


```
Real-time violation: intercepted call to real-time unsafe function `pthread_mutex_lock` in real-time context! Stack trace:
./example_external(_Z14get_stacktraceB5cxx11v+0x3c) [0xaaaaadc5c986c]
/home/parallels/Desktop/Parallels Shared Folders/Home/Documents/Developement/Lectures/CppOnSea 2024/example_external/build_linux-gnu/
librt_checked.so(_Z32log_function_if_realtime_contextPKc+0x58) [0xfffff974956dc]
/home/parallels/Desktop/Parallels Shared Folders/Home/Documents/Developement/Lectures/CppOnSea 2024/example_external/build_linux-gnu/librt_checked.so(pthread_mutex_lock+0x18)
[0xfffff97494838]
./example_external(+0x9278) [0xaaaaadc5c9278]
./example_external(_ZNSt5mutex4lockEv+0x14) [0xaaaaadc5c92d8]
./example_external(_ZNSt11unique_lockISt5mutexE4lockEv+0x48) [0xaaaaadc5cbfbc]
./example_external(_ZNSt11unique_lockISt5mutexEC2ERS0_+0x34) [0xaaaaadc5cb310]
./example_external(_Z20do_mutex_lock_unlockRSt5mutex+0x2c) [0xaaaaadc5c89f0]
```

```
Real-time violation: intercepted call to real-time unsafe function `pthread_mutex_unlock` in real-time context! Stack trace:
./example_external(_Z14get_stacktraceB5cxx11v+0x3c) [0xaaaaadc5c986c]
/home/parallels/Desktop/Parallels Shared Folders/Home/Documents/Developement/Lectures/CppOnSea 2024/example_external/build_linux-gnu/
librt_checked.so(_Z32log_function_if_realtime_contextPKc+0x58) [0xfffff974956dc]
/home/parallels/Desktop/Parallels Shared Folders/Home/Documents/Developement/Lectures/CppOnSea 2024/example_external/build_linux-gnu/librt_checked.so(pthread_mutex_unlock+0x18)
[0xfffff974948dc]
./example_external(+0x92b4) [0xaaaaadc5c92b4]
./example_external(_ZNSt5mutex6unlockEv+0x14) [0xaaaaadc5c9310]
./example_external(_ZNSt11unique_lockISt5mutexE6unlockEv+0x48) [0xaaaaadc5cc01c]
./example_external(_ZNSt11unique_lockISt5mutexED1Ev+0x24) [0xaaaaadc5cb34c]
./example_external(_Z20do_mutex_lock_unlockRSt5mutex+0x34) [0xaaaaadc5c89f8]
```




```
extern "C" int pthread_mutex_lock(pthread_mutex_t *mutex)
{
    log_function_if_realtime_context (__func__);

    static auto real_pthread_mutex_lock = (int (*)(pthread_mutex_t *))dlsym(RTLD_NEXT, "pthread_mutex_lock");
    return real_pthread_mutex_lock(mutex);
}

extern "C" int pthread_mutex_unlock(pthread_mutex_t *mutex)
{
    log_function_if_realtime_context (__func__);

    static auto real_pthread_mutex_unlock = (int (*)(pthread_mutex_t *))dlsym(RTLD_NEXT, "pthread_mutex_unlock");
    return real_pthread_mutex_unlock(mutex);
}
```

```
{  
    std::mutex m;  
  
    realtime_context rc;  
  
    get_file_size();  
    do_malloc_free();  
    do_vector_reserve();  
    do_mutex_lock_unlock (m);  
});
```

```
void do_mutex_lock_unlock (std::mutex& m)
{
    std::unique_lock l (m);
}
```

```
extern "C" int pthread_mutex_lock(pthread_mutex_t *mutex)
{
    log_function_if_realtime_context (__func__);

    static auto real_thread_mutex_lock = (int (*)(pthread_mutex_t *))dlsym(RTLD_NEXT, "pthread_mutex_lock");
    return real_thread_mutex_lock(mutex);
}

extern "C" int pthread_mutex_unlock(pthread_mutex_t *mutex)
{
    log_function_if_realtime_context (__func__);

    static auto real_thread_mutex_unlock = (int (*)(pthread_mutex_t *))dlsym(RTLD_NEXT, "pthread_mutex_unlock");
    return real_thread_mutex_unlock(mutex);
}
```

```
Real-time violation: intercepted call to real-time unsafe function `pthread_mutex_lock` in real-time context
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/home/parallels/Desktop/Parallels Shared Folders/Home/Documents/Developement/Lectures/CppOnSea 2024/example
librt_checked.so(_Z32log_function_if_realtime_contextPKc+0x58) [0xffff974956dc]
/home/parallels/Desktop/Parallels Shared Folders/Home/Documents/Developement/Lectures/CppOnSea 2024/example
[0xffff97494838]
./example_external(+0x9278) [0xaaaadc5c9278]
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./example_external(_ZNSt11unique_lockISt5mutexEC2ERS0_+0x34) [0xaaaadc5cb310]
./example_external(_Z20do_mutex_lock_unlockRSt5mutex+0x2c) [0xaaaadc5c89f0]

Real-time violation: intercepted call to real-time unsafe function `pthread_mutex_unlock` in real-time context
./example_external(_Z14get_stacktraceB5cxx11v+0x3c) [0xaaaadc5c986c]
/home/parallels/Desktop/Parallels Shared Folders/Home/Documents/Developement/Lectures/CppOnSea 2024/example
librt_checked.so(_Z32log_function_if_realtime_contextPKc+0x58) [0xffff974956dc]
/home/parallels/Desktop/Parallels Shared Folders/Home/Documents/Developement/Lectures/CppOnSea 2024/example
[0xffff974948dc]
./example_external(+0x92b4) [0xaaaadc5c92b4]
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./example_external(_Z20do_mutex_lock_unlockRSt5mutex+0x34) [0xaaaadc5c89f8]
```

```
{
    std::mutex m;

    realtime_context rc;

    get_file_size();
    do_malloc_free();
    do_vector_reserve();
    do_mutex_lock_unlock (m);
});
```

```
void do_mutex_lock_unlock (std::mutex& m)
{
    std::unique_lock l (m);
}
```


False Positives

Quiz question 8 revisited:

```
std::mutex m;
```

```
std::thread t1 ([&  
    {  
        std::unique_lock l (m);  
        // Do something real-time safe..  
    }]);
```

```
t1.join();
```

```
std::thread t2 ([&  
    {  
        std::unique_lock l (m);  
        // Do something else real-time safe..  
    }]);
```

```
t2.join();
```