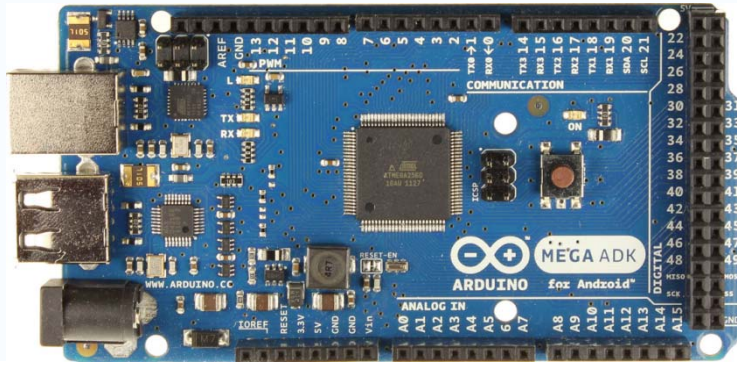


ECM583 Special Topics in Computer Systems

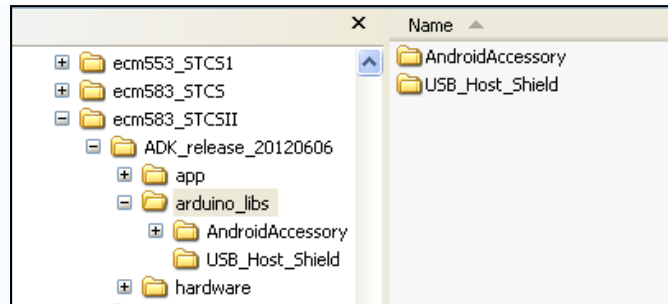
Getting Started with Android and Arduino

Prepare an Arduino board, Arduino Mega ADK (Accessory Development Kit). The Mega ADK board acts as a USB host, and Android device acts as a slave device.



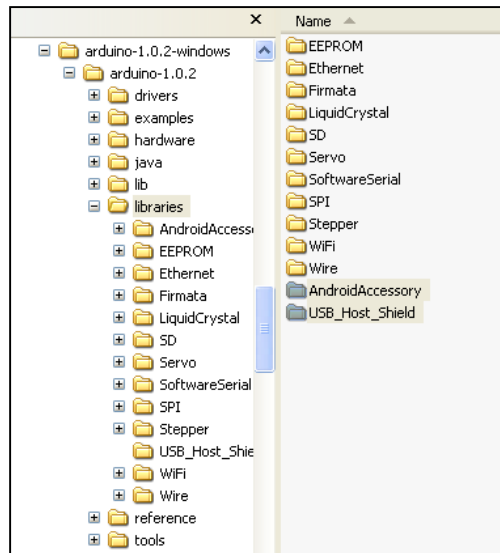
1. ADK 2011

- Download the Accessory Development Kit (ADK) 2011 package from <http://developer.android.com/tools/adk/adk.html> or from http://esca.korea.ac.kr/teaching/ecm583_STCSII/adk_release_20120606.zip
- Uncompress the downloaded zip file and make sure that you have AndroidAccessory and USB_Host_Shield directories as shown below.



2. Arduino Setup

1. Download and uncompress the Arduino Software (arduino-1.0.2-windows.zip) either from <http://arduino.cc/en/Main/Software> or from http://esca.korea.ac.kr/teaching/ecm583_STCSII/arduino-1.0.2-windows.zip
2. Copy AndroidAccessory and USB_Host_Shield directories in ADK2011 to /arduino-1.0.2/libraries



3. Test-run the following Arduino sketch and make sure that it compiles ok.

```

sketch_dec04a $
#include <Max3421e.h>
#include <Usb.h>
#include <AndroidAccessory.h>

#define ARRAY_SIZE 12

AndroidAccessory acc("Manufacturer", "Model", "Description",
                    "Version", "URI", "Serial");

char hello[ARRAY_SIZE] = {'H', 'e', 'l', 'l', 'o', ' ',
                          'W', 'o', 'r', 'l', 'd'};

void setup() {
  Serial.begin(115200);
  acc.powerOn();
}

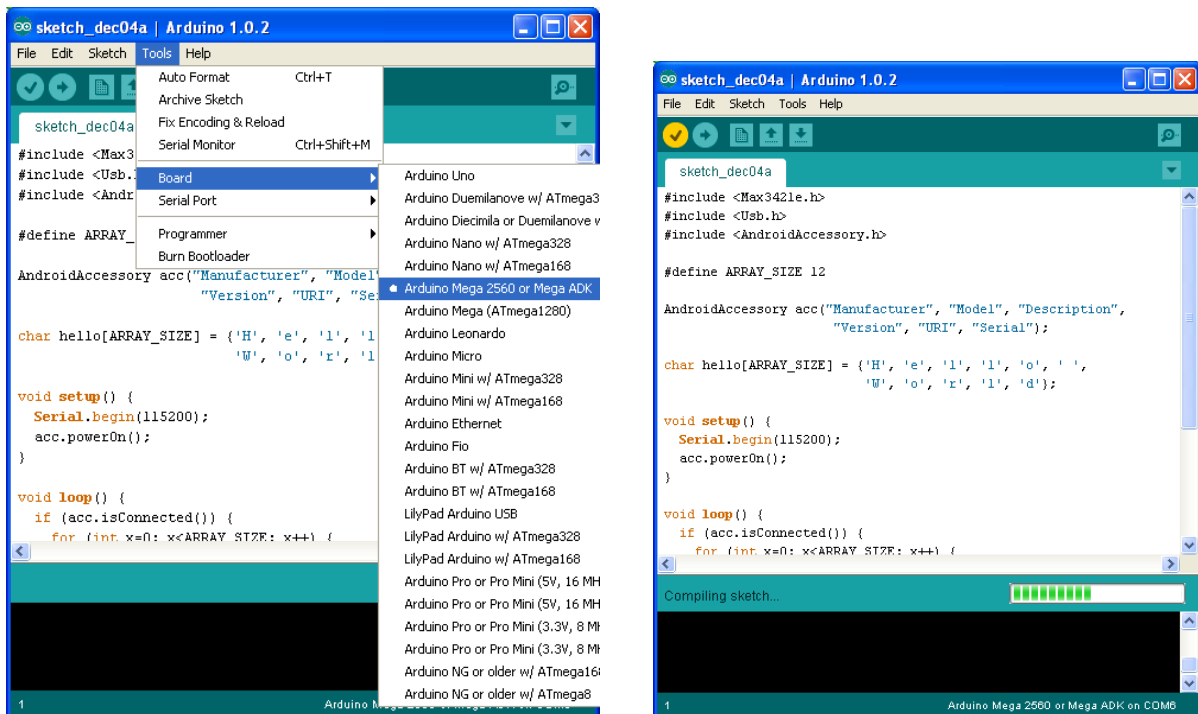
void loop() {
  if (acc.isConnected()) {
    for (int x=0; x<ARRAY_SIZE; x++) {
      Serial.print(hello[x]);
      delay(250);
    }
    Serial.println();
    delay(250);
  }
}
  
```

Done compiling.

Binary sketch size: 10,194 bytes (of a 258,048 byte maximum)

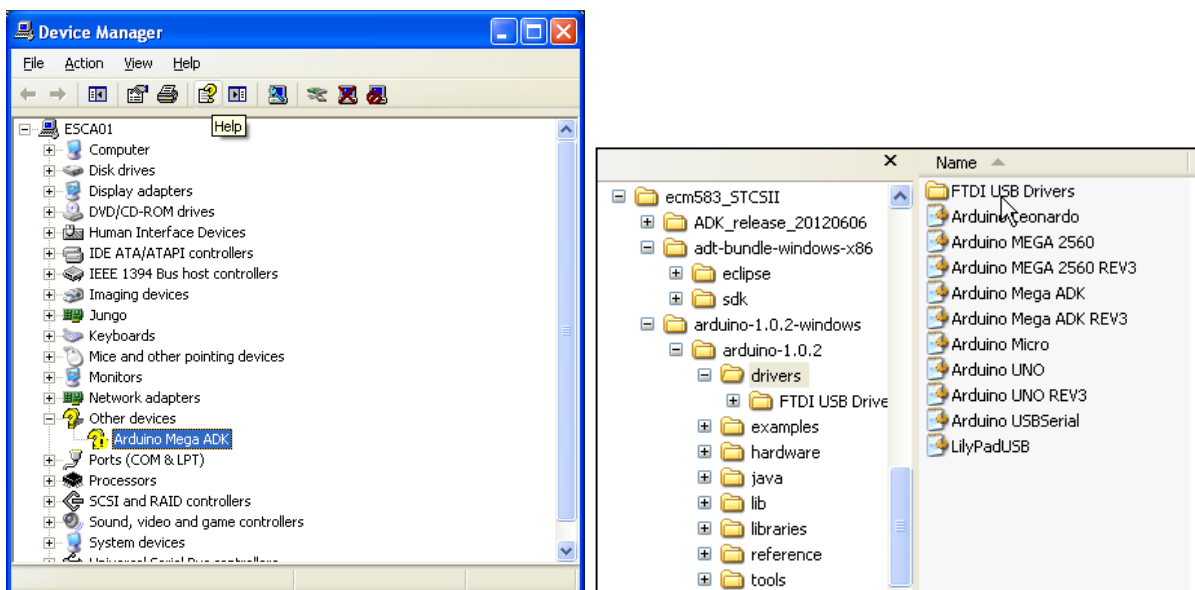
27 Arduino Mega 2560 or Mega ADK on COM6

- Change the board to Arduino MEGA ADK, and compile the code by clicking Verify button

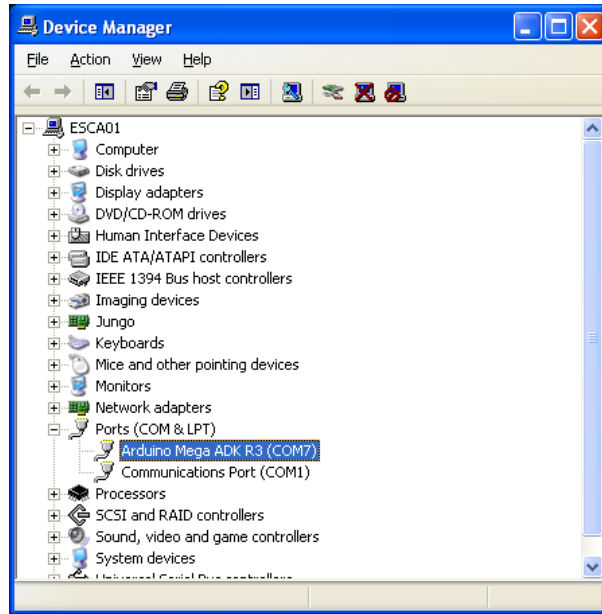


4. Connect the Mega ADK board to your PC and install device driver for the Mega ADK board

- Connect the Mega ADK board to your PC
- Then, you will see the Windows detect the board, but the device driver is not installed yet
- The device driver is located at /arduino-1.0.2-windows/arduino-1.0.2/drivers

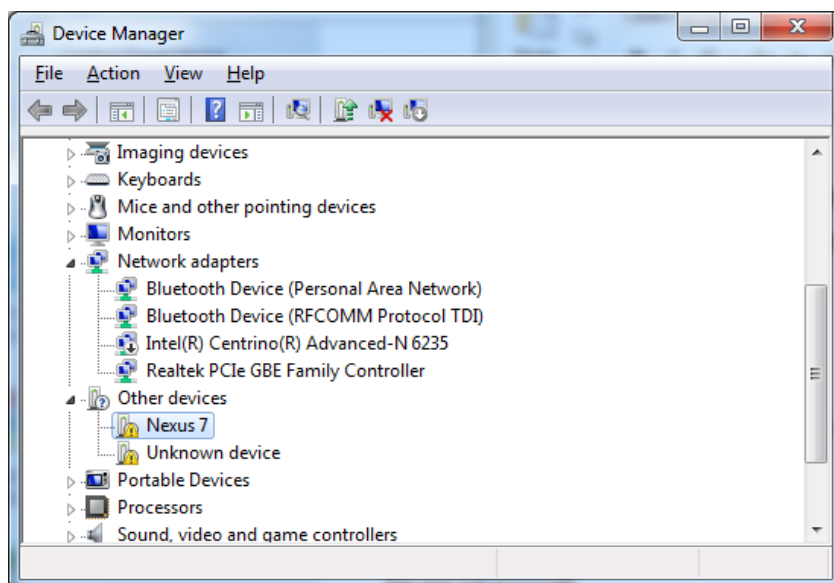


- Successful installation will show you a newly created COM port (such as COM7 below)

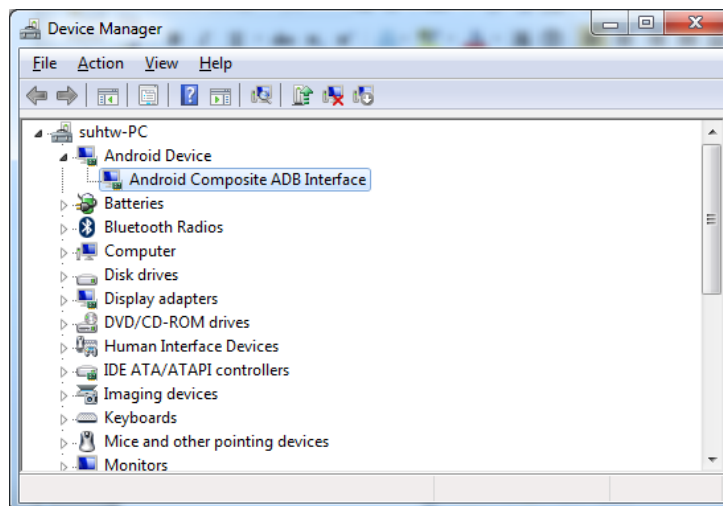
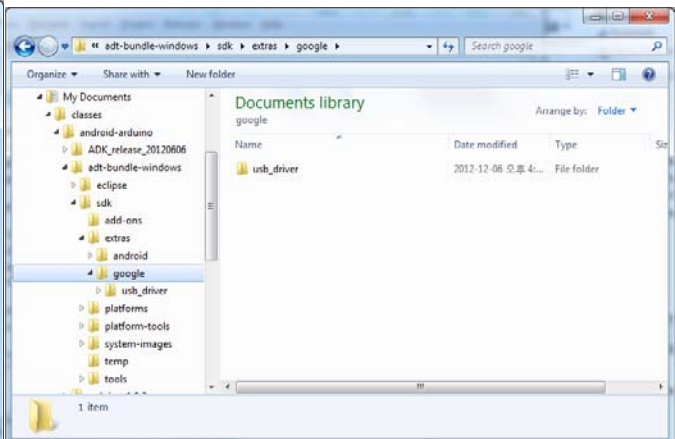
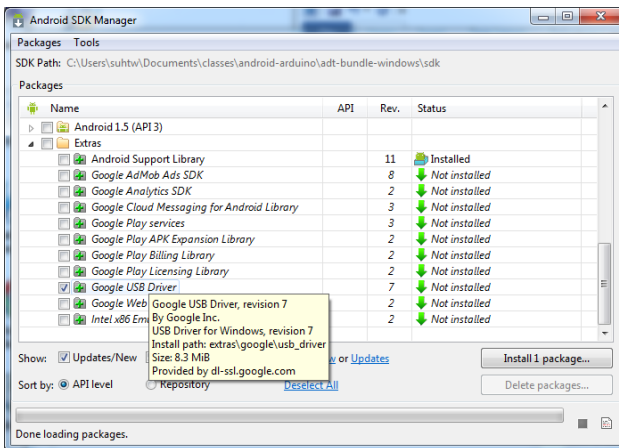
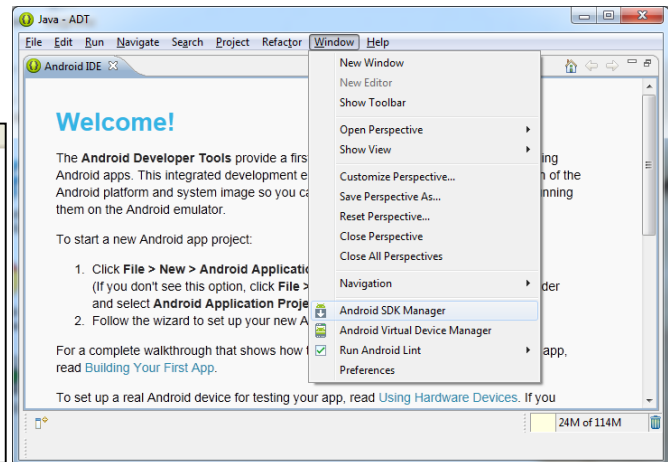
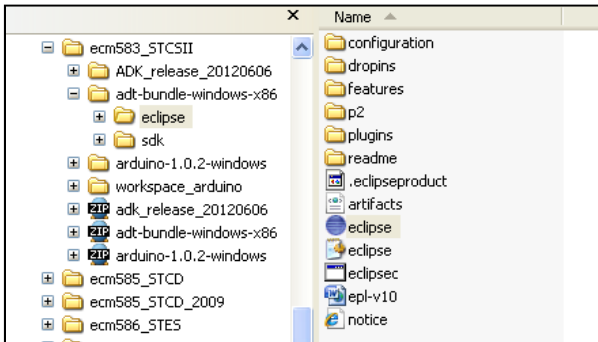


3. Android Setup

1. Download the Android SDK either from <http://developer.android.com/sdk/index.html> or from http://esca.korea.ac.kr/teaching/ecm583_STCSII/adt-bundle-windows-x86_64.zip
 - Make sure that you choose the right SDK version (32-bit or 64-bit) depending on your OS
2. Install a device driver for your Android machine (In my case, Nexus 7) with Eclipse
 - Connect your Android device to your PC and then you will see the Nexus 7 shown like below



- Run Eclipse, then **Window → Android SDK Manager**, and check on **Google USB Driver**
 - i. You should have **usb_driver** folder created as follows



3. Test-run the following 2 examples to see the interaction between Android and Arduino.
- http://esca.korea.ac.kr/teaching/ecm583_STCSII/workspace_android_arduino.zip
 - HelloWorld_OneWay: a) Download the Arduino sketch to the Mega ADK board (set the baud rate to 115200), and Open **Serial Monitor** in Arduino b) Download Android SDK project to Nexus 7 by **Run As** → **Android Application**
 - HelloWorld_TwoWay: Repeat the same steps as HelloWorld_OneWay