Keyboard & Mouse
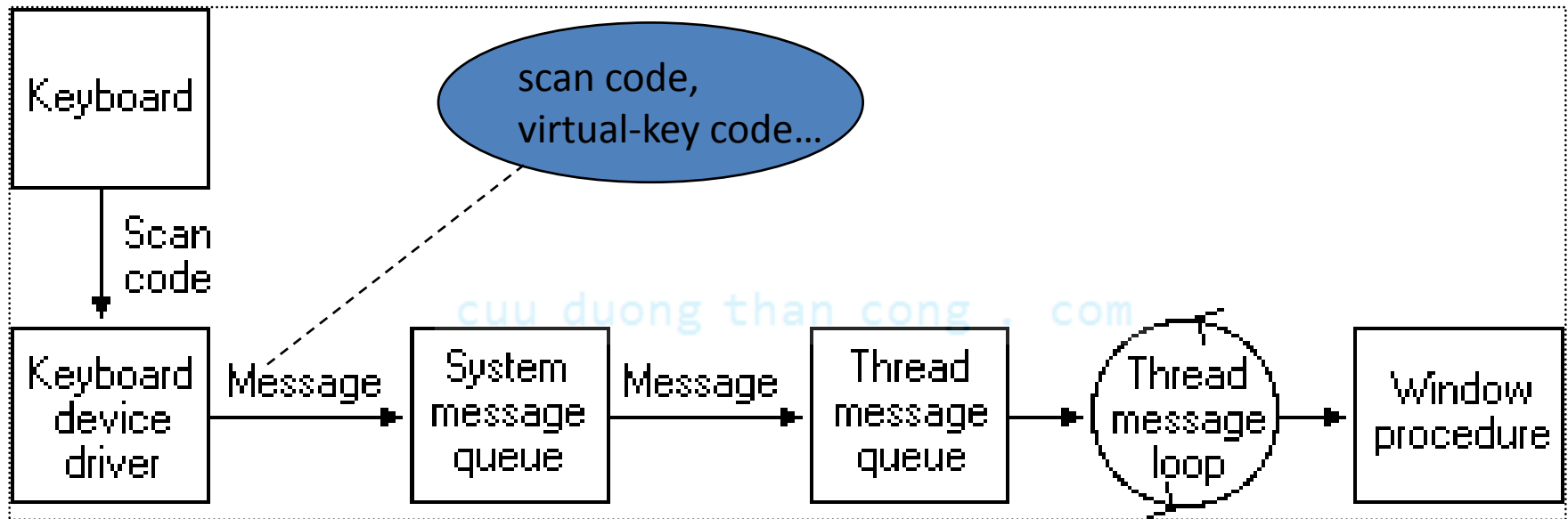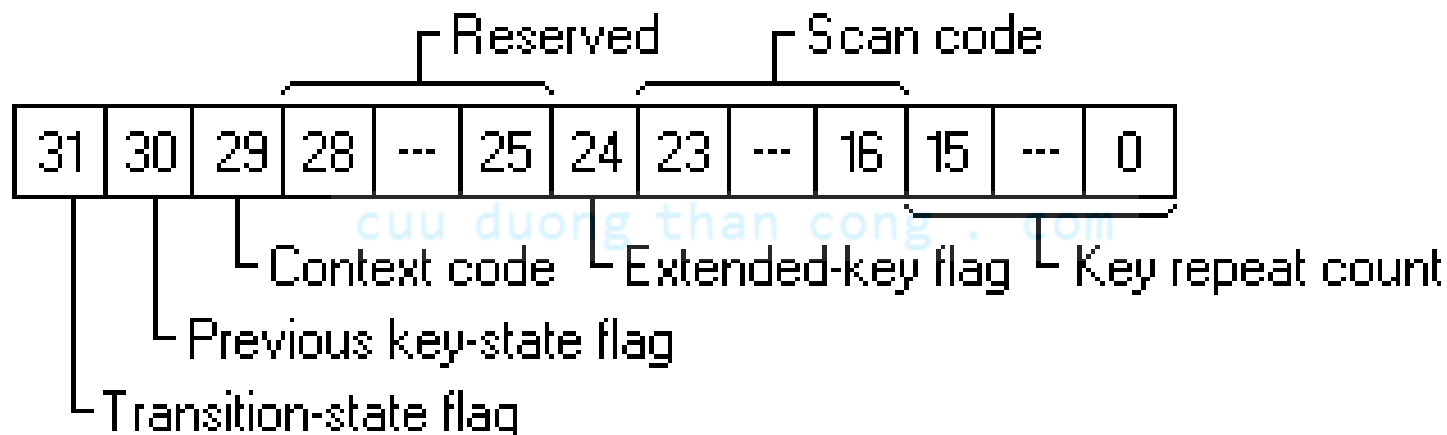
Windows programming

Keyboard input model

- ❑ Current focused window will get the messages
- ❑ Key pressed & released

Basic message

❑ WM_KEYDOWN

❑ WM_KEYUP

❑ wParam: virtual key code, always 'A' ('a' or 'A')

- ▪ LOWORD

GetKeyState

```
case WM_KEYDOWN: {
    if (wParam==VK_END) {
        int ctrl = GetKeyState(VK_LCONTROL);
        if (ctrl & 0x8000) { // 1: DOWN, 0: UP
                MessageBox(0, L"Vua nhan Ctrl+End",  0, 0);
        }
    break;
}
```

❑ Ctrl & 0x1: TOGGLED (NumsLock, CapsLock)
- 1: On, 0: Off

Quiz

❑ If we always receive 'A', how can we know we got 'a' or 'A' ?

  ▪ Shift & Capslock

Mouse

❑ Windows to receive mouse messages
- Current window contains the mouse
- Other window "capturing" the mouse

Messages

- WM_MOUSEMOVE
- WM_LBUTTONDBLCLK
- WM_LBUTTONDOWN
- WM_LBUTTONUP
- WM_RBUTTONDBLCLK
- WM_RBUTTONDOWN
- WM_RBUTTONUP
- WM_MBUTTONDBLCLK
- WM_MBUTTONDOWN
- WM_MBUTTONUP

Handle parameters

❑ lParam

- X = GET_X_LPARAM(lParam);
- Y = GET_Y_LPARAM(lParam);

LOWORD, HIWORD not true anymore with multiple monitors

❑ wParam: & to check bit is on (if wParam & MK_CONTROL)

- MK_CONTROL
- MK_SHIFT
- MK_LBUTTON
- MK_MBUTTON
- MK_RBUTTON

Basic functions

- SetCapture
- ReleaseCapture
- SystemParametersInfo
- GetSystemMetrics
- SwapMouseButton
- SetDoubleClickTime
- GetDoubleClickTime
- ScreenToClient
- ClientToScreen