Using and Installing:
HCS12C128 Board, USB-to-Serial port driver, and HyperTerminal

CMPEN 472, Kyusun Choi

Summary:
Install the USB-to-Serial port driver. This should be done automatically when you plug-in the USB-to-Serial port cable (USB port side) into your computer's USB port. Then download from the cmpen472 Homework 3 page, an old hyper terminal program, and install it on your Windows PC.

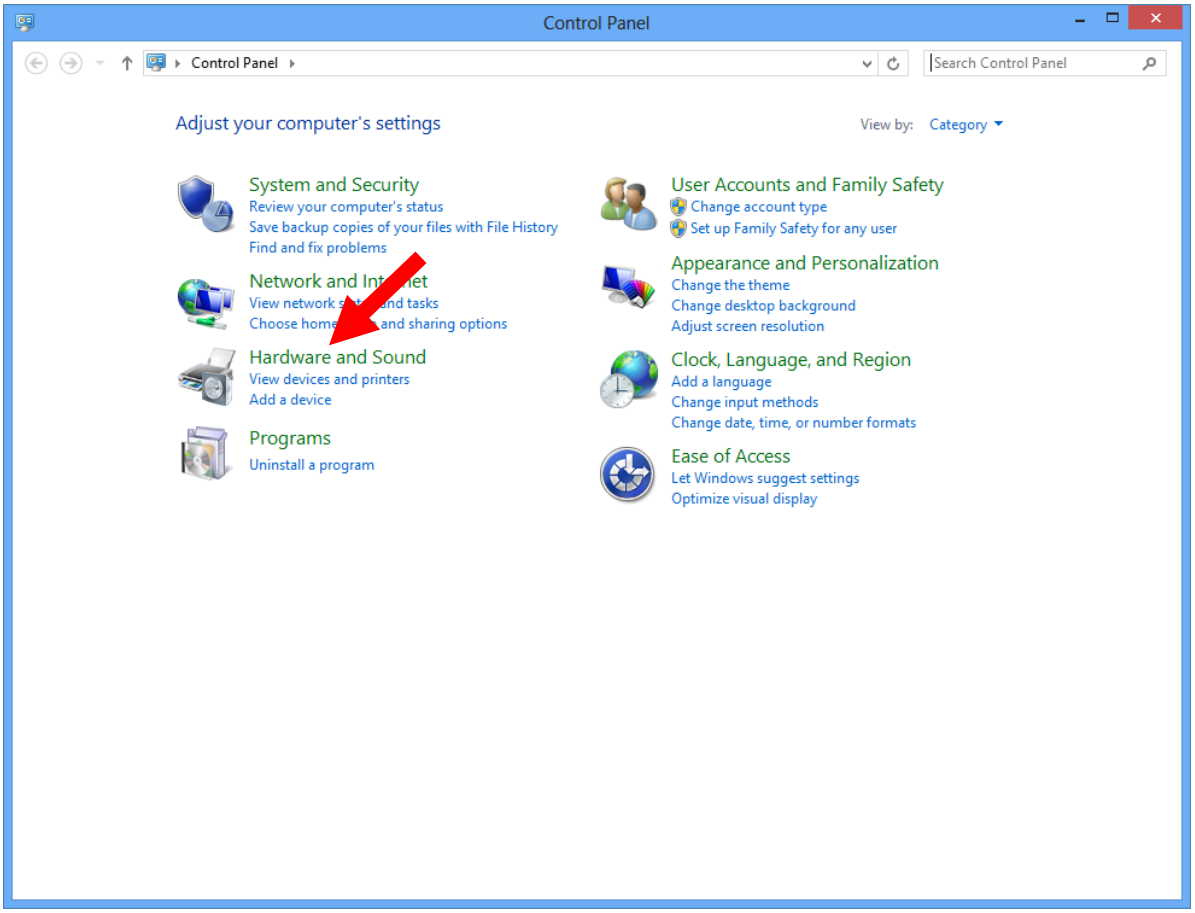
Procedure/Steps:
Now power-up your HCS12 board with the USB type B plug cable shown below. You may get a problem notice on your PC for this USB connection, but it is OK because you are using this USB connection for the 5V power only.

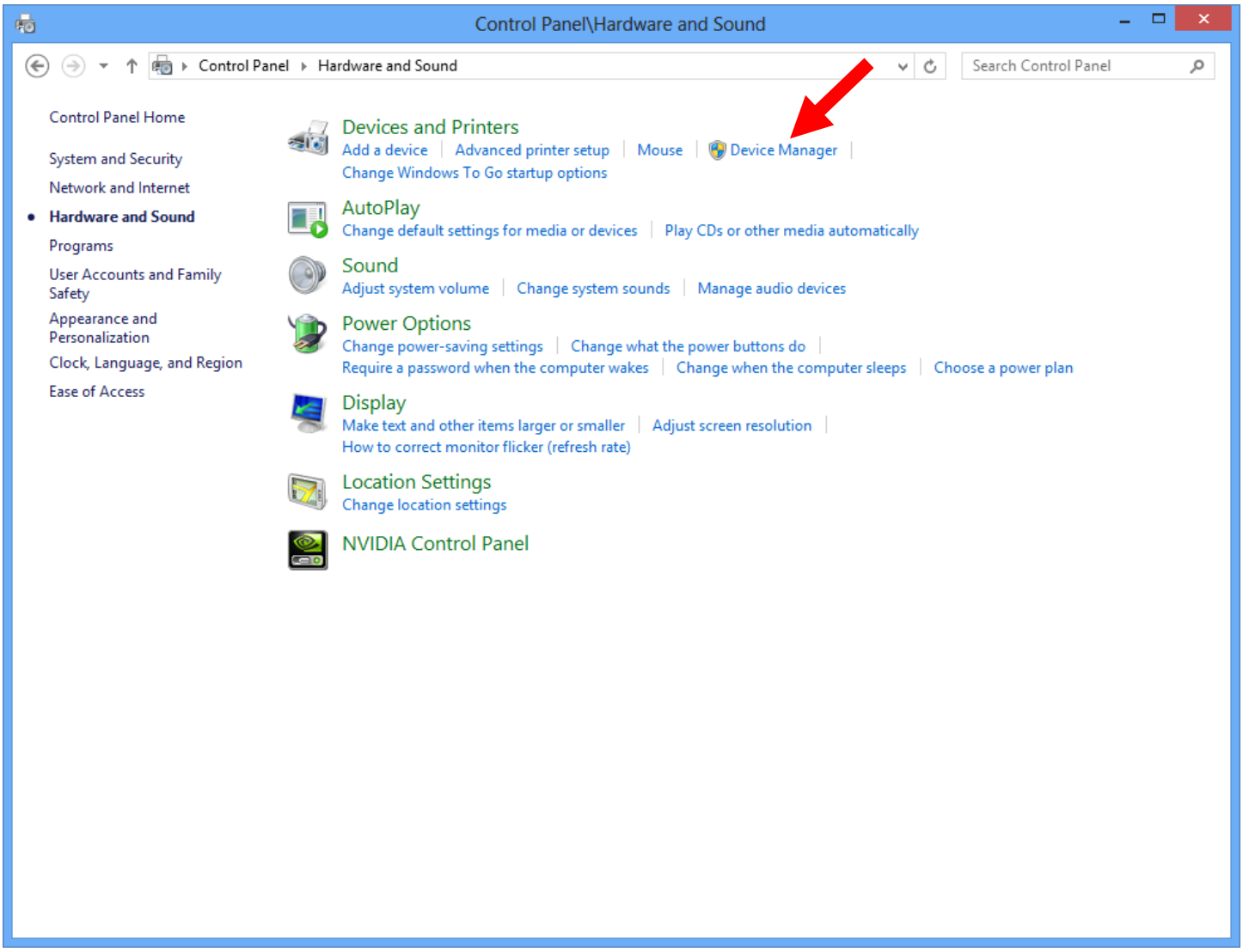
Then connect the USB-to-Serial port cable to your HCS12 board (serial port side). Then plug-in the USB-to-Serial port cable (USB port side) into your computer's USB port.

USB-to-Serial port driver should be installed automatically by Windows operating system.
If it does not, you can download the driver software from the cmpen472 Homework 3 page and install it on your PC.

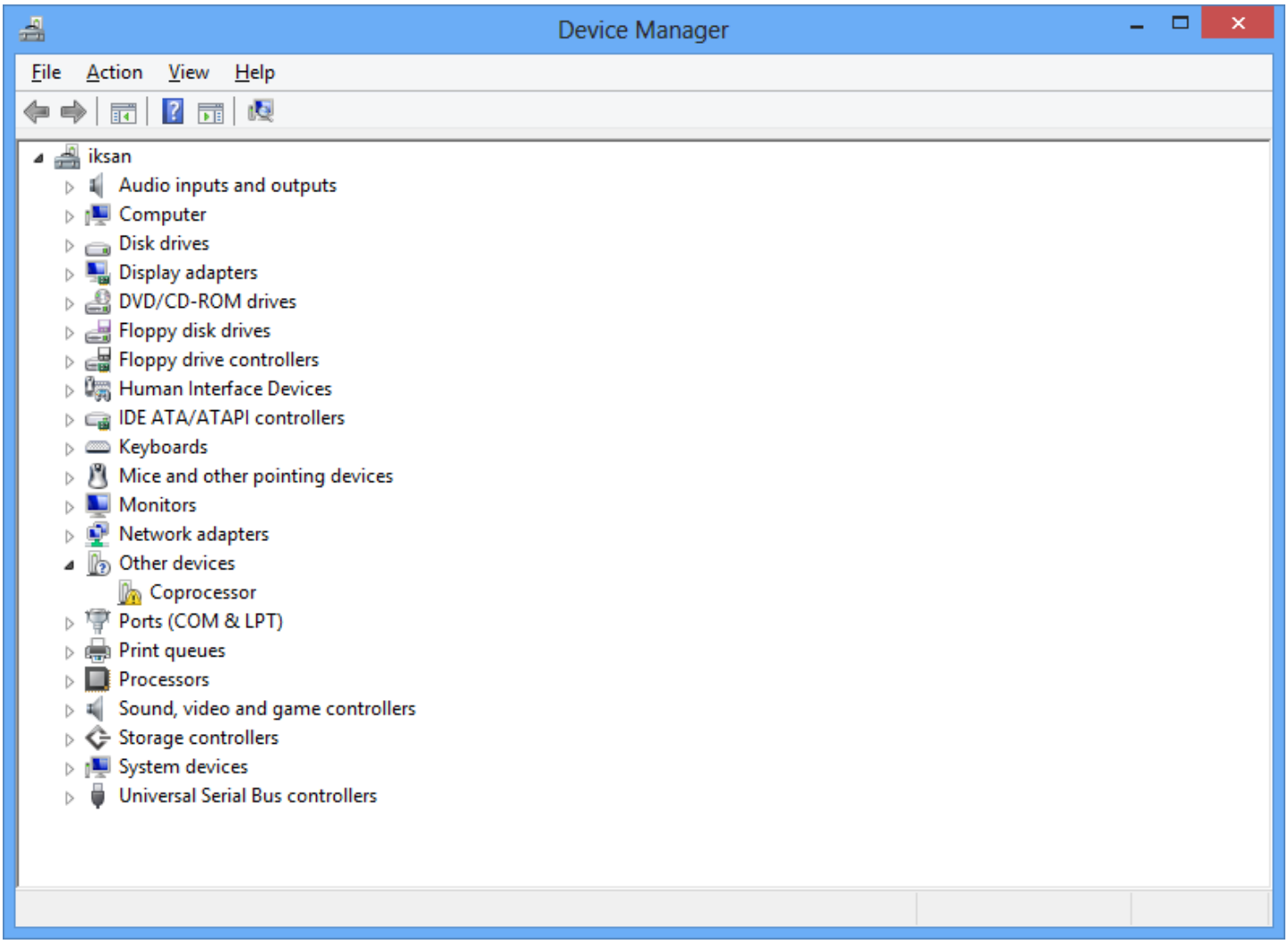
In the case of USB-to-Serial port cable is NOT recognized by your computer:

Open ‘Control Panel’ and click on ‘Hardware and Sound’ option.

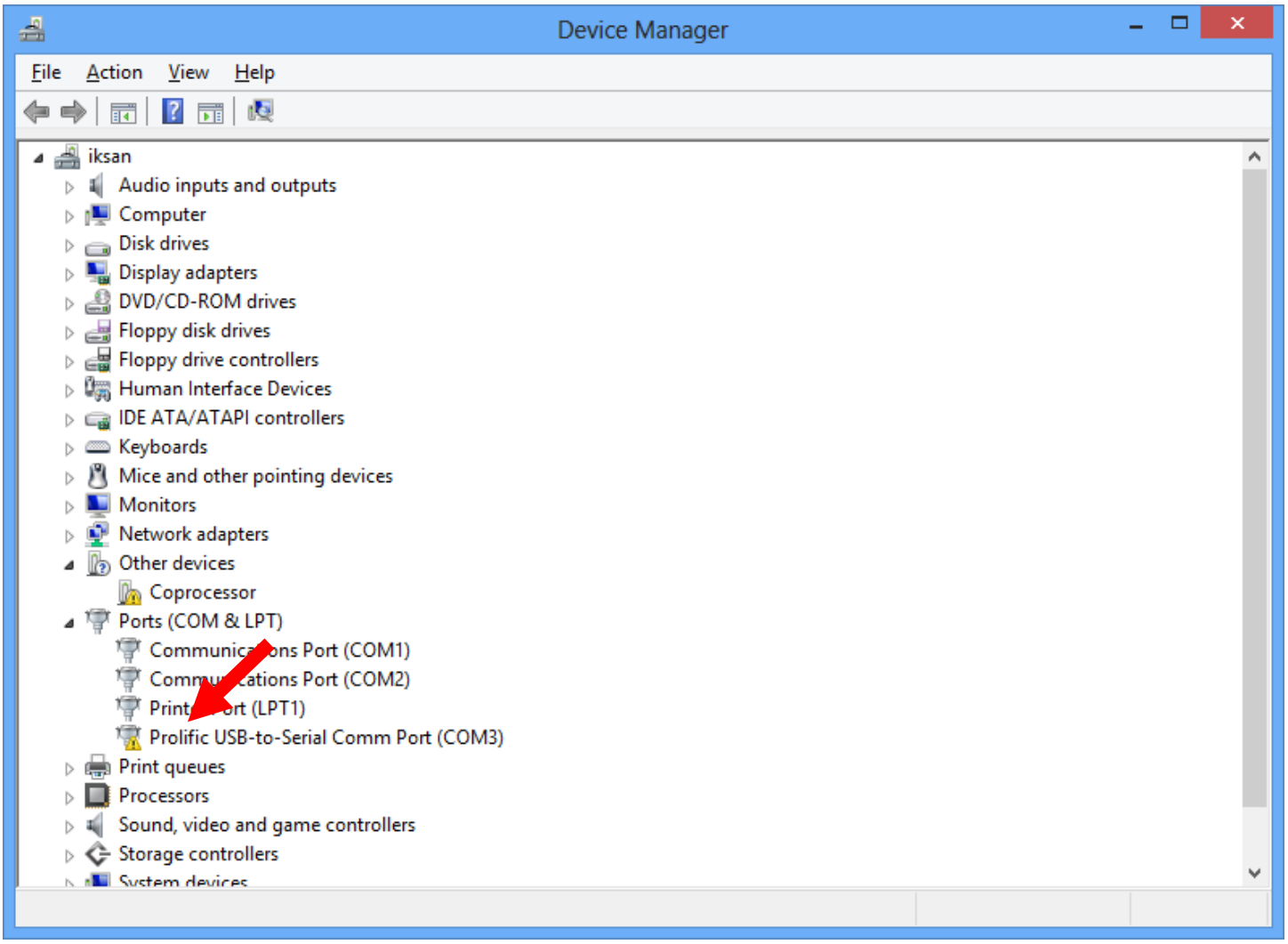




Select ‘Device Manager.’

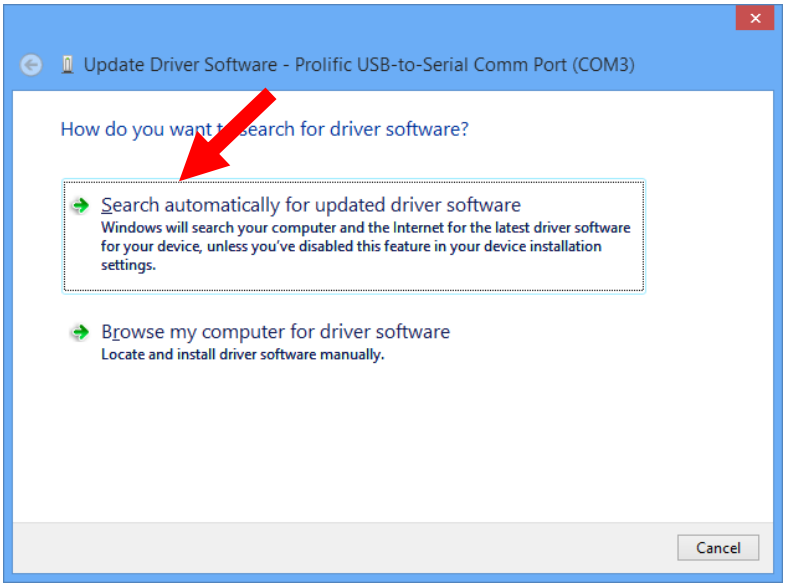


Please follow the procedures outlined below carefully.



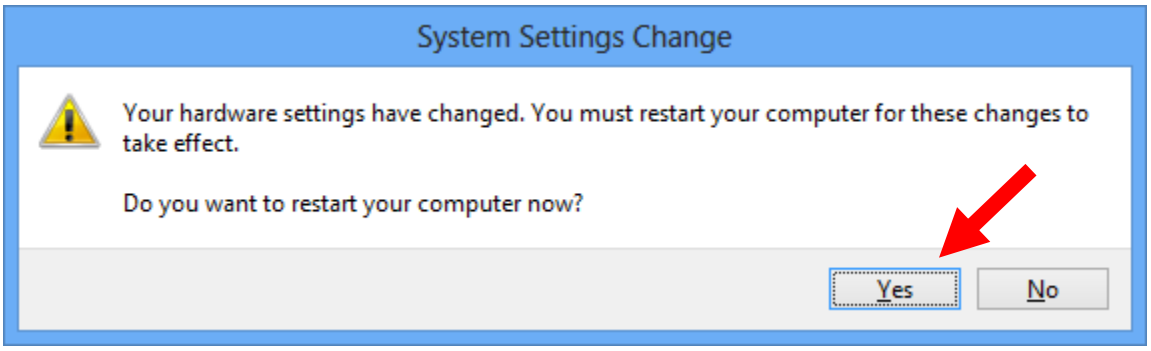
Right click on the 'USB-to-Serial Comm Port (COM3).' The 'COM3' may be different on your computer.

Then select 'Update Driver Software…' option.



Click on 'Search automatically for updated driver software' option. It may be in your computer or your computer should be connected to internet, to search.

After successful search and installation of the driver software, you may need to restart your computer.

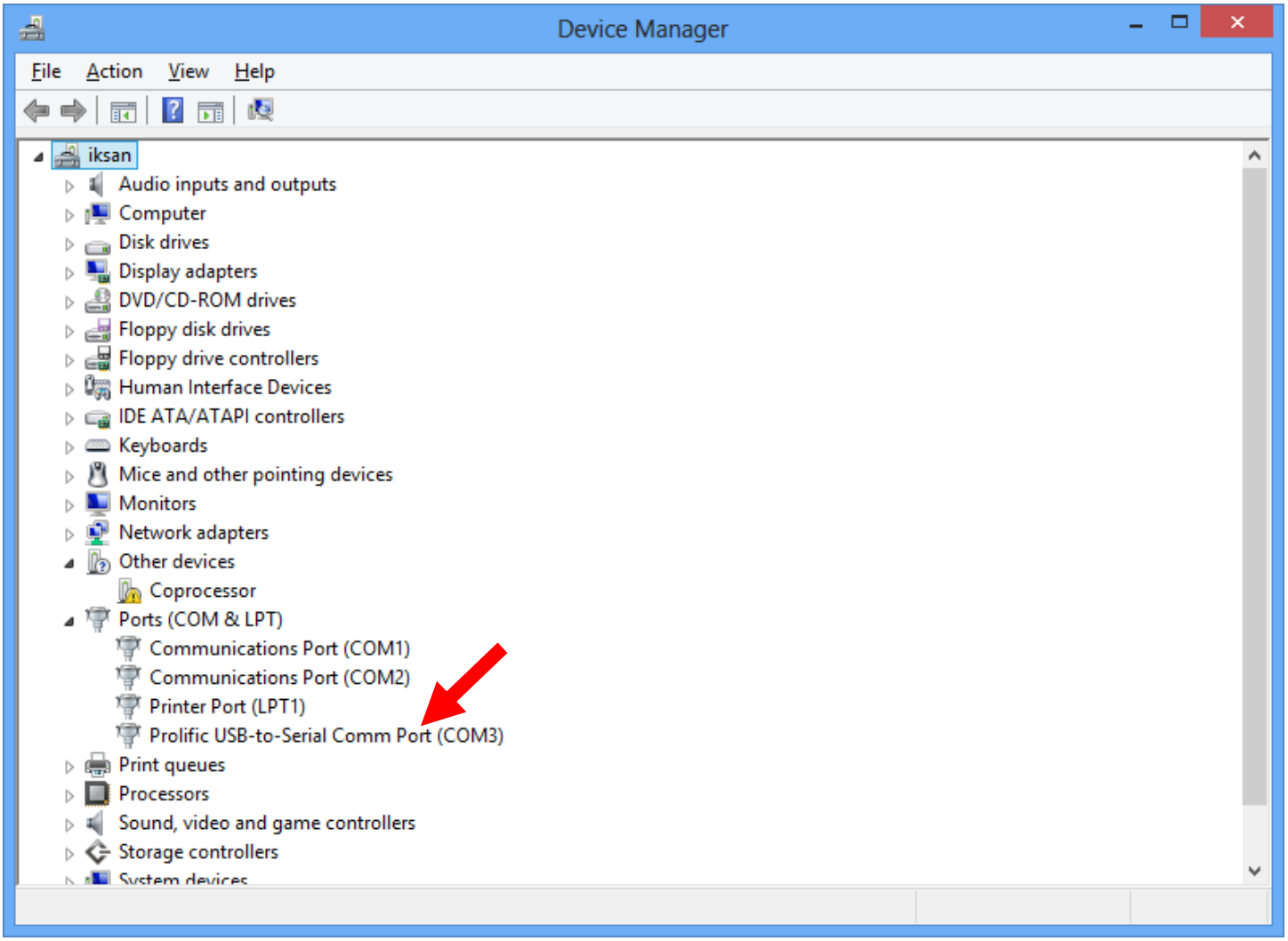


You may click ‘Yes’ if you are ready to restart your computer. Click ‘No’ if you need to close any other applications before the restart. Be sure to restart your computer before proceeding to your CodeWarrior project.

After you restart your computer, you can check to see if your USB-to-Serial port driver is correctly installed.

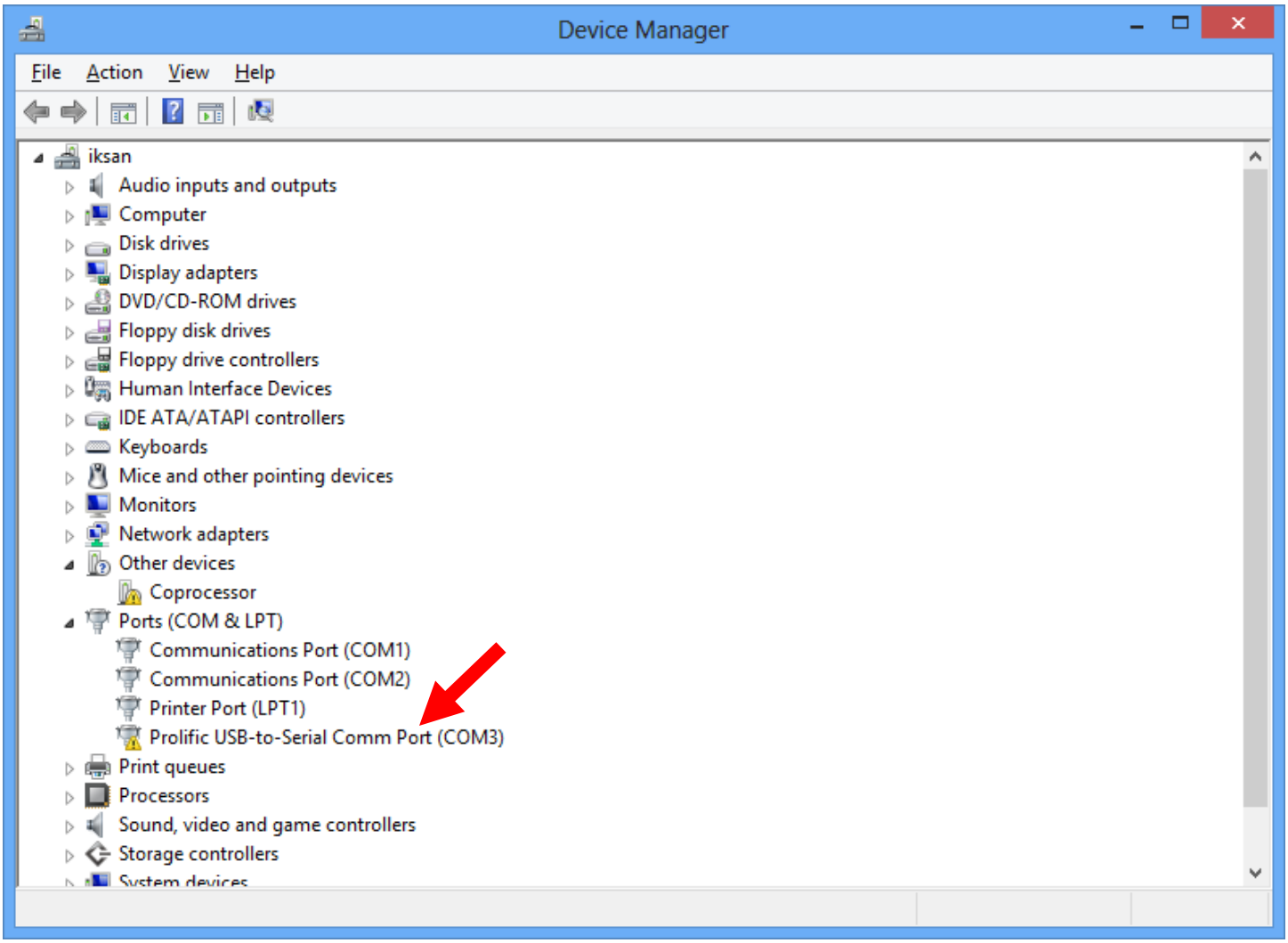
Open ‘Control Panel’ and click on ‘Hardware and Sound’ option. Open the ‘Device Manager’ window.
Plug-in the USB-to-Serial port cable into your computer’s USB port.

If your USB-to-Serial port driver IS correctly installed, you will see in the Device Manager window the ‘USB-to-Serial Comm Port (COM3)’ device WITHOUT the yellow exclamation mark as shown below.



If your USB-to-Serial port driver is NOT correctly installed, you will see in the Device Manager window the ‘USB-to-Serial Comm Port (COM3)’ device with the yellow exclamation mark as shown below.

Just in case if you still have problem, you can redo the USB-to-Serial port driver installation by following steps.



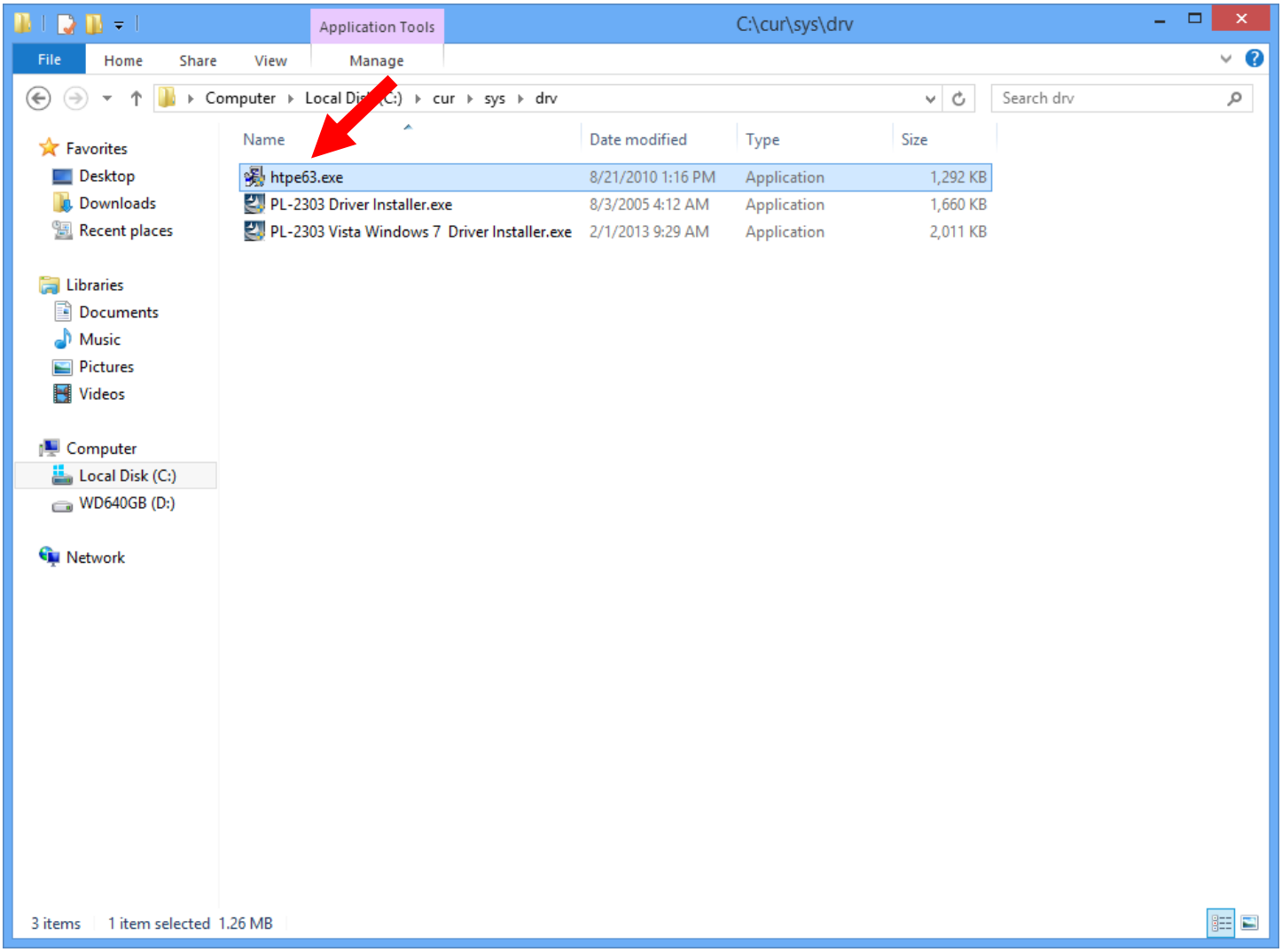
Right click on the ‘USB-to-Serial Comm Port (COM3)’ device with the yellow exclamation mark, and select the ‘Uninstall’ option.

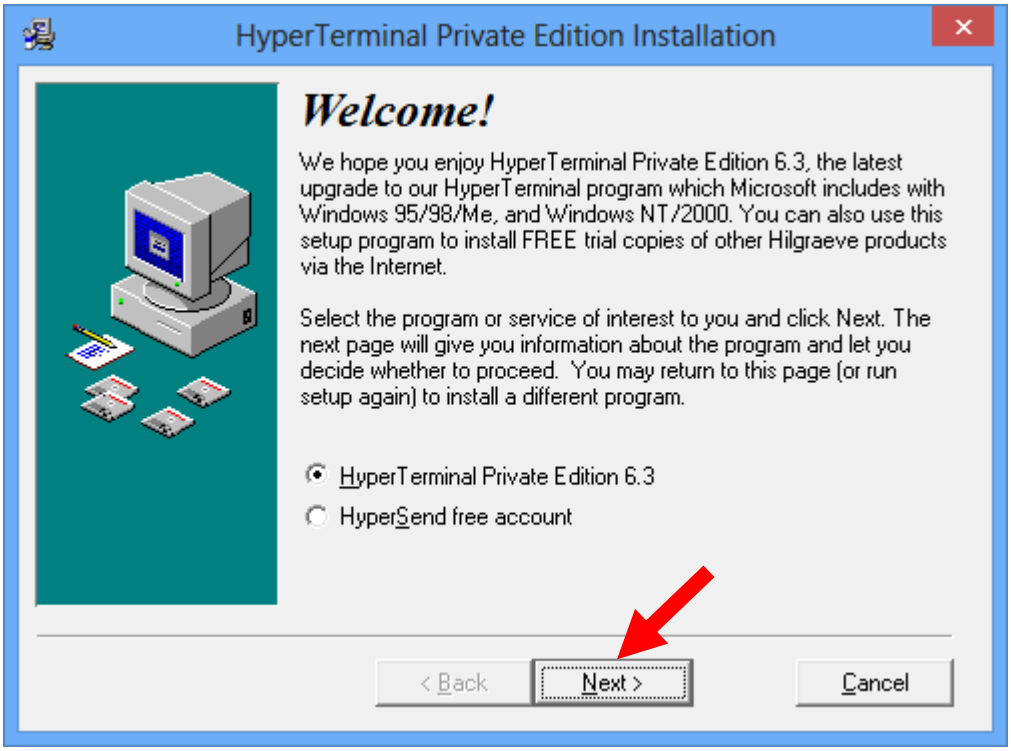
And un-plug the USB-to-Serial port cable from your computer's USB port.

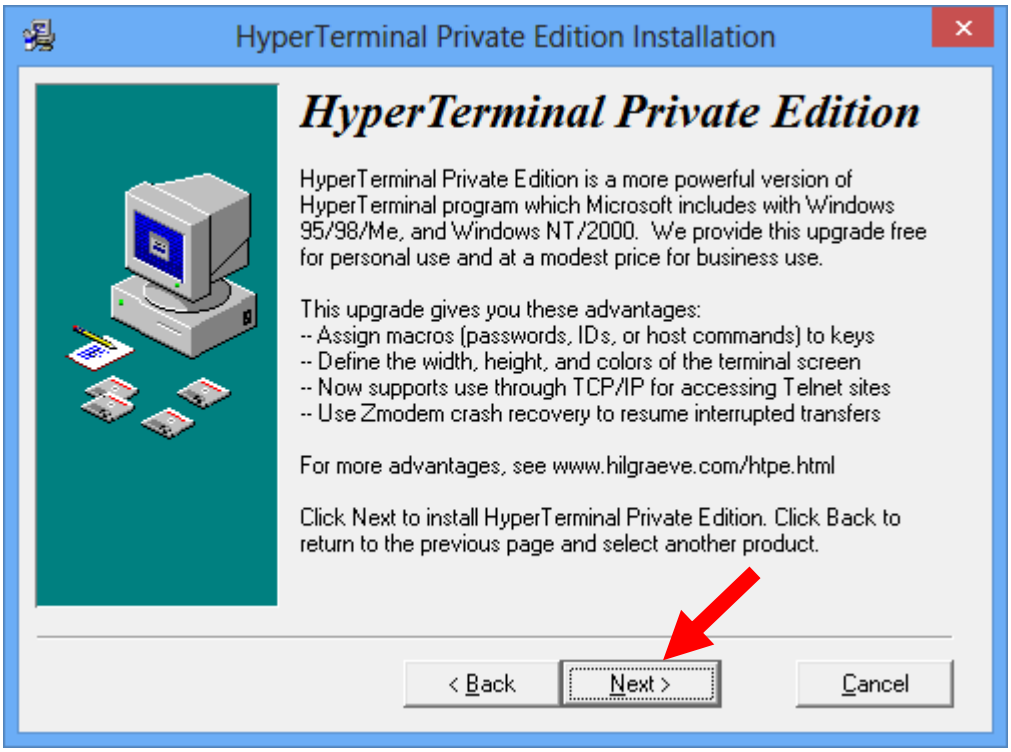
Now go to the top of this document, follow the USB-to-Serial port driver installation procedure.

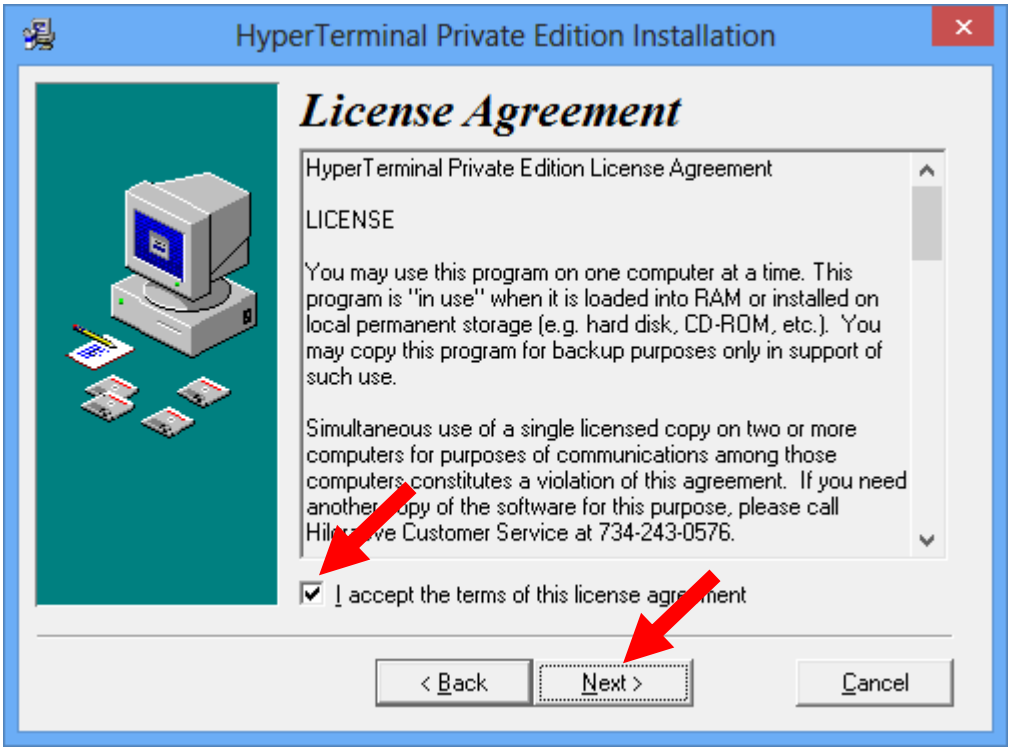
HyperTerminal Program Installation:

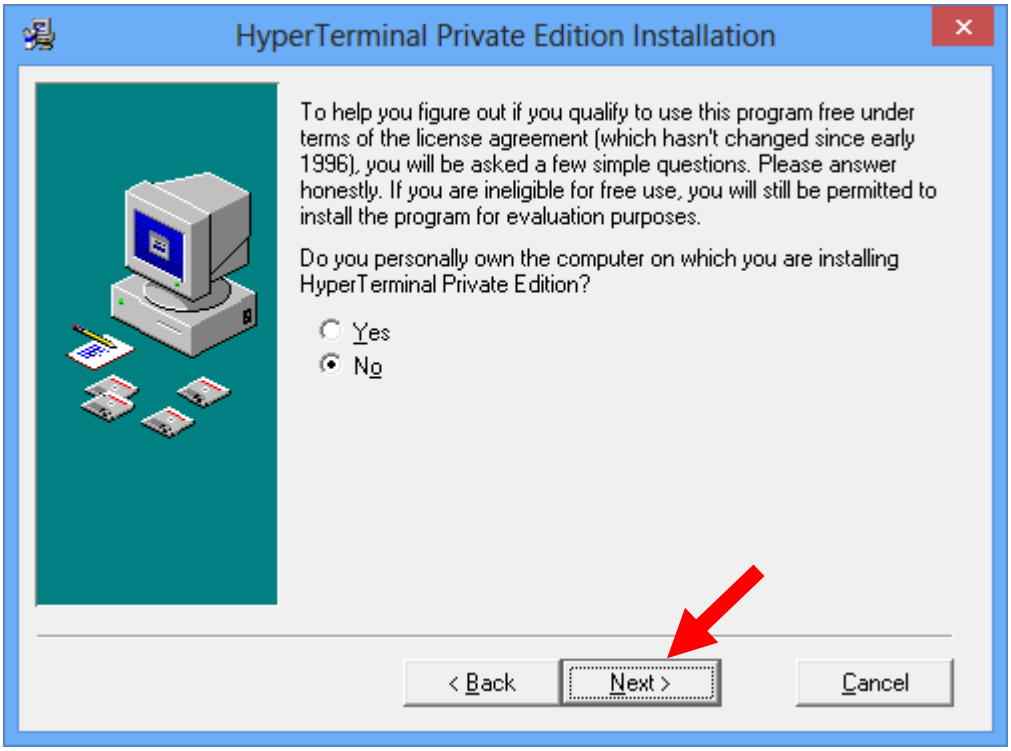
Next task is to install the HyperTerminal program. (If you have Windows XP computer, the HyperTerminal is already installed as part of the Windows XP.) Then download from the cmpen472 Homework 3 page, an old hyper terminal program, and install it on your Windows PC. Double click on the 'oldht.exe' file.

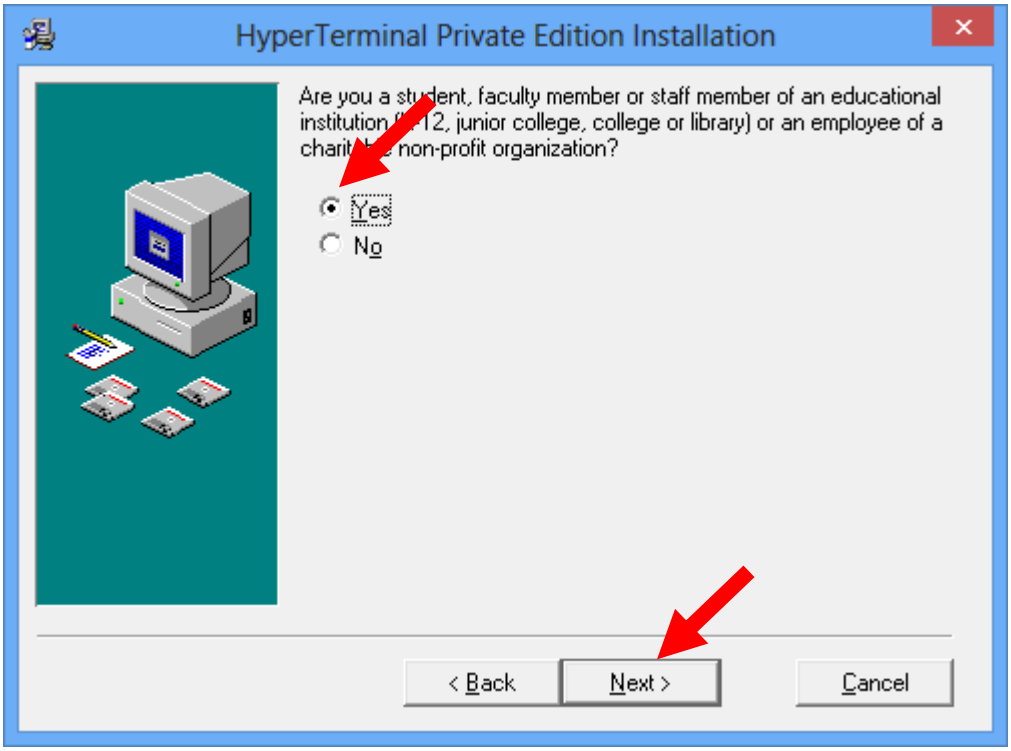

C:\cur\sys\drv
Application Tools
File
Home
Share
View
Manage
Computer
Local Disk (C:)
cur
sys
drv
Search drv
Favorites
Desktop
Downloads
Recent places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
WD640GB (D:)
Network
Name
Date modified
Type
Size
htpe63.exe
8/21/2010 1:16 PM
Application
1,292 KB
PL-2303 Driver Installer.exe
8/3/2005 4:12 AM
Application
1,660 KB
PL-2303 Vista Windows 7 Driver Installer.exe
2/1/2013 9:29 AM
Application
2,011 KB
3 items
1 item selected 1.26 MB

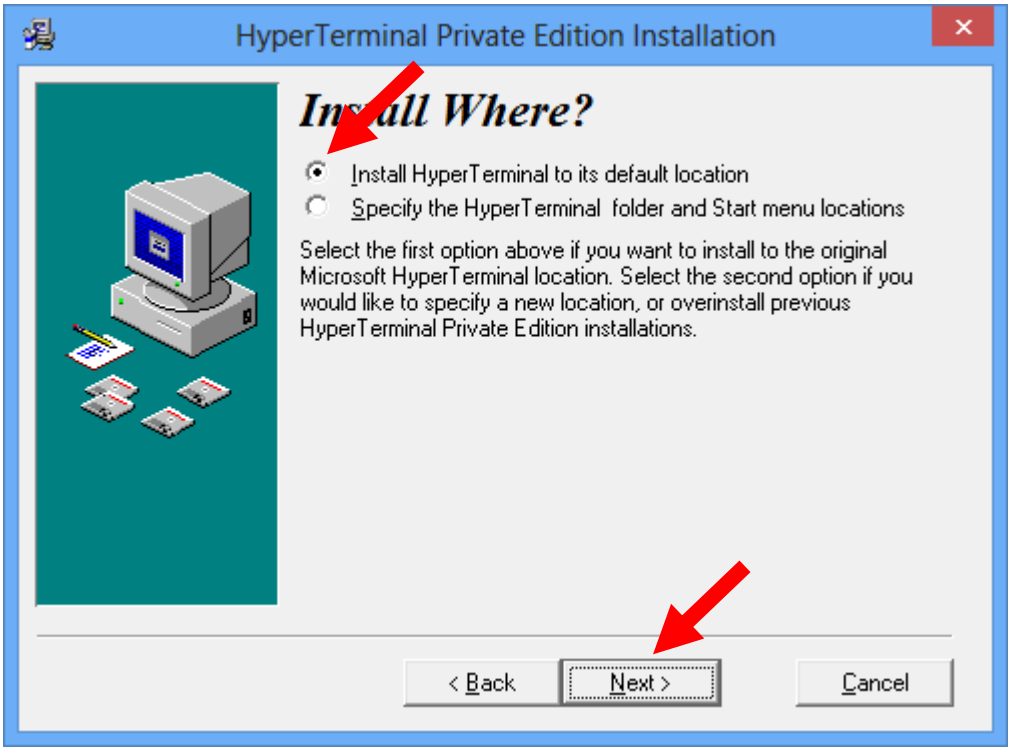

HyperTerminal Private Edition Installation
Welcome!
We hope you enjoy HyperTerminal Private Edition 6.3, the latest upgrade to our HyperTerminal program which Microsoft includes with Windows 95/98/Me, and Windows NT/2000. You can also use this setup program to install FREE trial copies of other Hilgraeve products via the Internet.
Select the program or service of interest to you and click Next. The next page will give you information about the program and let you decide whether to proceed. You may return to this page (or run setup again) to install a different program.
HyperTerminal Private Edition 6.3
HyperSend free account
< Back
Next >
Cancel

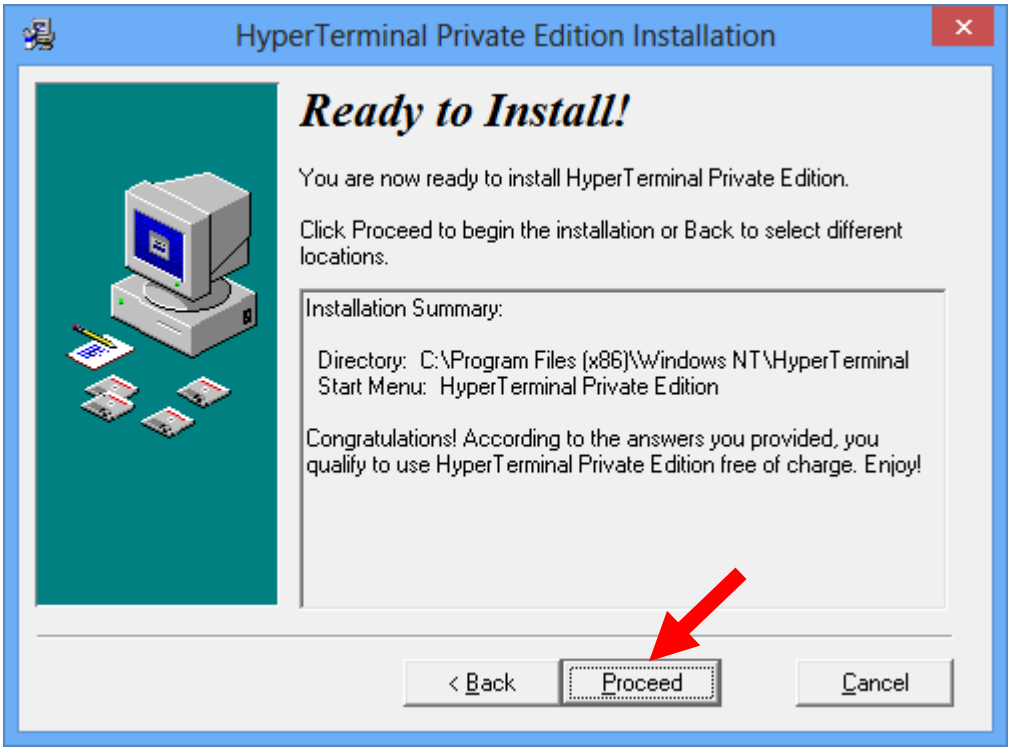

HyperTerminal Private Edition Installation
HyperTerminal Private Edition
HyperTerminal Private Edition is a more powerful version of HyperTerminal program which Microsoft includes with Windows 95/98/Me, and Windows NT/2000. We provide this upgrade free for personal use and at a modest price for business use.
This upgrade gives you these advantages:
-- Assign macros (passwords, IDs, or host commands) to keys
-- Define the width, height, and colors of the terminal screen
-- Now supports use through TCP/IP for accessing Telnet sites
-- Use Zmodem crash recovery to resume interrupted transfers
For more advantages, see www.hilgraeve.com/htpe.html
Click Next to install HyperTerminal Private Edition. Click Back to return to the previous page and select another product.
< Back
Next >
Cancel

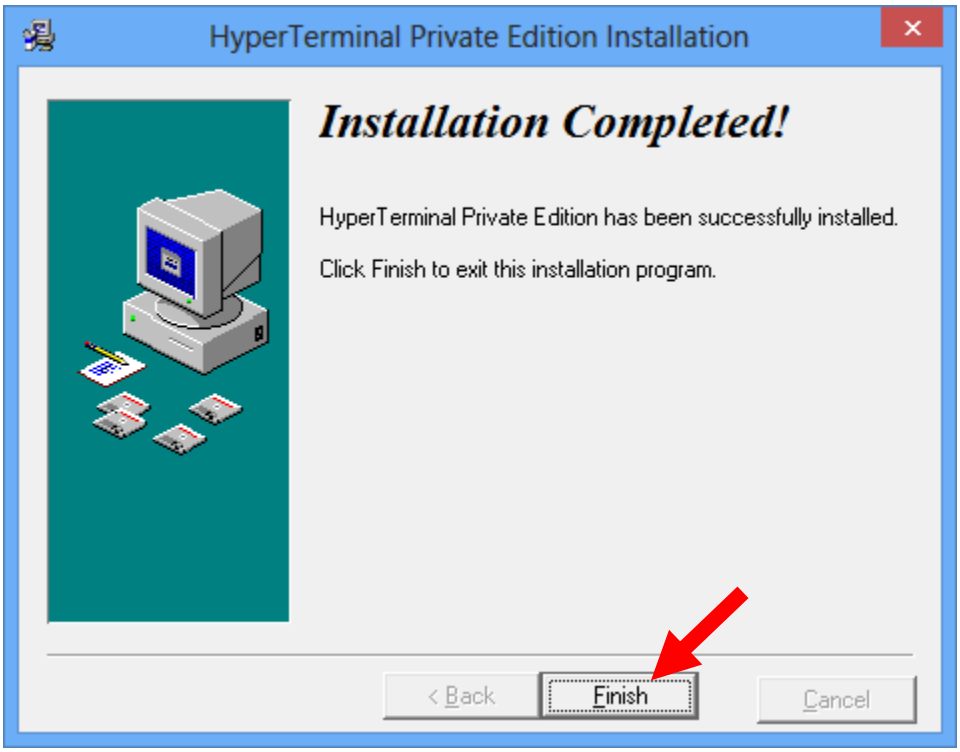

HyperTerminal Private Edition Installation
License Agreement
HyperTerminal Private Edition License Agreement
LICENSE
You may use this program on one computer at a time. This program is "in use" when it is loaded into RAM or installed on local permanent storage (e.g. hard disk, CD-ROM, etc.). You may copy this program for backup purposes only in support of such use.
Simultaneous use of a single licensed copy on two or more computers for purposes of communications among those computers constitutes a violation of this agreement. If you need another copy of the software for this purpose, please call Hilgrave Customer Service at 734-243-0576.
I accept the terms of this license agreement
< Back
Next >
Cancel

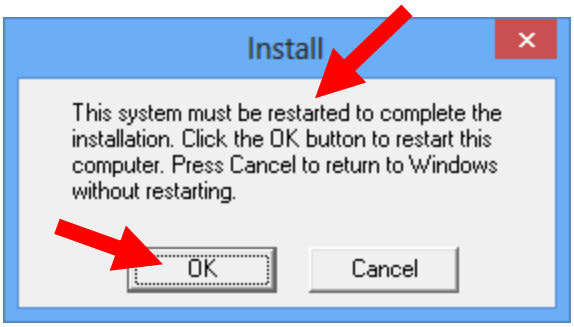

HyperTerminal Private Edition Installation
To help you figure out if you qualify to use this program free under terms of the license agreement (which hasn't changed since early 1996), you will be asked a few simple questions. Please answer honestly. If you are ineligible for free use, you will still be permitted to install the program for evaluation purposes.
Do you personally own the computer on which you are installing HyperTerminal Private Edition?
Yes
No
< Back
Next >
Cancel


HyperTerminal Private Edition Installation
Are you a student, faculty member or staff member of an educational institution (K-12, junior college, college or library) or an employee of a charitable non-profit organization?
Yes
No
< Back
Next >
Cancel


HyperTerminal Private Edition Installation
Install Where?
Install HyperTerminal to its default location
Specify the HyperTerminal folder and Start menu locations
Select the first option above if you want to install to the original Microsoft HyperTerminal location. Select the second option if you would like to specify a new location, or overinstall previous HyperTerminal Private Edition installations.
< Back
Next >
Cancel


HyperTerminal Private Edition Installation
Ready to Install!
You are now ready to install HyperTerminal Private Edition.
Click Proceed to begin the installation or Back to select different locations.
Installation Summary:
Directory: C:\Program Files (x86)\Windows NT\HyperTerminal
Start Menu: HyperTerminal Private Edition
Congratulations! According to the answers you provided, you qualify to use HyperTerminal Private Edition free of charge. Enjoy!
< Back
Proceed
Cancel


HyperTerminal Private Edition Installation
Installation Completed!
HyperTerminal Private Edition has been successfully installed.
Click Finish to exit this installation program.
< Back
Finish
Cancel


Install
This system must be restarted to complete the installation. Click the OK button to restart this computer. Press Cancel to return to Windows without restarting.
OK
Cancel

Communicating HCS12 Board with HyperTerminal on your computer:

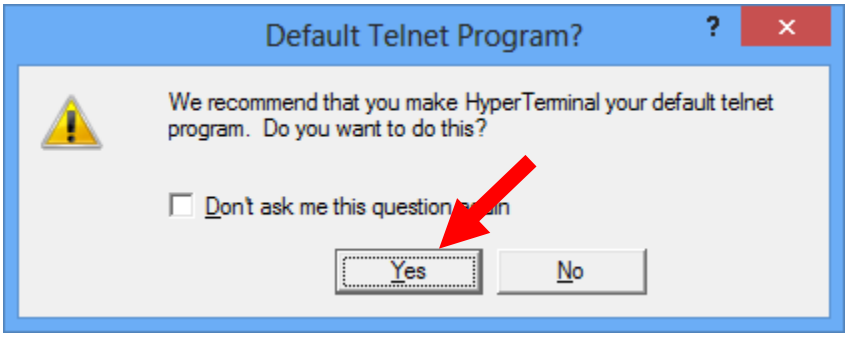
Now you are ready to use your HCS12 board to do the homework!

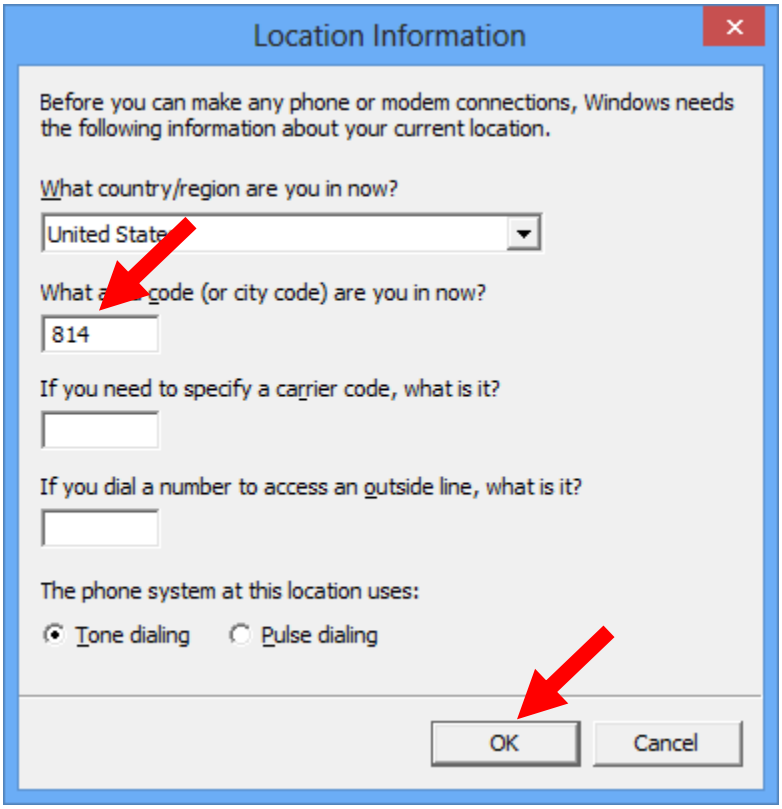
Again, please follow the procedures outlined below carefully.

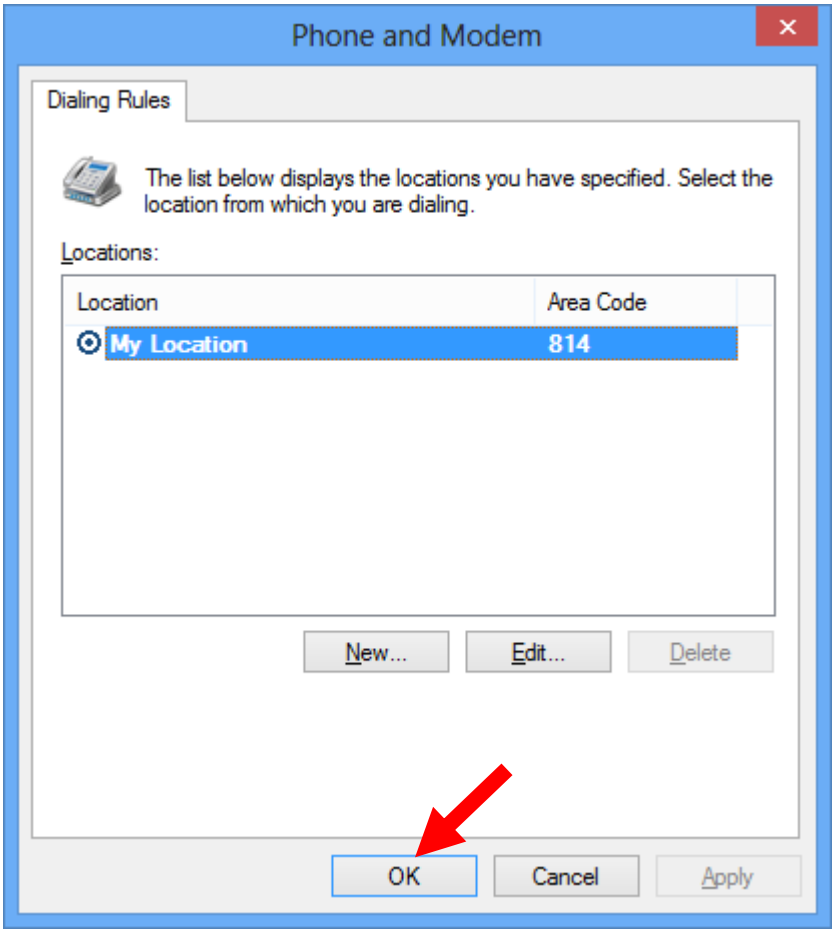
Now power-up your HCS12 board with the USB type B plug. Then connect the USB-to-Serial port cable to your HCS12 board (serial port side).

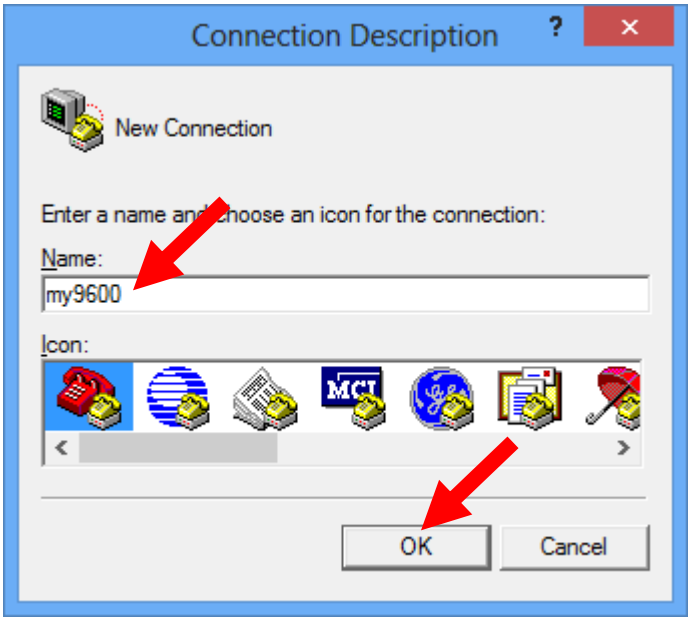
Plug-in the USB-to-Serial port cable (USB port side) into your computer's USB port.

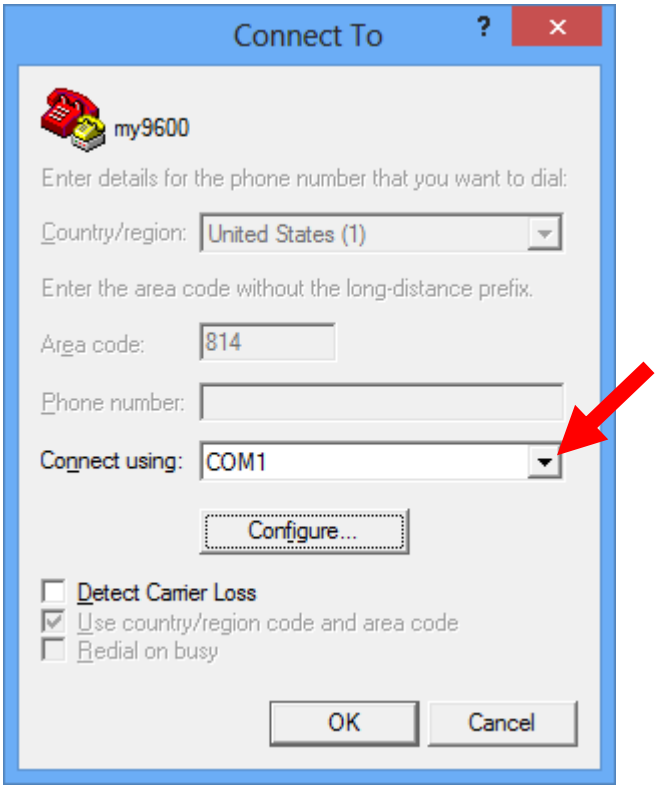
Start the old hyper terminal program (HyperTerminal Private Edition), from the Start Menu or from Metro menu.

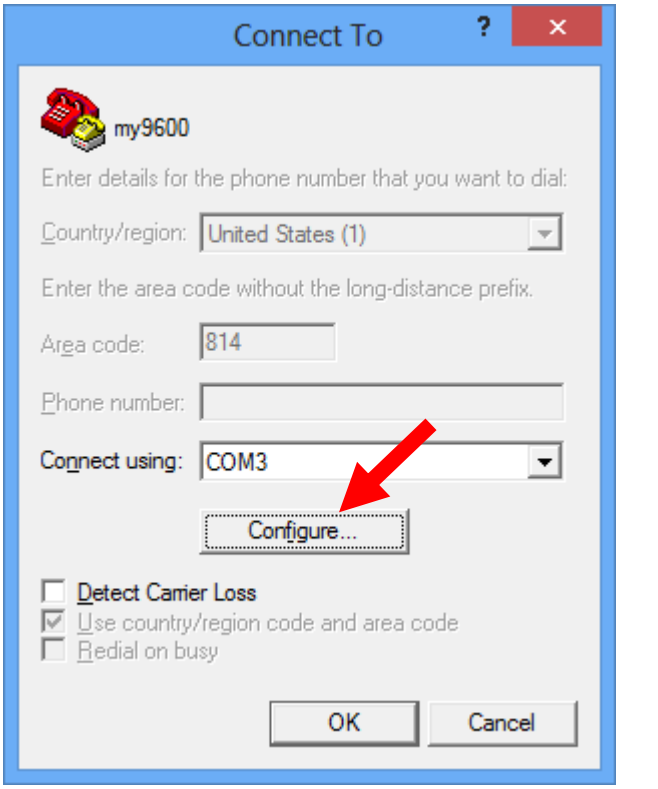


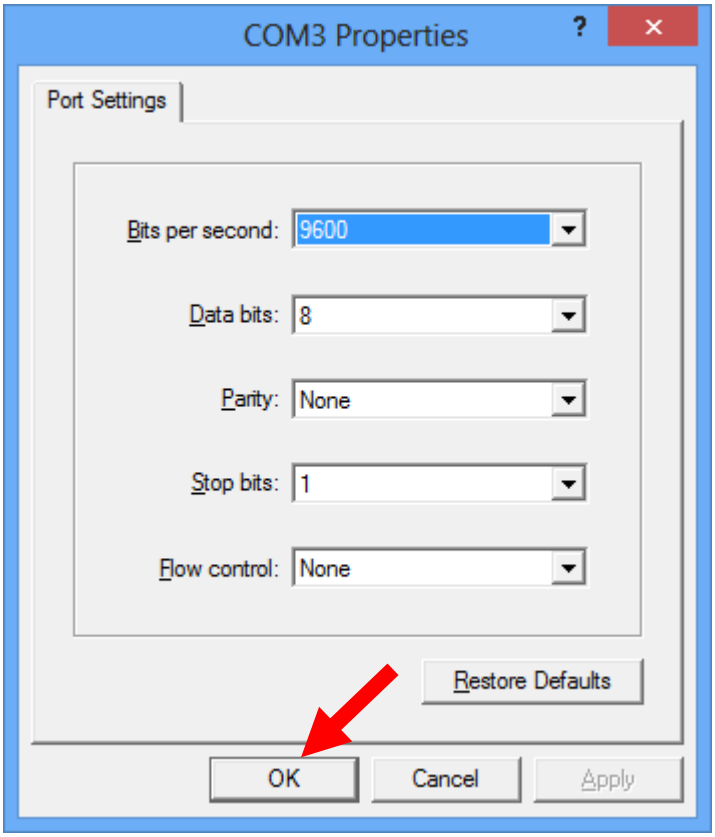


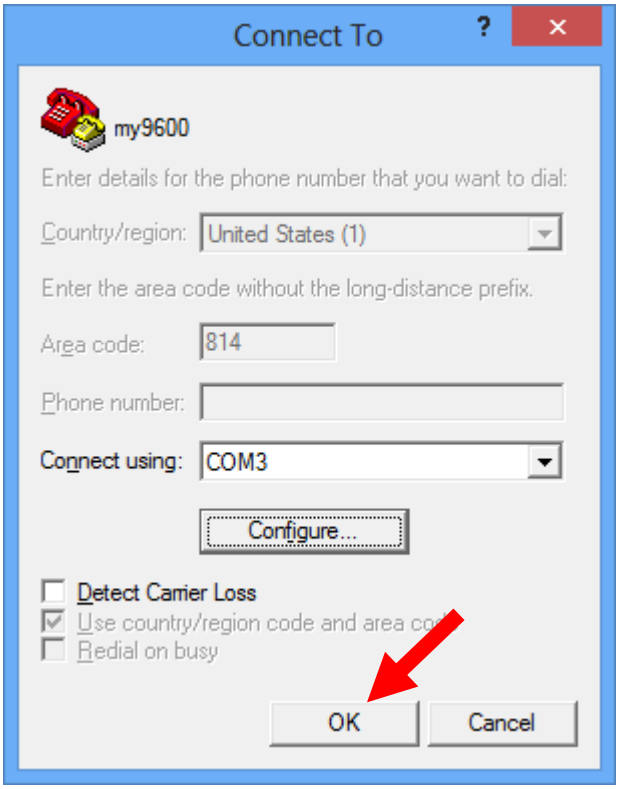

Phone and Modem
Dialing Rules
The list below displays the locations you have specified. Select the location from which you are dialing.
Locations:
Location
Area Code
My Location
814
New...
Edit...
Delete
OK
Cancel
Apply

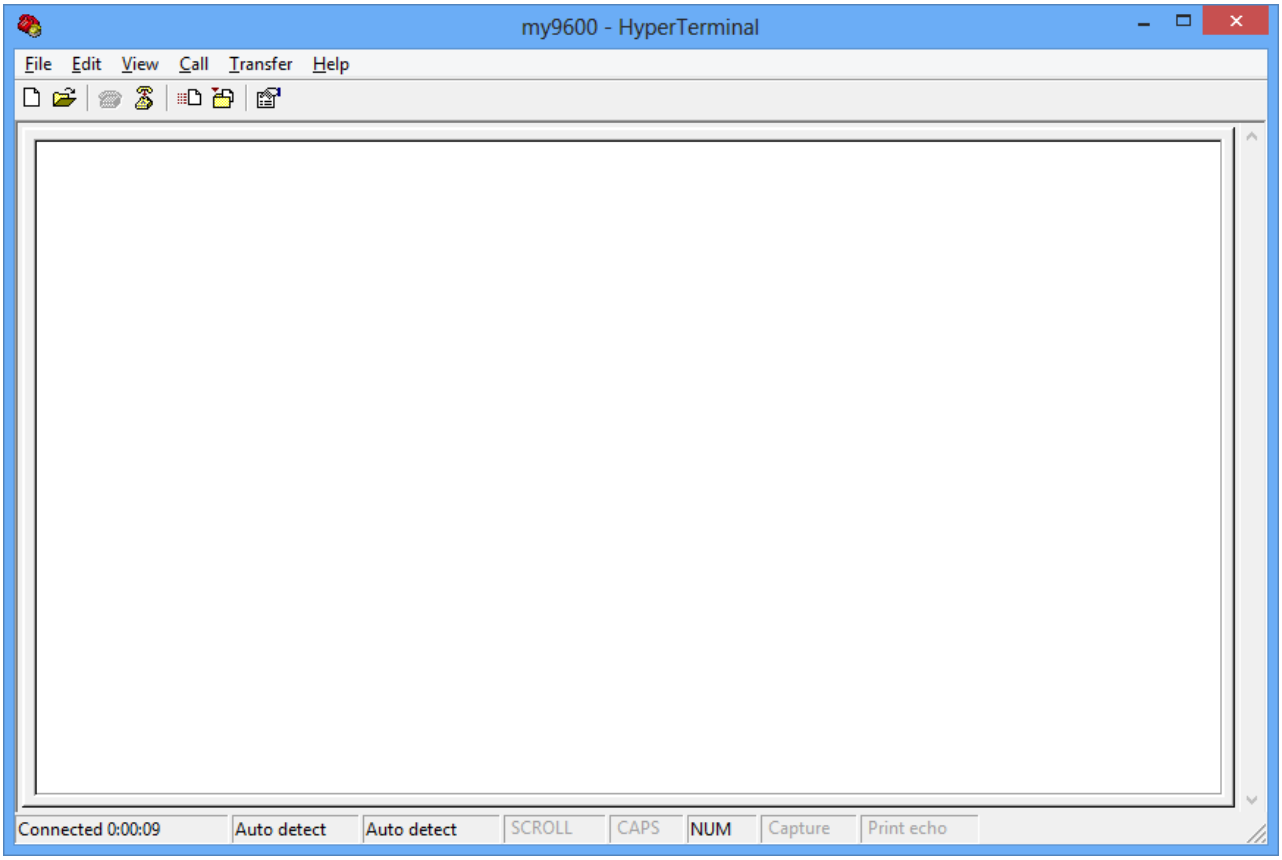

Connection Description
New Connection
Enter a name and choose an icon for the connection:
Name:
my9600
Icon:
OK
Cancel


Connect To
my9600
Enter details for the phone number that you want to dial:
Country/region: United States (1)
Enter the area code without the long-distance prefix.
Area code: 814
Phone number:
Connect using: COM1
Configure...
Detect Carrier Loss
Use country/region code and area code
Redial on busy
OK
Cancel

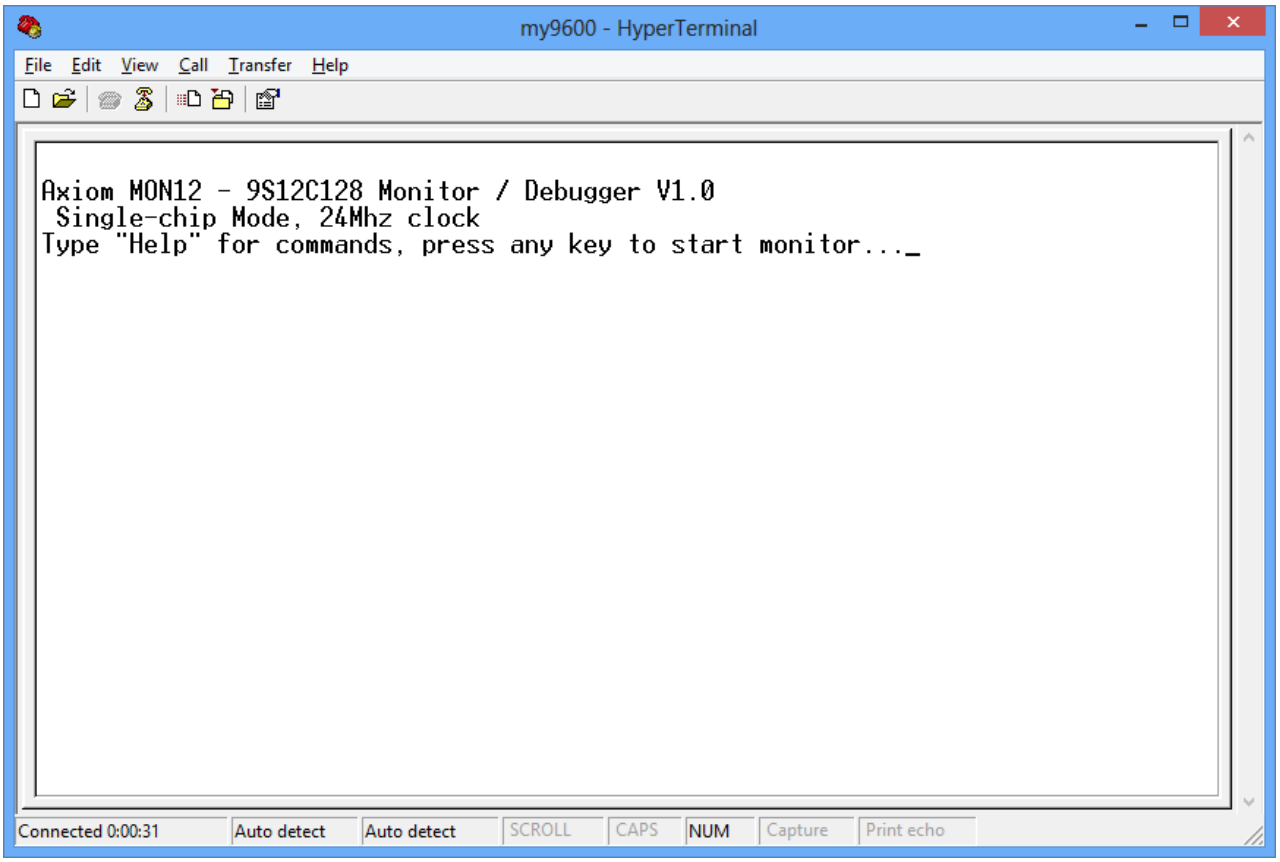

Connect To
my9600
Enter details for the phone number that you want to dial:
Country/region: United States (1)
Enter the area code without the long-distance prefix.
Area code: 814
Phone number:
Connect using: COM3
Configure...
Detect Carrier Loss
Use country/region code and area code
Redial on busy
OK
Cancel


COM3 Properties
Port Settings
Bits per second: 9600
Data bits: 8
Parity: None
Stop bits: 1
Flow control: None
Restore Defaults
OK
Cancel
Apply

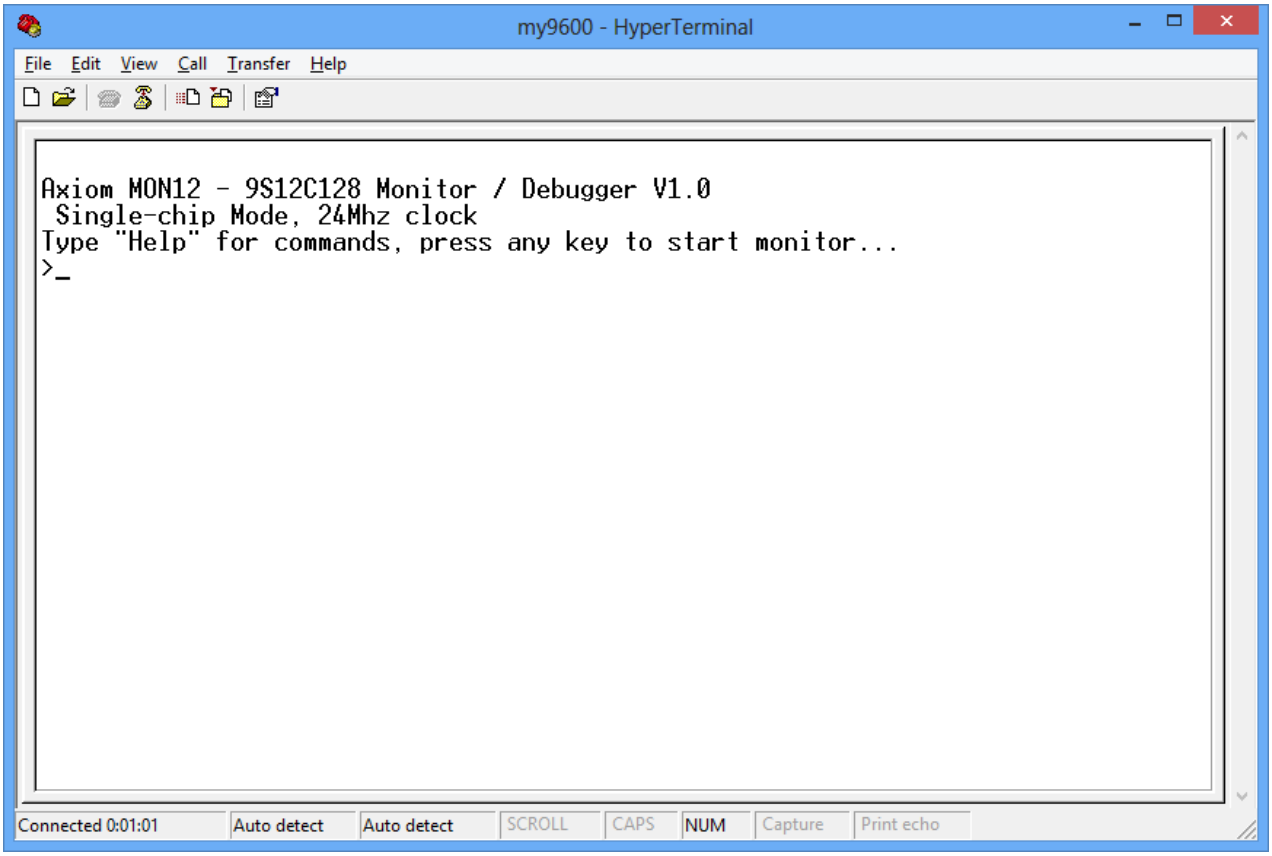

Connect To
my9600
Enter details for the phone number that you want to dial:
Country/region: United States (1)
Enter the area code without the long-distance prefix.
Area code: 814
Phone number:
Connect using: COM3
Configure...
Detect Carrier Loss
Use country/region code and area co
Redial on busy
OK
Cancel

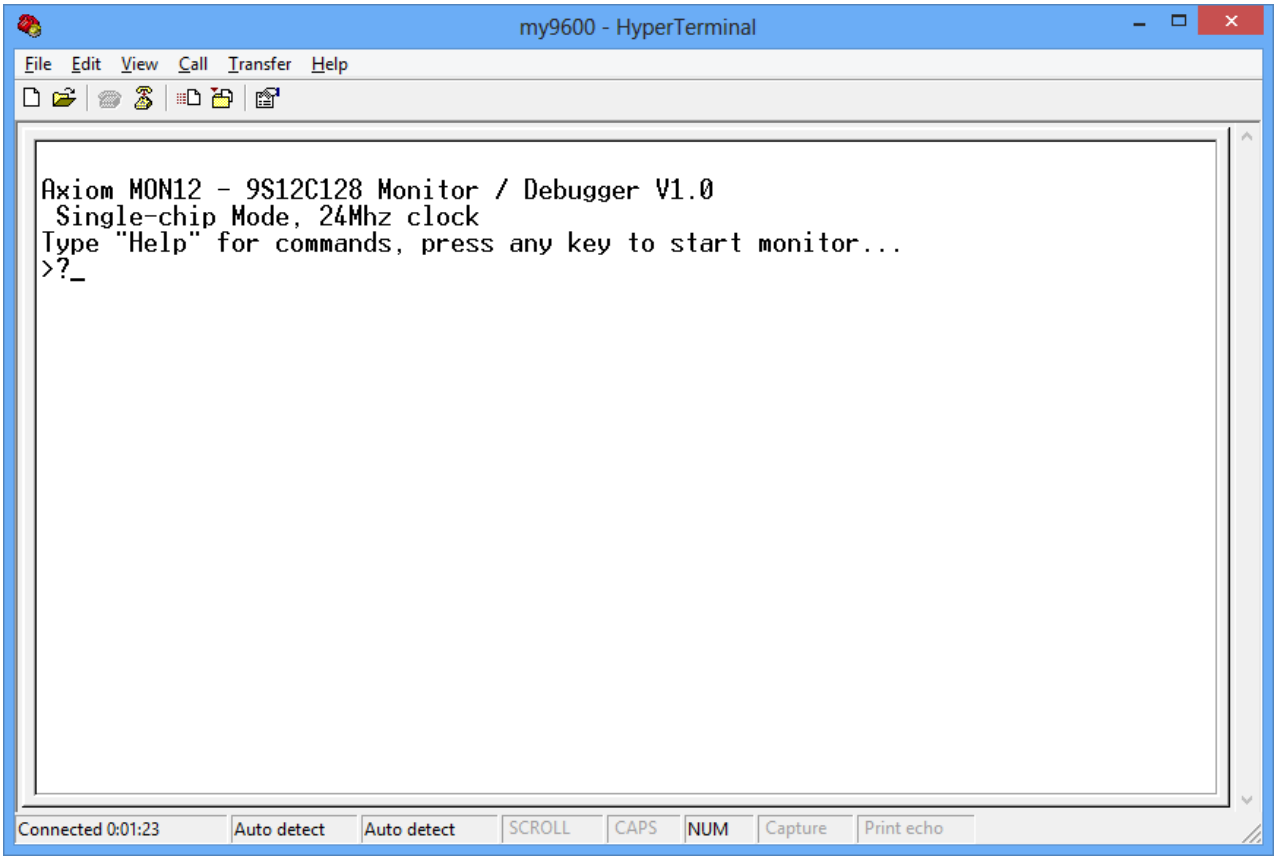


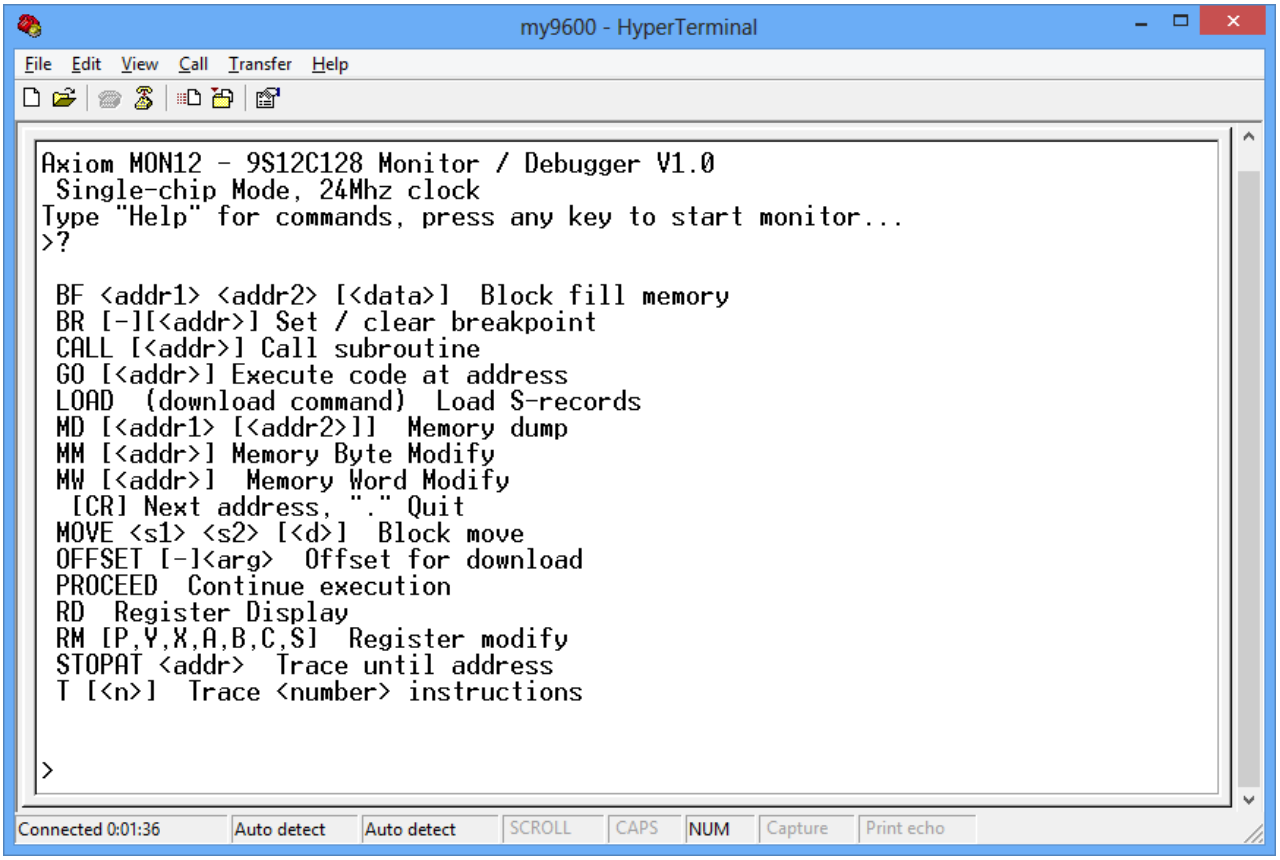
Press the Reset button on your HCS12 board.



Hit a return key to start the monitor program on the HCS12 board.


my9600 - HyperTerminal
File Edit View Call Transfer Help
Axiom MON12 - 9S12C128 Monitor / Debugger V1.0
Single-chip Mode, 24Mhz clock
Type "Help" for commands, press any key to start monitor...
>_
Connected 0:01:01
Auto detect
Auto detect
SCROLL
CAPS
NUM
Capture
Print echo

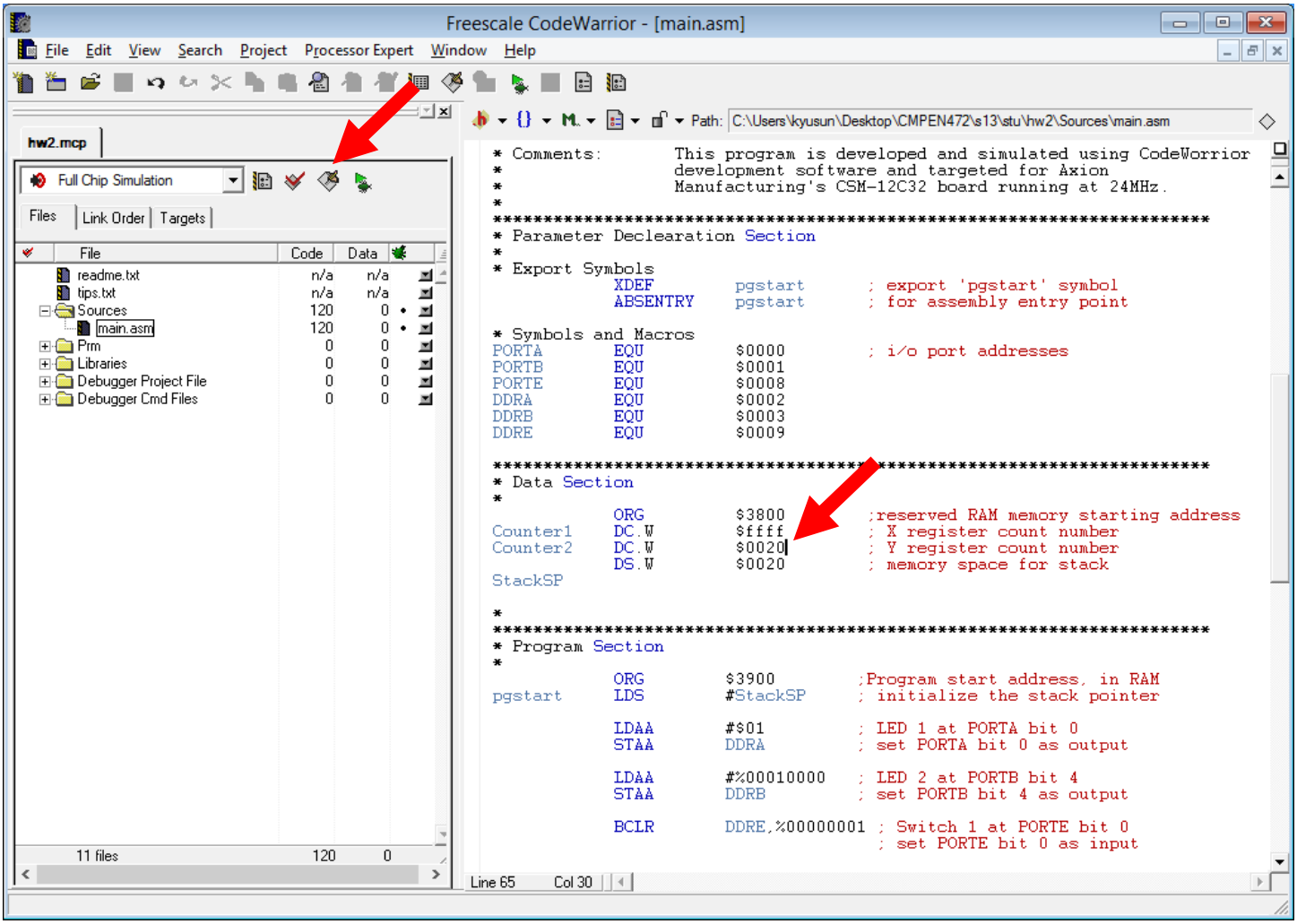

my9600 - HyperTerminal
File Edit View Call Transfer Help
Axiom MON12 - 9S12C128 Monitor / Debugger V1.0
Single-chip Mode, 24Mhz clock
Type "Help" for commands, press any key to start monitor...
>?_
Connected 0:01:23
Auto detect
Auto detect
SCROLL
CAPS
NUM
Capture
Print echo

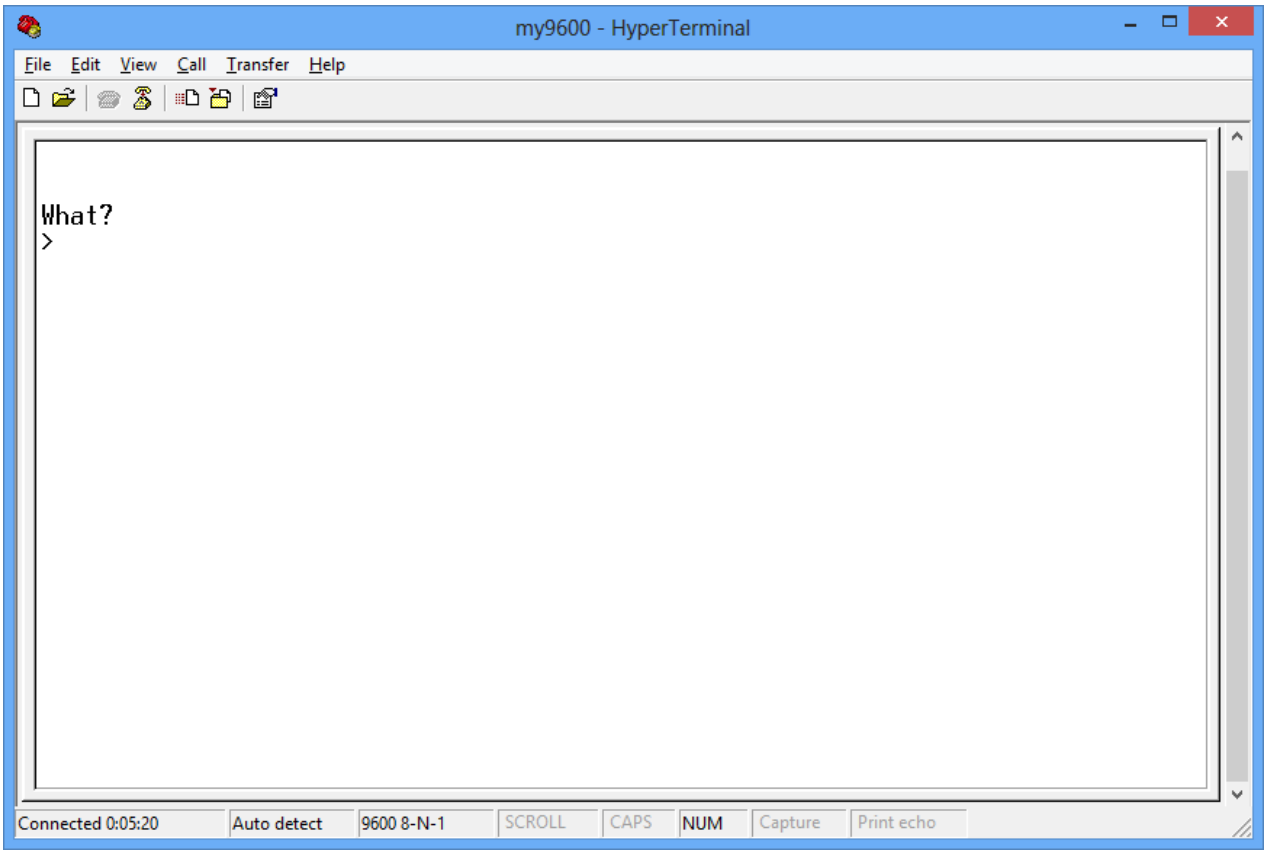


Now you can test run the HW2 program on the HCS12 board.

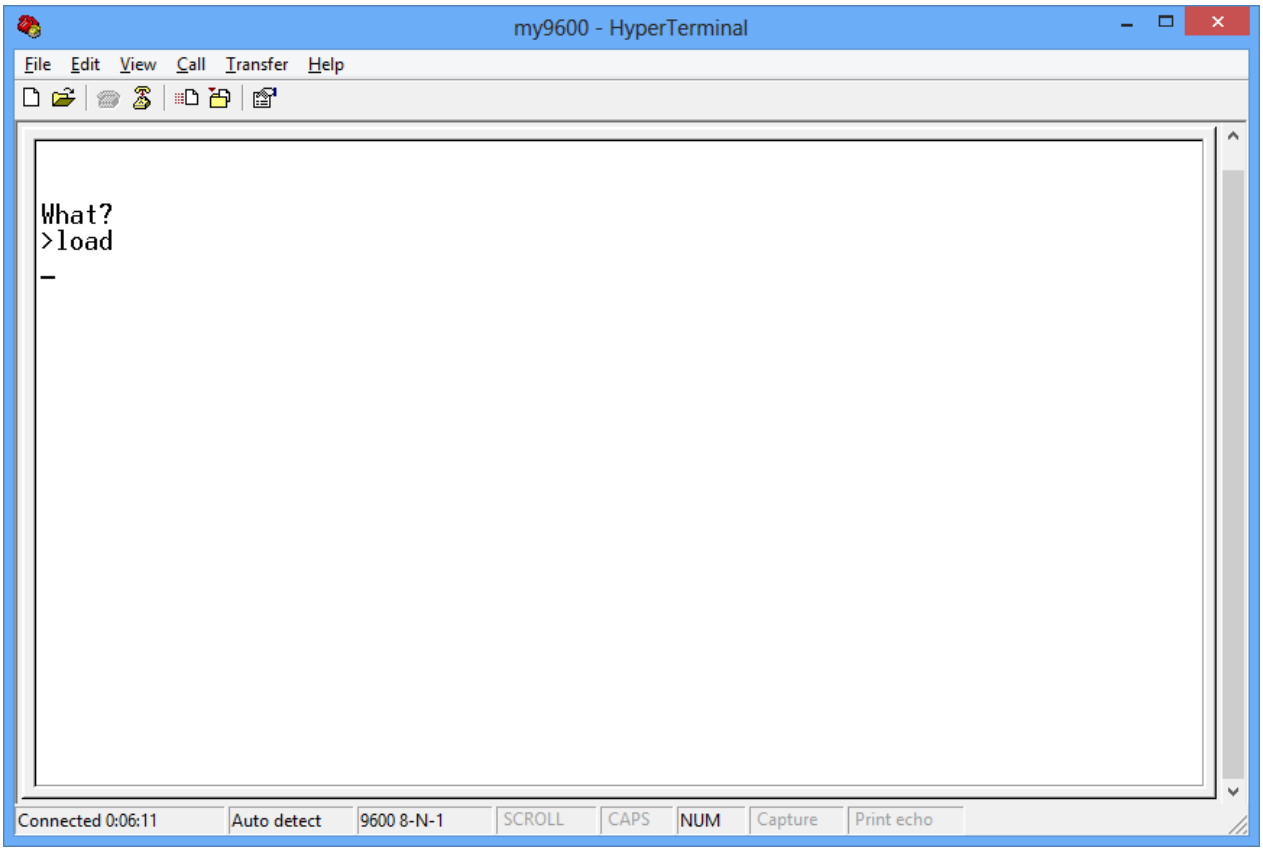
Change the ‘Counter2’ constant from $0002 to $0020, longer delay (running the program on the HCS12 board with 24MHz bus clock is about 16 times faster than the program simulation on your computer).

For this year, we are using MC9S12C128 board, the program starts at $3100 and data section starts at $3000. So, use 'ORG $3000' and 'ORG $3100'. (Previous years, we used MC9S12C32 and the address was $3800 and $3900.)

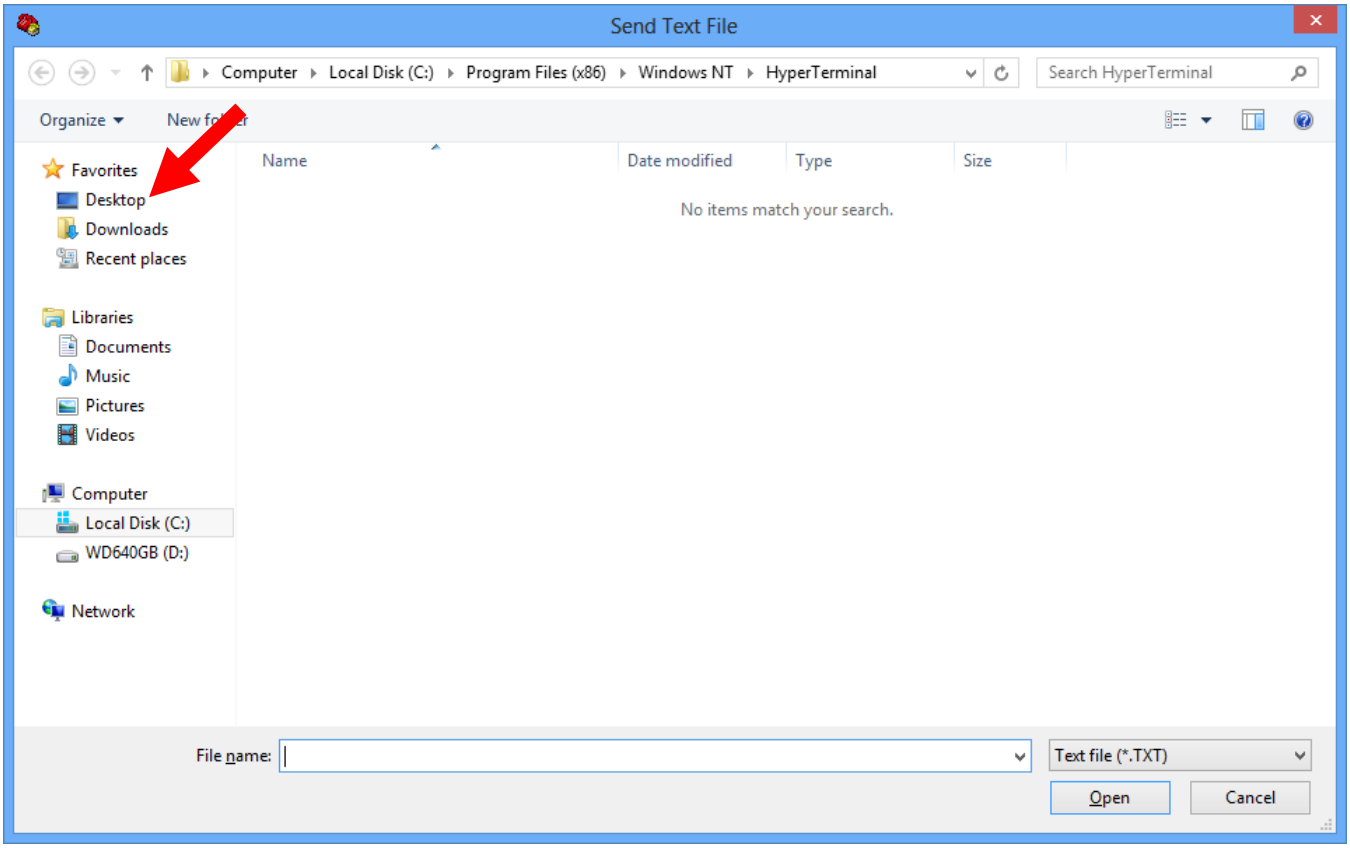




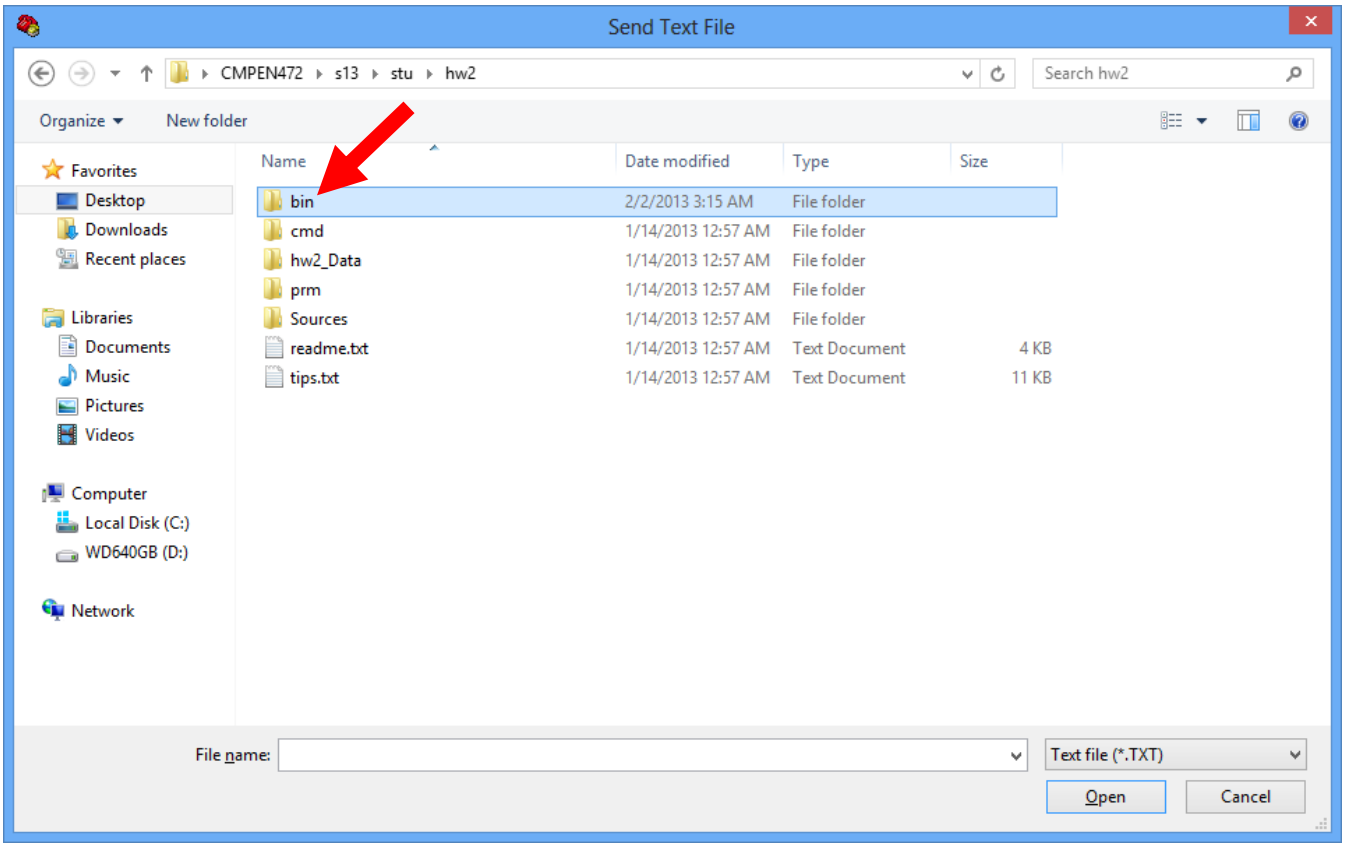
Type ‘load’ command and hit the return key.

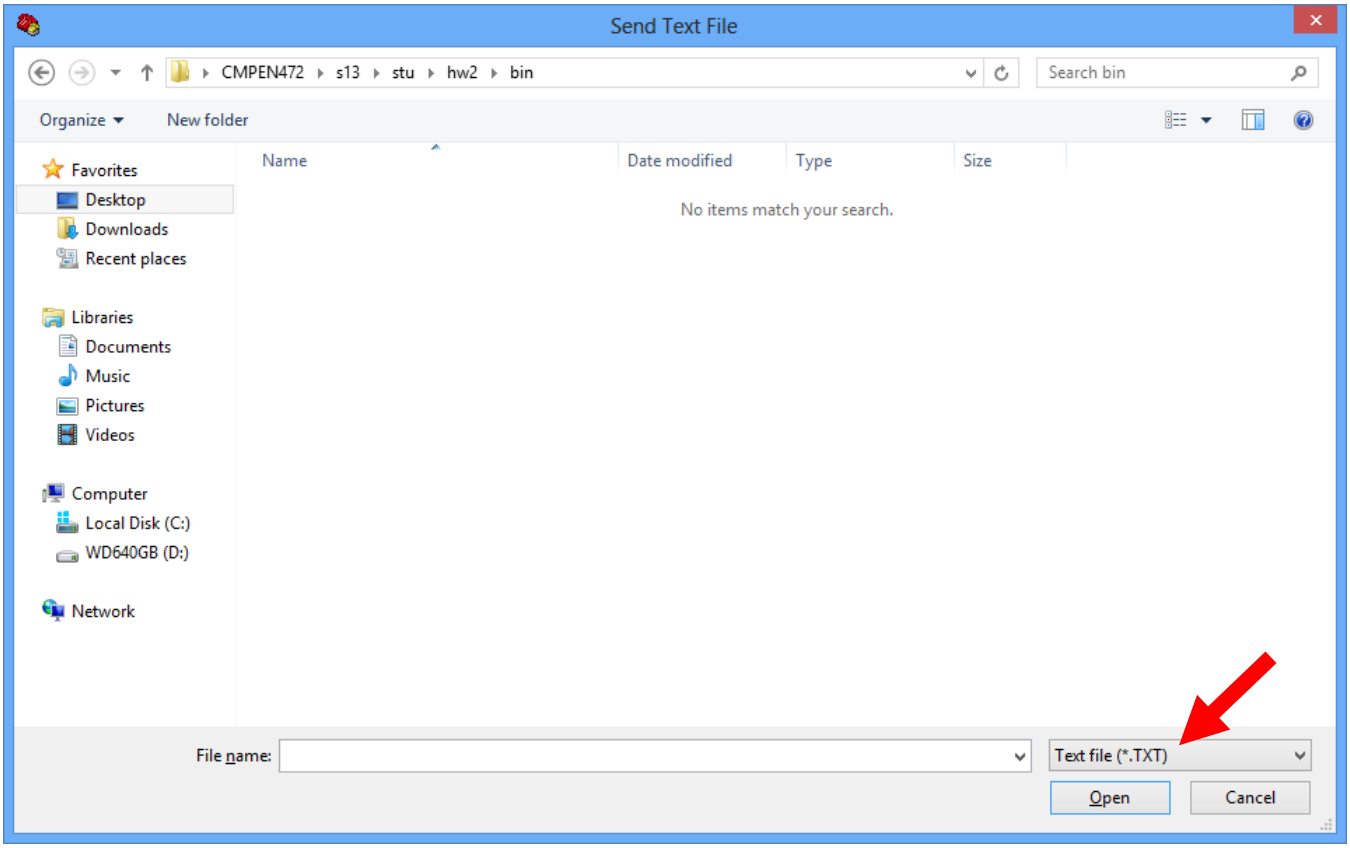


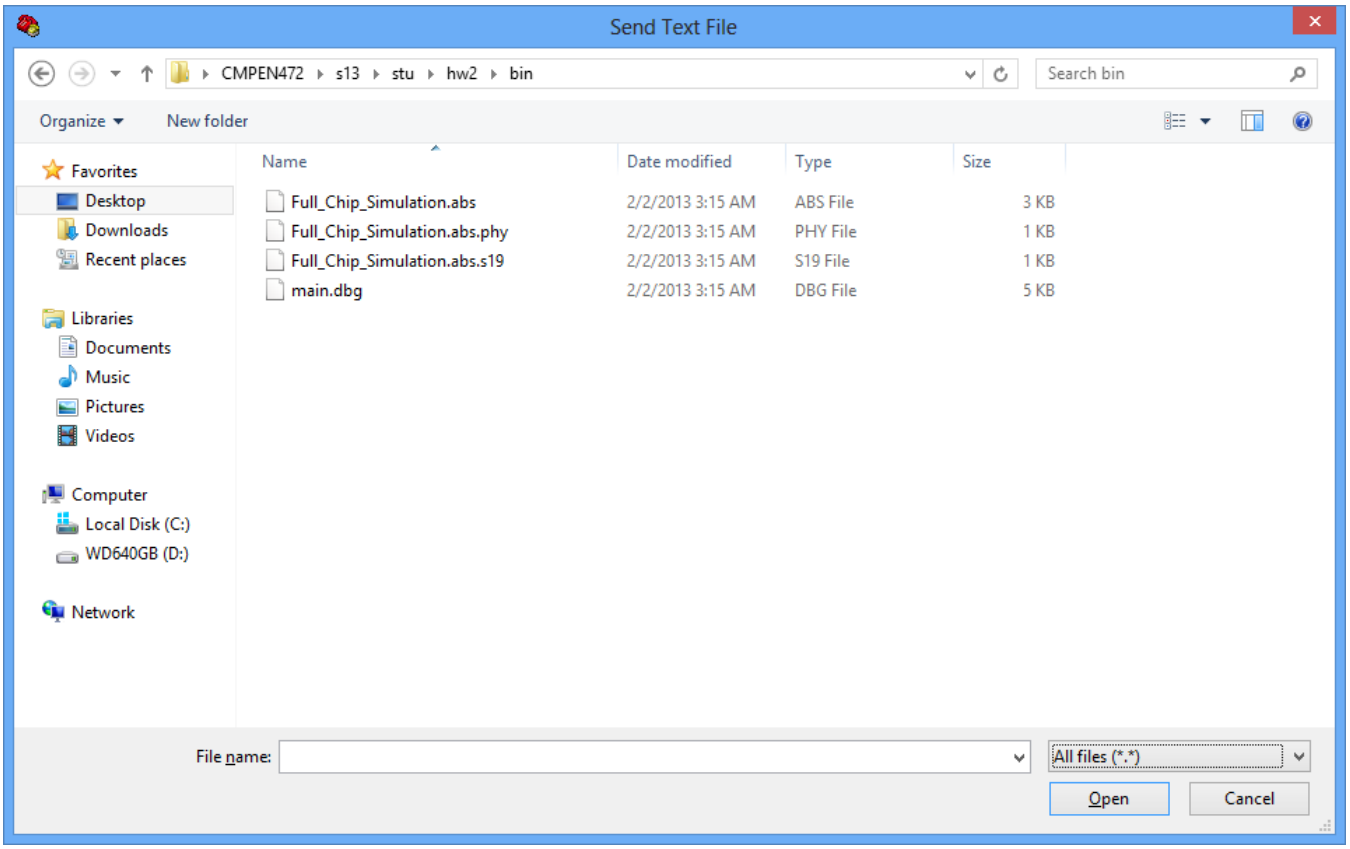
Left click the ‘Transfer’ menu, and select the ‘Send Text File’ option.

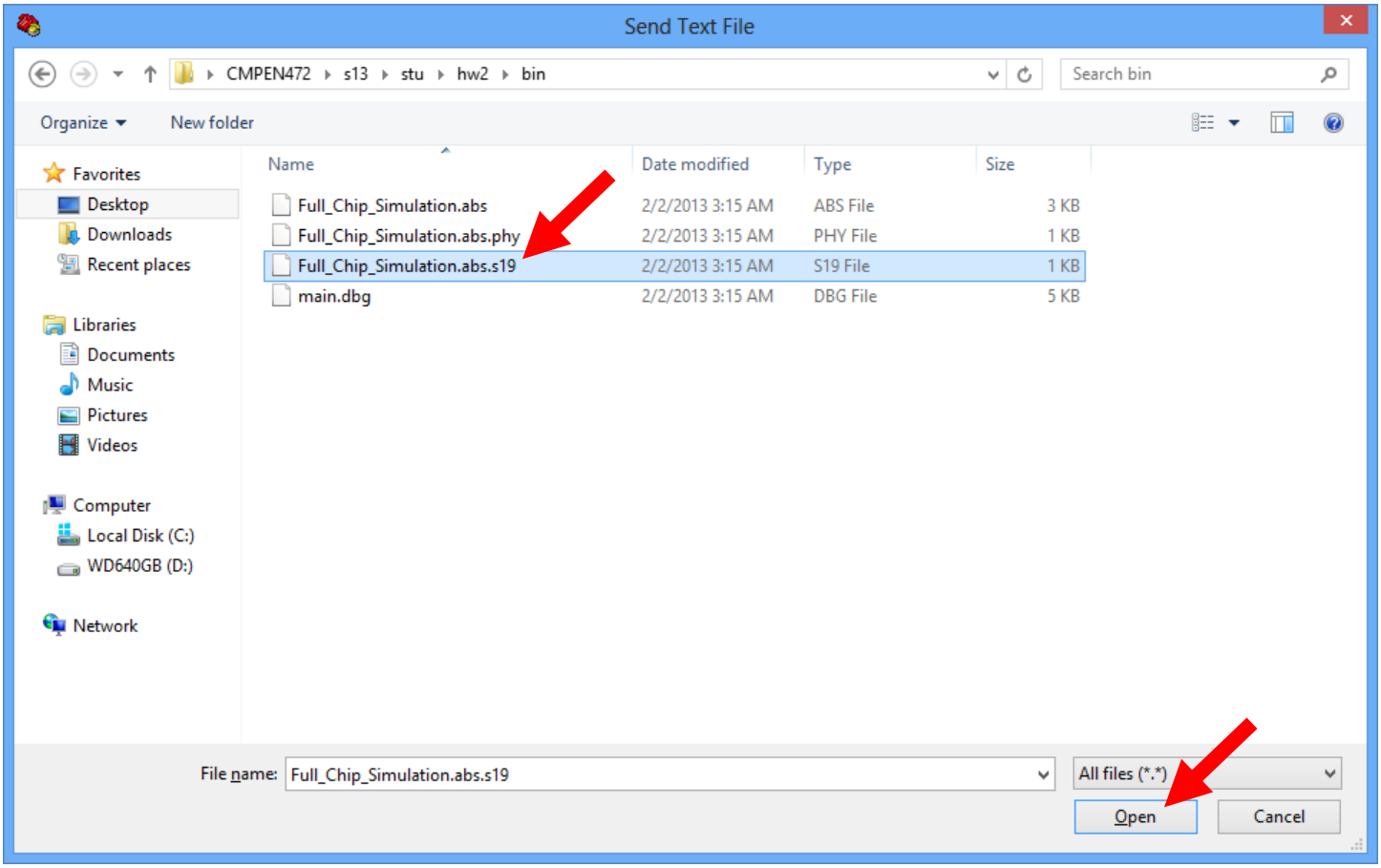


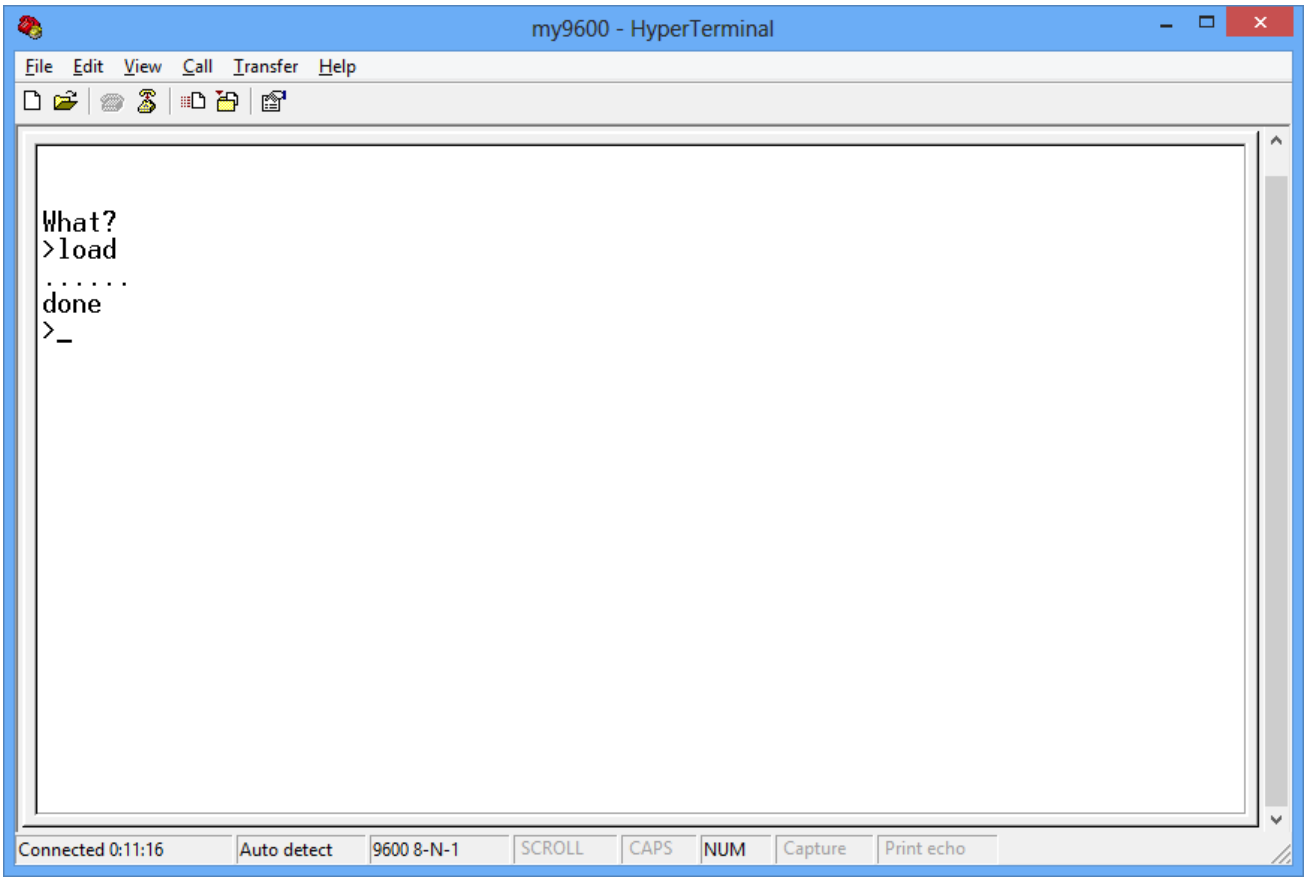
Find the ‘bin’ folder of your HW2 CodeWarrior project.



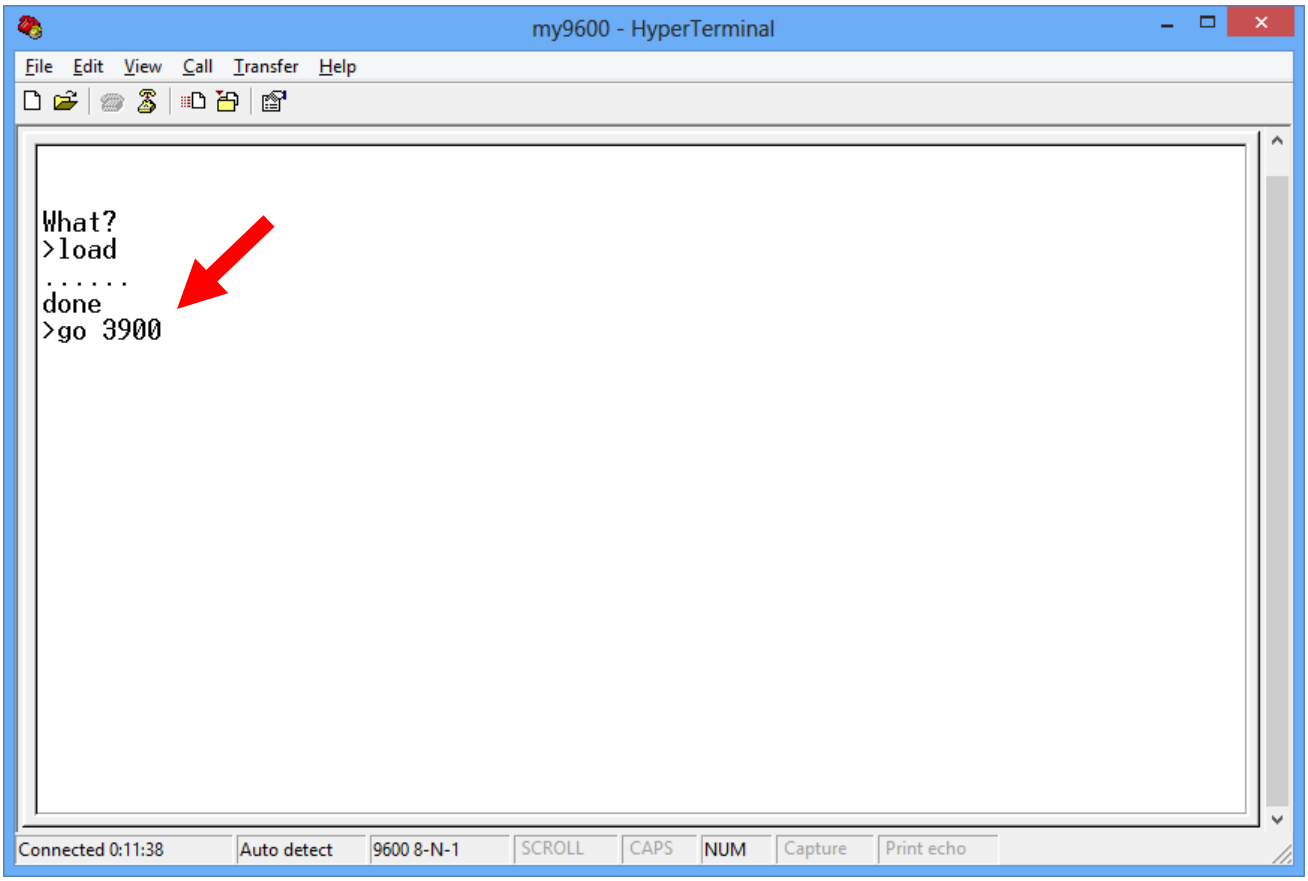

Send Text File
CMPEN472 ▸ s13 ▸ stu ▸ hw2 ▸ bin
Search bin
Organize
New folder
Favorites
Desktop
Downloads
Recent places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
WD640GB (D:)
Network
Name
Date modified
Type
Size
No items match your search.
File name:
Text file (*.TXT)
Open
Cancel


Send Text File
CMPEN472 ▸ s13 ▸ stu ▸ hw2 ▸ bin
Search bin
Organize
New folder
Favorites
Desktop
Downloads
Recent places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
WD640GB (D:)
Network
Name
Date modified
Type
Size
Full_Chip_Simulation.abs 2/2/2013 3:15 AM ABS File 3 KB
Full_Chip_Simulation.abs.phy 2/2/2013 3:15 AM PHY File 1 KB
Full_Chip_Simulation.abs.s19 2/2/2013 3:15 AM S19 File 1 KB
main.dbg 2/2/2013 3:15 AM DBG File 5 KB
File name:
All files (*.*)
Open
Cancel


Send Text File
CMPEN472 ▸ s13 ▸ stu ▸ hw2 ▸ bin
Search bin
Organize
New folder
Favorites
Desktop
Downloads
Recent places
Libraries
Documents
Music
Pictures
Videos
Computer
Local Disk (C:)
WD640GB (D:)
Network
Name
Date modified
Type
Size
Full_Chip_Simulation.abs 2/2/2013 3:15 AM ABS File 3 KB
Full_Chip_Simulation.abs.phy 2/2/2013 3:15 AM PHY File 1 KB
Full_Chip_Simulation.abs.s19 2/2/2013 3:15 AM S19 File 1 KB
main.dbg 2/2/2013 3:15 AM DBG File 5 KB
File name: Full_Chip_Simulation.abs.s19
All files (*.*)
Open
Cancel



Type ‘go 3900’ command. (Type '**go 3100**' command for the **HCS12C128** board)



Now you should see the blinking light of the LED1 on the HCS12C32 board.
Congratulations!

Note on board names

CSM12C128 board is also called HCS12C128 board or APS12C128 board.
It contains the MC9S12C128 microcontroller chip. In the previous years,
the class used smaller CSM12C32 boards with MC9S12C32 microcontroller chip.
The main differences are the on-chip RAM size and flash memory size.
The RAM on MC9S12C128 chip starts at $3000 and the RAM on MC9S12C32 chip
starts at $3800. Otherwise, both chips are practically the same.

This completes this guide.