BUILDING NFC DEMO APP (Ubuntu)

Thursday, September 17, 2020 7:34 PM

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NFC CHECKING
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1. On boot, right when the Lenovo logo appears, long press/repeatedly press on the F1 key on the keyboard. BIOS settings will be loaded
2. From BIOS settings, select Security
3. From Security, select I/O Port Access
4. Make sure that NFC Device is turned on/enabled
5. Save changes by pressing F10 and selecting Yes.

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BUILDING NFC DEMO APP
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1. Download "SW3240xx" software release package to Desktop (provided by NXP, but an account is needed to download this from their site)\
   --> Alternatively, clone the directory from git:
   $ git clone https://github.com/NXPNFCLinux/linux_libnfc-nci.git
2. Extract files to desktop
3. Navigate to extracted folder
   $ cd /home/ubuntu/Desktop/libnfc-nci-linux
4. Install dependencies
   $ sudo apt-get install libusb-dev dh-autoreconf
   $ sudo apt-get install libpcsclite-dev
   $ sudo apt-get install libusb-0.1-4 libpcsclite1 libccid pcscd libftdi1
   $ sudo apt-get install texinfo
   $ sudo apt-get install pkg-config
5. Grant permission to access the bootstrap file
   $ chmod u+x bootstrap
   --> Note: If you encounter a permission request problem, run:
   $ sed -i -e 's/\r$//' bootstrap
6. Run bootstrap file
   $ ./bootstrap
7. Run configure
   $ ./configure --enable-alt --enable-debug
8. Build the source
   $ sudo make
9. Install the generated library into the target
   $ sudo make install
10. Add the path to /usr/local/lib target directory to LD_LIBRARY_PATH environment variable.
    $ export LD_LIBRARY_PATH=/usr/local/lib
11. Check if the path was added
    $ echo $LD_LIBRARY_PATH
12. Four configuration files should be automatically added in /usr/local/etc:
    Expected output:
    - libnfc-nci.conf
    - libnfc-nxp-init.conf
    - libnfc-nxp-pn547.conf
    - libfnc-nxp-pn548.conf

13. Go to the folder with the phTmlNfc_alt.h file:
    $ cd /home/ubuntu/Desktop/libnfc-nci-linux/src/halimpl/pn54x/tml/i2c
14. Edit the file:
    $ sudo gedit phTmlNfc_alt.h

15. The I2C and GPIO connection to the NFC Controller is depicted in phTmlNfc_alt.h file and must be adapted to the targeted platform:

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// --> RTKO1
#define CONFIGURATION 0
/* Custom configuration */
#define I2C_BUS        "/dev/i2c-7"
#define I2C_ADDRESS     0x29
#define PIN_INT        283+215
#define PIN_ENABLE      283+209

// --> BB-2
#define CONFIGURATION 0
/* Custom configuration */
#define I2C_BUS "/dev/i2c-7"
#define I2C_ADDRESS 0x29
#define PIN_INT 200+0x30
#define PIN_ENABLE 200+0x117

// --> RTKO2
#define CONFIGURATION 0
/* Custom configuration */
#define I2C_BUS "/dev/i2c-1"
#define I2C_ADDRESS 0x29
#define PIN_INT 200+0x012A
#define PIN_ENABLE 200+0x0124

// --> JAGUAR/PANTHER
#define CONFIGURATION 0
/* Custom configuration */
#define I2C_BUS "/dev/i2c-17"
#define I2C_ADDRESS 0x29
#define PIN_INT 152+0x0143
#define PIN_ENABLE 152+0x0140
```

16. Return to the base directory and build the source
    $ cd /home/ubuntu/Desktop/libnfc-nci-linux
    $ make
17. Install the generated library into the target:
    $ sudo make install
18. Run nfcDemoApp:
    $ sudo nfcDemoApp poll

19. An error was encountered (nfcDemoApp: error while loading shared libraries: libnfc_nci_linux-1.so: cannot open shared object file: no such file or directory). Solution:
    $ sudo ldconfig -v
20. Check if nxp_nci_i2c module is still running
    $ lsmod | grep nxp
21. If it is still running, remove it
    $ sudo rmmod nxp_nci_i2c

22. Run nfcDemoApp again
    $ sudo nfcDemoApp poll

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GPIO PINS
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To retrieve the GPIO PINS needed:

1. Install dependencies
   $ sudo apt install acpica-tools
   $ sudo cp /sys/firmware/acpi/tables/DSDT <new directory>
   e.g. sudo cp /sys/firmware/acpi/tables/DSDT /home/ubuntu
2. Convert the dat file to dsl file
   $ sudo iasl DSDT
3. Search for NFC in the DSDT.dsl file
   --> "ActiveHigh" should be INT pin, and the third is ENABLE pin
4. To get the base class:
   $ ls -l /sys/class/gpio
   --> Jaguar/Panther has gpio152, so the base class for Jaguar/Panther is 152
5. To find the i2c bus number, install the following dependency:
   $ sudo apt install i2c-tools
6. Run
   $ i2cdetect -l
7. Look for Synopsys Designware I2C adapter and check the I2C_BUS no. of the first entry

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NFC DEB FILE CREATION
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1. Install dependencies:
   $ sudo apt-get install checkinstall
   $ sudo checkinstall
2. Press 2 to change the name of the deb file
3. Press 3 to change the version number (Use the latest date)

reference: https://www.howtoforge.com/tutorial/how-to-create-an-ubuntu-package-from-source/