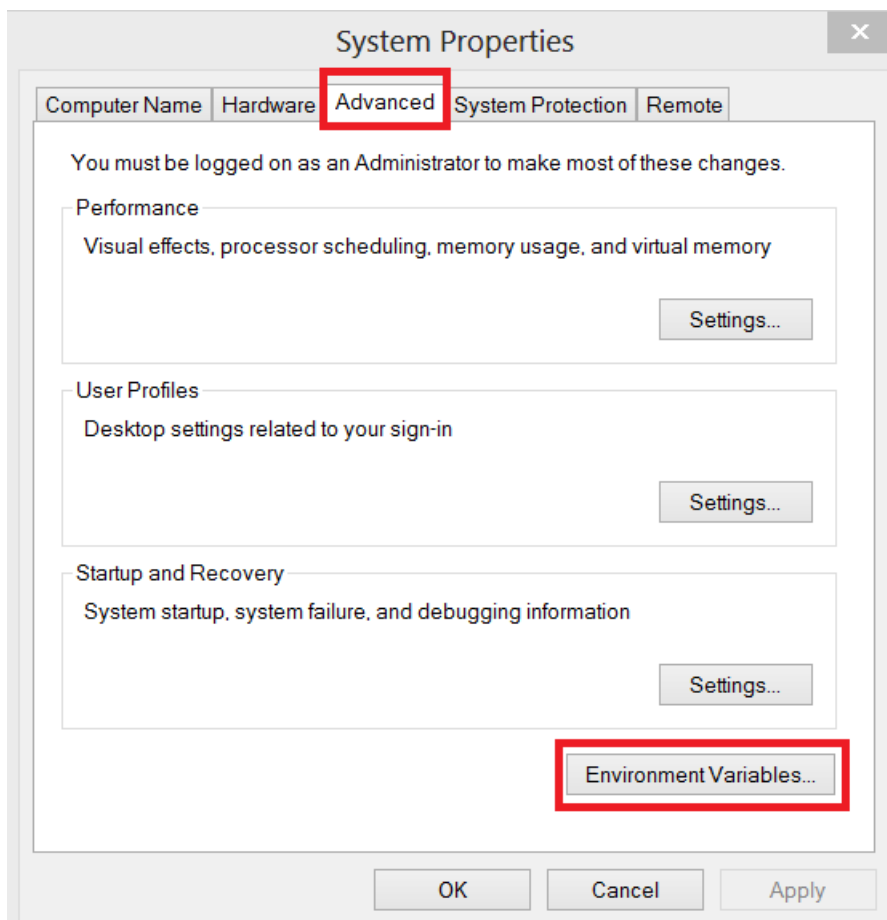
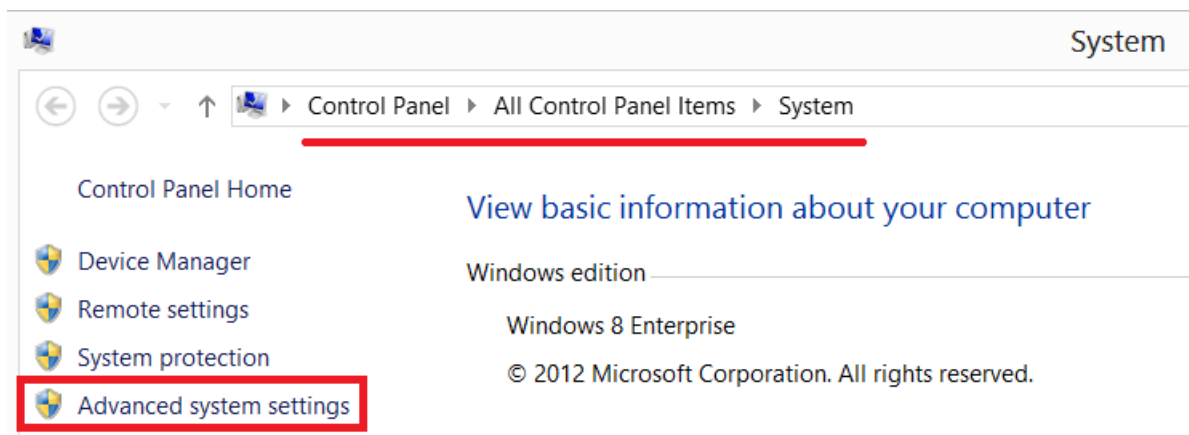


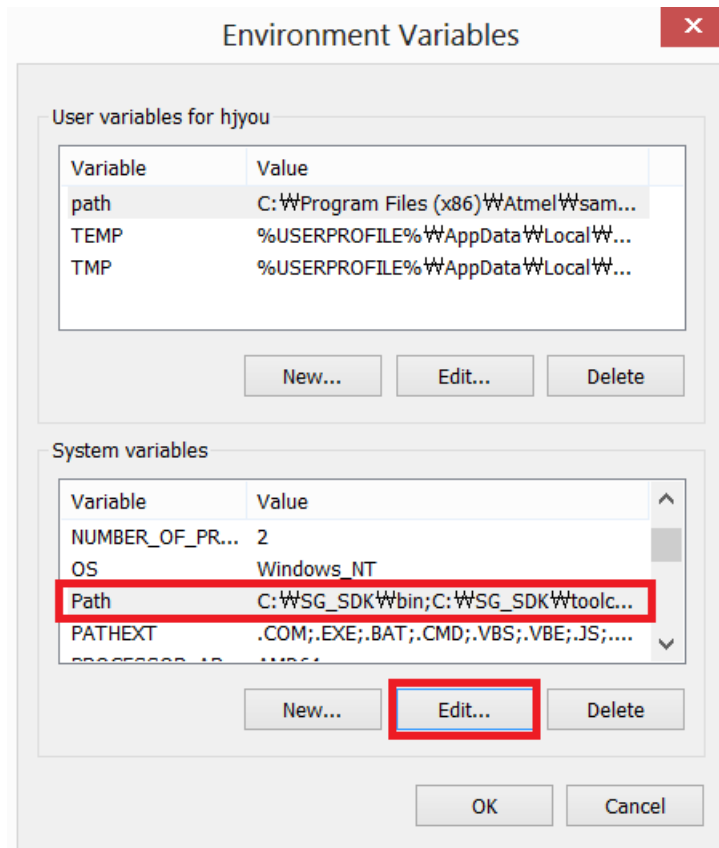
# 1. SDK Installation

1. Unzip SG\_SDK(1405-V327).zip at C:\.

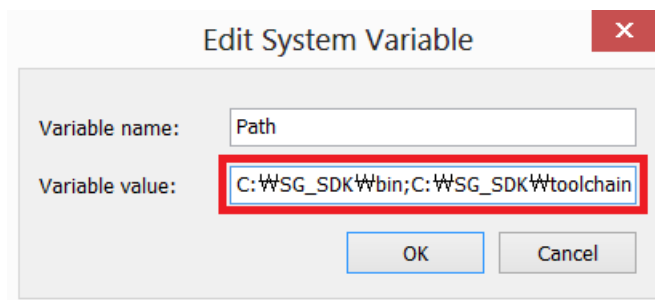
C:\SG\_SDK should be created after extraction is complete.

2. Add 2 paths to Environment Variables in System Properties. The paths should be located at the left most side.





Select "Path" from "System variables" then click the **Edit** button.



Add "C:\SG\_SDK\bin;C:\SG\_SDK\toolchains\bin;" without the quotes and click the **OK** button.

## 2. Application Compile

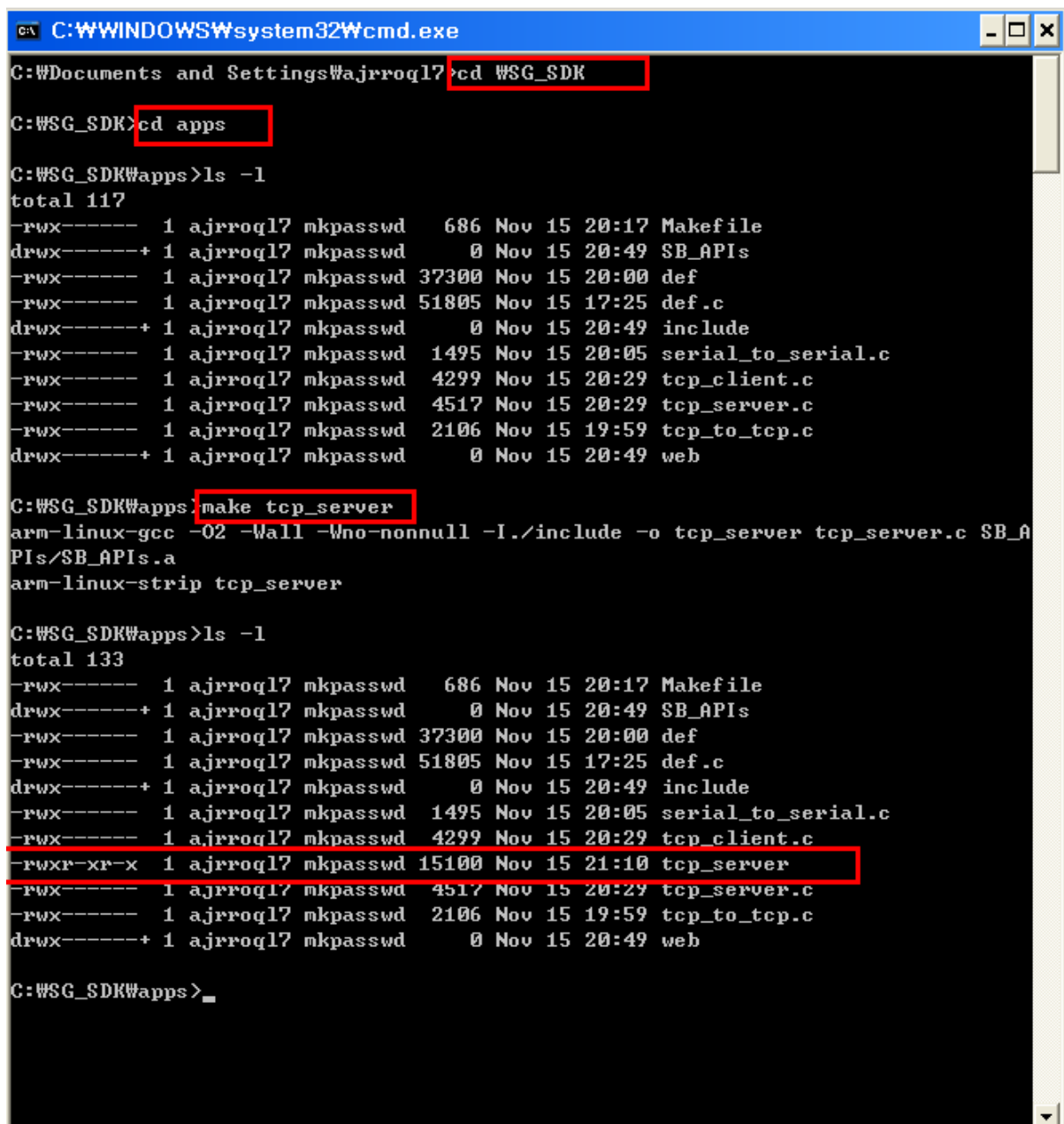
1. Open a Command Prompt window

2. Go to the folder where SG SDK sample source code is located.

```
cd C:\SG_SDK\apps
```

3. Compile the source code.

```
make tcp_server
```



```
C:\WINDOWS\system32\cmd.exe
C:\Documents and Settings\Wajrroq17>cd WSG_SDK

C:\WSG_SDK>cd apps

C:\WSG_SDK\apps>ls -l
total 117
-rwx----- 1 ajrroq17 mkpasswd 686 Nov 15 20:17 Makefile
drwx-----+ 1 ajrroq17 mkpasswd 0 Nov 15 20:49 SB_APIs
-rwx----- 1 ajrroq17 mkpasswd 37300 Nov 15 20:00 def
-rwx----- 1 ajrroq17 mkpasswd 51805 Nov 15 17:25 def.c
drwx-----+ 1 ajrroq17 mkpasswd 0 Nov 15 20:49 include
-rwx----- 1 ajrroq17 mkpasswd 1495 Nov 15 20:05 serial_to_serial.c
-rwx----- 1 ajrroq17 mkpasswd 4299 Nov 15 20:29 tcp_client.c
-rwx----- 1 ajrroq17 mkpasswd 4517 Nov 15 20:29 tcp_server.c
-rwx----- 1 ajrroq17 mkpasswd 2106 Nov 15 19:59 tcp_to_tcp.c
drwx-----+ 1 ajrroq17 mkpasswd 0 Nov 15 20:49 web

C:\WSG_SDK\apps>make tcp_server
arm-linux-gcc -O2 -Wall -Wno-nonnull -I./include -o tcp_server tcp_server.c SB_APIs/SB_APIs.a
arm-linux-strip tcp_server

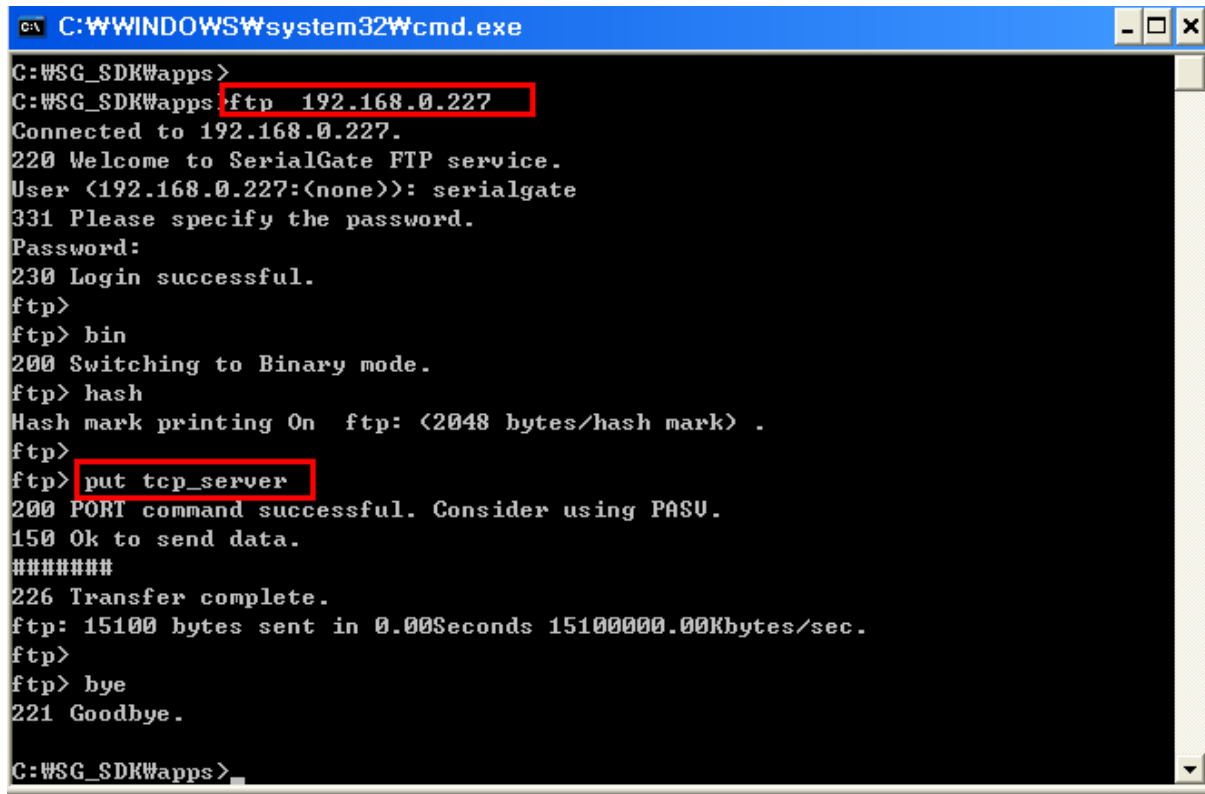
C:\WSG_SDK\apps>ls -l
total 133
-rwx----- 1 ajrroq17 mkpasswd 686 Nov 15 20:17 Makefile
drwx-----+ 1 ajrroq17 mkpasswd 0 Nov 15 20:49 SB_APIs
-rwx----- 1 ajrroq17 mkpasswd 37300 Nov 15 20:00 def
-rwx----- 1 ajrroq17 mkpasswd 51805 Nov 15 17:25 def.c
drwx-----+ 1 ajrroq17 mkpasswd 0 Nov 15 20:49 include
-rwx----- 1 ajrroq17 mkpasswd 1495 Nov 15 20:05 serial_to_serial.c
-rwx----- 1 ajrroq17 mkpasswd 4299 Nov 15 20:29 tcp_client.c
-rwxr-xr-x 1 ajrroq17 mkpasswd 15100 Nov 15 21:10 tcp_server
-rwx----- 1 ajrroq17 mkpasswd 4517 Nov 15 20:29 tcp_server.c
-rwx----- 1 ajrroq17 mkpasswd 2106 Nov 15 19:59 tcp_to_tcp.c
drwx-----+ 1 ajrroq17 mkpasswd 0 Nov 15 20:49 web

C:\WSG_SDK\apps>
```

### 3. Application Upload

1. Use FTP to connect to SerialGate and upload the compiled sample source code as shown below.

IP address of SerialGate shown below is 192.168.0.223 which is the factory default value.



```
C:\WINDOWS\system32\cmd.exe
C:\WSG_SDK\apps>
C:\WSG_SDK\apps>ftp 192.168.0.227
Connected to 192.168.0.227.
220 Welcome to SerialGate FTP service.
User (192.168.0.227:(none)): serialgate
331 Please specify the password.
Password:
230 Login successful.
ftp>
ftp> bin
200 Switching to Binary mode.
ftp> hash
Hash mark printing On  ftp: (2048 bytes/hash mark) .
ftp>
ftp> put tcp_server
200 PORT command successful. Consider using PASV.
150 Ok to send data.
#####
226 Transfer complete.
ftp: 15100 bytes sent in 0.00Seconds 15100000.00Kbytes/sec.
ftp>
ftp> bye
221 Goodbye.

C:\WSG_SDK\apps>
```

## 4. Application Execution

1. Connect to SerialGate using telnet.
2. Modify the file attribute for the uploaded file so that it will be executable.
3. Run it.

```
C:\ 텔넷 192.168.0.227
```

```
Login incorrect  
SerialGate login: serialgate  
Password:  
  
#####  
#####  
##  
# #  
# #  
##  
#####  
## ##### # #####  
# # # ### # # # #  
# ##### # # ##### # #  
## # # # # # # #  
# # # # # # # #  
# # ##### # # ##### # #  
## ##  
#####  
  
COPYRIGHT <C> 1987-2012 SYSTEMBASE ALL RIGHTS RESERVED  
  
Model : SG-1010/ALL  
Firmware Version : 2.1.202  
MAC Address : 00:05:f4:12:34:90  
System Time : 19:29:09 up 2:29  
  
## chmod 777 tcp_server  
## ./tcp_server 1 1 &  
##  
##  
##
```

Note) When the user application is uploaded using FTP, it will be stored in **/tmp** folder.

(When the users use telnet to connect, they will be connected to the default folder; /tmp.)

## 5. Auto-start the Application

1. Use a web browser to connect to change the serial settings.
2. Select "Serial Settings" from the left menu.
3. Choose User Application in the Operation Mode.
4. Set Port Alias as /flash/ts <argument>.

**(Caution)** Maximum 16 bytes can be registered, therefore, excluding 7 characters from /flash/, 8 characters of program name and argument can be set.

/flash/ folder cannot be removed even if the SerialGate resets. The users should place the program in this location

From **4. Application Execution**, copy the user program to /flash/ folder.

```
cp tcp_server /flash/ts
```

As stated above, application name can be 8 characters maximum, change the folder location to **ts** and define a value in Port Alias including the folder name, execution file name and the argument.

The screenshot shows the SerialGate web interface. The top header includes the logo 'SerialGate', the tagline 'Device Networking Experts', and the website 'www.sysbas.com'. Below the header is a status bar with fields for MODEL (SG-1010/ALL), IP (192.168.0.227), MAC (00:05:4:12:34:90), NAME (대한민국대한민국만세2), User (serialgate), and Firmware (2.1.202). The left sidebar contains a menu with 'Overview', 'Network Settings', 'Serial Settings', 'Wireless Settings', 'SNMP Settings', 'Change Password', 'Factory Default', 'Reboot', 'Update Firmware', 'Logout', and 'System Log'. The main content area is titled 'Serial Settings' and contains a 'Serial Port 1 Setting' section. This section has several fields: 'Operation Mode' (set to 'User Application'), 'Interface' (set to 'RS-232'), 'Local Socket Port' (set to '4001'), 'Port Alias' (set to '/flash/ts 1 16'), 'Com Options' (Baudrate: 9600 bps, Data: 8 bits, Stop: 1 bit, Parity: None), 'Flow Control' (set to 'None'), 'Device Type' (set to 'Data Only'), 'Remote IP Address / Port' (set to '0.0.0.0 / 4000'), 'Keep-Alive Check Time' (set to '0 sec'), and 'Latency Time' (set to '0 msec'). At the bottom of the settings section are 'Apply' and 'Cancel' buttons.

## 6. Auto-run Application using the Shell

If pre-defined shell, “userinit.sh”, exists in the /flash/ folder in SerialGate the application will automatically start.

Auto-run from the shell can execute multiple application.

The following example shows an exemplary program, tcp\_server, running for the each ports by the script file.

Two files “tcp\_server” and “userinit.sh” need to be located in /flash/ folder.

When SerialGate reboots, userinit.sh will run three commands as shown below.

**(Caution)** userinit.sh and tcp\_server must be set as executable file.

**(Caution)** Each serial port settings must be set as “disable” in “Operation Mode”.

(Two programs should not share the same port.)

File contents in “userinit.sh”.

```
#!/bin/sh

/flash/tcp_server 1 16 &
/flash/tcp_server 2 16 &
/flash/tcp_server 3 16 &
```

tcp\_server exemplary program will refer to the configuration settings (Serial Settings from the Web Manager) for serial port #1, #2, and #3 then execute daemons separately.

(Refer to tcp\_server source code for argument contents.)