



Universidad Rey Juan Carlos

E.T.S. INGENIERÍA DE TELECOMUNICACIÓN

DISEÑO SOFTWARE

*Práctica 6*

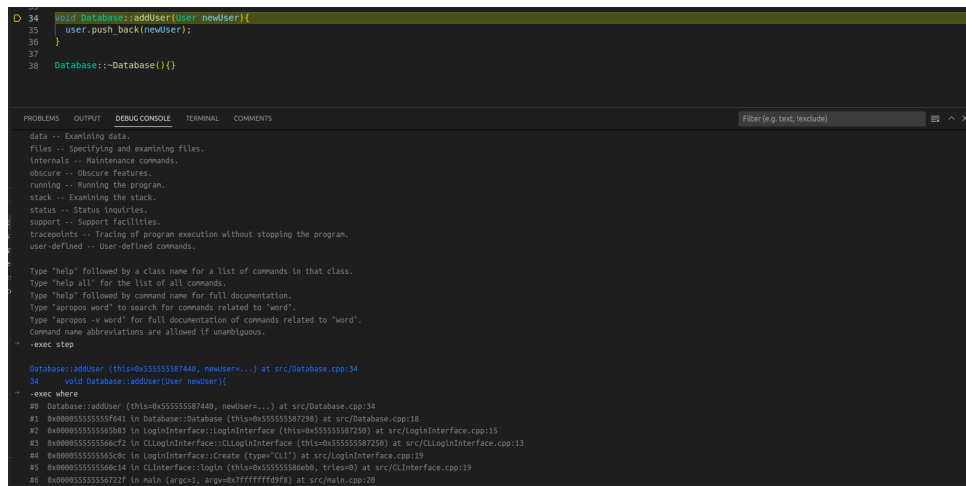
Autor:  
Javier Izquierdo Hernández

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2	Bloque de repetición	6
3	Creación objeto con herencia	9

# 1 Estructura de almacenamiento (Vector)



The image shows a C++ IDE with a source code editor and a debugger console. The source code defines a `Database` class with an `addUser` method that pushes a `newUser` into a `user` vector. The debugger console shows the execution of `Database::addUser`, with a stack trace indicating the call from `src/main.cpp:34`.

```
34 void Database::addUser(User newUser){
35     user.push_back(newUser);
36 }
37
38 Database::~Database(){}

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
data -- Examining data.
files -- Specifying and examining files.
internals -- Maintenance commands.
obscure -- Obscure features.
running -- Running the program.
stack -- Examining the stack.
status -- Status inquiries.
support -- Support facilities.
tracepoints -- Tracing of program execution without stopping the program.
user-defined -- User-defined commands.

Type "help" followed by a class name for a list of commands in that class.
Type "help all" for the list of all commands.
Type "help" followed by command name for full documentation.
Type "apropos word" to search for commands related to "word".
Type "apropos -v word" for full documentation of commands related to "word".
Command name abbreviations are allowed if unambiguous.

-exec step
Database::addUser (this=0x55555587440, newUser=...) at src/Database.cpp:34
34 void Database::addUser(User newUser){
-exec where
#0 Database::addUser (this=0x55555587440, newUser=...) at src/Database.cpp:34
#1 0x000055555555f041 in Database::Database (this=0x55555587298) at src/Database.cpp:18
#2 0x0000555555556983 in LoginInterface::LoginInterface (this=0x55555587298) at src/LoginInterface.cpp:15
#3 0x00005555555566c2 in CLoginInterface::CLLoginInterface (this=0x55555587298) at src/CLLoginInterface.cpp:13
#4 0x00005555555565bc in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
#5 0x00005555555568c4 in CLInterface::login (this=0x55555586e08, tries=0) at src/CLInterface.cpp:19
#6 0x000055555555672f in main (argc=1, argv=0x7fffffffd0f8) at src/main.cpp:34
```

Figure 1.1: Pushing user to vector

```

1183     void
1184     push_back(const value_type& __x)
1185     {
1186         if (this->M_impl.M_finish != this->M_impl.M_end_of_storage)
1187         {
1188             GLIBCXX_ASSERT_GROW(1);
1189             __Alloc_traits::construct(this->M_impl, this->M_impl.M_finish,
1190                                     __x);
1191             ++this->M_impl.M_finish;
1192         }
1193     }
1194 }
1195
1196 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
1197 Filter (e.g. test, include)
1198
1199 #3 0x0000555555566cf2 in CLLoginInterface::CLLoginInterface (this=0x555555587250) at src/CLLoginInterface.cpp:13
1200 #4 0x0000555555566c0c in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
1201 #5 0x0000555555566c14 in CLInterface::login (this=0x555555586eb0, tries=0) at src/CLInterface.cpp:19
1202 #6 0x000055555556722f in main (argc=1, argv=0x7fffffffd9fa) at src/main.cpp:20
1203
1204 -exec step
1205
1206 std::vector<User, std::allocator<User> >::push_back (this=0x5555555872b0 <user=User(const&)+121>, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1184
1207     push_back(const value_type& __x)
1208
1209 -exec where
1210
1211 #0 std::vector<User, std::allocator<User> >::push_back (this=0x5555555872b0 <user=User(const&)+121>, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1184
1212 #1 0x000055555555f0fb in Database::addUser (this=0x555555587290, newUser=...) at src/Database.cpp:35
1213 #2 0x000055555555f041 in Database::Database (this=0x555555587290) at src/Database.cpp:18
1214 #3 0x0000555555566b83 in LoginInterface::LoginInterface (this=0x555555587250) at src/LoginInterface.cpp:15
1215 #4 0x0000555555566cf2 in CLLoginInterface::CLLoginInterface (this=0x555555587250) at src/CLLoginInterface.cpp:13
1216 #5 0x0000555555566c0c in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
1217 #6 0x0000555555566c14 in CLInterface::login (this=0x555555586eb0, tries=0) at src/CLInterface.cpp:19
1218 #7 0x000055555556722f in main (argc=1, argv=0x7fffffffd9fa) at src/main.cpp:20
1219
1220 -exec step
1221
1222 1186         if (this->M_impl.M_finish != this->M_impl.M_end_of_storage)
1223
1224 -exec where
1225
1226 #0 std::vector<User, std::allocator<User> >::push_back (this=0x555555587290, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1186
1227 #1 0x000055555555f0fb in Database::addUser (this=0x555555587290, newUser=...) at src/Database.cpp:35
1228 #2 0x000055555555f041 in Database::Database (this=0x555555587290) at src/Database.cpp:18
1229 #3 0x0000555555566b83 in LoginInterface::LoginInterface (this=0x555555587250) at src/LoginInterface.cpp:15
1230 #4 0x0000555555566cf2 in CLLoginInterface::CLLoginInterface (this=0x555555587250) at src/CLLoginInterface.cpp:13
1231 #5 0x0000555555566c0c in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
1232 #6 0x0000555555566c14 in CLInterface::login (this=0x555555586eb0, tries=0) at src/CLInterface.cpp:19
1233 #7 0x000055555556722f in main (argc=1, argv=0x7fffffffd9fa) at src/main.cpp:20

```

Figure 1.2: Inside vector

```

824     }
825     iterator
826     end() const GLIBCXX_NOEXCEPT
827     { return iterator(this->M_impl.M_finish); }
828
829     /**
830      * Returns a read-only (constant) iterator that points one past
831      * the last element in the <vector>. Iteration is done in
832      * ordinary element order.
833      */
834
835 PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
836 Filter (e.g. test, include)
837
838 #3 0x0000555555566c0c in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
839 #4 0x0000555555566c14 in CLInterface::login (this=0x555555586eb0, tries=0) at src/CLInterface.cpp:19
840 #7 0x000055555556722f in main (argc=1, argv=0x7fffffffd9fa) at src/main.cpp:20
841
842 -exec step
843
844 1195         M_realloc_insert(end(), __x);
845
846 -exec where
847
848 #0 std::vector<User, std::allocator<User> >::push_back (this=0x555555587290, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1195
849 #1 0x000055555555f0fb in Database::addUser (this=0x555555587290, newUser=...) at src/Database.cpp:35
850 #2 0x000055555555f041 in Database::Database (this=0x555555587290) at src/Database.cpp:18
851 #3 0x0000555555566b83 in LoginInterface::LoginInterface (this=0x555555587250) at src/LoginInterface.cpp:15
852 #4 0x0000555555566cf2 in CLLoginInterface::CLLoginInterface (this=0x555555587250) at src/CLLoginInterface.cpp:13
853 #5 0x0000555555566c0c in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
854 #6 0x0000555555566c14 in CLInterface::login (this=0x555555586eb0, tries=0) at src/CLInterface.cpp:19
855 #7 0x000055555556722f in main (argc=1, argv=0x7fffffffd9fa) at src/main.cpp:20
856
857 -exec step
858
859 std::vector<User, std::allocator<User> >::end (this=0x7fffffffd080) at /usr/include/c++/9/bits/stl_vector.h:826
860     end() const GLIBCXX_NOEXCEPT
861
862 -exec where
863
864 #0 std::vector<User, std::allocator<User> >::end (this=0x7fffffffd080) at /usr/include/c++/9/bits/stl_vector.h:826
865 #1 0x0000555555566b83 in std::vector<User, std::allocator<User> >::push_back (this=0x555555587290, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1195
866 #2 0x000055555555f0fb in Database::addUser (this=0x555555587290, newUser=...) at src/Database.cpp:35
867 #3 0x000055555555f041 in Database::Database (this=0x555555587290) at src/Database.cpp:18
868 #4 0x0000555555566b83 in LoginInterface::LoginInterface (this=0x555555587250) at src/LoginInterface.cpp:15
869 #5 0x0000555555566cf2 in CLLoginInterface::CLLoginInterface (this=0x555555587250) at src/CLLoginInterface.cpp:13
870 #6 0x0000555555566c0c in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
871 #7 0x0000555555566c14 in CLInterface::login (this=0x555555586eb0, tries=0) at src/CLInterface.cpp:19
872 #8 0x000055555556722f in main (argc=1, argv=0x7fffffffd9fa) at src/main.cpp:20

```

Figure 1.3: Inside vector

```

1751 // Called by M.fill_insert, M.insert_aux etc.
1752 size_type
1753 M_check_len(size_type n, const char* _s) const
1754 {
1755     if (max_size() - size() < n)
1756         throw_length_error(_N(_s));
1757     const size_type _len = size() + (std::max)(size(), n);
1758     return (_len < size() || _len > max_size()) ? max_size() : _len;
1759 }
1760
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
Filter (e.g. text, exclude)

-exec step
435 const size_type _len =
-exec where
#0 std::vector<user, std::allocator<user> >::M_realloc_insert<user const& (this=&0x55555587290, __position=non-dereferenceable iterator for std::vector) at /usr/include/c++/9/bits/vector.tcc:435
#1 0x0000555555560829 in std::vector<user, std::allocator<user> >::push_back (this=&0x55555587290, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1195
#2 0x000055555556f7b7 in Database::addUser (this=&0x55555587290, newUser=...) at src/Database.cpp:35
#3 0x000055555555f641 in Database::Database (this=&0x55555587290) at src/Database.cpp:18
#4 0x0000555555565b83 in LoginInterface::LoginInterface (this=&0x55555587290) at src/LoginInterface.cpp:15
#5 0x0000555555566cf2 in CLoginInterface::CLLoginInterface (this=&0x55555587290) at src/CLLoginInterface.cpp:13
#6 0x00005555555656c6 in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
#7 0x000055555556d614 in CLoginInterface::login (this=&0x55555586e6b, tries=0) at src/CLInterface.cpp:19
#8 0x000055555556722f in main (argc=1, argv=&0x7fffffffd9fa) at src/main.cpp:20
-exec step
std::vector<user, std::allocator<user> >::M_check_len (this=&0x770000007c, __n=0, __s=0x0) at /usr/include/c++/9/bits/stl_vector.h:1753
1753 M_check_len(size_type __n, const char* __s) const
-exec where
#0 std::vector<user, std::allocator<user> >::M_check_len (this=&0x770000007c, __n=0, __s=0x0) at /usr/include/c++/9/bits/stl_vector.h:1753
#1 0x000055555556081a in std::vector<user, std::allocator<user> >::M_realloc_insert<user const& (this=&0x55555587290, __position=non-dereferenceable iterator for std::vector) at /usr/include/c++/9/bits/vector.tcc:435
#2 0x0000555555560829 in std::vector<user, std::allocator<user> >::push_back (this=&0x55555587290, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1195
#3 0x000055555556f7b7 in Database::addUser (this=&0x55555587290, newUser=...) at src/Database.cpp:35
#4 0x000055555555f641 in Database::Database (this=&0x55555587290) at src/Database.cpp:18
#5 0x0000555555565b83 in LoginInterface::LoginInterface (this=&0x55555587290) at src/LoginInterface.cpp:15
#6 0x0000555555566cf2 in CLoginInterface::CLLoginInterface (this=&0x55555587290) at src/CLLoginInterface.cpp:13
#7 0x00005555555656c6 in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
#8 0x000055555556d614 in CLoginInterface::login (this=&0x55555586e6b, tries=0) at src/CLInterface.cpp:19
#9 0x000055555556722f in main (argc=1, argv=&0x7fffffffd9fa) at src/main.cpp:20

```

Figure 1.4: Inside vector

```

430 size_type
431 max_size() const _GLIBCXX_USE_NOEXCEPT
432 {
433     #if PTRODIFF_MAX < SIZE_MAX
434         return size_t((PTRODIFF_MAX) / sizeof(Tp));
435     #else
436         return size_t((-1) / sizeof(Tp));
437     #endif
438 }
439
PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS
Filter (e.g. text, exclude)

-exec step
std::allocator_traits<std::allocator<user> >::max_size (__a=...) at /usr/include/c++/9/bits/alloc_traits.h:504
504 max_size(const allocator_type& __a) noexcept
-exec step
505 { return __a.max_size(); }
-exec step
__gnu_cxx::new_allocator<user>::max_size (this=&0x7ffffffd0286 <std::__cxx11::basic_string<char, std::char_traits<char>, std::allocator<char> >::M_replace(unsigned long, unsigned long, char const*, unsigned long)>+45
45) at /usr/include/c++/9/ext/new_allocator.h:132
132 max_size() const _GLIBCXX_USE_NOEXCEPT
-exec where
#0 __gnu_cxx::new_allocator<user>::max_size (this=&0x7ffffffd0286 <std::__cxx11::basic_string<char, std::char_traits<char>, std::allocator<char> >::M_replace(unsigned long, unsigned long, char const*, unsigned long)>+45) at /usr/include/c++/9/ext/new_allocator.h:132
#1 0x000055555556090a in std::allocator_traits<std::allocator<user> >::max_size (__a=...) at /usr/include/c++/9/bits/alloc_traits.h:505
#2 0x0000555555560809 in std::vector<user, std::allocator<user> >::S_max_size (__a=...) at /usr/include/c++/9/bits/stl_vector.h:1780
#3 0x000055555556079c in std::vector<user, std::allocator<user> >::max_size (this=&0x55555587290) at /usr/include/c++/9/bits/stl_vector.h:921
#4 0x0000555555560636 in std::vector<user, std::allocator<user> >::M_check_len (this=&0x55555587290, __n=1, __s=&0x55555586e6b: "vector::M_realloc_insert") at /usr/include/c++/9/bits/stl_vector.h:1755
#5 0x000055555556091a in std::vector<user, std::allocator<user> >::M_realloc_insert<user const& (this=&0x55555587290, __position=non-dereferenceable iterator for std::vector) at /usr/include/c++/9/bits/vector.tcc:435
#6 0x0000555555560829 in std::vector<user, std::allocator<user> >::push_back (this=&0x55555587290, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1195
#7 0x000055555556f7b7 in Database::addUser (this=&0x55555587290, newUser=...) at src/Database.cpp:35
#8 0x000055555555f641 in Database::Database (this=&0x55555587290) at src/Database.cpp:18
#9 0x0000555555565b83 in LoginInterface::LoginInterface (this=&0x55555587290) at src/LoginInterface.cpp:15
#10 0x0000555555566cf2 in CLoginInterface::CLLoginInterface (this=&0x55555587290) at src/CLLoginInterface.cpp:13
#11 0x00005555555656c6 in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
#12 0x000055555556d614 in CLoginInterface::login (this=&0x55555586e6b, tries=0) at src/CLInterface.cpp:19
#13 0x000055555556722f in main (argc=1, argv=&0x7fffffffd9fa) at src/main.cpp:20

```

Figure 1.5: Inside vector

```

72 | template<typename Tp>
73 | constexpr Tp&&
74 | forward(typename std::remove_reference<Tp>::type& __t) noexcept
75 | { return static_cast<Tp&&(__t); }
76 |
77 | /**
78 |  * @brief Forward an rvalue.
79 |  * @return The parameter cast to the specified type.
80 |  *
81 |  * This function is used to implement "perfect forwarding".

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS Filter (e.g. text, exclude)

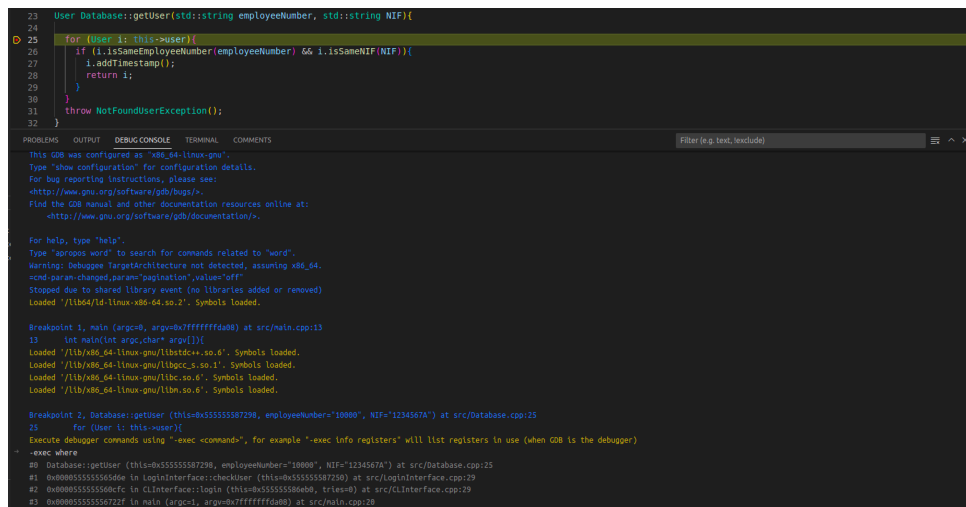
```

74 | forward(typename std::remove_reference<Tp>::type& __t) noexcept
- exec step
75 | { return static_cast<Tp&&(__t); }
- exec step
__gnu_cxx::new_allocator<User>::construct<User, User const& (this=0x0, __p=0x7fffffffd400) at /usr/include/c++/9/ext/new_allocator.h:144
144 | construct(_Up* __p, _Args&&... __args)
- exec step
146 | ( :new((void *)__p) _Up(std::forward<_Args>(__args)...); }
- exec step
std::forward<User const& (&__t...) at /usr/include/c++/9/bits/move.h:74
74 | forward(typename std::remove_reference<Tp>::type& __t) noexcept
- exec where
#0 std::forward<User const& (&__t...) at /usr/include/c++/9/bits/move.h:74
#1 0x00005555555604c5 in __gnu_cxx::new_allocator<User>::construct<User, User const& (this=0x555555587298, __p=0x555555587290) at /usr/include/c++/9/ext/new_allocator.h:146
#2 0x0000555555560176 in std::allocator_traits<std::allocator<User> >::construct<User, User const& (&__t..., __p=0x555555587290) at /usr/include/c++/9/bits/alloc_traits.h:403
#3 0x0000555555560259 in std::vector<User, std::allocator<User> >::_M_realloc_insert<User const& (this=0x555555587298, __position=non-const_iterator for std::vector) at /usr/include/c++/9/bits/vector.tcc:449
#4 0x0000555555560029 in std::vector<User, std::allocator<User> >::push_back (this=0x555555587298, __x=...) at /usr/include/c++/9/bits/stl_vector.h:1195
#5 0x000055555555f7b0 in Database::addUser (this=0x555555587298, newUser=...) at src/database.cpp:35
#6 0x000055555555f641 in Database::Database (this=0x555555587298) at src/database.cpp:18
#7 0x00005555555556b3 in LoginInterface::LoginInterface (this=0x555555587290) at src/LoginInterface.cpp:15
#8 0x00005555555666f2 in CLoginInterface::CLLoginInterface (this=0x555555587290) at src/CLLoginInterface.cpp:13
#9 0x00005555555645bc in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19
#10 0x00005555555640c4 in CLInterface::Login (this=0x555555580e0, tries=0) at src/CLInterface.cpp:19
#11 0x000055555556722f in main (argc=1, argv=0x7fffffffd0f0) at src/main.cpp:20

```

Figure 1.6: Reserved space for next User

## 2 Bloque de repetición



```
22 User Database::getUser(std::string employeeNumber, std::string NIF){
23
24
25     for (User i: this->user){
26         if (i.isSameEmployeeNumber(employeeNumber) && i.isSameNIF(NIF)){
27             i.addTimestamp();
28             return i;
29         }
30     }
31     throw NotFoundUserException();
32 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS

Filter (e.g. text, exclude)

This GDB was configured as "x86\_64-linux-gnu".  
Type "show configuration" for configuration details.  
For bug reporting instructions, please see:  
<http://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'.  
Warning: debuggee target architecture not detected, assuming x86\_64.  
<cmd-param-changed,param="pagination",value="off">  
Stopped due to shared library event (no libraries added or removed)  
Loaded "/lib64/ld-linux-x86-64.so.2". Symbols loaded.

Breakpoint 1, main (argc=0, argv=0x7fffffffa008) at src/main.cpp:13  
13 int main(int argc, char\* argv[]){  
Loaded "/lib64/x86\_64-linux-gnu/libstdc++.so.6". Symbols loaded.  
Loaded "/lib64/x86\_64-linux-gnu/libgcc\_s.so.1". Symbols loaded.  
Loaded "/lib64/x86\_64-linux-gnu/libc.so.6". Symbols loaded.  
Loaded "/lib64/x86\_64-linux-gnu/libnss.so.3". Symbols loaded.

Breakpoint 2, Database::getUser (this=0x555555587298, employeeNumber="10000", NIF="1234567A") at src/Database.cpp:25  
25 for (User i: this->user){  
Execute debugger commands using "-exec <command>", for example "-exec info registers" will list registers in use (when GDB is the debugger)  
-exec where  
#0 Database::getUser (this=0x555555587298, employeeNumber="10000", NIF="1234567A") at src/Database.cpp:25  
#1 0x000055555556d66e in LoginInterface::checkUser (this=0x555555587298) at src/LoginInterface.cpp:29  
#2 0x000055555556d6fc in CLInterface::login (this=0x555555586e6b, tries=0) at src/CLInterface.cpp:29  
#3 0x000055555556722f in main (argc=0, argv=0x7fffffffa008) at src/main.cpp:10

Figure 2.1: Starting for loop

```

907 iterator
908 begin() GLIBCXX_NOEXCEPT
909 { return iterator(this->M_impl.M_start); }
910
911 /**
912  * Returns a read-only (constant) iterator that points to the
913  * first element in the %vector. Iteration is done in ordinary
914  * element order.
915  */

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS

Filter (e.g. text, include)

ncnd-param-changed,param-paginatation,value=off  
 Stopped due to shared library event (no libraries added or removed)  
 Loaded "/lib64/ld-linux-x86-64.so.2". Symbols loaded.

Breakpoint 1, main (argc=0, argv=0x7fffffffd000) at src/main.cpp:13  
 13 int main(int argc,char\* argv[]){  
 Loaded "/lib/x86\_64-linux-gnu/libstdc++.so.6". Symbols loaded.  
 Loaded "/lib/x86\_64-linux-gnu/libgcc\_s.so.1". Symbols loaded.  
 Loaded "/lib/x86\_64-linux-gnu/libc.so.6". Symbols loaded.  
 Loaded "/lib/x86\_64-linux-gnu/libm.so.6". Symbols loaded.

Breakpoint 2, Database::getUser (this=0x55555587298, employeeNumber="10000", NIF="1234567A") at src/Database.cpp:25  
 25 for (User i: this->user){  
 Execute debugger commands using "-exec <command>", for example "-exec info registers" will list registers in use (when GDB is the debugger)

-exec where  
 #0 Database::getUser (this=0x55555587298, employeeNumber="10000", NIF="1234567A") at src/Database.cpp:25  
 #1 0x0000555555556d0e in LoginInterface::checkUser (this=0x55555587298) at src/LoginInterface.cpp:29  
 #2 0x00005555555560fc in CLInterface::login (this=0x55555580e00, tries=0) at src/CLInterface.cpp:29  
 #3 0x000055555555672f in main (argc=1, argv=0x7fffffffd000) at src/main.cpp:20  
 -exec step

std::vector<User, std::allocator<User> >::begin (this=0x0) at /usr/include/c++/9/bits/stl\_vector.h:808  
 808 begin() GLIBCXX\_NOEXCEPT  
 -exec where  
 #0 std::vector<User, std::allocator<User> >::begin (this=0x0) at /usr/include/c++/9/bits/stl\_vector.h:808  
 #1 Database::getUser (this=0x55555587298, employeeNumber="10000", NIF="1234567A") at src/Database.cpp:25  
 #2 0x0000555555556d0e in LoginInterface::checkUser (this=0x55555587298) at src/LoginInterface.cpp:29  
 #3 0x00005555555560fc in CLInterface::login (this=0x55555580e00, tries=0) at src/CLInterface.cpp:29  
 #4 0x000055555555672f in main (argc=1, argv=0x7fffffffd000) at src/main.cpp:20

Figure 2.2: Getting iterator

```

19 class User{
20 friend std::ostream &operator<< (std::ostream &,const User &);
21 public:
22 /**
23  * @brief Create a new User
24  *
25  * @param employeeNumber
26  * @param NIF

```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS

Filter (e.g. text, include)

904 operator<<(const \_\_gnu\_cxx::\_\_normal\_iterator<\_\_Container# \_\_lhs,  
 -exec step

907 { return \_\_lhs.base() != \_\_rhs.base(); }  
 -exec step

\_\_gnu\_cxx::\_\_normal\_iterator<User\*, std::vector<User, std::allocator<User> > >::base (this=0x7fffffffd530) at /usr/include/c++/9/bits/stl\_iterator.h:808  
 808 base() const GLIBCXX\_NOEXCEPT  
 -exec step

809 { return !\_M\_current; }  
 -exec step

\_\_gnu\_cxx::\_\_normal\_iterator<User\*, std::vector<User, std::allocator<User> > >::base (this=0x7fffffffd578) at /usr/include/c++/9/bits/stl\_iterator.h:808  
 808 base() const GLIBCXX\_NOEXCEPT  
 -exec step

809 { return !\_M\_current; }  
 -exec step

\_\_gnu\_cxx::\_\_normal\_iterator<User\*, std::vector<User, std::allocator<User> > >::operator\* (this=0x55555587298) at /usr/include/c++/9/bits/stl\_iterator.h:816  
 816 operator\*() const GLIBCXX\_NOEXCEPT  
 -exec step

817 { return \*\_M\_current; }  
 -exec step

User::user (this=0x7fffffffd578) at /include/User.h:19  
 19 class User{

Figure 2.3: Setting iterator type User



```

23 User Database::getUser(std::string employeeNumber, std::string NIF){
24
25     for (User i: this->user){
26         if (!i.isSameEmployeeNumber(employeeNumber) && !i.isSameNIF(NIF)){
27             i.addTimestamp();
28             return i;
29         }
30     }
31     throw NotFoundException();
32 }

```

DEBUG CONSOLE

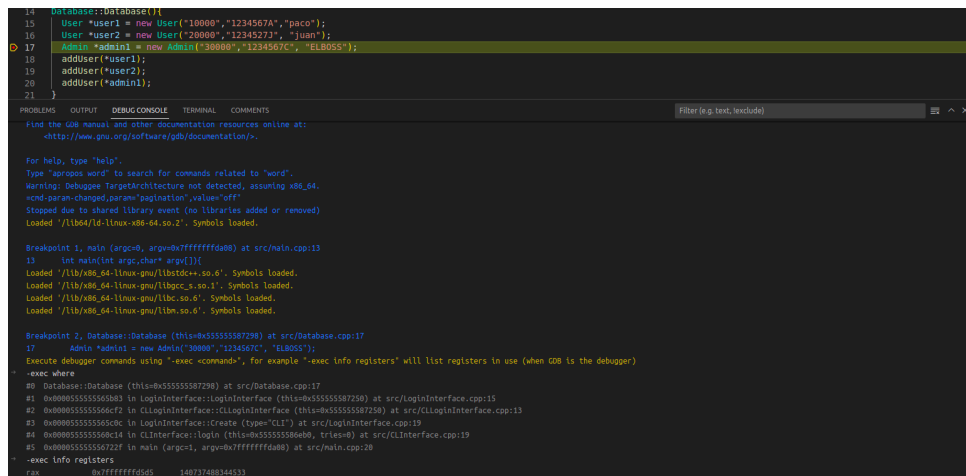
```

- exec step
__gnu_cxx::__normal_iterator<User*, std::vector<User, std::allocator<User> > >::base (this=0x7fffffffdd30) at /usr/include/c++/9/bits/stl_iterator.h:868
868     base() const _GLIBCXX_NOEXCEPT
- exec step
869     { return *_M_current; }
- exec step
__gnu_cxx::__normal_iterator<User*, std::vector<User, std::allocator<User> > >::base (this=0x7fffffffdd30) at /usr/include/c++/9/bits/stl_iterator.h:868
868     base() const _GLIBCXX_NOEXCEPT
- exec step
869     { return *_M_current; }
- exec step
__gnu_cxx::__normal_iterator<User*, std::vector<User, std::allocator<User> > >::operator* (this=0x55555587298) at /usr/include/c++/9/bits/stl_iterator.h:816
816     operator*() const _GLIBCXX_NOEXCEPT
- exec step
817     { return *_M_current; }
- exec step
User::User (this=0x7fffffffdd30) at include/user.h:19
19     class User{
- exec step
Database::getUser (this=0x55555587298, employeeNumber="10000", NIF="1234567A") at src/Database.cpp:26
26     if (!i.isSameEmployeeNumber(employeeNumber) && !i.isSameNIF(NIF)){

```

Figure 2.4: Inside the loop

### 3 Creación objeto con herencia



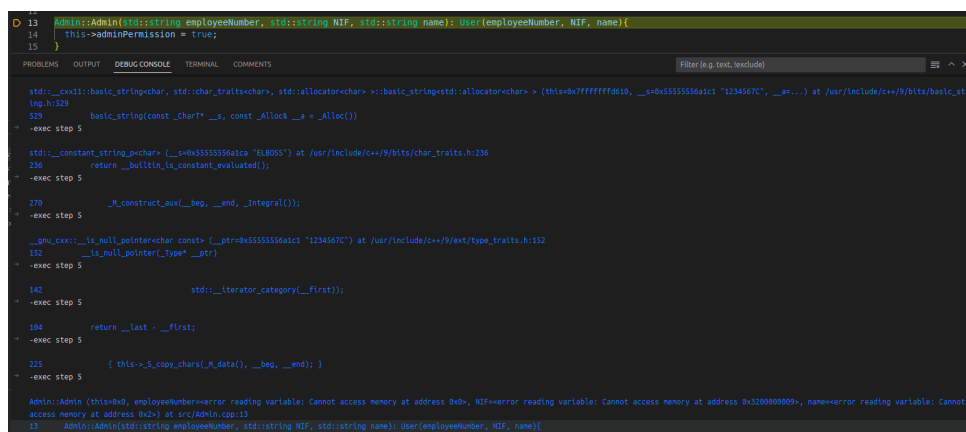
```
14 Database::Database() {
15     User *user1 = new User("10000", "1234567A", "paco");
16     User *user2 = new User("20000", "1234567J", "juan");
17     Admin *admin1 = new Admin("30000", "1234567C", "ELBOSS");
18     adduser(*user1);
19     adduser(*user2);
20     adduser(*admin1);
21 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS

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'.  
Warning: Debuggee TargetArchitecture not detected, assuming x86\_64.  
<cmd-param-changed,param="pagination",value="off">  
Stopped due to shared library event (no libraries added or removed).  
Loaded "/lib64/ld-linux-x86-64.so.2". Symbols loaded.  
Breakpoint 1, main (argc=0, argv=0x7fffffffd000) at src/main.cpp:13  
13 int main(int argc, char\* argv[]) {  
Loaded "/lib/x86\_64-linux-gnu/libstdc++.so.6". Symbols loaded.  
Loaded "/lib/x86\_64-linux-gnu/libgcc\_s.so.1". Symbols loaded.  
Loaded "/lib/x86\_64-linux-gnu/libc.so.6". Symbols loaded.  
Loaded "/lib/x86\_64-linux-gnu/libm.so.6". Symbols loaded.  
Breakpoint 2, Database::Database (this=0x555555587298) at src/Database.cpp:17  
17 Admin \*admin1 = new Admin("30000", "1234567C", "ELBOSS");  
Execute debugger commands using "-exec <command>", for example "-exec info registers" will list registers in use (when GDB is the debugger)  
-exec where  
#0 Database::Database (this=0x555555587298) at src/Database.cpp:17  
#1 0x0000555555587298 in LoginInterface::LoginInterface (this=0x555555587298) at src/LoginInterface.cpp:15  
#2 0x0000555555587298 in CLLoginInterface::CLLoginInterface (this=0x555555587298) at src/CLLoginInterface.cpp:13  
#3 0x0000555555587298 in LoginInterface::Create (type="CLI") at src/LoginInterface.cpp:19  
#4 0x0000555555587298 in CLInterface::Login (this=0x555555587298, type=0) at src/CLInterface.cpp:19  
#5 0x0000555555587298 in main (argc=1, argv=0x7fffffffd000) at src/main.cpp:16  
-exec info registers  
rax 0x7fffffffd000 14073408344511

Figure 3.1: Creating admin object



```
13 Admin::Admin(std::string employeeNumber, std::string NIF, std::string name): User(employeeNumber, NIF, name) {
14     this->adminPermission = true;
15 }
```

PROBLEMS OUTPUT DEBUG CONSOLE TERMINAL COMMENTS

Filter (e.g. text, exclude)

std::cxx11::basic\_string<char, std::char\_traits<char>, std::allocator<char> >::basic\_string(std::allocator<char> > (this=0x7fffffffd000, \_\_a=0x555555587298, \_\_s=...) at /usr/include/c++/9/bits/basic\_string.h:529  
529 basic\_string(const \_CharT\* \_\_s, const \_Alloc \_\_a = \_Alloc())  
-exec step 5  
std::\_\_constant\_string\_ptr<char> (\_\_s=0x555555587298, "ELBOSS") at /usr/include/c++/9/bits/char\_traits.h:236  
236 return \_\_builtin\_is\_constant\_evaluated();  
-exec step 5  
279 \_M\_construct\_aux(\_\_beg, \_\_end, \_\_integral());  
-exec step 5  
\_\_gnu\_cxx::\_\_is\_null\_pointer<char const> (\_\_ptr=0x555555587298, "1234567C") at /usr/include/c++/9/ext/type\_traits.h:152  
152 \_\_is\_null\_pointer(\_\_ptr)  
-exec step 5  
142 std::\_\_iterator\_category(\_\_first);  
-exec step 5  
104 return \_\_last - \_\_first;  
-exec step 5  
225 { this->\_S\_copy\_chars(\_M\_data(), \_\_beg, \_\_end); }  
-exec step 5  
Admin::Admin (this=0x0, employeeNumber=error reading variable: Cannot access memory at address 0x0, NIF=error reading variable: Cannot access memory at address 0x0, name=error reading variable: Cannot access memory at address 0x0) at src/Admin.cpp:13  
13 Admin::Admin(std::string employeeNumber, std::string NIF, std::string name): User(employeeNumber, NIF, name){

Figure 3.2: Admin constructor

