A checker for dangling string pointers in C++

in the Clang Static Analyzer

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Real-world example

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return std::to_string(size).c_str();
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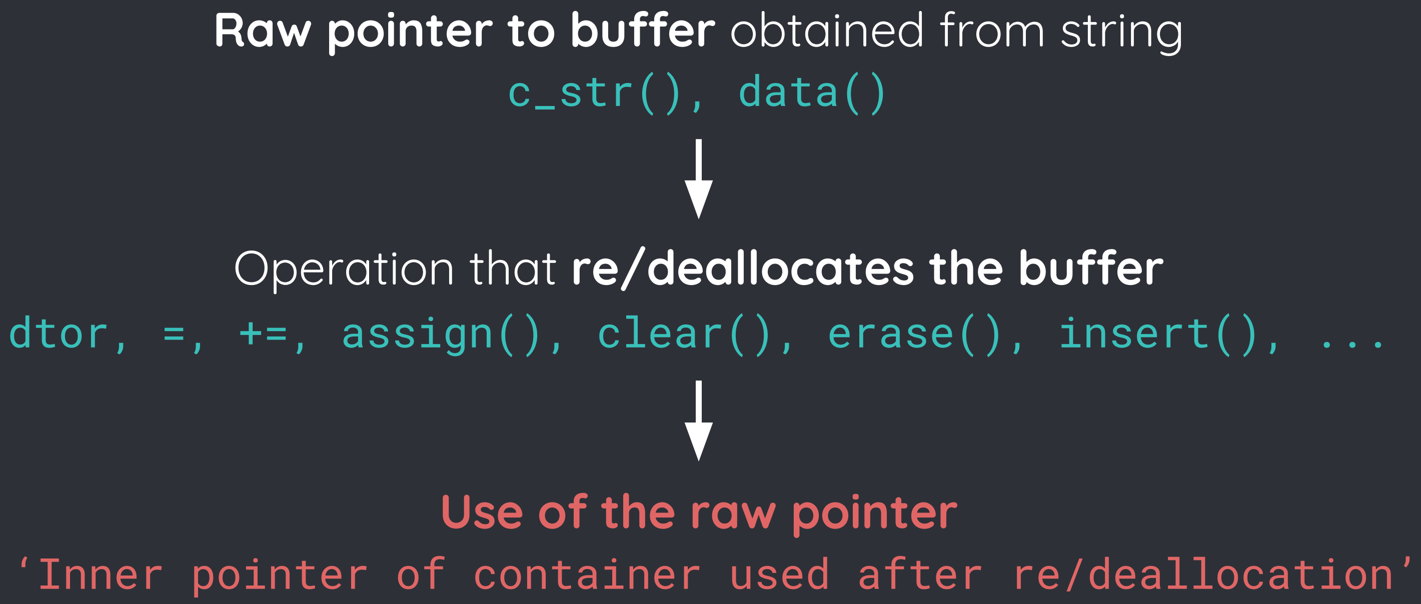
* found code like this in popular open-source projects

cplusplus.InnerPointer



Raw pointer to buffer obtained from string

`c_str(), data()`

Operation that **re/deallocates the buffer**

`dtor, =, +=, assign(), clear(), erase(), insert(), ...`

Use of the raw pointer

`‘Inner pointer of container used after re/deallocation’`

cplusplus.InnerPointer

Evaluated on a couple of open-source projects (+ dependencies):
Bitcoin, Ceph, Harfbuzz, ICU, LibreOffice, LLVM, qBittorrent

Found **3 true positives**
in Ceph, GPGME and Facebook’s RocksDB
Reported & fixed within a day

Found **0 false positives** in these projects!
Please try it out and give feedback!

Future plans

other STL / non-STL containers

`std::string_view`

How to use

Analyze a project:

```
$ scan-build
```

Enabled by default

Analyze one file:

```
$ clang --analyze a.cpp
```

Enabled by default

Thanks!

Final report:

rnkovacs.github.io/gsoc2018

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