# How To Do ?

Development Environment Setup - **MA35H0**

MU20 Eric

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# MPU Platform Practice

## Exercise 1 MA35H0 Setup

1. Development Environment Setup
2. Make an Embedded Image
3. NuWriter to Program Image
4. Run Application Code


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# MPU Quick Start

- Development Environment Setup

- **Environment Download:**

  1. Ubuntu OS: MA35D1 Linux Environment on VMWare
  2. VMWare player : VMware Player

- **Software Tool :**

  Programming : MA35_NuWriter


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# MPU Quick Start

- Make an Embedded Image

## ➢ Start up with VMware

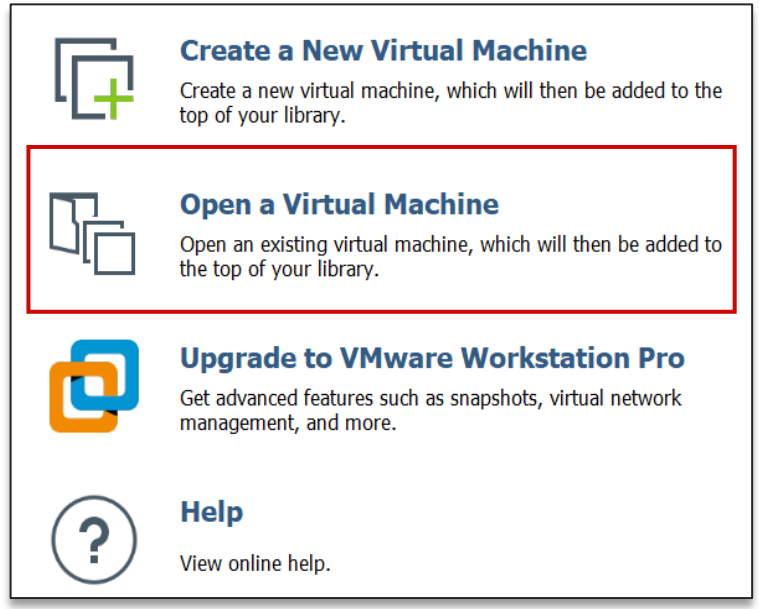
- This VMware Image offers a Linux development environment for MA35H0.
- User Name: user

  Password: user

---

### Open the development environment

1. Click *Vmware player*
2. Click "*Open a Virtual Machine" and choose* ubuntu image(unzip)
3. Enter the password to enter the linux OS





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# MA35H0 Quick Start

- Make an Embedded Image

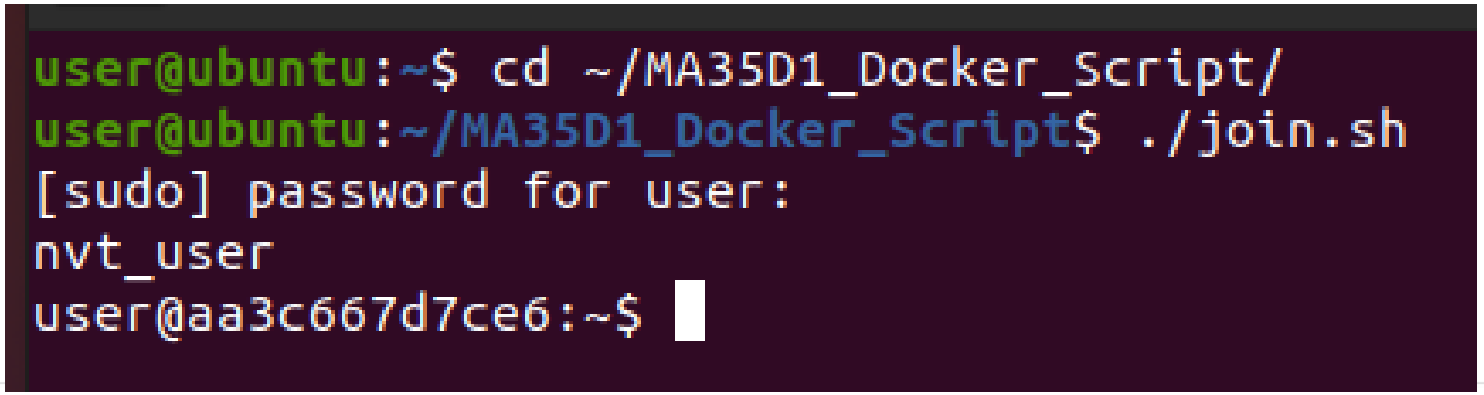
## ➢ Into to the Docker

Buildroot:

$ cd ~/MA35D1_Docker_Script/

$ ./join.sh

Password: user





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# MPU Quick Start

- Make an Embedded Image

## ➢ [Docker] Update Buildroot

Buildroot:

Goto MA35D1_Buildroot folder

$ cd ~/shared/buildroot/MA35D1_Buildroot/

Update Buildroot:

$ git pull

```
user@aa3c667d7ce6:~/shared/Buildroot/MA35D1_Buildroot$ git pull
Already up to date.
user@aa3c667d7ce6:~/shared/Buildroot/MA35D1_Buildroot$
```


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# MA35H0 Quick Start

- Make an Embedded Image

## ➢ [Docker] Choose your EVB config

Buildroot:

- Set configuration to the target board

$ make numaker_hmi_ma35h04f70_defconfig

```
user@aa3c667d7ce6:~/shared/buildroot/MA35D1_Buildroot$ make numaker_som_ma35d16a81_defconfig
#
# configuration written to /home/user/shared/buildroot/MA35D1_Buildroot/.config
#
user@aa3c667d7ce6:~/shared/buildroot/MA35D1_Buildroot$
```


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# MA35H0 Quick Start

- Make an Embedded Image

## ➢ [Docker] Make it

Buildroot:

- start building it. (*first build need 1.5 hour*)

$ make

```
user@aa3c667d7ce6:~/shared/Buildroot/MA35D1_Buildroot$ make
>>>   Finalizing host directory
>>>   Finalizing target directory
mkdir -p /home/user/shared/Buildroot/MA35D1_Buildroot/output/host/etc/meson
sed -e 's%@TARGET_CROSS@%/home/user/shared/Buildroot/MA35D1_Buildroot/output/host/bin/aarch64-nuvoton-linux-gnu-%g' -e 's%@TARGET_ARCH@%aarch64%g
' -e 's%@TARGET_CPU@%cortex-a35%g' -e 's%@TARGET_ENDIAN@%little%g' -e "s%@TARGET_CFLAGS@%'-D_LARGEFILE_SOURCE', '-D_LARGEFILE64_SOURCE', '-D_FILE
_OFFSET_BITS=64', '-Os'@PKG_TARGET_CFLAGS@%g" -e "s%@TARGET_LDFLAGS@%@PKG_TARGET_CFLAGS@%g" -e "s%@TARGET_CXXFLAGS@%'-D_LARGEFILE_SOURCE', '-D_LA
RGEFILE64_SOURCE', '-D_FILE_OFFSET_BITS=64', '-Os'@PKG_TARGET_CFLAGS@%g" -e 's%@HOST_DIR@%/home/user/shared/Buildroot/MA35D1_Buildroot/output/hos
t%g' -e 's%@STAGING_DIR@%/home/user/shared/Buildroot/MA35D1_Buildroot/output/host/aarch64-nuvoton-linux-gnu/sysroot%g' -e 's%@STATIC@%false%g' pa
ckage/meson//cross-compilation.conf.in > /home/user/shared/Buildroot/MA35D1_Buildroot/output/host/etc/meson/cross-compilation.conf.in
sed -e 's%@PKG_TARGET_CFLAGS@%%g' -e 's%@PKG_TARGET_LDFLAGS@%%g' -e 's%@PKG_TARGET_CXXFLAGS@%%g' /home/user/shared/Buildroot/MA35D1_Buildroot/out
put/host/etc/meson/cross-compilation.conf.in > /home/user/shared/Buildroot/MA35D1_Buildroot/output/host/etc/meson/cross-compilation.conf
/usr/bin/sed -i -e '/# GENERIC_SERIAL$/s~^.*#~ttyS0::respawn:/sbin/getty -L  ttyS0 0 vt100 #~' /home/user/shared/Buildroot/MA35D1_Buildroot/outpu
t/target/etc/inittab
/usr/bin/sed -i -e '/^#.*-o remount,rw \/$/s~^#\+~~' /home/user/shared/Buildroot/MA35D1_Buildroot/output/target/etc/inittab
if grep -q CONFIG_ASH=y /home/user/shared/Buildroot/MA35D1_Buildroot/output/build/busybox-1.33.1/.config; then grep -qsE '^/bin/ash$' /home/user/
shared/Buildroot/MA35D1_Buildroot/output/target/etc/shells || echo "/bin/ash" >> /home/user/shared/Buildroot/MA35D1_Buildroot/output/target/etc/s
hells; fi
if grep -q CONFIG_HUSH=y /home/user/shared/Buildroot/MA35D1_Buildroot/output/build/busybox-1.33.1/.config; then grep -qsE '^/bin/hush$' /home/use
r/shared/Buildroot/MA35D1_Buildroot/output/target/etc/shells || echo "/bin/hush" >> /home/user/shared/Buildroot/MA35D1_Buildroot/output/target/et
c/shells; fi
rm -f /home/user/shared/Buildroot/MA35D1_Buildroot/output/target/usr/share/glib-2.0/schemas/*.xml /home/user/shared/Buildroot/MA35D1_Buildroot/ou
tput/target/usr/share/glib-2.0/schemas/*.dtd
/home/user/shared/Buildroot/MA35D1_Buildroot/output/host/bin/glib-compile-schemas /home/user/shared/Buildroot/MA35D1_Buildroot/output/host/aarch6
4-nuvoton-linux-gnu/sysroot/usr/share/glib-2.0/schemas --targetdir=/home/user/shared/Buildroot/MA35D1_Buildroot/output/target/usr/share/glib-2.0/
schemas
```


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# MA35H0 Quick Start

- Make an Embedded Image

## ➢ [Docker] Building Finishing

Buildroot:

- Once the build is complete, you can find the resulting image at /output/image

```
bl2.bin                                                  ma35d1-som-256m.dtb                                  tee.bin
bl2.dtb                                                  MBR.sdcard.bin                                       tee-header_v2.bin
bl31.bin                                                 nuwriter                                             tee-pageable_v2.bin
core-image-buildroot-ma35d1-som-256m.rootfs.sdcard       pack-core-image-buildroot-ma35d1-som-256m-sdcard.bin tee-pager_v2.bin
fip.bin                                                  rootfs.ext2                                          u-boot.bin
fip.bin-sdcard                                           rootfs.ext4                                          uboot-env.bin
header.bin                                               rootfs.tar                                           uboot-env.bin-sdcard
header-core-image-buildroot-ma35d1-som-256m-sdcard.bin   rootfs.ubi                                           uboot-env.txt
Image                                                    rootfs.ubifs                                         uboot-env.txt-sdcard
Image.dtb                                                RTP-BSP
user@aa3c667d7ce6:~/shared/Buildroot/MA35D1_Buildroot/output/images$
```

- The core-image-buildroot-ma35d1-som-256m.rootfs.sdcard can be used to directly program to an SD card
- pack-core-image-buildroot-ma35d1-som-256-sd.bin can be used to program an SD card through NuWriter


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# MPU Platform Practice

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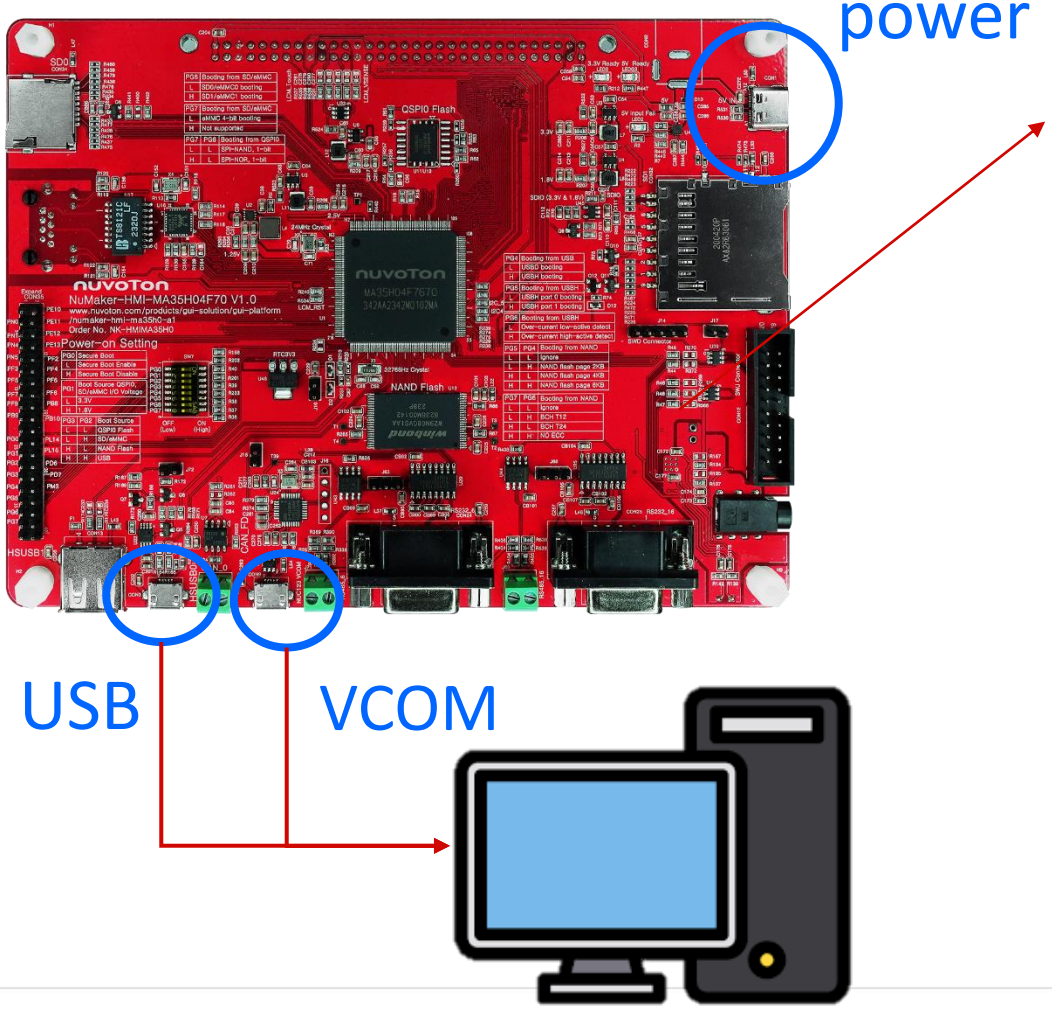
# MA35H0 Quick Start

- NuWriter to Program Image




## Power-on-setting

| Pin | Description |
|---|---|
| PG[0] | Secure Boot Disable Bit<br>0 = Secure Boot Enabled.<br>1 = Secure Boot Disabled. |
| PG[3:2] | Boot Source Selection<br>00 = Boot from SPI Flash.<br>01 = Boot from SD/eMMC.<br>10 = Boot from NAND Flash.<br>11 = Boot from USB. |
| PG[5:4] | NAND Flash Page Size Selection<br>00 = Ignore.<br>01 = NAND Flash page size is 2 KB.<br>10 = NAND Flash page size is 4 KB.<br>11 = NAND Flash page size is 8 KB. |
| PG[7:6] | Miscellaneous Configuration<br><br>If BTSRCSEL = 01, Boot from SD/eMMC.<br>00 = SD0/eMMC0 4-bit mode booting.<br>01 = SD1/eMMC1 4-bit mode booting.<br>10 = eMMC0 8-bit mode booting.<br>11 = eMMC1 8-bit mode booting.<br><br>If BTSRCSEL = 10, the Boot from NAND Flash.<br>00 = Ignore.<br>01 = ECC is BCH T12.<br>10 = ECC is BCH T24.<br>11 = No ECC.<br><br>If BTSRCSEL = 00, the Boot from SPI Flash.<br>00 = SPI-NAND Flash with 1-bit mode booting.<br>10 = SPI-NOR Flash with 1-bit mode booting.<br>Others reserved. |

Remember to USB mode

SW 1 & SW 3 & SW 4 are ON
Others sre OFF.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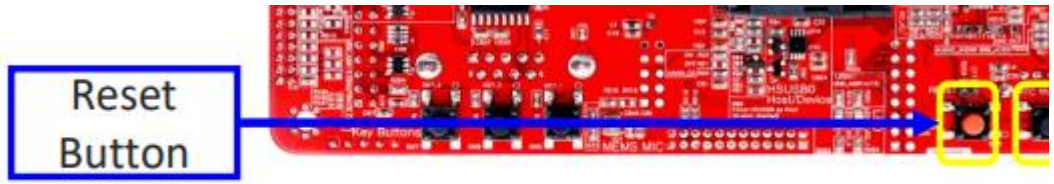
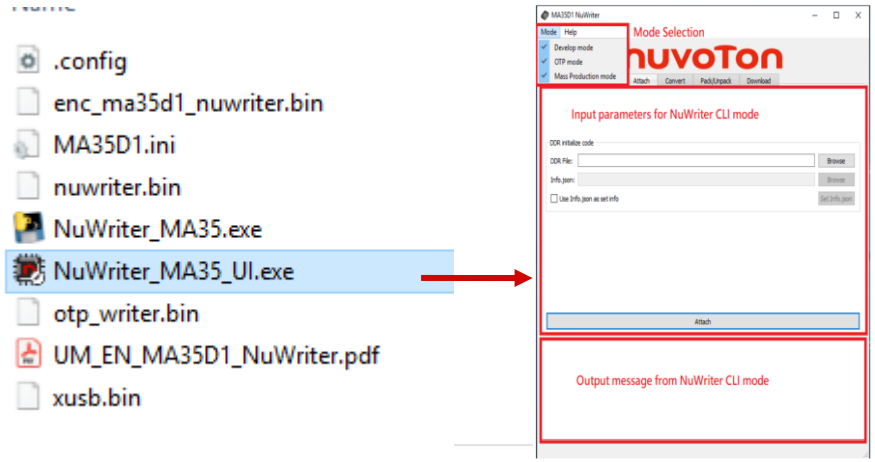
# MA35H0 Quick Start

- NuWriter to Program Image

## ➢ Reset Btn for reset MA35H0




## ➢ Open the NuWriter



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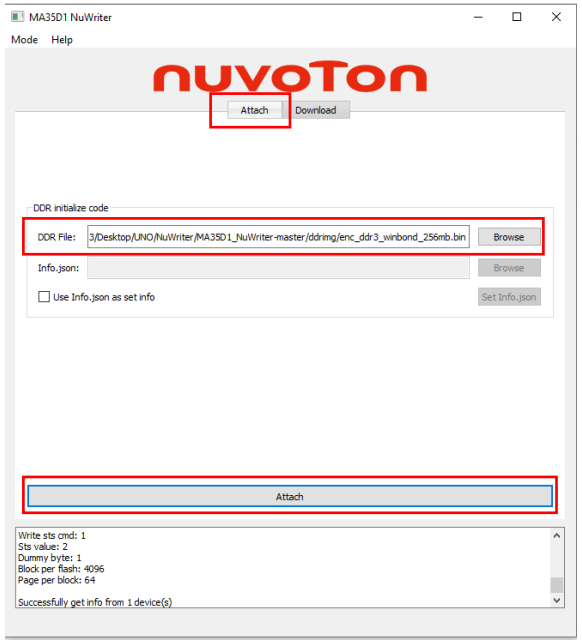
# MA35H0 Quick Start

- NuWriter to Program Image

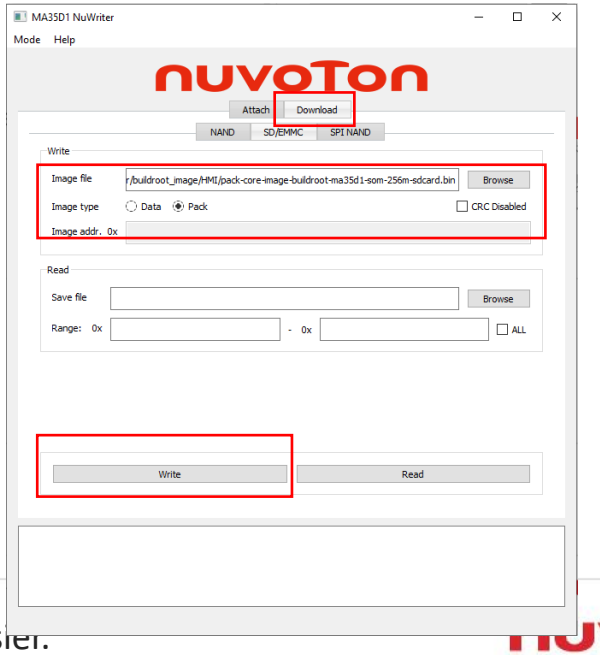
## ➢ First, Attach

Choose \ddrimg\MA35H04F767C and Attach for DDR init.




## ➢ Second, Download

1. Choose Download , SD/EMMC
2. Select .bin file : pack-core-image-buildroot-ma35h0-hmi-128m-sdcard.bin
3. pack tick
4. Write



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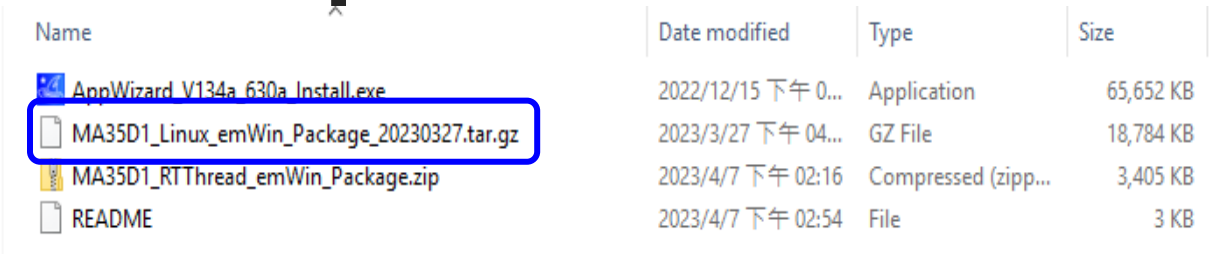
# MA35H0 Quick Start

- Run Application Code

## ➢ 1. unzip MA35D1 Linux emWin




## ➢ 2. Copy MA35_Linux_emWin_Package to VMware

## ➢ 3. and change the permissions

$ chmod 777 MA35_Linux_emWin_Package



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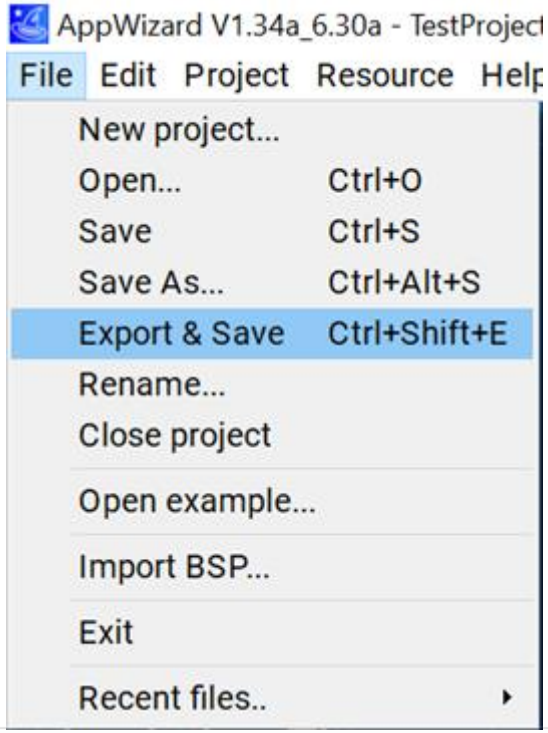
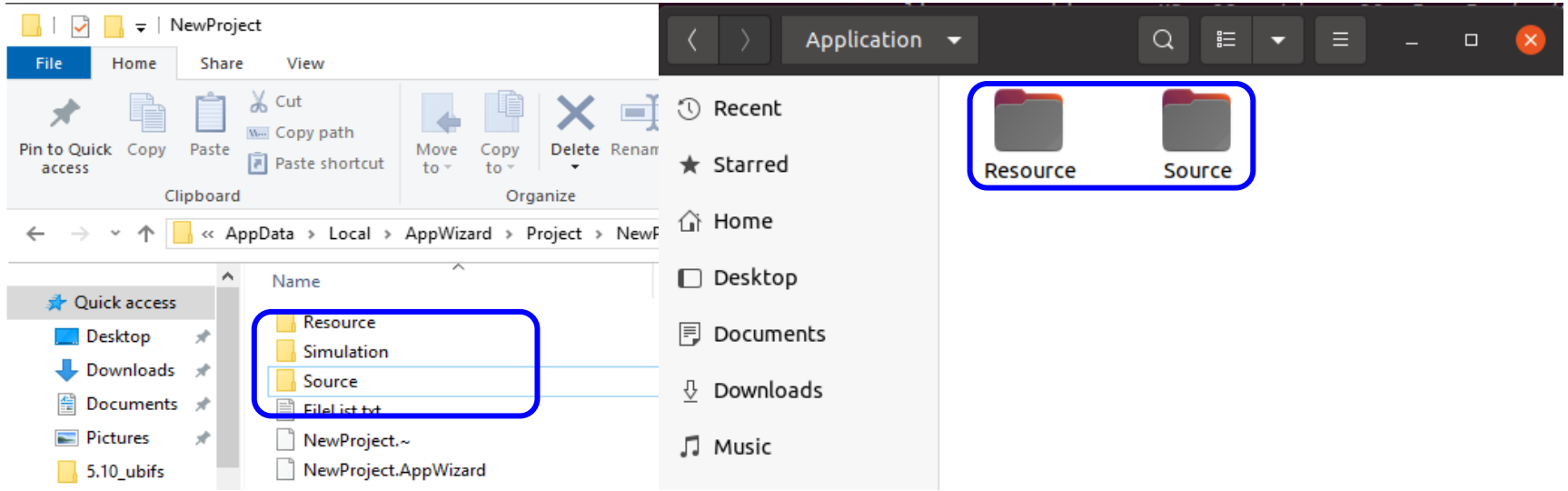
# MA35H0 Quick Start

- Run Application Code

## ➢ emWin AppWizard



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# MA35H0 Quick Start

- Run Application Code

## ➢ Start to compile

$ make

```
 ././Application/Resource/Image/data.o ././Application/Resource/Image/robotic_arm.o ././Application/Resource/Image/DARK_Button_Up_100x30
.o ././Application/Resource/Image/DARK_Switch_Thumb_26x26.o ././Application/Resource/Image/DARK_Switch_Body_H_On_55x20.o ././Application
/Resource/Image/power_off.o ././Application/Resource/Image/Progbar_Block_H_10_Black_160x20.o ././Application/Resource/Image/DARK_Slider_
Shaft_H_Left_Blue_30x16.o ././Application/Resource/Image/DARK_Button_Down_100x30.o ././Application/Resource/Image/upload.o ././Applicati
on/Resource/Image/Progbar_Block_H_10_White_160x20.o ././Application/Resource/Image/gear.o ././Application/Resource/Image/DARK_Angle_Arro
w_Down_Black_16x9.o ././Application/Resource/Image/undo__1_.o ././Application/Resource/Text/APPW_Language_1.o ././Application/Resource/T
ext/APPW_Language_0.o ././Application/Resource/Font/Roboto_24_Normal_EXT_AA4.o ././Application/Resource/Font/Roboto_16_Normal_EXT_AA4.o
././Application/Source/Generated/SCREEN_CENTER.o ././Application/Source/Generated/APPWConf.o ././Application/Source/Generated/SCREEN_SET
TING.o ././Application/Source/Generated/SCREEN_INIT.o ././Application/Source/Generated/Resource.o ././Application/Source/APPW_MainTask.o
 ././Application/Source/CustomCode/SCREEN_SETTING_Slots.o ././Application/Source/CustomCode/SCREEN_INIT_Slots.o ././Application/Source/C
ustomCode/SCREEN_CENTER_Slots.o ././Application/Source/CustomCode/Application.o ././APPW_MainTask2.o ././main.o ././tslib/MA35D1TouchPan
el.o ././GUIConf2.o ././LCDConf2.o ../../Config/GUI_X.o -L../../Lib -lNUemWin -lm -lts -ldl -pthread -o SimpleDemoAppWizard
/home/user/buildroot/MA35D1_Buildroot/output/host/bin/aarch64-nuvoton-linux-gnu-strip SimpleDemoAppWizard
user@ubuntu:~/AppWizard/MA35D1_Linux_emWin_64bit_Package_20230609/Sample/SimpleDemoAppWizard$ ls
Application       APPW_MainTask2.d  DEMO_MA35D1  GUIConf2.d  LCDConf2.c  LCDConf2.o  main.d  Makefile                tslib
APPW_MainTask2.c  APPW_MainTask2.o  GUIConf2.c   GUIConf2.o  LCDConf2.d  main.c      main.o  SimpleDemoAppWizard
user@ubuntu:~/AppWizard/MA35D1_Linux_emWin_64bit_Package_20230609/Sample/SimpleDemoAppWizard$
```

Copy “SimpleDemoAppWizard” to evaluation board



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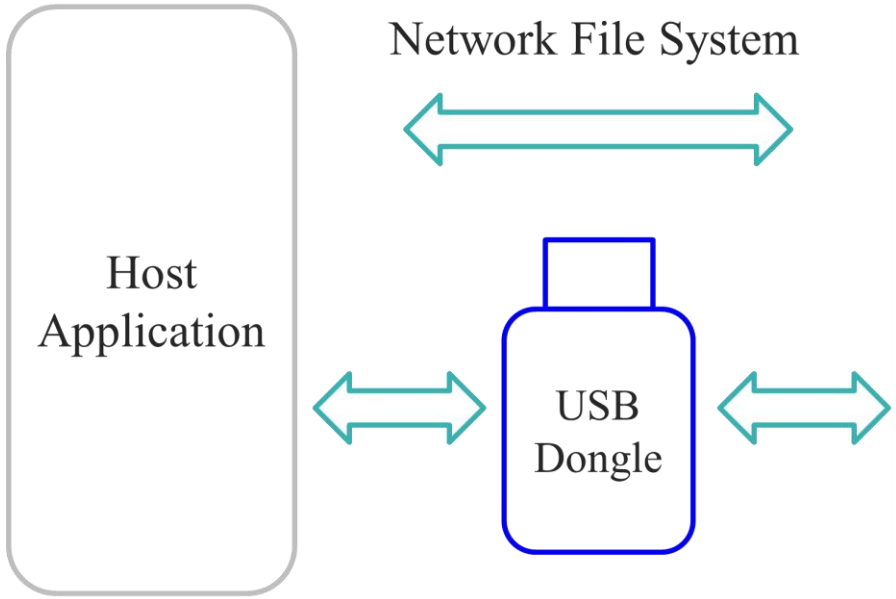
# MA35H0 Quick Start

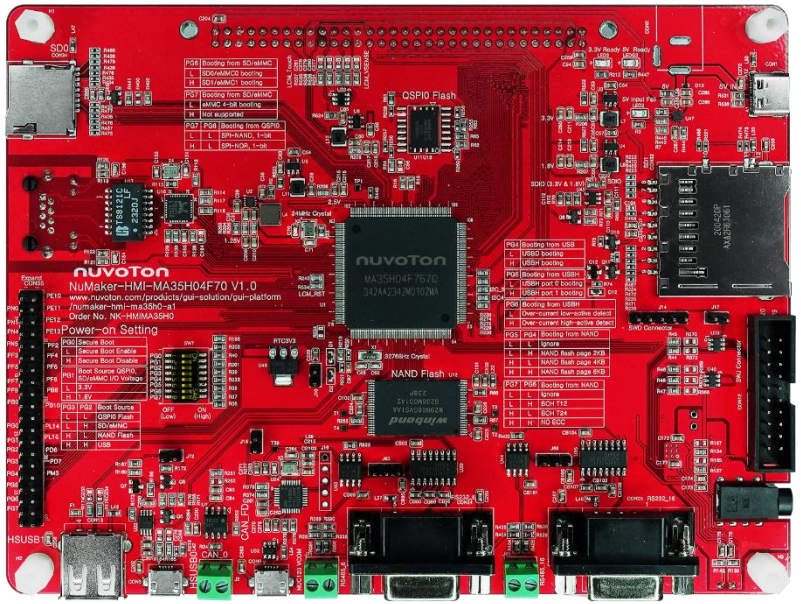
- Run Application Code

## ➢ Put SimpleDemoAppWizard to MA35H0

There are many ways to program application to evaluation board. Here Nuvoton demonstrates two methods.

1. Network file System Programming
2. USB Dongle Programming





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# MA35H0 Quick Start

- Run Application Code

## ➢ Execute OrderMachine_Demo

```
$ cd /opt
$ ./OrderMachine_Demo
```



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Joy of innovation

NUVOTON

谢谢

謝謝

Děkuji

Bedankt

Thank you

Kiitos

Merci

Danke

Grazie

ありがとう

감사합니다

Dziękujemy

Obrigado

Спасибо

Gracias

Teşekkür ederim

Cảm ơn