Subject: ASyncWork/CoWork Cancel() method leads to deadlock (when used with GuiLock)

Posted by Oblivion on Sun, 26 Aug 2018 18:16:53 GMT

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Hello,

This happens on both linux (latest) and Window 7/10.

When I try to cancel any AsyncWork/CoWork-based threads that access/modify gui elements (using GuiLock) application simply hangs.
(OTOH, If i use a simple cancelleation flag instead, everything works well. But obviously it work like a "cancel all" command)

I attached a simple example, and here is its log:

CoWork constructed 7f66af217ca0
Do0, looper: false, previous todo: 0
Pool::InitThreads: 8
CoWork thread #0 started
CoWork thread #1 started
CoWork thread #2 started
CoWork thread #4 started
CoWork thread #3 started
CoWork thread #5 started
CoWork thread #6 started
CoWork thread #7 started
#2 Waiting for job
#5 Waiting for job
#0 Waiting for job
#4 Waiting for job
#1 Waiting for job
#7 Waiting for job
#3 Waiting for job
#6 Waiting for job
Adding job
Releasing thread waiting for job, waiting threads: 8
#2 Waiting ended
#2 Job acquired
CoWork constructed 7f66af217d80
DoJob (CoWork 7f66af217ca0)
Thread #0 started.
Do0, looper: false, previous todo: 0
Adding job
Releasing thread waiting for job, waiting threads: 7
CoWork constructed 7f66af217e60
#5 Waiting ended

#5 Job acquired
DoJob (CoWork 7f66af217d80)
Thread #1 started.
Do0, looper: false, previous todo: 0
Adding job
Releasing thread waiting for job, waiting threads: 6
#0 Waiting ended
#0 Job acquired
CoWork constructed 7f66af217f40
DoJob (CoWork 7f66af217e60)
Thread #2 started.
Do0, looper: false, previous todo: 0
Adding job
Releasing thread waiting for job, waiting threads: 5
#4 Waiting ended
#4 Job acquired
DoJob (CoWork 7f66af217f40)
Thread #3 started.
CoWork Cancel0
WaitForFinish (CoWork 7f66af217ca0)

What am I doing wrong?

Best regards,
Oblivion

File Attachments
1) AsyncTest.zip, downloaded 238 times

Subject: Re: ASyncWork/CoWork Cancel() method leads to deadlock (when used with GuiLock)
Posted by mirek on Mon, 27 Aug 2018 07:47:46 GMT
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I believe the issue is caused by the fact that "Cancel" waits for the job to actually exit.

Now AsyncTest::Stop is GUI event, so when it performs, GuiLock is locked. Cancel has to wait for CoWork to finish - that is important, because often CoWork jobs are referencing local data. Then in your worker job, you attempt to GuiLock too. Obviously, after that Sleep, it is unable to lock GuiLock and result is deadlock.

Now what to do with that, I am not sure... Perhaps we need another form of 'Cancel' (something like 'Abandon') that is not required to wait for job to finish?

Subject: Re: ASyncWork/CoWork Cancel() method leads to deadlock (when used with GuiLock)
Posted by mirek on Mon, 27 Aug 2018 07:55:32 GMT

After further thinking, 'Abandon' is dangerous idea. Perhaps we need something like 'GuiUnlock __' instead...

Mirek

Subject: Re: ASyncWork/CoWork Cancel() method leads to deadlock (when used with GuiLock)
Posted by mirek on Mon, 27 Aug 2018 08:00:35 GMT

OK, fixed with GuiUnLock :


```
void AsyncTest::Stop()
{
 GuiUnLock __;
 for(auto& w : workers)
  w.Cancel();
}
```

Subject: Re: ASyncWork/CoWork Cancel() method leads to deadlock (when used with GuiLock)
Posted by Oblivion on Mon, 27 Aug 2018 09:45:41 GMT

Quote:
OK, fixed with GuiUnLock

Thanks, a very simple and nice solution!

However I'd recommend changing the class name from GuiUnLock to GuiUnlock. (It is easier to spell, and more natural.)

Best regards,
Oblivion

Subject: Re: ASyncWork/CoWork Cancel() method leads to deadlock (when used

with GuiLock)
Posted by Klugier on Mon, 27 Aug 2018 15:24:31 GMT

Hello Mirek

Why not make "n" private in GuiUnlock class:

```
struct GuiUnlock {
 int n; // There is realy not need to make it publicly available.

  GuiUnlock()  { n = LeaveGuiMutexAll(); }
 ~GuiUnlock() { EnterGuiMutex(n); }
};
```

Sincerely,
Klugier

Subject: Re: ASyncWork/CoWork Cancel() method leads to deadlock (when used with GuiLock)
Posted by mirek on Mon, 27 Aug 2018 15:52:46 GMT

Yes, you are right.

Subject: Re: ASyncWork/CoWork Cancel() method leads to deadlock (when used with GuiLock)
Posted by mdelfede on Tue, 28 Aug 2018 15:25:47 GMT

I stumbled many times on this problem (mostly when calling inside a thread, like Ctrl::Call())
and always solved with LeaveGuiMutexAll().
The new way is obviously better!

Subject: Re: ASyncWork/CoWork Cancel() method leads to deadlock (when used with GuiLock)
Posted by bozero on Thu, 14 May 2020 02:25:34 GMT

I notice the progress indication of this case (ASyncTest.zip) always displays 0 percent. Is it a bug?

Tried under upp-win-14434.