How to compile application including modbus Lib with LinPAC SDK on Windows?

Applies to:			No. L2-003
Platform	Software operating system	OS version	Classification
LP-8000/9000 Series LP-2000/5000 Series	All version	All version	Installation & Configuration

This article illustrates how to compile application including modbus library with LinPAC SDK on Windows platform, please follow the instructions below.

libmodbus is a free software library to send/receive data with a device which respects the Modbus protocol. This library is written in C and designed to run on Linux, Mac OS X, FreeBSD and QNX and Windows. Please visit the official website www.libmodbus.org to get more information.

Download and Install

To compile Libmodbus under Windows, user need to install MinGW and MSYS then select the common packages (gcc, automake, libtool, etc) as below:

- **LinPAC AM335X SDK**: https://www.icpdas.com/en/download/file.php?num=1551
- **Libmodbus**: https://github.com/stephane/libmodbus/releases
- **MinGW for Windows Platform**: https://sourceforge.net/projects/mingw/
- **MSYS for Windows Platform** : https://www.msys2.org/

Environment Variable Configuration

The PATH variable defines the search path for running commands. Therefore, user need to modify the C:\msys64\etc\profile file, add the cross compile folder to environment variable “PATH”.

```
PATH=$PATH:'c/cygwin/LinPAC_AM335x_SDK/Linaro_GCC_4.7/bin:/c/Cygwin/LinPAC_AM335x_SDK/Linaro_GCC_4.7/arm-linux-gnueabihf/bin:/c/cygwin/LinPAC_AM335x_SDK/Linaro_GCC_4.7/arm-linux-gnueabihf/libc/usr/lib/opkg/alternatives:/c/cygwin/LinPAC_AM335x_SDK/Linaro_GCC_4.7/arm-linux-gnueabihf/libc/usr/lib/pkgconfig'
```

Open mingw32.exe shell launcher (Click the '**Start**' menu → '**MSYS2**' → '**MSYSW MINGW32**')

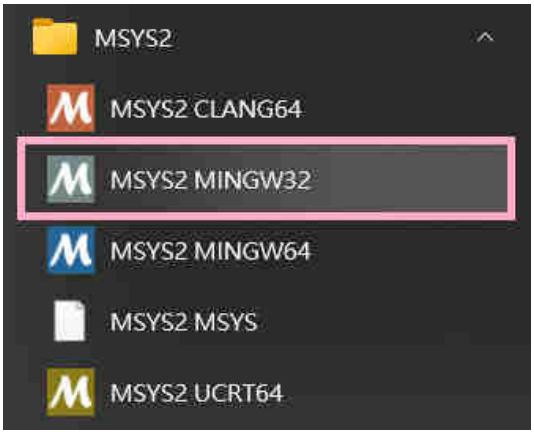

Figure 1

Or enter to C:\msys64\ directory, and click the mingw32.exe

Using the **exprot** command to check the environment variable of PATH.

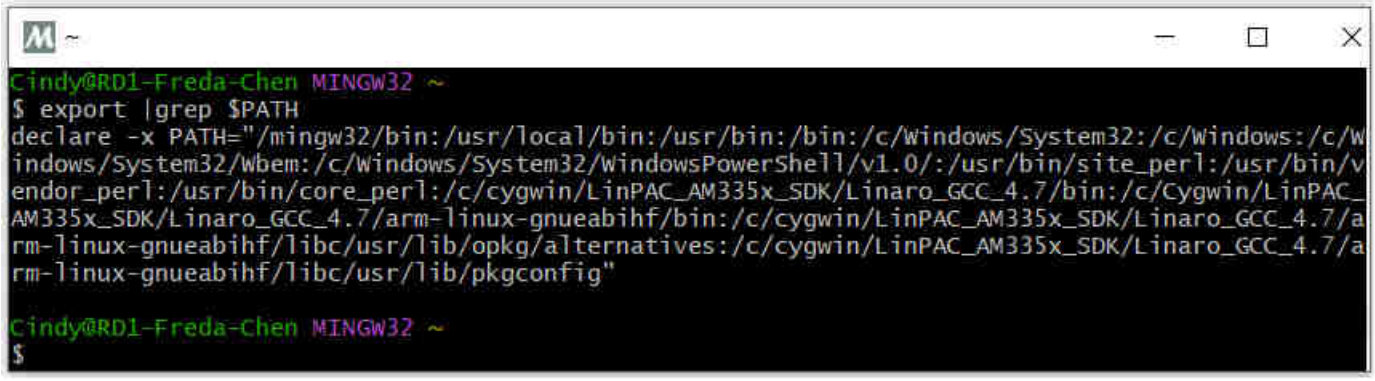

Figure 2

COMPILE LIBMODBUS LIBRARY AND EXAMPLES

To go to the libmodbus-3.1.8 directory, and type:

```
Cindy@RD1-Freda-Chen MINGW32 /c/cygwin/LinPAC_AM335x_SDK/libmodbus-3.1.8
$ mkdir    linpac


Cindy@RD1-Freda-Chen MINGW32 /c/cygwin/LinPAC_AM335x_SDK/libmodbus-3.1.8
$ sh configure    CC=arm-linux-gnueabihf-gcc    --host=arm-linux-gnueabihf    --enable-static
--prefix=$(pwd)/linpac
```

Here is the result of complete installing libmodbus-3.1.8 on Windows platform.

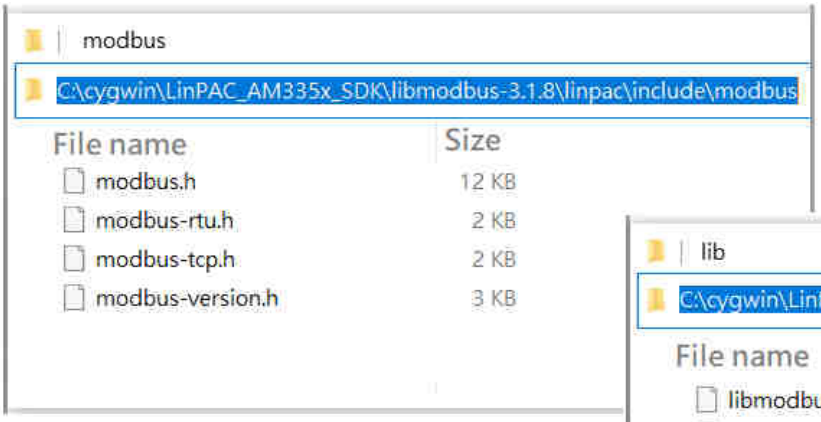

Figure 3

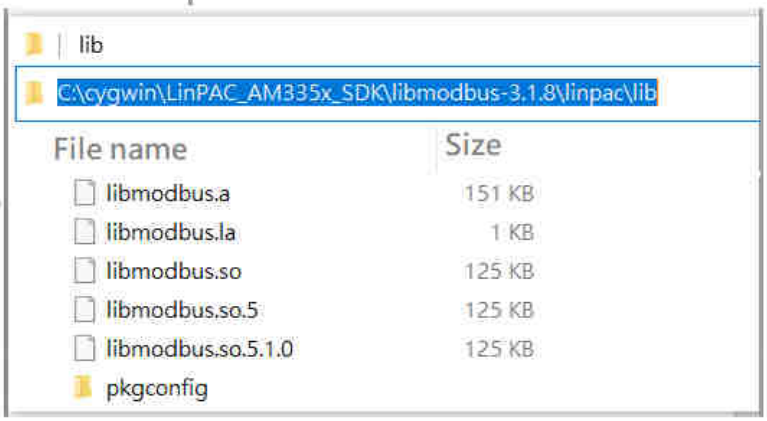

Figure 4

Compile modbus program with the following command manually:

```
Cindy@RD1-Freda-Chen MINGW32 /c/cygwin/LinPAC_AM335x_SDK/libmodbus-3.1.8/tests
$ arm-linux-gnueabihf-gcc -I../linpac/include/modbus -lm -o random-test-server.exe
random-test-server.c ../linpac/lib/libmodbus.a
```

Makefile shall call make manually to build a targe in *tests* directory. User can modify the **Makefile** file, add the following code:

- LDFLAGS = -lm
- CFLAGS = -g -O2 -I. -I../include
- LIBS = ../linpac/lib/libmodbus.a
- Change syntax of a makefile's contents --- 'version' for example.

```
676 #version$(EXEEXT): $(version_OBJECTS) $(version_DEPENDENCIES) $(EXTRA_version_DEPENDENCIES)
677 #   @rm -f version$(EXEEXT)
678 #   $(AM_V_CCLD)$(LINK) $(version_OBJECTS) $(version_LDADD) $(LIBS)
679
680 version: ./version.o
681     $(CC) $(CFLAGS) -o ./$@ ./version.o $(LIBS) $(LDFLAGS)
682     @rm -f ./version.o
```

Figure 5 shows the result of running ***make*** command from *tests* directory.

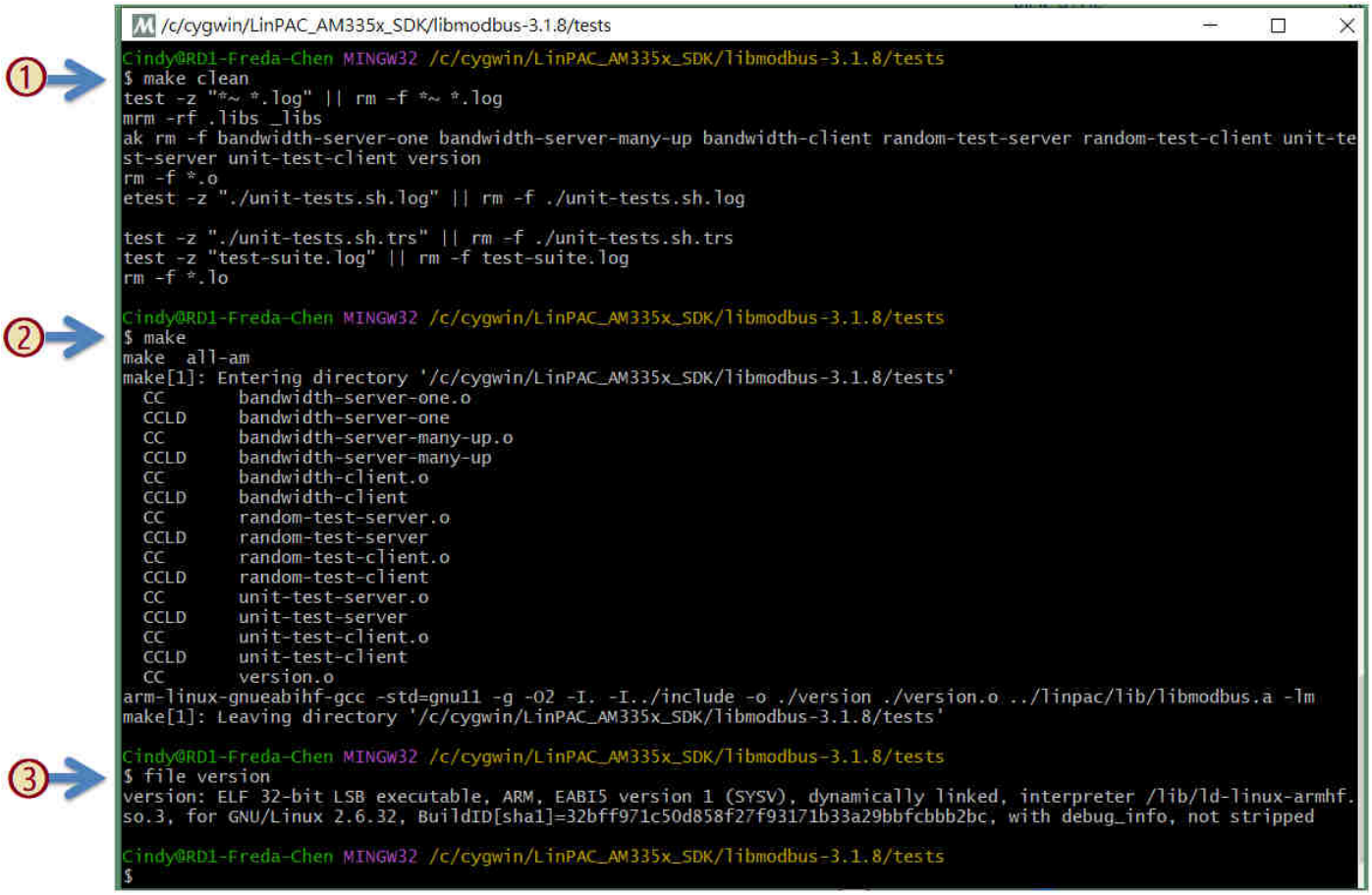

Figure 5

UPLOAD EXECUTABLE FILE TO THE LINPAC

libmodbus provides some tests in ***tests*** directory, user can run them to test or edit them to fit the needs.

Figure 6 shows the result of running ***version.c*** program from *tests* directory.

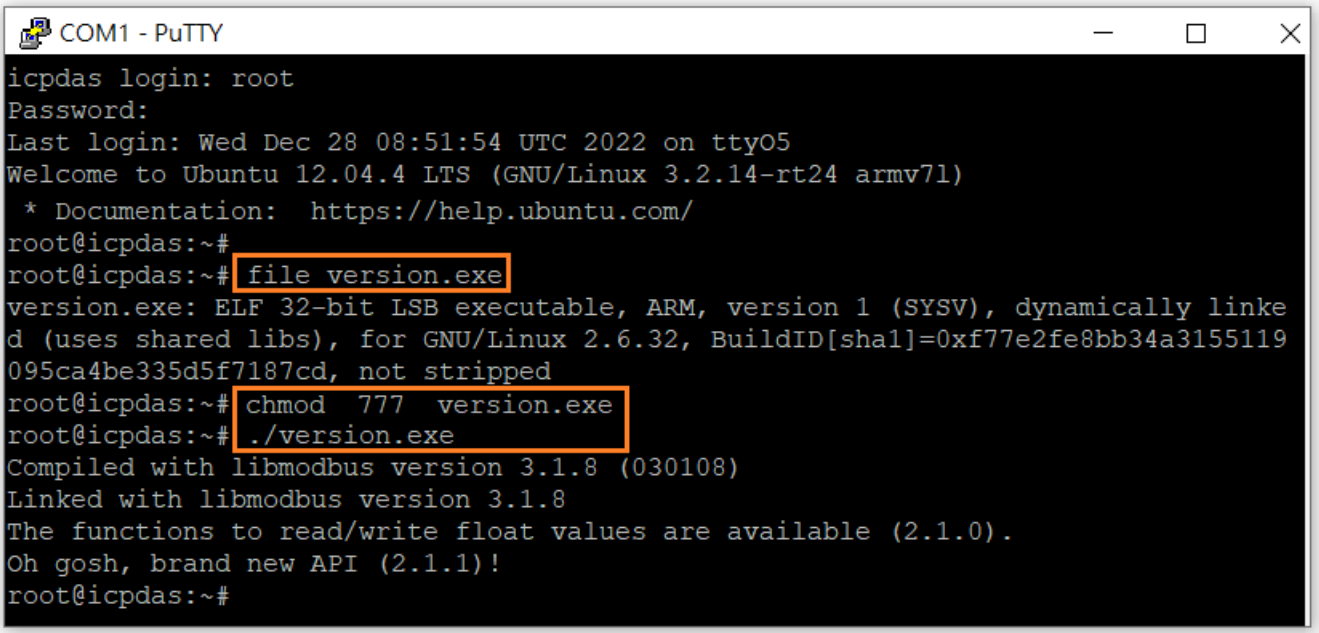

Figure 6