

概念上簡單來說，每個 chip 會有一 unique id 區分彼此 (例如 id 可放在 flash 某固定位址)，而在 PC 端應用程式則有一 mutex 物件對應，為了避免同時有兩應用程式對同一 chip 做動作，所以應用程式必須先取得板子對應的 mutex 物件，才能有 chip 佔有權接著下出指令動作。當然實際應用上考慮的情況會複雜許多。

Please reference to the following files:

1. Sample\USB\Smpl_HIDTransfer\WindowsTool\HIDTransferTest\HIDTransferTest.cpp
2. Sample\USB\Smpl_HIDTransfer\WindowsTool\HIDTransferTest\HID.hpp
3. Sample\USB\Smpl_HIDTransfer\HIDTransfer_API.c - function HID_CmdID

Reference:

1. [http://msdn.microsoft.com/en-us/library/windows/desktop/ms686927\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/windows/desktop/ms686927(v=vs.85).aspx)

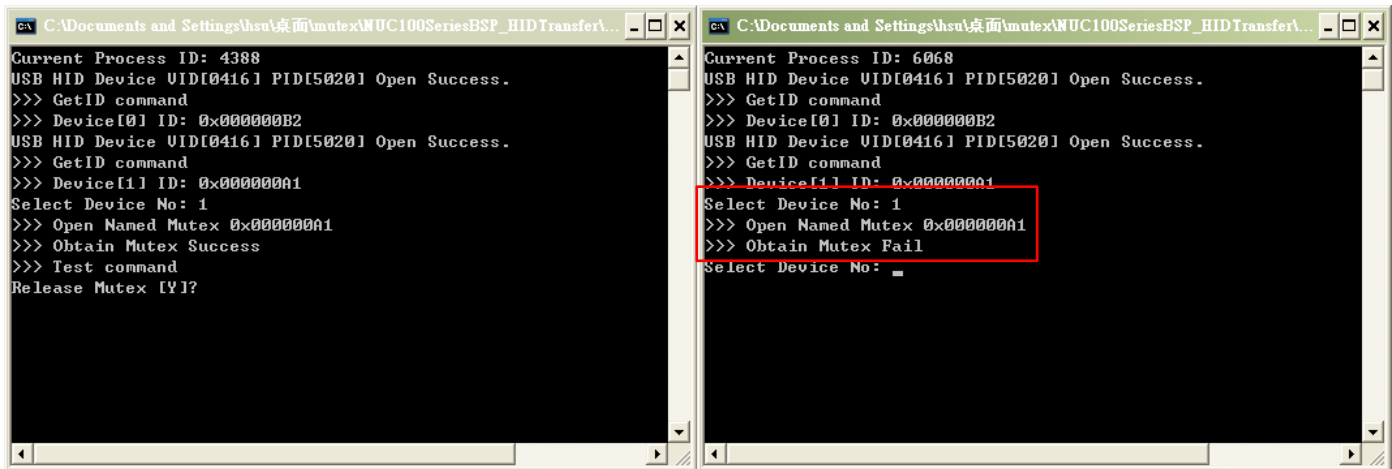
Simple Demo:

PC 連接兩 NUC120AN chip 測試，而 id 分別為 0x000000A1 & 0x000000B2 (P.S. sample code 內預設都是回傳 0xFFFFFFFF，這部分需自己去實作)，接著同時執行兩 HIDTransferTest 應用程式如下：

a) 一開始根據 VID 及 PID 去列舉出所有與 PC 相連的 HID USB 裝置，接著會跳出 "Select Device No" 訊息提示輸入選取裝置號碼。

b) 假設現在 Process 4388 選取了 device[1] 即 id 0x000000A1 裝置，則會嘗試去取得對應 mutex 物件。

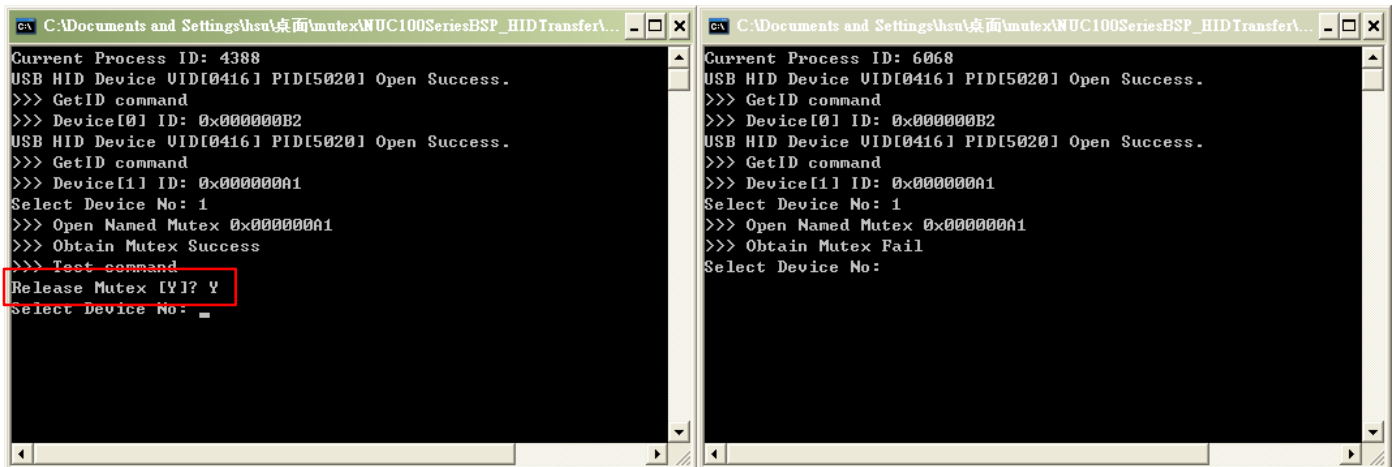
c) 接著如果 Process 6068 嘗試去取得 device[1]所對應 mutex 物件，則會出現錯誤訊息。



```
C:\Documents and Settings\hsu\桌面\mutex\WUC100SeriesBSP_HIDTransferA...
Current Process ID: 4388
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[0] ID: 0x000000B2
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[1] ID: 0x000000A1
Select Device No: 1
>>> Open Named Mutex 0x000000A1
>>> Obtain Mutex Success
>>> Test command
Release Mutex [Y]?

C:\Documents and Settings\hsu\桌面\mutex\WUC100SeriesBSP_HIDTransferA...
Current Process ID: 6068
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[0] ID: 0x000000B2
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[1] ID: 0x000000A1
Select Device No: 1
>>> Open Named Mutex 0x000000A1
>>> Obtain Mutex Fail
Select Device No: _
```

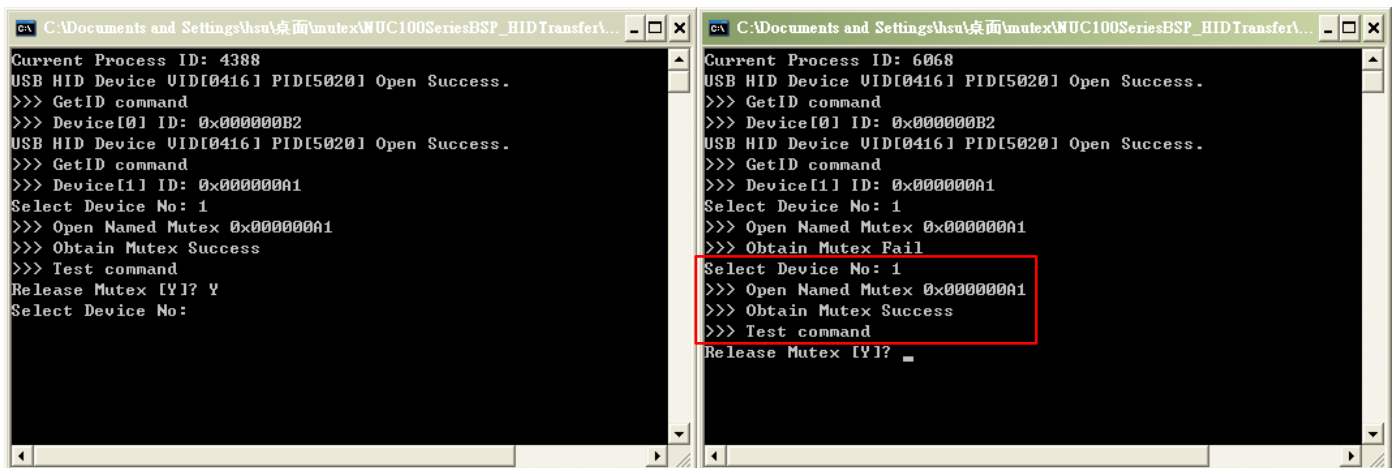
d) Process 4388 釋放 device[1] mutex 物件。



```
C:\Documents and Settings\hsu\桌面\mutex\WUC100SeriesBSP_HIDTransferA...
Current Process ID: 4388
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[0] ID: 0x000000B2
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[1] ID: 0x000000A1
Select Device No: 1
>>> Open Named Mutex 0x000000A1
>>> Obtain Mutex Success
>>> Test command
Release Mutex [Y]? Y
Select Device No: _

C:\Documents and Settings\hsu\桌面\mutex\WUC100SeriesBSP_HIDTransferA...
Current Process ID: 6068
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[0] ID: 0x000000B2
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[1] ID: 0x000000A1
Select Device No: 1
>>> Open Named Mutex 0x000000A1
>>> Obtain Mutex Fail
Select Device No: _
```

e) Process 6068 再一次嘗試去取得 device[1]所對應 mutex 物件，則會回傳成功訊息。



```
C:\Documents and Settings\hsu\桌面\mutex\WUC100SeriesBSP_HIDTransferA...
Current Process ID: 4388
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[0] ID: 0x000000B2
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[1] ID: 0x000000A1
Select Device No: 1
>>> Open Named Mutex 0x000000A1
>>> Obtain Mutex Success
>>> Test command
Release Mutex [Y]? Y
Select Device No: _

C:\Documents and Settings\hsu\桌面\mutex\WUC100SeriesBSP_HIDTransferA...
Current Process ID: 6068
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[0] ID: 0x000000B2
USB HID Device VID[0416] PID[5020] Open Success.
>>> GetID command
>>> Device[1] ID: 0x000000A1
Select Device No: 1
>>> Open Named Mutex 0x000000A1
>>> Obtain Mutex Fail
Select Device No: 1
>>> Open Named Mutex 0x000000A1
>>> Obtain Mutex Success
>>> Test command
Release Mutex [Y]? _
```