.00 42.00 49.00 56.00 63.00
Index out of bounds
Done
Starting...
0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
0.00 1.00 2.00 3.00 4.00 5.00 6.00 7.00 8.00 9.00
0.00 2.00 4.00 6.00 8.00 10.00 12.00 14.00 16.00 18.00
0.00 3.00 6.00 9.00 12.00 15.00 18.00 21.00 24.00 27.00
0.00 4.00 8.00 12.00 16.00 20.00 24.00 28.00 32.00 36.00
0.00 5.00 10.00 15.00 20.00 25.00 30.00 35.00 40.00 45.00
0.00 6.00 12.00 18.00 24.00 30.00 36.00 42.00 48.00 54.00
0.00 7.00 14.00 21.00 28.00 35.00 42.00 49.00 56.00 63.00
Index out of bounds
Done
==21630==
==21630== HEAP SUMMARY:
==21630== in use at exit: 0 bytes in 0 blocks
==21630== total heap usage: 56 allocs, 56 frees, 76,611 bytes allocated
==21630==
==21630== All heap blocks were freed -- no leaks are possible
==21630==
==21630== For counts of detected and suppressed errors, rerun with: -v
==21630== ERROR SUMMARY: 0 errors from 0 contexts (suppressed: 0 from 0)
zhnegyl@zhnegyl-VirtualBox:~/下载/hw7$
```