

01) Threads

ThreadPools



7

SEVENTH
EDITION

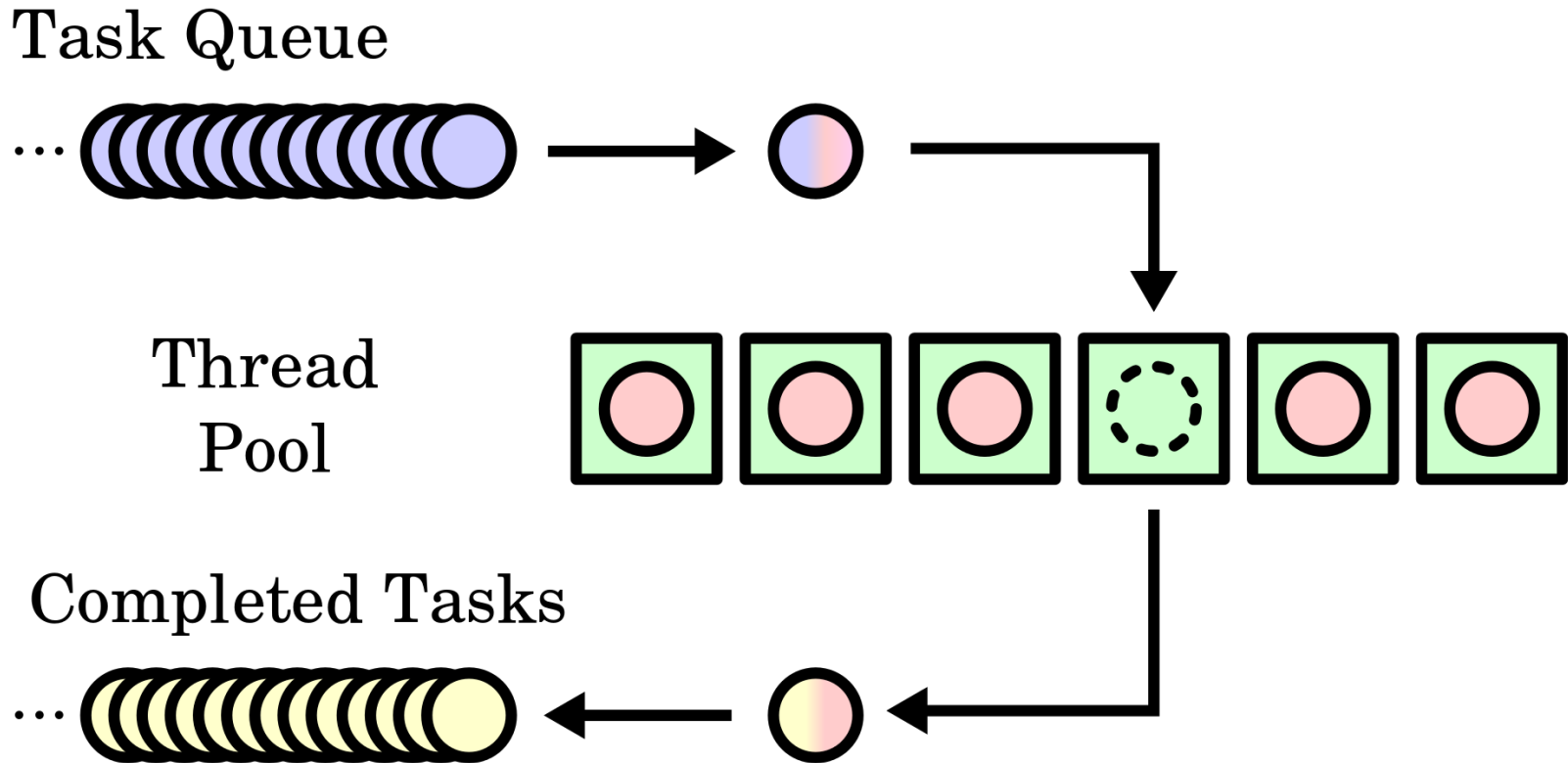
Windows Internals



Professional



What is a ThreadPool?



https://en.wikipedia.org/wiki/Thread_pool





WinAPI ThreadPool Callbacks

Every process in Windows has a default ThreadPool

- Work Callbacks
- Timer Callbacks
- Wait Callbacks
- I/O Callbacks

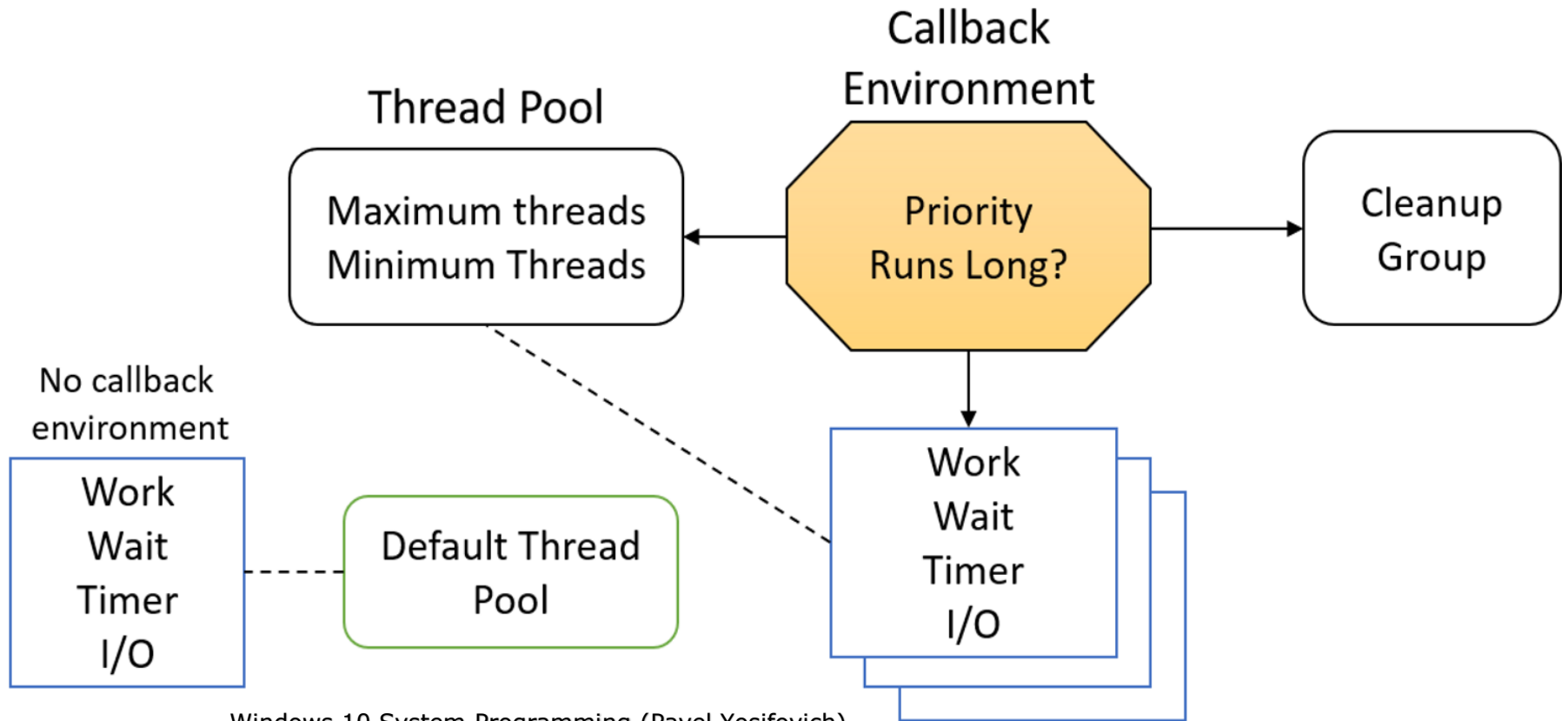
- You can create other ThreadPools

```
PTP_POOL CreateThreadpool(_Reserved_ PVOID reserved);
```

```
VOID SetThreadpoolThreadMaximum(  
    _Inout_ PTP_POOL ptp,  
    _In_ DWORD cthrdMost);  
BOOL SetThreadpoolThreadMinimum(  
    _Inout_ PTP_POOL ptp,  
    _In_ DWORD cthrdMin);
```



WinAPI ThreadPools



Windows 10 System Programming (Pavel Yosifovich)

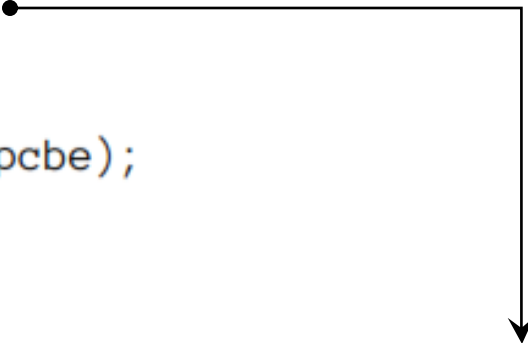


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Simple Work Callbacks

```
BOOL TrySubmitThreadpoolCallback(  
    _In_ PTP_SIMPLE_CALLBACK pfns,  
    _Inout_opt_ PVOID pv,  
    _In_opt_ PTP_CALLBACK_ENVIRON pcbe);
```



```
typedef VOID (NTAPI *PTP_SIMPLE_CALLBACK)(  
    _Inout_      PTP_CALLBACK_INSTANCE Instance,  
    _Inout_opt_ PVOID Context);
```





Creating Work Callbacks

```
PTP_WORK CreateThreadpoolWork(  
    _In_ PTP_WORK_CALLBACK pfnwk,  
    _Inout_opt_ PVOID pv,  
    _In_opt_ PTP_CALLBACK_ENVIRON pcbe);  
  
VOID SubmitThreadpoolWork(  
    _Inout_ PTP_WORK Work  
);  
  
typedef VOID (CALLBACK *PTP_WORK_CALLBACK)(  
    _Inout_ PTP_CALLBACK_INSTANCE Instance,  
    _Inout_opt_ PVOID Context,  
    _Inout_ PTP_WORK Work);  
  
void WaitForThreadpoolWorkCallbacks(  
    _Inout_ PTP_WORK pwk,  
    _In_ BOOL fCancelPendingCallbacks);
```





Timer Callbacks

```
PTP_TIMER CreateThreadpoolTimer(  
    _In_ PTP_TIMER_CALLBACK pfnti,  
    _Inout_opt_ PVOID pv,  
    _In_opt_ PTP_CALLBACK_ENVIRON pcbe);
```

```
typedef VOID (CALLBACK *PTP_TIMER_CALLBACK)(  
    _Inout_      PTP_CALLBACK_INSTANCE Instance,  
    _Inout_opt_ PVOID Context,  
    _Inout_      PTP_TIMER Timer);
```

```
VOID SetThreadpoolTimer(  
    _Inout_ PTP_TIMER pti,  
    _In_opt_ PFILETIME pftDueTime,  
    _In_ DWORD msPeriod,  
    _In_opt_ DWORD msWindowLength);
```





CODING TIME