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iNexio Touch Screen Manual (for Linux)

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1. Introduction

Nexio Touch Screen provides a new computer use environment. This touch screen enables controlling computer programs just with a simple touch, and perfectly supports touch functions in Linux.

1.1. OS Compatible with Touch Screen

		Ubuntu 10.10	Ubuntu 11.04	Fedora 14	OpenSuSE 11.4	OpenSuSE 11.3
Touch Method	HL	Multi-touch	Multi-touch	Multi-touch	Multi-touch	Multi-touch
	HM	Mouse	Mouse	Mouse	Mouse	Mouse
	HS	Multi-touch	Multi-touch	Multi-touch	Multi-touch	Mouse
	BULK	Multi-touch	Multi-touch	Multi-touch	Multi-touch	Multi-touch
	Serial	Mouse	Mouse	Mouse	Mouse	Mouse
Plug and Play	HL	X	X	X	X	X
	HM	O	O	O	O	O
	HS	X	X	X	X	X
	BULK	X	X	X	X	X
	Serial	X	X	X	X	X
Nexio Applications	HL	O	O	O	O	O
	HM	O	O	O	O	O
	HS	O	O	O	O	O
	BULK	O	O	O	O	O
	Serial	O	O	O	O	O
Firmware Upgrade	HL	O	O	O	O	X
	HM	O	O	O	O	X
	HS	O	O	O	O	X
	BULK	O	O	O	O	X
	Serial	O	O	O	O	X
Coordinates Calibration	HL	O	O	O	O	O
	HM	O	O	O	O	O
	HS	O	O	O	O	O
	BULK	O	O	O	O	O
	Serial	O	O	O	O	O
Gesture	HL	O	O	O	O	O
	HM	X	X	X	X	X
	HS	O	O	O	O	X
	BULK	O	O	O	O	O
	Serial	X	X	X	X	X
Touch Coordinate Rotation	HL	O	O	O	O	O
	HM	O	O	O	O	O
	HS	O	O	O	O	O
	BULK	O	O	O	O	O

	Serial	○	○	○	○	○
Multi-monitors	HL	○	○	○	○	○
	HM	○	○	○	○	○
	HS	○	○	○	○	○
	BULK	○	○	○	○	○
	Serial	○	○	○	○	○

Category: X No support △ Partial support ○ Total support

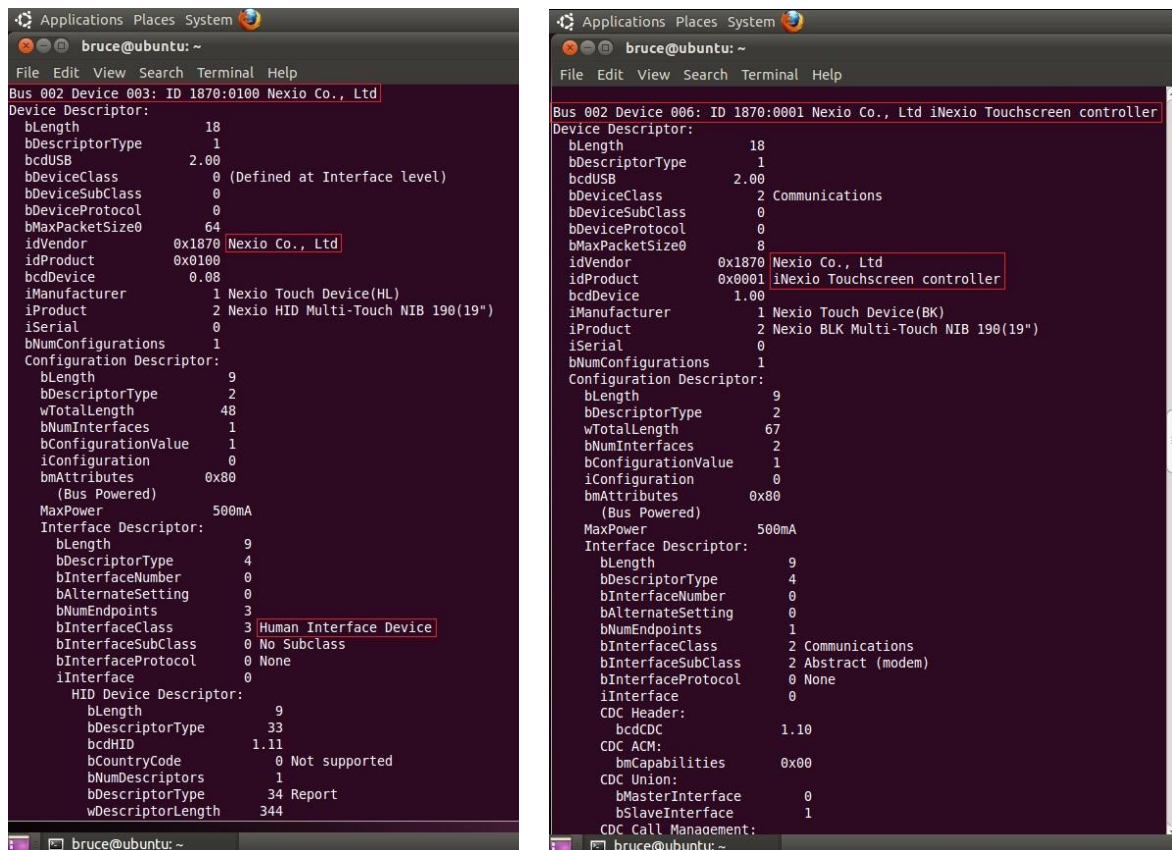
2. USB Connection

2.1. Touch Screen USB Cable Connected to Computer

If USB cable is connected to the computer, Touch Screen is automatically recognized in Linux, but not normally operated. For a normal operation of Touch Screen, TouchCon Software for Linux should be installed.

2.2. Checking Touch Screen Connection

After connection, execute terminal programs in Linux, and enter `lsusb -v` command. If USB information below appears after entering, it means that Touch Screen is correctly connected.



```
bruce@ubuntu: ~  
File Edit View Search Terminal Help  
Bus 002 Device 003: ID 1870:0100 Nexio Co., Ltd  
Device Descriptor:  
  bLength:             18  
  bDescriptorType:     1  
  bcdUSB:               2.00  
  bDeviceClass:         0 (Defined at Interface level)  
  bDeviceSubClass:     0  
  bDeviceProtocol:     0  
  bMaxPacketSize0:     64  
  idVendor:             0x1870 Nexio Co., Ltd  
  idProduct:           0x0100  
  bcdDevice:           0.08  
  iManufacturer:       1 Nexio Touch Device(HL)  
  iProduct:            2 Nexio HID Multi-Touch NIB 190(19")  
  iSerial:             0  
  bNumConfigurations:  1  
Configuration Descriptor:  
  bLength:             9  
  bDescriptorType:     2  
  wTotalLength:        48  
  bNumInterfaces:      1  
  bConfigurationValue: 1  
  iConfiguration:     0  
  bmAttributes:        0x80  
    (Bus Powered)  
  MaxPower:            500mA  
Interface Descriptor:  
  bLength:             9  
  bDescriptorType:     4  
  bInterfaceNumber:    0  
  bAlternateSetting:   0  
  bNumEndpoints:      3  
  bInterfaceClass:     3 Human Interface Device  
  bInterfaceSubClass:  0 No Subclass  
  bInterfaceProtocol:  0 None  
  iInterface:          0  
  HID Device Descriptor:  
    bLength:           9  
    bDescriptorType:   33  
    bcdHID:            1.11  
    bCountryCode:      0 Not supported  
    bNumDescriptors:   1  
    bDescriptorType:   34 Report  
    wDescriptorLength: 344  
bruce@ubuntu: ~
```

```
bruce@ubuntu: ~  
File Edit View Search Terminal Help  
Bus 002 Device 006: ID 1870:0001 Nexio Co., Ltd iNexio Touchscreen controller  
Device Descriptor:  
  bLength:             18  
  bDescriptorType:     1  
  bcdUSB:               2.00  
  bDeviceClass:         2 Communications  
  bDeviceSubClass:     0  
  bDeviceProtocol:     0  
  bMaxPacketSize0:     8  
  idVendor:             0x1870 Nexio Co., Ltd  
  idProduct:           0x0001 iNexio Touchscreen controller  
  bcdDevice:           1.00  
  iManufacturer:       1 Nexio Touch Device(BK)  
  iProduct:            2 Nexio BLK Multi-Touch NIB 190(19")  
  iSerial:             0  
  bNumConfigurations:  1  
Configuration Descriptor:  
  bLength:             9  
  bDescriptorType:     2  
  wTotalLength:        67  
  bNumInterfaces:      2  
  bConfigurationValue: 1  
  iConfiguration:     0  
  bmAttributes:        0x80  
    (Bus Powered)  
  MaxPower:            500mA  
Interface Descriptor:  
  bLength:             9  
  bDescriptorType:     4  
  bInterfaceNumber:    0  
  bAlternateSetting:   0  
  bNumEndpoints:      1  
  bInterfaceClass:     2 Communications  
  bInterfaceSubClass:  2 Abstract (modem)  
  bInterfaceProtocol:  0 None  
  iInterface:          0  
  CDC Header:  
    bcdCDC:            1.10  
  CDC ACM:  
    bmCapabilities:   0x00  
  CDC Union:  
    bMasterInterface:  0  
    bSlaveInterface:  1  
  CDC Call Management:  
bruce@ubuntu: ~
```

[HID type on the left, and BULK type on the right]

3. Package for Touch Screen Support and Control

3.1. Introduction to Package

Nexio Touch Screen requires the installation of package for Touch Screen in Linux. The package includes a driver for Linux designed to drive Touch Screen, and an application program to control the functions of Touch Screen.

3.2. Installation of Package

Package shall be installed following the sequence below.

3.3. Preparations for Installation

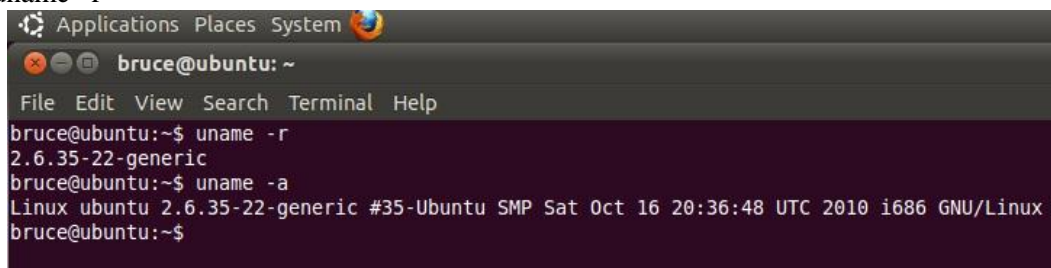
To use the Nexio screen touch in Linux environment, the version information of the kernel drivers provided by the package should correspond to that of the environment for installation. Versions for the installation of the kernel drivers provided by the package are as follows:

Linux Distributions	Versions by Distribution	Kernel Versions Supported by Package
Ubuntu Linux	10.10	2.6.35-22-generic
	11.04	2.6.38-10-generic
Fedora Linux	Core 14	2.6.35.6-45.fc14.i686
OpenSuSE Linux	11.3	2.6.34-12-desktop
	11.4	2.6.37.1-1.2-desktop

[Kernel Versions by Linux Distribution]

The installation process below is described, based on the execution of a Linux distribution of Ubuntu 10.10. The Linux kernel version of environment for installation can be checked with the following command:

→ `uname -r`



[Checking Linux Kernel Version]

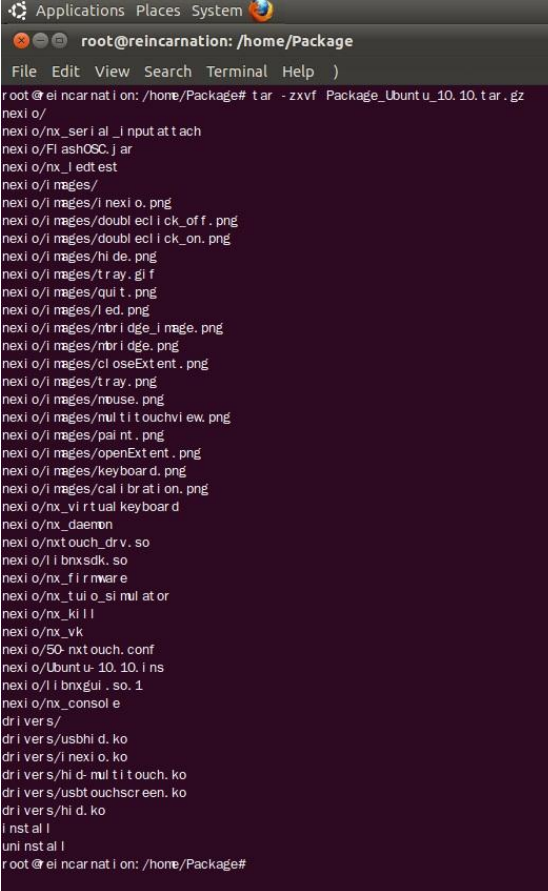
If the kernel information above is found identical to that of Linux, the terminal program in Linux is executed with root privileges. Then, move to the folder containing the package, using the following command. The

figure below shows the compressed package file in /home/Package/ path:

→ cd /home/Package/

Go to the relevant path, and decompress the compressed file with the following command:

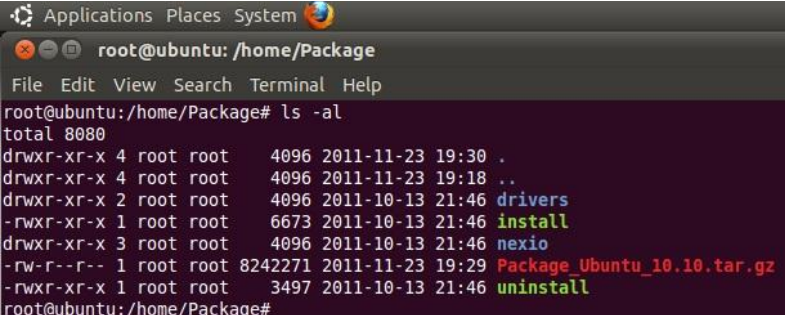
→ tar -zxvf [Name of the compressed file]



```
Applications Places System
root@reincarnation: /home/Package
File Edit View Search Terminal Help
root@reincarnation: /home/Package# tar -zxvf Package_Ubuntu_10.10.tar.gz
next o/
next o/nx_serl al _l nput at t ach
next o/Fl ashOSC. j ar
next o/nx_ l ed t est
next o/i mages/
next o/i mages/i nexi o. png
next o/i mages/doubl ecli ck_of. png
next o/i mages/doubl ecli ck_on. png
next o/i mages/hi de. png
next o/i mages/tr ay. gl f
next o/i mages/qui t. png
next o/i mages/l ed. png
next o/i mages/mbr i dge_i mage. png
next o/i mages/mbr i dge. png
next o/i mages/cl oseExt ent. png
next o/i mages/tr ay. png
next o/i mages/mouse. png
next o/i mages/mul ti t ouchvi ew. png
next o/i mages/pai nt. png
next o/i mages/openExt ent. png
next o/i mages/keyboar d. png
next o/i mages/cal i brat i on. png
next o/nx_ vi rt ual keyboar d
next o/nx_daemon
next o/nxt ouch. drv. so
next o/i l i bnxsdk. so
next o/nx_fi rmware
next o/nx_t ui_o_si mul at or
next o/nx_ki l l
next o/nx_vk
next o/50- nxt ouch. conf
next o/Ubuntu- 10. 10. i ns
next o/i l i bnxgui. so. 1
next o/nx_consol e
dri vers/
dri vers/usbhi d. ko
dri vers/i nexi o. ko
dri vers/hi d- mul ti t ouch. ko
dri vers/usb t ouchscreen. ko
dri vers/hi d. ko
i nst al l
uni nst al l
root@reincarnation: /home/Package#
```

[Package Decompression]

After decompression, the files and folders shown in the table below are created:



```
Applications Places System
root@ubuntu: /home/Package
File Edit View Search Terminal Help
root@ubuntu: /home/Package# ls -al
total 8080
drwxr-xr-x 4 root root 4096 2011-11-23 19:30 .
drwxr-xr-x 4 root root 4096 2011-11-23 19:18 ..
drwxr-xr-x 2 root root 4096 2011-10-13 21:46 drivers
-rwxr-xr-x 1 root root 6673 2011-10-13 21:46 install
drwxr-xr-x 3 root root 4096 2011-10-13 21:46 nexio
-rw-r--r-- 1 root root 8242271 2011-11-23 19:29 Package_Ubuntu_10.10.tar.gz
-rwxr-xr-x 1 root root 3497 2011-10-13 21:46 uninstall
root@ubuntu: /home/Package#
```

[Contents of Decompressed Folder]

Name of File/Folder	Description
driver	Contains a kernel driver for the driving of Touch Screen.
nexio	Contains TouchCon application-relevant files for the control of Touch Screen.
install	Contains a file for the execution of package installation.
uninstall	Contains a file for the execution of package uninstallation.

[Description of the files/folders contained in the installed package]

3.3.1. Launch of Installation

Created decompressing the compressed software package from the terminal program executed with root privileges in the preceding process, the Install file is executed. The following text appears with package program installed:

```

Applications Places System
root@reincarnation: /home/Package
File Edit View Search Terminal Help
root@reincarnation: /home/Package# ./install

*****
* TouchScreen SW Kit iNexio *
* Your Linux Version
* [ #35- Ubuntu SMP Sat Oct 16 20:36:48 UTC 2010 ]
*****

>>>>> Save Original Touch Drivers <<<<<<
>> Save original hid.ko -----> hid.ko.orig
>> Save original usbhid.ko -----> usbhid.ko.orig
>> Save original inxio.ko -----> inxio.ko.orig
>> Save original usbtouchscreen.ko -----> usbtouchscreen.ko.orig
>>>>> Remove Original Driver Modules <<<<<<
ERROR: Module hid_multitouch does not exist in /proc/modules
... Remove original hid_multitouch
... Remove original usbhid
... Remove original hid
... Remove original usbtouchscreen
... Remove original inxio
>>>>> Insert Original Driver Modules <<<<<<
Insert NEXIO hid Driver =====>SUCCESS
Insert NEXIO usbhid Driver =====>SUCCESS
Insert NEXIO hid-multitouch Driver =====>SUCCESS
Insert NEXIO inxio Driver =====>SUCCESS
Insert NEXIO usbtouchscreen Driver =====>SUCCESS
depmod -a
update-initramfs -u
update-initramfs: Generating /boot/initrd.img-2.6.35-22-generic
Make NX GUI Library Success

*****
* Link Module TouchScreen X Driver *
*****

Success

***** Temporarily Skip This Process *****
* Install TouchScreen DeviceDriver *
*****

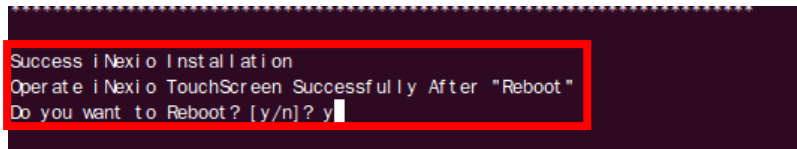
Success iNexio Installation
Operate iNexio TouchScreen Successfully After "Reboot"
Do you want to Reboot? [y/n]?

```

[Installation Process]

3.3.2. Completion of Installation

If the program was correctly installed, a message asking if you want to reboot appears, as shown in the last of installation process figures.



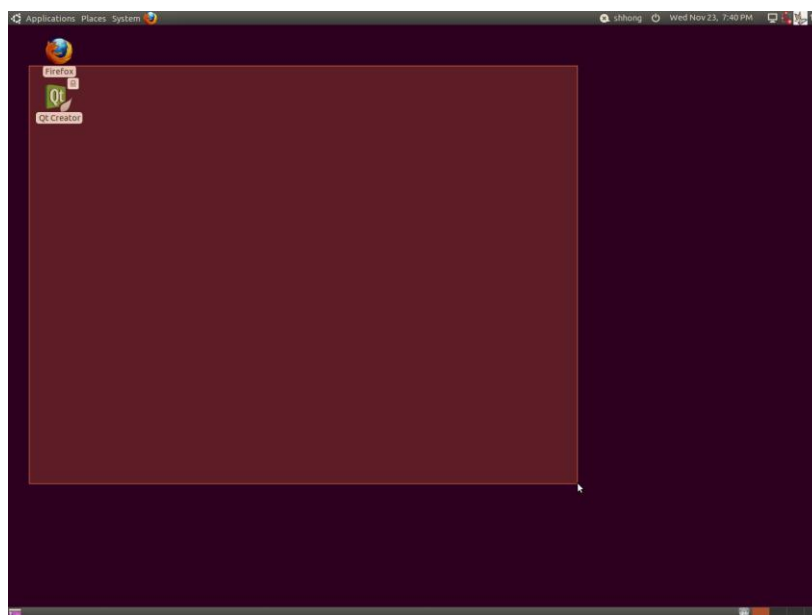
[Completion of Installation, and Rebooting]

3.3.3. Checking Installation

→ Checking Installation of Driver

If Touch Screen is touched after connection, the portion ranging from the starting point of touch to the current one of touch reacts like the left click and drag of the mouse, as shown in the figure below:

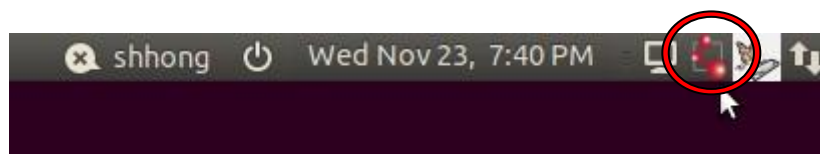
→



[Checking Driver Installation]

→ Checking Application Installation

The Tray Icon appearing on the task bar of Linux means that the application has been correctly installed.



[Checking Application Installation]

3.3.4. Removal of Installation

Created decompressing the compressed software package from the terminal program executed with root privileges, the Uninstall file is executed. The following text appears with the environment restored to the previous state of the installation of the package program.

```
Applications Places System
root@ubuntu: /home/Package
File Edit View Search Terminal Help
root@ubuntu:/home/Package# ./uninstall

*****
* Uninstall TouchScreen X Driver *
*****

Success

*****
* UnInstall TouchScreen DeviceDriver *
*****

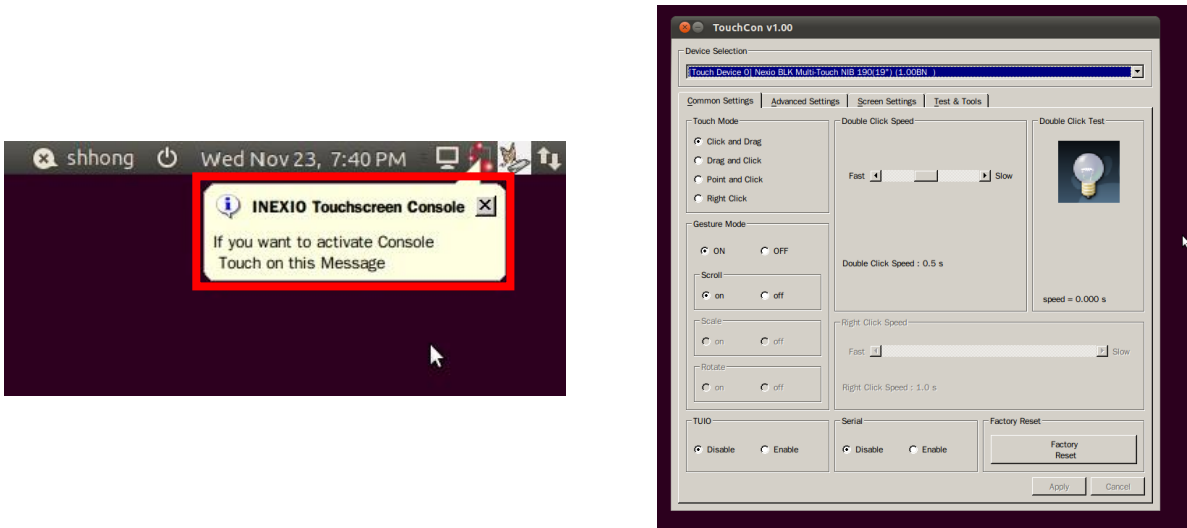
Restore Original HID Module ---> SUCCESS
Restore Original USBHID Module ---> SUCCESS
Restore Original INEXIO Module ---> SUCCESS
Restore Original USBTOUCH Module ---> SUCCESS
depmod -a
update-initramfs -u
update-initramfs: Generating /boot/initrd.img-2.6.35-22-generic
Success iNexio UnInstallation
Remove iNexio TouchScreen Successfully After "Reboot"
Do you want to Reboot? [y/n]? y
```

[Installation Removal]

4. Details of Application

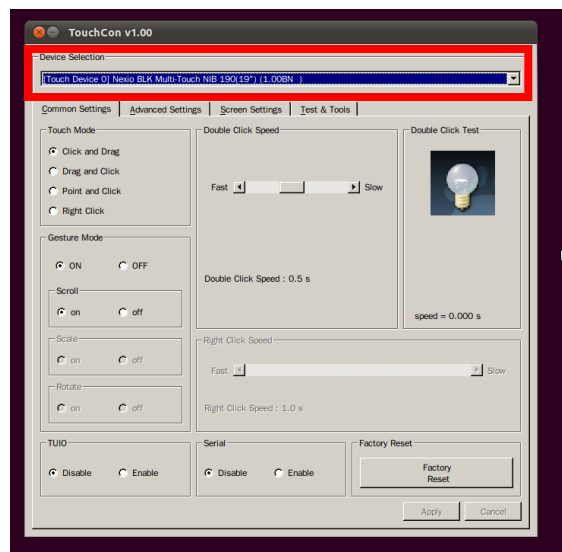
4.1. Execution of Application

If the icon on the task bar of the computer indicated in the left figure below is touched, a message bubble appears. If the message bubble is touched, or the icon is double touched in succession, the TouchCon application is executed, as shown in the right figure below:



[Application Execution]

There appear the name and size of NEXIO Touch Screen with firmware version information on the top of the application, as shown in the figure below. If this section is touched, all information about NEXIO Touch Screen appears contained in the combo box linked as shown in the figure below, which can be changed to the NEXIO Touch Screen desired to set.



[Application Execution]

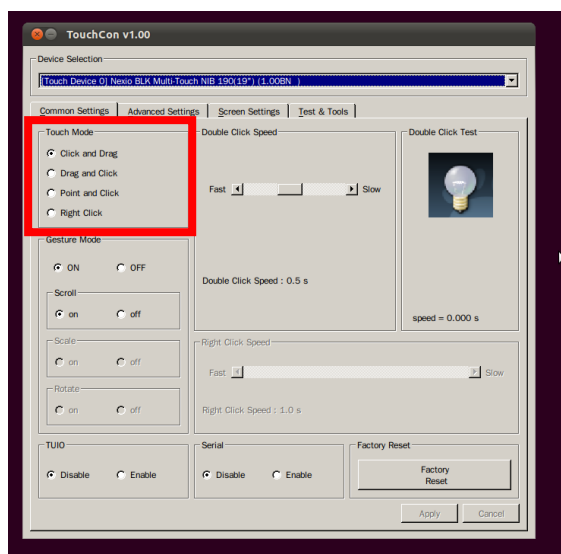
4.2. Common Setting Tab

It is possible to set a change in Touch and Gesture modes, a change in the speed of Double Click and Right Click, Enable/Disable of TUIO and Serial, and Factory Reset, using the Common Setting Tab. Change your desired section setting, and press the Apply button to apply set values. If you have a wrong setting, or want to cancel the modified setting, press the Cancel button to return to the previous process of the change. The default values of this tab are as follows:

Common Setting List		Default Values
Touch Mode		Click and Drag
Gesture	Gesture Mode	On
	Scroll	On
	Scale	Disable (Support Unavailable)
	Rotate	Disable (Support Unavailable)
Double Click Speed		0.5 Second
Right Click Speed		1.0 Second
TUIO		Disable
Serial		Disable

[Default Values of Common Setting Tab]

4.2.1. Change in Touch Mode



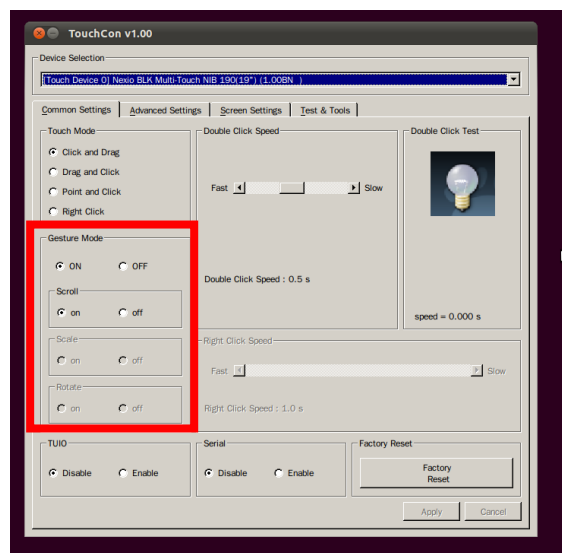
[Change in Touch Mode]

Here you can set the touch mode of Touch Screen.

→ **Click and Drag:** In this mode, the starting point of the touch of Touch Screen is equivalent to the pressed state of the left button of the mouse, and release from the touch of Touch Screen to that from the pressed state of the button.

- **Drag and Click:** In this mode, regardless of the initial point of the touch of Touch Screen, release from the touch of Touch Screen produces an equivalent result to the click of the left button of the mouse.
- **Point and Click:** In this mode, the cursor does not move since the range between the starting point of the touch of Touch Screen and the end of the touch is equivalent to the pressed state of the left button of the mouse, and it acts as if the left button of the mouse was released at the ending point of the touch.
- **Right Click:** This mode is the same as that of Click and Drag in basic functions, but it acts as if the right button of the mouse was clicked while the touch lasts within a certain area.

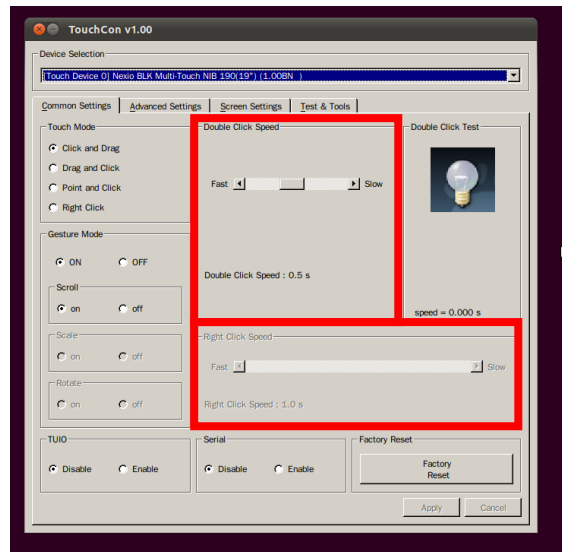
4.2.2. Change in Gesture Mode



[Change in Gesture Mode]

If touching the screen with two fingers, Gesture Mode should be selected to execute the intended. You can decide whether to use or not use Gesture with the Gesture ON/OFF button. If Gesture is ON, you can make it act as if the mouse wheel is moved by moving two fingers to the same direction at the same time after turning on/off the Scroll.

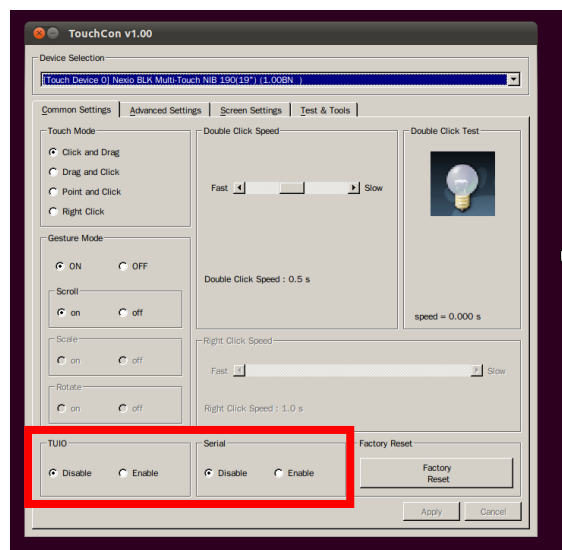
4.2.3. Change in Double Click / Right Click Speed



[Change in Double / Right Click Speed]

- **Double Click Speed:** Time interval can be adjusted to take two consecutive touches as Double Click, using the scroll bar for setting.
- **Right Click Speed:** Time interval can be set until right click occurs while touch coordinates are within a certain area, using the scroll bar for setting, if Touch Mode is at right click.

4.2.4. Settings for TUIO, Serial Enable/Disable



[Settings for TUIO, Serial Enable/Disable]

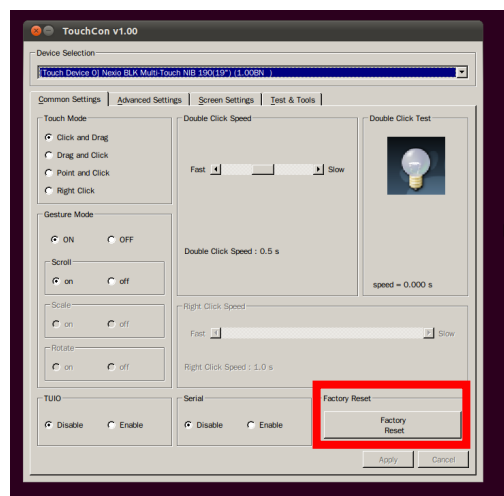
- **TUIO:** This is a function designed to decide whether to use or not use TUIO. If TUIO is enabled, TUIO program works, and other programs using TUIO transmits coordinates so Touch Screen could receive

the touch screen coordinates that are entered in the current PC. If TUIO interworks with Wine, precautions are attached to the appendix.

< **If you want to use the relevant function, Java program should be installed. How to install Java is provided in the appendix.** >

→ **Serial:** This is a function that enables the use of NEXIO Touch Screen to which Serial Type is connected. If a serial type of touch screen is connected and enabled, it appears in the Device Selection combo box and the touch screen works. The serial type of touch screen is not automatically terminated when it is disconnected, and it is necessary to select Serial Disable.

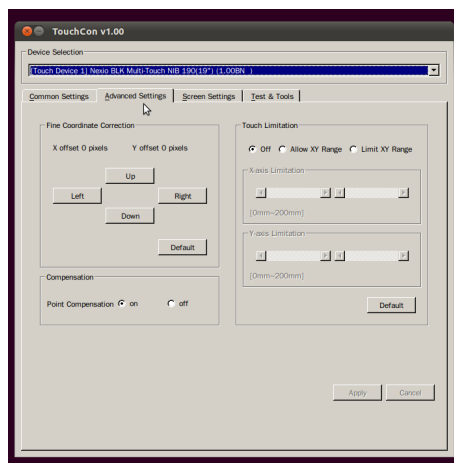
4.2.5. Factory Reset



[Change in Factory Reset]

Factory Reset is used to initialize all settings of Touch Screen. If the button is pressed, a box asking if you want to enter factory reset values appears. If you select the Yes button, all setting values on the screen are initialized for Reset. The application of default values requires pressing the Apply button.

4.3. Advanced Setting Tab



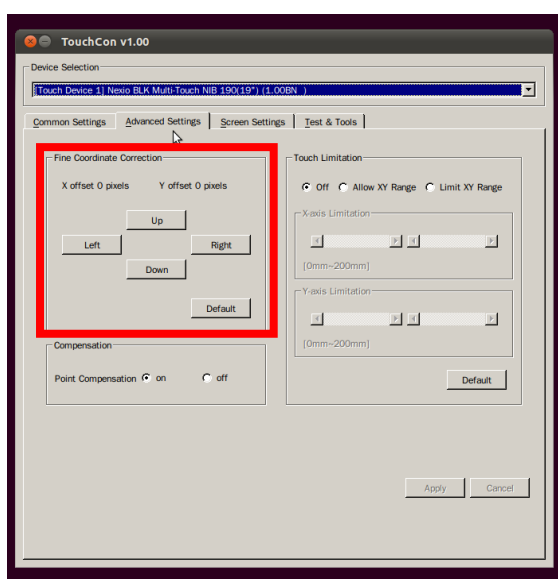
[Advanced Settings]

This is designed to set advanced touch functions. Default values are as follows:

Advanced Setting List		Default Values
Fine Coordinate Correction		X : 0 Pixel / Y : 0 Pixel
Compensation		On < Works only in BULK Type Device >
Touch Limitation	Touch Limitation	Off < Works only in BULK Type Device >
	X-Axis Limitation	0-200mm < Works only in BULK Type Device >
	Y-Axis Limitation	0-200mm < Works only in BULK Type Device >

[Basic Settings of Advanced Setting Tab]

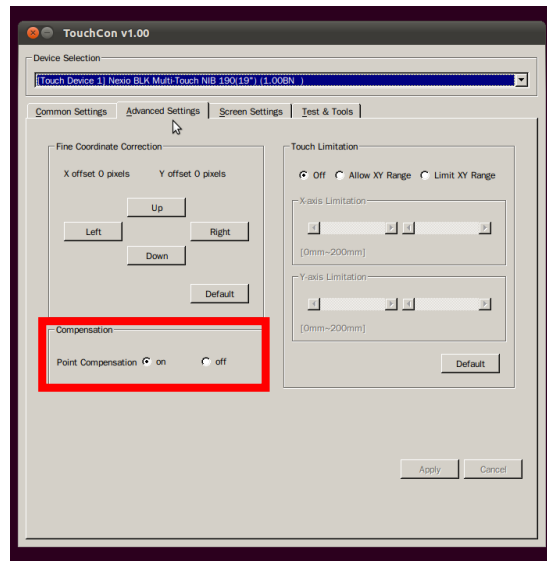
4.3.1. Fine Coordinate Correction



[Settings for Fine Coordinate Correction]

If touch coordinates do not correspond to the location of the section actually touched by fingers, the difference can be corrected, using Fine Coordinate Correction. Press Up, Down, Left, and Right buttons, and the location of the touch coordinates displayed on the screen moves by 1 pixel respectively. If Default button on the right bottom is pressed, they return to their default values.

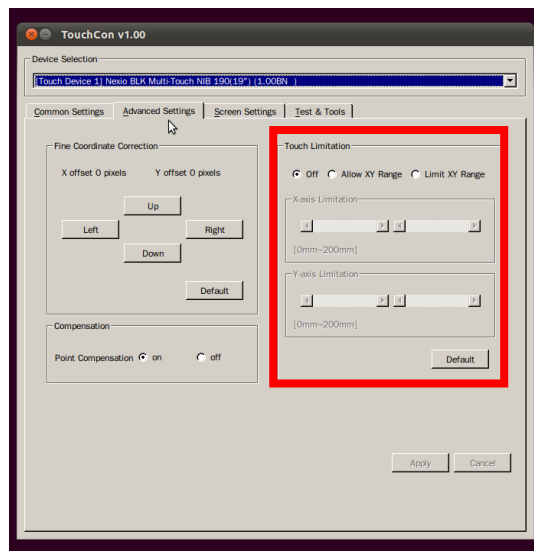
4.3.2. Compensation



[Settings for Point Compensation]

For BULK Type Device, there occur cases in which one fails to touch the outermost rim due to the physical characteristics of Touch Screen. This serves to expand touch coordinates a little bit from the center to the outside to fit the screen, taking into consideration such physical characteristics of Touch Screen. Default value is ON so there is no inconvenience in using.

4.3.3. Touch Limitation



[Settings for Touch Limitation]

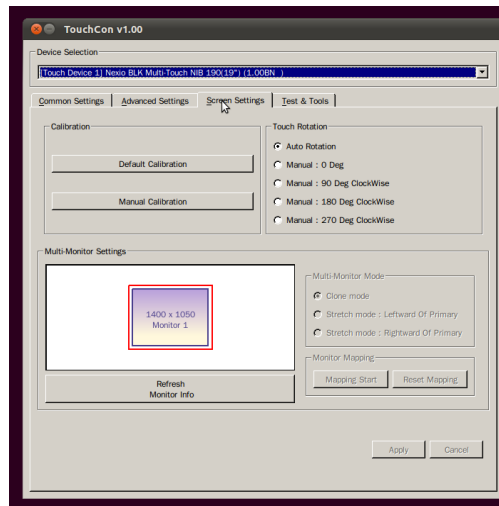
For BULK Type Device, it is possible to recognize touch area as well as touch coordinates. This function enables to ignore or accept the touch input of a certain area or greater, using such characteristics of BULK-type touch screens. Default value is OFF, and two types of function of Allow and Limit are supported.

→ **Allow XY Range:** This serves to accept only the touch coordinates of area within the set scope. You can

set the size of the touch area to be accepted by X-axis / Y-axis, using the scroll bar on the bottom.

→ **Limit XY Range:** This serves to accept only the touch coordinates of area outside the set scope. You can set the size of the touch area to be accepted by X-axis / Y-axis, using the scroll bar on the bottom.

4.4. Screen Setting Tab



[Screen Settings]

This serves to adjust settings between touch screens. If monitor information changes, the program itself recognizes the change, and upgrades the monitor information displayed on the screen. Except for the following circumstances, there are some cases in which monitor information is not updated, but in such cases, you can click on the Refresh Monitor Info button, and update monitor settings again:

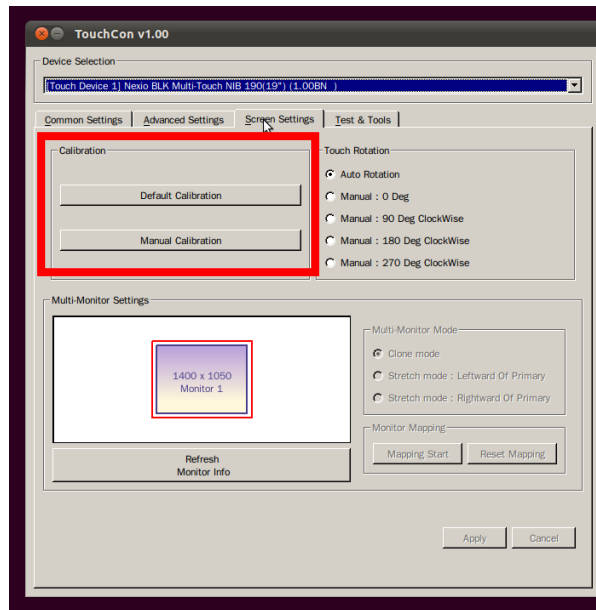
1. Screen Setting Tab UI is opened
2. Calibration is executed
3. Multi-monitors perform Mapping Start / Mapping Reset
4. Drawing Test button is pressed on Test & Tool Tab
5. Multi-Touch View execution button is pressed on Test & Tool Tab.

Default values of Screen Settings are as follows:

Screen Setting List	Default Values
Calibration	Default Calibration
Rotation	Auto Rotation
Multi Monitor Setting	< Works only if two or more monitors are provided >
Multi Monitor Mode	None < Recognizes the mode is used for the first time by the user > - Disabled in Nvidia -
Monitor Mapping	Mapping all touch screens in Primonitor.

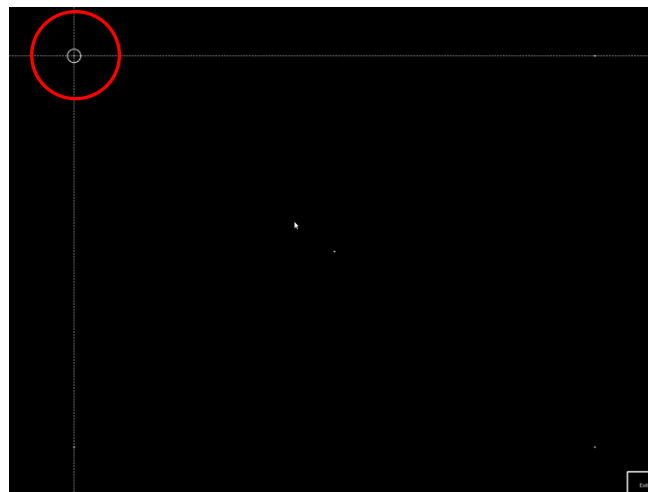
[Default Values of Screen Setting Tab]

4.4.1. Manual Calibration



[Manual Calibration Settings]

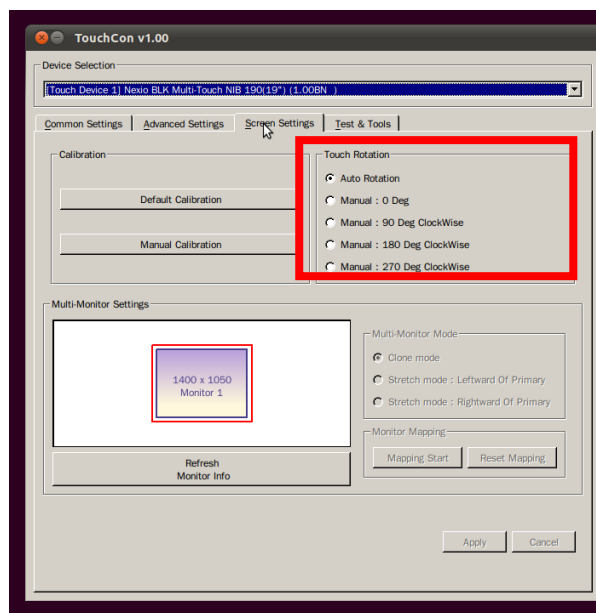
If a touch point on Touch Screen is not identical to the location of the mouse cursor displayed on the screen, the touch point is calibrated, using the manual coordinate calibration. To start coordinate calibration, touch the Manual Calibration button. If you want to return coordinates to default values, touch the Default Calibration button.



[Manual Calibration in Operation]

The execution of manual coordinate calibration program leads to a calibration screen, as shown in the figure above. Give one touch to the center of every circle in the order in which they appear on the calibration screen, and the calibration is completed.

4.4.2. Rotation



[Settings for Rotation]

4.4.2.1. Auto Rotation

This serves to calibrate coordinates automatically, depending on the direction of rotation, when the monitor with Touch Screen installed has to be used vertically. Select Auto Rotation in Rotation, and press the Apply button for its application. If Auto Rotation is applied, coordinates are automatically set even when the screen rotates. For the matters associated with the rotation of monitor screen, refer to the “Help” words of graphic card manufacturers, which are installed in computers.

4.4.2.2. Manual Rotation

This enables users to set Touch Screen manually to calibrate coordinates, depending on the direction of rotation.

4.4.2.3. Manual: 0 Deg

This is a function that returns the screen to unturned coordinates. Manual in Touch Screen: Select the 0 Deg button, and touch the Apply button to apply settings.

4.4.2.4. Manual: 90 Deg

This enables setting touch coordinates to rotate 90° clockwise on the monitor screen. Manual in Touch Rotation: Select the 90 Deg button, and touch the Apply button to apply settings.

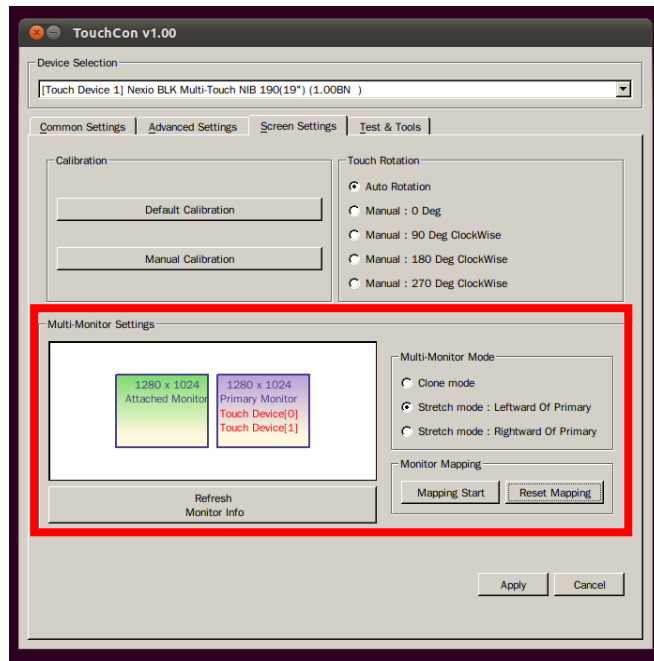
4.4.2.5. Manual: 180 Deg

This is a function that sets touch coordinates to rotate 180° clockwise on the monitor screen. If this function is executed, Touch Screen acts in the reversed direction of the monitor screen. Manual in Touch Rotation: Select the 180 Deg button, and touch the Apply button to apply settings.

4.4.2.6. Manual: 270 Deg

This is a function that sets touch coordinates to rotate 270° clockwise on the monitor screen. Manual in Touch Rotation: Select the 270 Deg button, and touch the Apply button to apply settings.

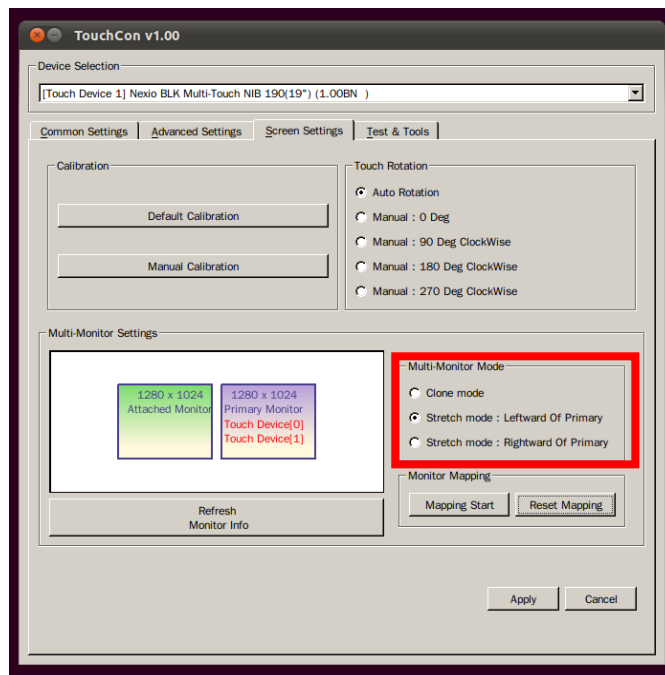
4.4.3. Multi Monitors Settings



[Multi Monitors Settings]

The NEXIO TouchCon application supports even Multi Monitors construction that uses two monitors. This function consists of Multi Monitors Status, Multi Monitors Mode, and Monitor Mapping. The status information of the current monitor can be obtained from Multi Monitors Status. It is possible to set monitor and touch screen, using Multi Monitors Mode and Monitor Mapping.

4.4.3.1. Multi Monitors Mode

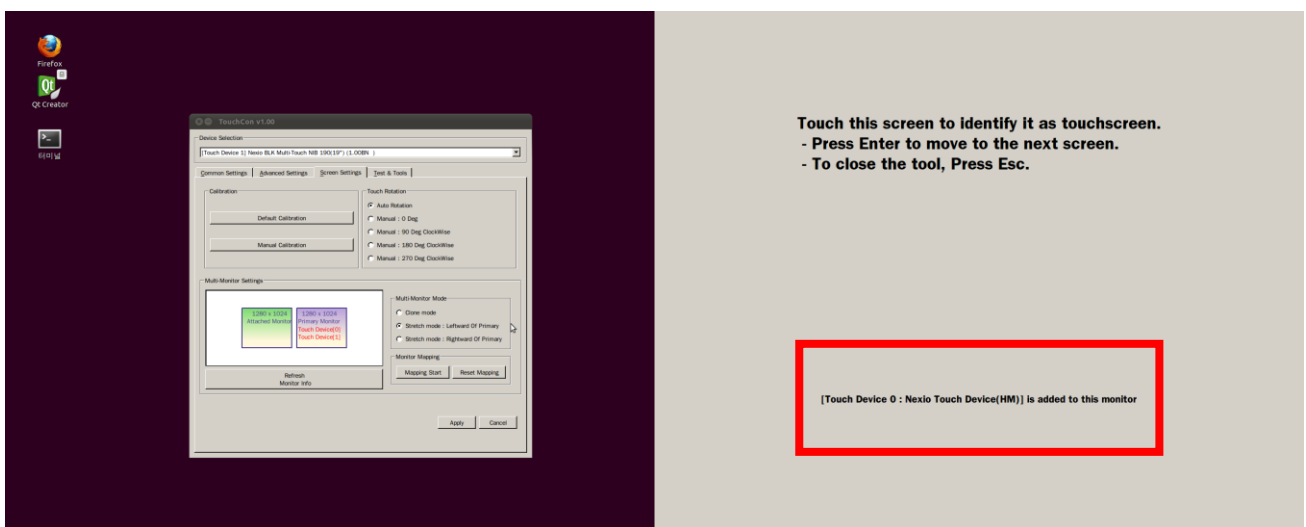


[Multi Monitors Mode Settings]

This mode serves to change settings of multi-monitor. It works only in the environment supported with Nouveau graphic driver in Linux. For Clone, the same screen appears in all monitors. On the contrary, for Stretch, the work space of the screen increases, and it can be decided whether an auxiliary monitor will be on the right or left side of the main monitor.

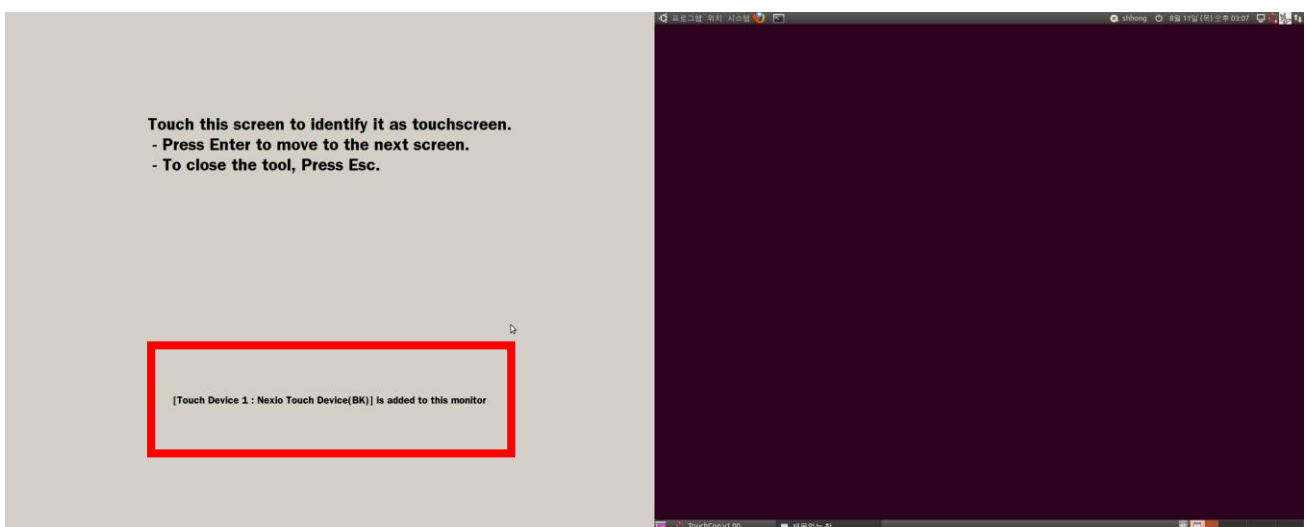
4.4.3.2. Monitor Mapping

If several touch screens are provided, they are all automatically set in the main monitor. If you want to map touch screens in the environment with two or more monitors, press the Mapping Start button, and the following screen appears on the main monitor:



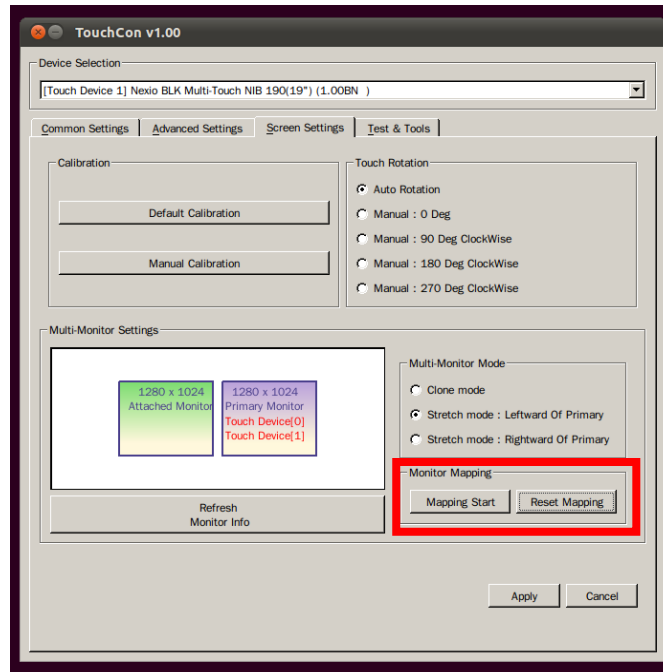
[Settings for Multi Monitors Mapping]

Touch the touch screen intended to map on the main monitor, and press the Enter key. If successful, the same screen will appear on the auxiliary monitor.



[Settings for Multi Monitors Mapping]

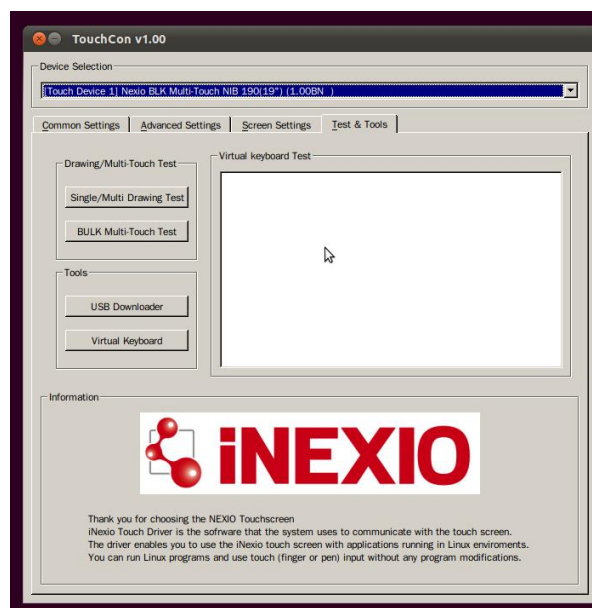
In the same way, touch the touch screen intended to use on the auxiliary monitor, and press the Enter key. If the process is finished, press the Refresh Monitor Info button on the left so you can find the mapping of the touch screen currently connected, as shown below:



[Settings for Reset Mapping]

To initiate the mapping of the touch screen, touch the Reset Mapping button. If you touch the button, all touch screens return to their initial conditions, as mapped on the main monitor.

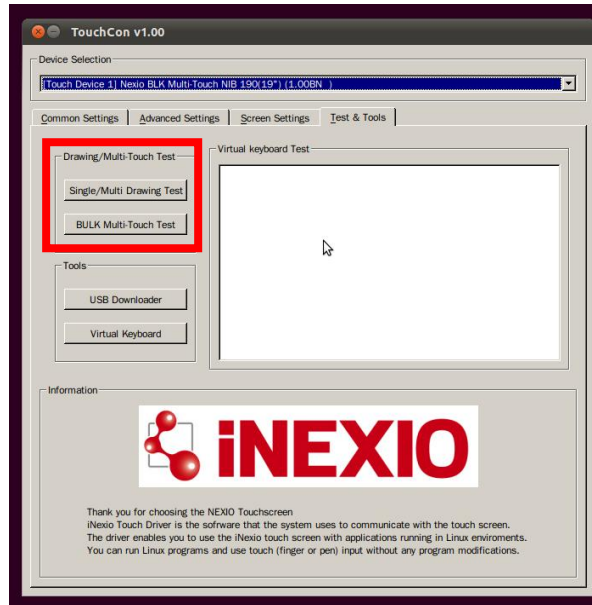
4.5. Test & Tools Tab



[Test & Tools]

This tab includes test function that tests the operation of Touch Screen, and tool function that enables more convenient use of Touch Screen.

4.5.1. Drawing/Multitouch Test



[Settings for Drawing / Multitouch Test]

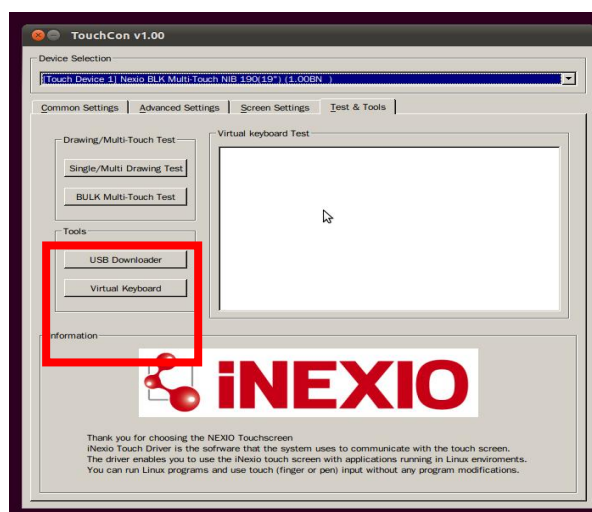
→ Single/Multi Drawing Test

Provide a drawing board that enables drawing pictures using Touch Screen.

→ BULK Multitouch Test

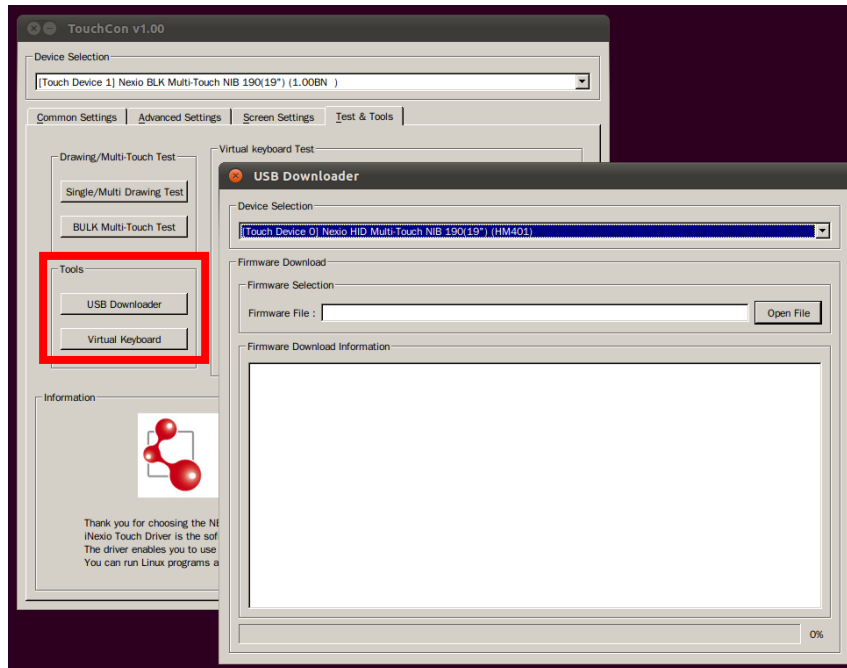
For a BULK Type of touch screen, the relevant function is activated. If you touch the Touch Screen after executing the function, the coordinates and area recognized by the screen appear on the screen.

4.5.2. Tools



[Settings for Tools]

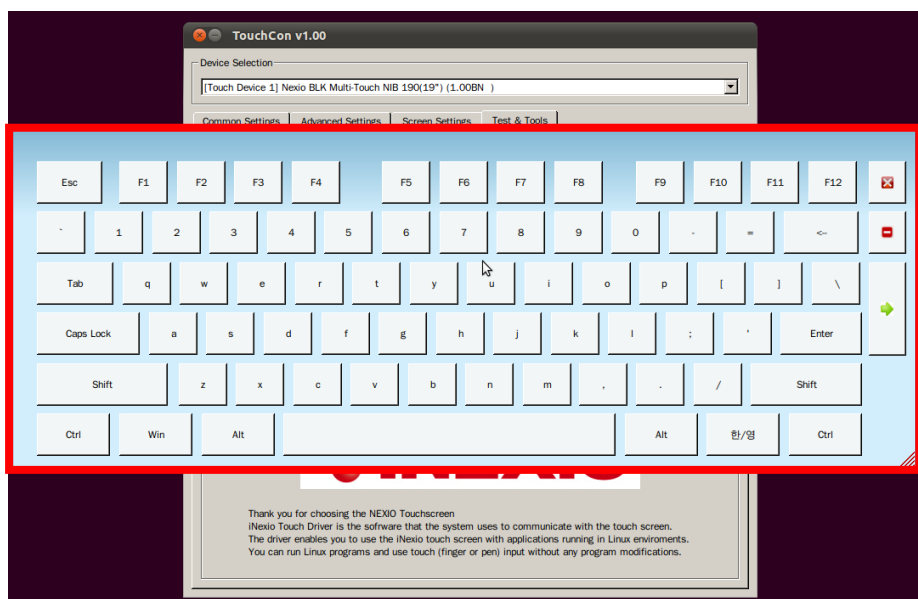
→ USB Downloader



[Settings for USB Downloader]

USB Downloader is used to change the firmware of the relevant touch screen. If the relevant function is executed, a new window, as shown above, appears, and if the intended firmware for change is opened, download starts. The progress of downloading is seen on the progress bar with the process of download on the center. If downloading is completed, a message for the completion of download comes out.

→ Virtual Keyboard



[Virtual Keyboard]

This is a function that displays a virtual keyboard. Press the button of the virtual keyboard in the edit box on the right to test if desired letters are entered.

5. Appendix

5.1. How to Install Java JRE

If Java is to be installed in the relevant Linux, it is recommended to install it in accordance with the following process. For the details of Java installation in Linux, log in <http://www.java.com/ko/download/>, and refer to the manual.

5.1.1. Environment for Installation

Linux support Red Hat Linux, SUSE Linux, and Ubuntu / Fedora series. It is recommended to use a processor of Pentium 166 MHz or more with at least 75 MB disc space and 32 MB RAM. Download and install Java for Linux in accordance with the following:

5.1.2. Download

1. Go to <http://java.com>, and click on the download button.
2. Installation package is provided in two types:

→ **Linux Automatic Decompression Binary File**

This file can be used in installing Java in the location designated by the user. Anyone including root users can install it. However, those who are not Java users are not allowed to replace the Java platform system version provided by Linux.

→ **Linux RPM Package**

Linux RPM (Redhat Package Manager) installs Java, using RPM. This method is limited to those who can use RPM. Ones who cannot use RPM should use other options. Download optimum package. One can download files in any directory of the system.

3. Check the size of file, and then if the whole software was downloaded without any damage.
 - Before downloading file, check the size of file indicated on the download page of the website.
 - If downloading is finished, compare the size of original file and that of downloaded file to know if they are the same size.

5.1.3. Installation

5.1.3.1. Linux Automatic Decompression Binary File

1. Change authority for the execution of downloaded file. Enter the following:

```
chmod a+x jre-6u<version>-linux-i586.bin
```
2. Check if the authority to execute file has been provided. Enter the following:

ls -l



```
root@almost:/usr/java
File Edit View Terminal Go Help
[root@almost java]# ls -l
total 18688
-rwx--x--x  1 root    root      19109129 Sep 14 09:58 jre-6u2-linux-i586.bin
[root@almost java]#
```

3. Changed to the directory in which file will be installed. Enter the following:

cd <name of directory path>

For example, if software is installed in the /usr/java/ directory, enter the following:

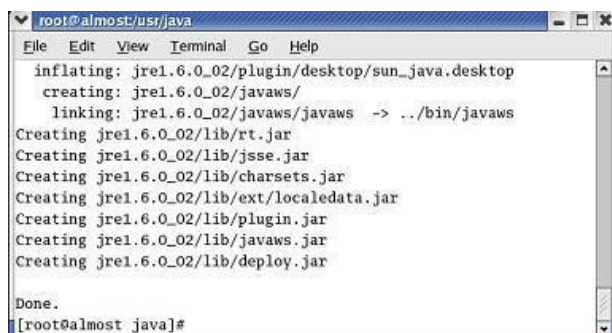
cd /usr/java/

4. Execute the automatic decompression. Enter the following:

./jre-6u<version>-linux-i586.bin

License agreement is displayed. Review the agreement. Press the space bar, and the next page is displayed. Enter “Yes” at the end of the agreement to continue installation.

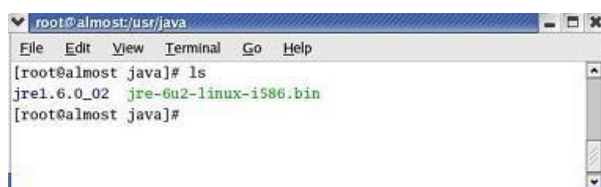
5. Java is installed in the relevant directory. In this case, Java is installed in the /usr/java/jre1.6.0_<version>. If installation is finished, “Done” is displayed.



```
root@almost:/usr/java
File Edit View Terminal Go Help
inflating: jre1.6.0_02/plugin/desktop/sun_java.desktop
creating: jre1.6.0_02/javaws/
linking: jre1.6.0_02/javaws/javaws -> ../bin/javaws
Creating jre1.6.0_02/lib/rt.jar
Creating jre1.6.0_02/lib/jsse.jar
Creating jre1.6.0_02/lib/charsets.jar
Creating jre1.6.0_02/lib/ext/localedata.jar
Creating jre1.6.0_02/lib/plugin.jar
Creating jre1.6.0_02/lib/javaws.jar
Creating jre1.6.0_02/lib/deploy.jar
Done.
[root@almost java]#
```

6. Check if the next jre1.6.0_<version> sub-directory is listed under the current directory. Enter the following:

ls



```
root@almost:/usr/java
File Edit View Terminal Go Help
[root@almost java]# ls
jre1.6.0_02  jre-6u2-linux-i586.bin
[root@almost java]#
```

5.1.3.2. Linux RPM Package

1. Be a root user by executing su command and entering super user password.
2. Changed to the directory in which file will be installed. Enter the following:

cd <directory>

For example, if software is installed in the /usr/java/ directory, enter the following:

cd /usr/java

3. Change authority for the execution of downloaded file. Enter the following:

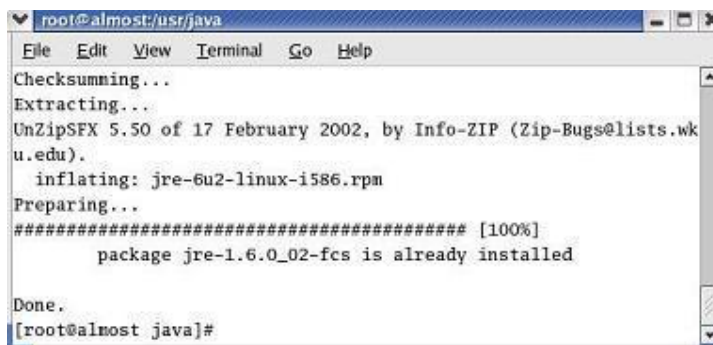
chmod a+x jre-6u<version>-linux-i586-rpm.bin

4. Start installation process, and enter the following:

./jre-6u<version>-linux-i586-rpm.bin

License agreement is displayed. Review the agreement. Press the space bar, and the next page is displayed. Enter “Yes” at the end of the agreement to continue installation.

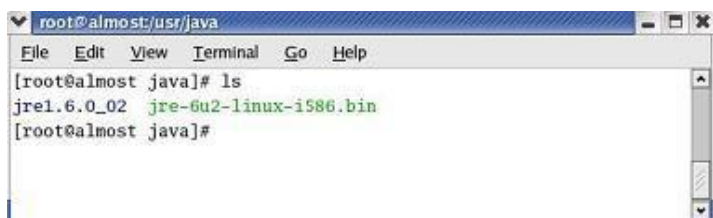
5. The installed file is created as jre-6<version>-linux-i586.rpm file in the current directory, and executed.



```
root@almost:/usr/java
File Edit View Terminal Go Help
Checksumming...
Extracting...
UnZipSFX 5.50 of 17 February 2002, by Info-ZIP (Zip-Bugs@lists.wk
u.edu).
  inflating: jre-6u2-linux-i586.rpm
Preparing...
##### [100%]
  package jre-1.6.0_02-fcs is already installed
Done.
[root@almost java]#
```

6. Check if the next jre1.6.0_<version> sub-directory is listed under the current directory. Enter the following:

ls



```
root@almost:/usr/java
File Edit View Terminal Go Help
[root@almost java]# ls
jre1.6.0_02 jre-6u2-linux-i586.bin
[root@almost java]#
```

5.1.3.3. Installation of Ubuntu / Fedora Series of Linux

The installation of Java package requires the connection to Internet with the following process:

1. JDK 7

→ **Debian, and Ubuntu Series**

Open the terminal available in Linux, and enter the following command:

```
$ sudo apt-get install openjdk-7-jre
```

The above openjdk-7-jre package provides only Java Runtime environment. If you want to prepare programs, using Java, the following JDK package should also be installed:

```
$ sudo apt-get install openjdk-7-jdk package
```

→ **Fedora, Oracle Linux, and Red Hat Enterprise Linux Series**

Open the terminal available in Linux, and enter the following command:

```
$ su -c "yum install java-1.7.0-openjdk"
```

The above java-1.7.0-openjdk package provides only Java Runtime environment. If you want to prepare programs, using Java, the following JDK package should also be installed:

```
$ su -c "yum install java-1.7.0-openjdk-develpackage"
```

2. JDK 6

→ **Debian, and Ubuntu Series**

Open the terminal available in Linux, and enter the following command:

```
$ sudo apt-get install openjdk-6-jre
```

The above openjdk-7-jre package provides only Java Runtime environment. If you want to prepare programs, using Java, the following JDK package should also be installed:

```
$ sudo apt-get install openjdk-6-jdk package
```

→ **Fedora, Oracle Linux, and Red Hat Enterprise Linux Series**

Open the terminal available in Linux, and enter the following command:

```
$ su -c "yum install java-1.6.0-openjdk"
```

The above java-1.6.0-openjdk package provides only Java Runtime environment. If you want to prepare programs, using Java, the following JDK package should also be installed:

```
$ su -c "yum install java-1.6.0-openjdk-develpackage."
```

5.1.3.4. Enabling and Configuration

The following should be executed to configure Java Plugin:

1. If Firefox browser is already in execution, terminate it.
2. Remove all Java Plugins installed previously.

Only one Java Plugin is allowed to use at a time. To use other plugins or other versions of plugins, symbolic links to other versions should be removed, and new symbolic links to new versions should be created.

3. Create a symbolic link to libnppj2.so file in the browser plugin directory.

4. Go to sub plugin directory of Firefox installation directory.
cd <Firefox installation directory>/plugin
5. Creating symbolic links.
ln -s <Java installation directory>/lib/i386/libnpp2.so
6. Start Firefox browser, or if Firefox browser is already in execution, restart it.

5.2. Settings for TUIO Program Interworking with Wine

There are some cases that TUIO program is enabled using the flash program supported in Windows. The following is the description of the process that executes TUIO program using Wine (WINDows Emulation) in Linux.

5.2.1. Installation of Wine

If Windows application program is executed, using Wine, PC for execution has Wine installed with the following method:

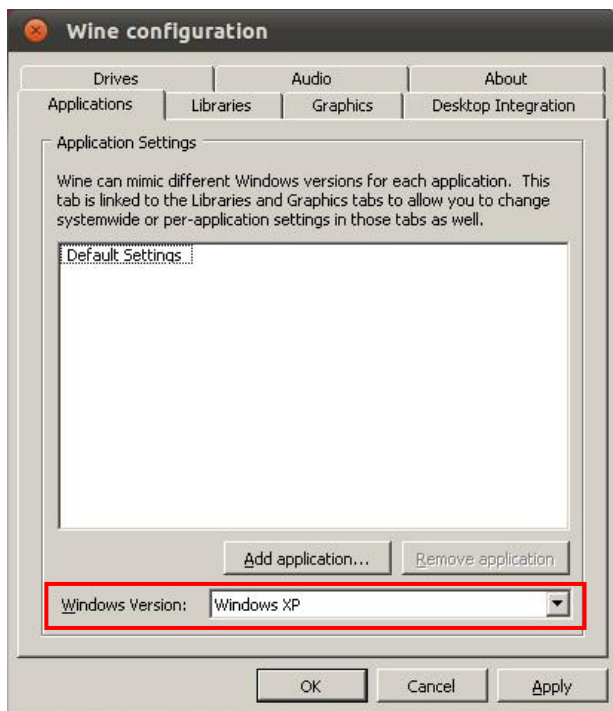
Ubuntu Series: System -> Administration -> Synaptic Package Manager -> Wine installation

Fedora Series: System -> Administration -> Add/Remove Software -> Wine installation

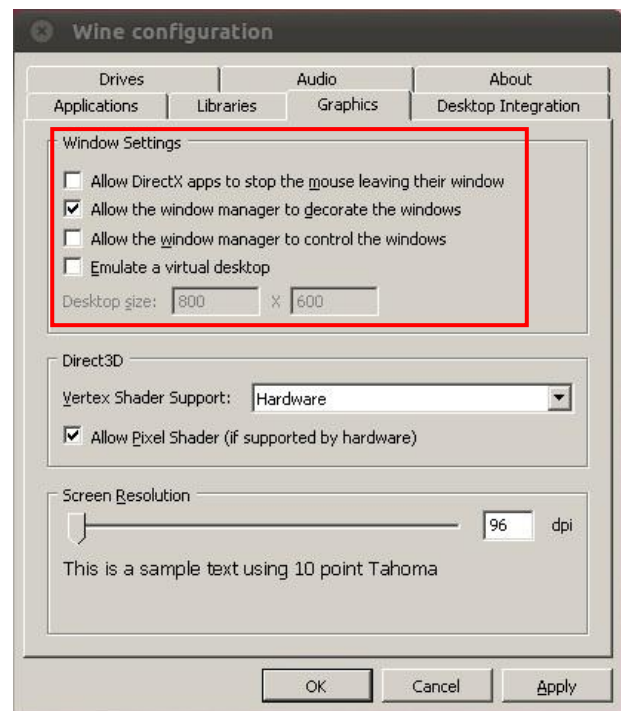
SuSE Linux Series: Refer to <http://en.opensuse.org/Wine>

5.2.2. Settings for Wine Environment

If Wine has been installed, open the environment setting window, and apply settings, as shown in the figure below. The environment setting window is opened by entering winecfg in the Terminal bar. (**To a condition that is not Root**)



- Application programs -> Application setting
- Click Default -> Window version -> XP
- All of these applied to other programs.



- Graphic -> Window setting
- Select "Window administrator is allowed to configure the window."
- All of the other choices should be unselected.

5.2.3. Precaution for Execution of Wine

If the TUIO program using Wine is executed, mouse click inputs are prohibited after execution.

< If mouse inputs are allowed, TUIO does not work since the confusion between touch inputs and Wine.

>