CASIO V-T500/V-N500 Series Quick Start Guide

(Version 1.10)

CASIO Computer Co., Ltd.

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1. Product Overview

This guide clearly and concisely sets out the information developers need to know to get started with CASIO **V-T500/V-N500** series terminals development.

1.1 Features at a Glance

The following is a brief overview of the features available on V-T500/V-N500 series terminals. For further details on the hardware specifications, refer to V-T500/V-N500 Series Hardware Manual.

V-T500/V-N500			
CPU		OMAP 1.5 GHz Dual core	
Memory	RAM	1GB	
	F-ROM	16GB	
Platform		Android 4.0	
LCD Model		IPS mode TFT color LCD	
	Size	10.1 inch	
	Pixel	1280 x 800 Wide XGA	
	Color	16.7	
	Viewing angle	80°	
	Backlight	LED Backlight	
LED		Red x 1, Green x 1	
		(For confirmation of charging/state of operation)	
Touch panel		Capacitive touch panel with Multi-Touch	
		Input :Pen-type digitizer	
Button		Power button/function buttons A and B/	
		Volume button (UP/DOWN)/	
	Γ	Screen locking button (display rotation locking button)	
Bluetooth®	Version	Bluetooth® Specification Ver.4.0+EDR	
communication	Communication range	Approximately 5 meters(Varies depending on conditions of radio wave	
		and environment.)	
	Class	2 (Output 2.5 mW Range 10 m)	
NFC	Model	ISO14443 Type A (Mifare)	
		ISO14443 Type B	
		Felica(JIS X 6319)	
		ISO15693 (Tag)	
	Antenna	Magnetic loop antenna	
SIM	Standard	ISO 7816 IC Card Standard	
	General specification		
SAM	Standard	ISO 7816 IC Card Standard	
	General specification		
Wireless LAN	Standard specification	IEEE 802.11a/b/g/n	
	Communication system	Spread Spectrum Communication System	
	Modulation method	BPSK,QPSK,CCK,16QAM,64QAM	

Table 1.1Features at a Glance

Transfer rate		802.11a/g : up to 54Mbps	
		802.11b : up to 11Mbps	
		802.11n : up to 72Mbps	
Communication range		802.11b/g/n : 50m (in-door), 150 m	
		(out-door) (2.4GHz band for $/n$)	
		802.11a/n : 30m (in-door), 150 m	
		(out-door) (5GHz band for n)	
Output		802.11a : 12.0dBm min. Typical 13.5dBm	
		(at 54Mbps)	
		802.11b : 17.0dBm mini. Typical 18dBm	
		(at 11Mbps)	
		802.11g : 12.0dBm mini. Typical 14dBm	
		(at 54Mbps)	
		802.11n : 11.0dBm min. Typical 12.5dBm	
		(at 72Mbps)	
GPS	General specifications	1575.42 MHz, C/A Code	
	Positioning scheme	Self-ephemeris	
SD card slot		Supporting SDHC/SDIO cards	
Micro SD card slot		Supporting SDHC card	
USB		USB host x 1	
		USB devicex 1	
Camera	Effective pixels	Approx. 2M Pixels (2592×1944 pixels)	
	Aperture	F2.8±5%	
	Focal length	f=3.4mm±5%	
	Focus distance	10cm to infinity	
LED light		21,000mcd()	
Speaker		Alam, etc.	
Microphone		Voice input	
Power source	Main Battery	Lithium Ion Polymer Rechargeable Battery	
	Sub-battery	1 x Lithium Ion Secondary Battery	
Temperature		-20 to 50 °C	
Humidity		10 to 90% RH	
Drop strength		1.0m	
Waterproof and dustproof performance		IP54-compliant	
Size		269 mm x 190 mm x 14 mm	

1.2 Library Configuration

The V-T500/V-N500 Software Development Kit ("BDK") provides various libraries including those listed in the table.

Table	1.2
-------	-----

Library	Description
System Library	Library that is used to control the system.
SAM Library	Library that is used to communicate with the SAM Card.
Authentication library	Library that is used to set the authentication function such as the password.
Camera scanning library	Library that is used to scan symbols with the camera.

The following table shows each file name of the jar files.

Table 1.3

Library	jar file
System Library	jp_casio_vx_framework_system.jar
SAM Library	jp_casio_vx_framework_sam.jar
Authentication library	jp_casio_vx_framework_authenticate.jar
Camera scanning library	jp_casio_vx_framework_camerascanner.jar

1.3 Development Manuals

The **V-T500/V-N500 Software Development Kit** ("**BDK**") provides various development reference manuals as described in the table below.

Table 1.4 V-T500/V-N500 manual

Development Manual	Description	
Quick Start Guide	This reference manual.	
Hardware Manual	Reference manual that describes hardware specifications in detail on each	
	dedicated option and V-T500/V-N500 handheld terminal.	
Software Manual	Reference manual that describes software specifications in detail for all the	
	software integrated in V-T500/V-N500 handheld terminal.	

Table 1.5 Library manual

Development Manual	Description	
System Library Manual	Reference manual that describes individual functions in detail for System	
	Library.	
SAM Library Manual	Reference manual that describes individual functions in detail for SAM Library.	
Authentication Library Manual	Reference manual that describes individual functions in detail for	
	Authentication Library.	
Camera Scanning Library Manual	Reference manual that describes individual functions in detail for Camera	
	Scanning Library.	

2. Prerequisites

2.1 Skills Required

V-T500/V-N500 application can be developed by the following languages:

• Java

The following skills or experience are also desirable:

- Android OS
- Development of Android applications
- Eclipse integrated development environment
- Some networking experience

2.2 Hardware Required

The following models and dedicated options are available.

Table 2.1List of available model

Model no.	Remark
V-N500	
V-T500	

2.3 Systems Required

PC Operating System

One of following OS (in case of 32 bit) is required.

- Microsoft Windows Vista Service Pack 2 or later
- Microsoft Windows 7 Service Pack 1 or later (Professional/Ultimate)
- Microsoft Windows 8.1 (Professional)

One of following OS (in case of 64 bit) is required.

- Microsoft Windows 7 Service Pack 1 or later (Professional/Ultimate)
- Microsoft Windows 8.1 (Professional)

Main unit of the computer

The personal computer on which the OS above operates

Memory

Secure the necessary and adequate capacity for operating the OS above. The necessary capacity varies according to the OS used. In either case, a capacity of 1 GB or more is recommended.

Hard disc capacity

10 GB or more free space is recommended.

2.4 Software Required

The Android development environment is required for developing the V-T500/V-N500 application.

Table 2.2 Development platform

Programming Language	Detail
Java	Java SE Development Kit
	Eclipse IDE with built-in ADT
	Android SDK (API level 15)

Note:

Procedures may differ in the future by updating of Google.

3. Setting up the Development Environment

3.1 Application Development

This chapter explains what to set up for the development environment before starting your application development.

(1) Installing JDK/Android SDK/Eclipse/ADT

Install the development environment for the Android application on the PC. For details, refer to Chapter 2.4Software Required.

(2) Installing CASIO SDK to PC

Install CASIO SDK on the PC. For the installation method, refer to Chapter 3.6Installing Software Development Kit ("SDK").

(3) Connecting V-T500/V-N500 to PC

Connect **V-T500/V-N500** to PC. For the connection method, refer to Chapter 4Connecting V-T500/V-N500 to PC.

(4) Preparing the Device Emulator

Prepare to use the CASIO **V-T500/V-N500** device emulator on the PC. For the operation method, refer to Chapter 6Emulator. If no device emulator is required, proceed to (5).

(5) Application Development

Now, the application development environment is set up and your development with the development platform can be started.

After an application has been developed, transfer it to the Device Emulator or an actual terminal of **V-T500/V-N500** via the tool of (3) to check the operability.

For the application development method and transferring your application, refer to Chapter 7Eclipse.

3.2 Installing JDK

Java SE JDK can be downloaded from the Java site. Access the Java site, and download the **Java SE JDK** package compatible with the Windows platform used.

The URL and the details of the Java site may differ from those given in this document because the site has been updated.

When downloading **Java SE JDK**, access the Java site from a search site, and follow the procedures explained on the site.

http://www.oracle.com/technetwork/java/javase/downloads/index.html



Figure 3.1

jdk-7u55-windows-i586.exe (32 Bit version) is downloaded in the example below. Download the 64 bit version for the 64 bit version OS.

Java SE Development Kit 7u55			
You must accept the Oracle Binary Code License Agreement for Java SE to download this			
	software.		
Accept License Agreement Occline License Agreement			
Droduct / File Description	Eile Size	Doumload	
Product/ File Description	File Size	Download	
Linux x86	115.67 MB	👤 jdk-7u55-linux-i586.rpm	
Linux x86	133 MB	👱 jdk-7u55-linux-i586.tar.gz	
Linux x64	116.97 MB	🛓 jdk-7u55-linux-x64.rpm	
Linux x64	131.82 MB	jdk-7u55-linux-x64.tar.gz	
Mac OS X x64	179.56 MB	jdk-7u55-macosx-x64.dmg	
Solaris x86 (SVR4 package)	138.86 MB	👱 jdk-7u55-solaris-i586.tar.Z	
Solaris x86	95.14 MB	🛓 jdk-7u55-solaris-i586.tar.gz	
Solaris x64 (SVR4 package)	24.55 MB	jdk-7u55-solaris-x64.tar.Z	
Solaris x64	16.25 MB	보 jdk-7u55-solaris-x64.tar.gz	
Solaris SPARC (SVR4 package)	138.23 MB	jdk-7u55-solaris-sparc.tar.Z	
Solaris SPARC	98.18 MB	🛓 jdk-7u55-solaris-sparc.tar.gz	
Solaris SPARC 64-bit (SVR4 package)	24 MB	jdk-7u55-solaris-sparcv9.tar.Z	
Solaris SPARC 64-bit	18.34 MB	jdk-7u55-solaris-sparcv9.tar.gz	
Windows x86	123.67 MB	1 jdk-7u55-windows-i586.exe	
Windows x64	125.49 MB	Jdk-7u55-windows-x64.exe	

Figure 3.2

Start the downloaded file, and execute installation.

For installation, execute the downloaded file by a user who has administrative authority.

If you wish to execute it by a user who does not have administrative authority, right-click on the downloaded file on the explorer, select **Execute as the administrator** from the displayed menu, and execute it. No changes are required during installation.





🗒 Java SE Development Kit 7 Update 55 - Custom Setup	×
👙 Java [.]	ORACLE
Select optional features to install from the list below. You ca installation by using the Add/Remove Programs utility in the O	n change your choice of features after Control Panel
Development Tools Source Code Public JRE	Feature Description Java SE Development Kit 7 Update 55, including the JavaFX SDK, a private JRE, a private JavaFX runtime, and the Java Mission Control tools suite. This will require 300MB on your hard drive.
C:\Program Files\Java\jdk1.7.0_55\	Change
< <u>B</u> ack	Next > Cancel

Figure 3.4

🗒 Java SE Development Kit 7 Update 55 - Complete	×
Java [®]	ORACLE
Successfully Installed Java SE Development Kit 7 Update 55	
Click Next Steps to access tutorials, API documentation, developer guides, releas and more to help you get started with the JDK. <u>Next Steps</u>	e notes
Close	

Figure 3.5

When the installation is finished, set the folder where JAVA is installed in the environment variable **JAVA_HOME**, and log in again. Pay attention because if you forget this setting, an error occurs when installing **Android SDK**.

omputer Name Hardware Advanced System Protection Remote	User variables for	r casio	
You must be logged on as an Administrator to make most of these changes.	Variable	Value	
Performance Visual effects, processor scheduling, memory usage, and virtual memory	TEMP TMP	%USERPROFILE%\AppData\Local\Temp %USERPROFILE%\AppData\Local\Temp	
Settings		New System Variable	F
User Profiles			
Desktop settings related to your logon Settings	System variables Variable AMDAPPSDKRO	Variable name: JAVA_HOME Variable value: C:\Program Files\Java\idk1.7.0_55	ocel
Startup and Recovery	ComSpec		icci
System startup, system tailure, and debugging information Settings	FP_NO_HOST_(NUMBER_OF_P	4	
Envirogment Variables		OK Cancel	

Figure 3.6

3.3 Installing Android SDK (ADT Bundle)

Android SDK (ADT Bundle) is available from the Android of Google site. Please input the URL at browser, and download Android SDK. http://developer.android.com/sdk/index.html?hl=sk

Get the Android SDK

The Android SDK provides you the API libraries and developer tools necessary to build, test, and debug apps for Android.

If you're a new Android developer, we recommend you download the ADT Bundle to quickly start developing apps. It includes the essential Android SDK components and a version of the Eclipse IDE with built-in **ADT (Android Developer Tools)** to streamline your Android app development.

With a single download, the ADT Bundle includes everything you need to begin developing apps:

- Eclipse + ADT plugin
- Android SDK Tools
- · Android Platform-tools
- · The latest Android platform
- · The latest Android system image for the emulator

Figure 3.7

32 Bit version is downloaded in the example below. Download the 64 bit version for the 64 bit version OS.



Download the SDK ADT Bundle for Windows

Get the Android SDK

Before installing the Android SDK, you must agree to the following terms and conditions.

Terms and Conditions
This is the Android Software Development Kit License Agreement
1. Introduction
1.1 The Android Software Development Kit (referred to in this License Agreement as the "SDK" and specifically including the Android system files, packaged APIs, and Google APIs add-ons) is licensed to you subject to the terms of this License Agreement. This License Agreement forms a legally binding contract between you and Google in relation to your use of the SDK.
1.2 "Android" means the Android software stack for devices, as made available under the Android Open Source Project, which is located at the following URL: http://source.android.com/, as updated from time to time.
1.3 "Google" means Google Inc., a Delaware corporation with principal place of business at 1600 Amphitheatre Parkway, Mountain View, CA 94043, United States.
<u> </u>
\square I have read and agree with the above terms and conditions
○ 32-bit ○ 64-bit
Download the SDK ADT Bundle for Windows

Figure 3.8

Unzip downloaded file into directory of your choice.

Add the paths related to **Android SDK** to **PATH** of the system environment variable.

Add paths to tools under the **The folder Android SDK is installed**, and **platform-tools** under the **The folder Android SDK is installed**.

Variable	Value
TEMP	%USERPROFILE%\AppData\Local\Temp
TMP	%USERPROFILE%\AppData\Local\Temp
vstem variables	New Edit Delete
Variable	Value
NUMBER_OF_P	4 Windows_NT
Path	c:\Program Files\AMD APP\bin\x86;C:\
PATHEXT	.COM;.EXE;.BAT;.CMD;.VBS;.VBE;.JS;
	New Edit Delete
	Edit System Variable
	Variable name: Path

Figure 3.9

Execute **SDK Manager** from the menu of **Android SDK Tools** by a user who has administrative authority. If you wish to execute it by a user who does not have administrative authority, right-click on **SDK Manager** in the menu of **Android SDK Tools**, and select **Execute as the administrator** from the displayed menu, and execute it.

Select **Reload** from the Package menu.

	Show Updates/New Packages Show Installed Packages	idle-window	s-x86-2014	H0321¥sd	k	
	Show Obsolete Packages Show Archives Details		API	Rev.	Status	
	Sort by API Level			22.6.2	👼 Installed	
	Sort by Repository			19.0.1	🐯 Installed	
	Reload			19.0.3	🐯 Installed	
-	SDK Platform ARM EABL v7a System	Image	19	3	♥ Installed	
4	Extras					
	Android Support Library			19.0.1	👼 Installed	
ho	w: 🗹 Updates/New 📝 Installer	d 📄 Obsolete	Select Ne	w or Upo	iates Insta	ill packages
or	t by: 💿 API level 💿 Reposite	ory	Deselect	All	Dele	te packages

Figure 3.10

The list of packages is updated to the latest version.

Check Android 4.0.3(API15) and Google USB driver in Extras, then install.

Please do not check Android SDK Tools in Tools.

Please pay attention because Android 4.0.3 (API15) is not checked by default.

- The object indiagen				
ackages Tools				
DK Path: C:¥Users¥casio¥Desktop¥adt-bundle-windows-x	86-2014	0321¥sd	k	
Packages				
Name	API	Rev.	Status	
Android 4.1.2 (API 16)				
A C Android 4.0.3 (API 15)				
SDK Platform	15	3	Not installed	
Samples for SDK	15	2	Not installed	-
ARM FABL v7a System Image	15	2	Not installed	
Intel x86 Atom System Image	15	1	Not installed	- 6
	10	-		_
Google APIs	15	2	Not installed	-1
Sources for Android SDK	15	2	Not installed	L
Android 4.0 (API 14)				
Android 3.2 (API 13)				
Android 3.1 (API 12)				
Android 3.0 (API 11)				
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Android SDK Manager Packages Tools DK Path: C:¥Users¥casio¥Desktop¥adt-bundle-windows-x Packages Image: Imag	86-2014 API	0321¥sd Rev. 5 19.0.1 3 12 16 7 3 5 2 9 2 4 4 w or Upc	Status Not installed Update available: rev. 19.1 Not installed Install 6 package	S
Android SDK Manager Packages Tools DK Path: C:¥Users¥casio¥Desktop¥adt-bundle-windows-x Packages Image: Imag	86-2014 API	Rev. 5 19.0.1 3 12 16 7 3 5 2 9 2 4 w or Upc All	Status Not installed Update available: rev. 19.1 Not installed Installed Delete packages)

Figure 3.11

3.4 Installing Software Development Kit ("SDK")

This chapter explains about installing SDK and construct Android SDK.

- 1. Install SDK as add-on for **Android SDK**.
- 2. Navigate to "package" directory of SDK.
- 3. Copy "V-T500" directory under "package" directory of SDK.
- 4. Paste "V-T500" directory copied in above 3 into "add-ons" directory under the root directory of Android SDK.

🛯 🍌 android-SDK	addon-dual screen anis-kvocera corporation-8
a 🕕 add-ons	addon-dual screen apis-kyocera corporation-10
> Ъ addon-dual_screen_apis-kyocera_corpo	addon-galaxy_tab-samsung_electronics-8
⊳ Ъ addon-dual_screen_apis-kyocera_corpol 😑	addon-google_apis-google-3
addon-galaxy_tab-samsung_electronics	🎉 addon-google_apis-google-4
addon-google_apis-google-3	🎍 addon-google_apis-google-7
addon-google apis-google-4	addon-google_apis-google-8
addon-google apis-google-7	addon-google_apis-google-10
addon-google_apis-google-8	addon-google_apis-google-11
	addon-google_apis-google-12
	addon-intel atom v86 system image-intel cornoration-
	addon-opensense sdk for phones-htc-10
	addon-opensense sdk for tablets-htc-12
addon-google_apis-google-13	addon-real3d-lge-8
addon-intel_atom_x86_system_image-i	\mu addon-real3d-lge-10
addon-opensense_sdk_for_phones-htc-1	addon-sony_xperia_extensions_edk_2_0-sony_mobile_c
addon-opensense_sdk_for_tablets-htc-1	🍑 V-T500
addon-real3d-lge-8	
> 🕌 addon-real3d-lge-10	
addon_cony_xporia_extensions_edk_2_(
V-T500	

Figure 3.12

4. Connecting V-T500/V-N500 to PC

4.1 Installing USB Driver

Install the USB driver to connect the PC and the V-T500/V-N500.

Only the configuration file of the USB driver is included in the **V-T500/V-N500** development kit. The USB driver is included in the **Android SDK**, which was installed in Chapter 3.3Installing Android SDK.

In case of Windows Vista and Windows 7

First, create a folder for the driver (e.g. "C:\V-T500Driver").

Next, search a file named android_winsub.inf in the installed folder of Android SDK.



Figure 4.1

When the file **android_winsub.inf** is found, copy it along with the sub folders in the folder for the driver that you created at the beginning.

Then, copy the following file from the CD.

V-T500/V-N500 development kit.\V-T500\driver\ android_winsub.inf

Paste the file in the same folder for the driver as above by overwriting.

When the mini-B USB port of **V-T500/V-N500** and the USB port of the PC are connected by cable, the connection is automatically detected by the OS, and the following dialog is displayed. Follow the instructions on the screen.

Select **No. not this time**, and press **<u>Next</u>. > button.**

Hardware Update Wizard	
	Welcome to the Hardware Update Wizard
	Windows will search for current and updated software by looking on your computer, on the hardware installation CD, or on the Windows Update Web site (with your permission). <u>Read our privacy policy</u>
	Can Windows connect to Windows Update to search for software?
	 Yes, this time only Yes, now and every time I connect a device No, not this time
	Click Next to continue.
	< <u>B</u> ack <u>N</u> ext > Cancel

Figure 4.2

Select Install from a list or specific location [Advanced] and press <u>Next</u> > button.





Check **Include this location in the search:**, and specify the folder for the driver that you created previously.

Hardware Update Wizard
Please choose your search and installation options.
Search for the best driver in these locations.
Use the check boxes below to limit or expand the default search, which includes local paths and removable media. The best driver found will be installed.
Search removable media (floppy, CD-ROM)
✓ Include this location in the search:
C:W-T500Driver Browse
Don't search. I will choose the driver to install.
Choose this option to select the device driver from a list. Windows does not guarantee that the driver you choose will be the best match for your hardware.
< <u>B</u> ack <u>N</u> ext > Cancel

Figure 4.4

Installation is started.

When the dialog below is displayed, installation is finished. Press Finish button, and close the dialog.

Hardware Update Wizard		
	Completing the Hardware Update Wizard	
	The wizard has finished installing the software for:	
604	ACPI Multiprocessor PC	
	The hardware you installed will not work until you restart your computer.	
	Click Finish to close the wizard.	
	< Back Finish Cancel	

Figure 4.5

For confirmation, open the command prompt, and enter the following command: adb devices



If the message above is displayed, the installation of the driver has succeeded.

■ In case of Windows 8.1

First, create a folder for the driver (e.g. "C:\V-T500Driver"). Next, search a file named **android winsub.inf** in the installed folder of **Android SDK**.

😂 usb_driver				
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools <u>H</u> elp				
🚱 Back 🝷 🕥 - 🏂 🔎 Search 🔊 Fold	ers 🛄 🕶			
Address 🛅 C:\app\android-sdk\extras\google\usb_driver				💙 🄁 Go
Folders	Name 🔺	Size	Туре	Date Modified
Ø Desktop	amd64 i386		File Folder File Folder	9/19/2012 7:20 PM 9/19/2012 7:20 PM
🖃 😼 My Computer	android_winusb.inf	6 KB	Setup Information	9/19/2012 7:20 PM
🗉 退 31⁄2 Floppy (A:)	androidwinusb86.cat	10 KB	Security Catalog	9/19/2012 7:20 PM
🖃 🧇 Local Disk (C:)	androidwinusba64.cat	10 KB	Security Catalog	9/19/2012 7:20 PM
🖃 🛅 app	🔟 source.properties	17 KB	PROPERTIES File	9/19/2012 7:20 PM
🖃 🧰 android-sdk				
add-ons				
🗆 🧰 extras				
🖃 🦳 accale				
🗏 🤂 ush driver				
amd64				
G 1386				
I Constant				
T C platform-tools				
C temp				
E Cons				
II Compose				
Documents and Settings				
🗉 🤐 Program Files				
System Volume Information				

Figure 4.7

When the file **android_winsub.inf** is found, copy it along with the sub folders in the folder for the driver that you created at the beginning.

Then, copy following files from the CD.

V-T500/V-N500 development kit.\V-T500\drv-win8\android_winsub.inf V-T500/V-N500 development kit.\V-T500\drv-win8\androidwinusb86.cat V-T500/V-N500 development kit.\V-T500\drv-win8\androidwinusba64.cat

Paste these files in the same folder for the driver as above by overwriting.

Connect the mini-B USB port of **V-T500/V-N500** and the USB port of the PC by a cable. The following menu will be displayed if start button is right-clicked. Select **Device Manager**.

_	
F	Programs and Features
F	Power Options
E	Event Viewer
	System
ſ	Device Manager
1	Network Connections
(Disk Management
0	Computer Management
0	Command Prompt
C	Command Prompt (Admin)
٦	Task Manager
0	Control Panel
F	File Explorer
5	Search
F	Run
9	Shut down or sign out 🔹 🕨
(Desktop

Figure 4.8

As shown in the following figure, the connected device name is displayed.

🚔 Device Manager	-	×
<u>F</u> ile <u>A</u> ction <u>V</u> iew <u>H</u> elp		
File Action Yiew Help Image: TestPC Image: TestPC <th></th> <th></th>		
Universal Serial Bus controllers		

Figure 4.9

The following menu will be displayed if the device name is right-clicked. Select Update Driver Software.

🔺 🌆 Other d	levices
🔥 V-T	500 1
D Portal	Update Driver Software
Ports	Disable
Print •	Uninstall
Proce	
b Decur	Scan for hardware changes
b <u>Softw</u>	Properties
🕞 🖬 Sound	rioperaes

Figure 4.10

Select Browse my computer for driver software.



Figure 4.11

Specify the folder for the driver that you created previously, and Press \underline{Next} button.

€	Update Driver Software - V-T500-J
	Browse for driver software on your computer
Ι.	Search for driver software in this location:
	C:\V-T500Driver
	✓ Include subfolders
	Let me pick from a list of device drivers on my computer This list will show installed driver software compatible with the device, and all driver software in the same category as the device.
	<u>N</u> ext Cancel

Figure 4.12

The dialog of the following figure is displayed. Select **Install** button.

Windows Secur	ity 🗙
Would you like to install this device software Name: Google, Inc. Publisher: CASIO COMPUTER CO.,LTD.	e?
✓ <u>A</u> lways trust software from "CASIO COMPUTER CO.,LTD.".	Install Do <u>n</u> 't Install
You should only install driver software from published device software is safe to install?	rs you trust. <u>How can I decide which</u>

Figure 4.13



Figure 4.14

For confirmation, open the command prompt, and enter the following command: adb devices



Figure 4.15

If the message above is displayed, the installation of the driver has succeeded.

26

5. Setting Up the Development Environment

5.1 Setting JDK

Set the JDK installation version.

Start up Eclipse, and select Preferences of the Window menu.



Figure 5.1

Select Java \rightarrow Compiler, and set the level to 1.6.

Preferences		
type filter text	Compiler	⇔ • ⇔ •
DDMS 🔺		Configure Project Specific Settings
Editors	JDK Compliance	
Launch		
Lint Error Checkin	Comp <u>i</u> ler compliance level:	1.6 🗸
▷ LogCat	Use defaul <u>t</u> compliance settings	
Usage Stats	Generated .class files compatibility:	1.6 -
⊳ Ant	Cauran compatibility	1.6
⊳ Help	Source co <u>m</u> pacibility.	1.0 +
Install/Update	Disallow identifiers called 'assert':	Error 👻
⊿ Java	Disallow identifiers called 'enum':	Frror
Appearance		
Build Path	Classfile Generation	
Compiler	 Add variable attributes to generated class files (used by the debugger) Add line number attributes to generated class files (used by the debugger) 	
▷ Editor	Add source file name to generated class file (used by the debugger)	
Installed JREs	Preserve unused (never read) local variables	
JUnit	✓ Inline finally blocks (larger class files, but improved performance)	
Properties Files Ed		
⊳ Maven		
⊳ Mylyn		
Run/Debug		
⊳ Team		
> Usage Data Collector		
Validation 👻	Restore <u>D</u> efau	Ilts Apply
۰ III +		
?	ОК	Cancel



5.2 Setting AVD

Set the AVD (Android Virtual Device).

Refactor	win	dow Help		_
- 12		New Window New Editor		<u>ع</u> ا
		Open Perspective Show View	•	
		Customize Perspective Save Perspective As Reset Perspective Close Perspective Close All Perspectives		
		Navigation	+	
	Ē	Android SDK Manager		
[AVD Manager		
		Kun Android Lint Preferences	•	



Press the **New...** button, and create a new AVD.

🗄 Android Virtual Devic	e Manager				
List of existing Android Virtual Devices located at C:¥Users¥sasakic¥.android¥avd					
AVD Name	Target Name	Platform	API Level	CPU/ABI	New
✓ Android4.0WVGA	Android 4.0	4.0	14	ARM (armeabi-v7a)	Edit
✓ Android4.0XGA	Android 4.0	4.0	14	ARM (armeabi-v7a)	
✓ Android4.0.3WVGA	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	Delete
✓ Android4.0.3WXGA	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	Renair
✓ Android4.0.3XGA	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	
					Details
					Start
					Refresh
A valid Android Virtu	al Dovice 🕞 A repairable Android	Virtual Device	1		
 A valid Android Virtual D 	ar Device. 📷 A repairable Android	virtual Device.	1.F		
	evice char failed to todu, CIICK Deta	ins to see the ent	л.		

Figure 5.4

Enter "CASIO_V_T500" in Name, and select "CASIO V-T500/V-N500(CASIO COMPUTER CO., LTD.) - API Level 15" at Target, and press the Create AVD button.

Create new Android Virtual Device (AVD)					
Name:	CASIO_V_T500				
Target:	CASIO V-T500/V-N500 (CA	ASIO COMPUTER CO., LTE).) - API Level 15 🔻		
CPU/ABI:	ARM (armeabi-v7a)				
SD Card:					
	Size:		MiB 👻		
	© File:		Browse		
Snapshot:					
	Enabled				
Skin:					
	Built-in: Default (WXGA)	•		
	Resolution:	x			
Hardware:					
	Property	Value	^ New		
	Accelerometer	yes	E Delete		
	Abstracted LCD density	160	Delete		
	Touch screen type	touch			
	skin.name (Unknown)	WV	-		
Override the existing AVD with the same name					
	Crea	te AVD	Cancel		

Figure 5.5

Return to the Android Virtual Device Manager screen, confirm that "CASIO_V_T500" is added, and close the dialog to finish.

AVD Name	Target Name	Platform	API Level	CPU/ABI	New.
Android4.0WVGA	Android 4.0	4.0	14	ARM (armeabi-v7a)	Edit
Android4.0XGA	Android 4.0	4.0	14	ARM (armeabi-v7a)	Cuic.
Android4.0.3WVGA	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	Delete
Android4.0.3WXGA	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	Repair
Android4.0.3XGA	Android 4.0.3	4.0.3	15	ARM (armeabi-y7a)	Repui
CASIO_V_T500	CASIO V-T500/V-N500 (CASIO	4.0.3	15	ARM (armeabi-v7a)	Details
					Start
					Refre

Figure 5.6

5.3 Setting Android Project

Set the Android Project of the application created by **Eclipse**.

Select and right-click Android Project, and select **Properties**. Select **Android** in the displayed Properties dialog, and select **CASIO V-T500/V-N500** at **Target Name**.

Properties for SdkBetaLibTest					
type filter text 🗘 Android 🗘 👻 🚽					
> Resource			-1.15		
Android	Target Name	Vendor	Platform	API Le	
Puildare	Android 1.5	Android Open Source Project	1.5	3	
Builders Jawa Build Dath	Google APIs	Google Inc.	1.5	3	
Java Bullu Paul	Android 1.6	Android Open Source Project	1.6	4	
 Java Compiler 	Google APIs	Google Inc.	1.6	4	
 Java Editor 	Android 2.1	Android Open Source Project	2.1	7	
Javadoc Location	Google APIs	Google Inc.	2.1	7	
Project References	Android 2.2	Android Open Source Project	2.2	8	
Refactoring History	Google APIs	Google Inc.	2.2	8	
Run/Debug Settings	DTS Add-On	KYOCERA Corporation	2.2	8	
Task Repository	Real3D Add-On	LGE	2.2	8	
Task Tags	GALAXY Tab Addon	Samsung Electronics Co., Ltd.	2.2	8	Ξ
Validation	Android 2.3.3	Android Open Source Project	2.3.3	10	
WikiText	Google APIs	Google Inc.	2.3.3	10	
	OpenSense SDK for Pho	HTC	2.3.3	10	
	Intel Atom x86 System	Intel Corporation	2.3.3	10	
	DTS Add-On	KYOCERA Corporation	2.3.3	10	
	🔲 Real3D Add-On	LGE	2.3.3	10	
	EDK 2.0	Sony Mobile Communications AB	2.3.3	10	
	Android 3.0	Android Open Source Project	3.0	11	
	Google APIs	Google Inc.	3.0	11	
	Android 3.1	Android Open Source Project	3.1	12	
	Google APIs	Google Inc.	3.1	12	
	OpenSense SDK for Tab	нтс	3.1	12	
	Android 3.2	Android Open Source Project	3.2	13	
	Google APIs	Google Inc	3.2	13	
	Android 4.0	Android Open Source Project	4.0	14	
		Andreid Open Source Project	1.0	10	
	CASIO V-T500/V-N500	CASIO COMPUTER CO., LTD.	4.0.3	15	
					-
?		ОК		Cancel	

Figure 5.7

Next, select Java Build Path.

Press Add External JARs...button in the Libraries tab, and display the file selection dialog.



Figure 5.8

Open the **libs** folder under the SDK, and select all files.

JAR Selection						? 🔀
Look jn:	ibs		*	G 🦻 🖻	ب 🔝 🤊	
My Recent Documents	wk android.jar android_P17.ja jp_casio_vx_fr	amework_sam.jar				
Desktop	jp_casio_vx_hr	amework_system.jar				
My Documents						
My Computer						
	File <u>n</u> ame:	"jp_casio_vx_framework_syst	tem.jar'	"ip_casio	· [<u>O</u> pen
My Network	Files of <u>type</u> :	*.jar;*.zip			· (Cancel

Figure 5.9

Next, open the Order and Export tab, check all the added files, and press OK button to finish.

Properties for SdkBetaLibTe	st	
type filter text	Java Build Path	↓ ↓ ↓
Resource Android Android Lint Preferences Builders	Source Projects Libraries Order and Export Build class path order and exported entries. (Exported entries are contributed to dependent projects)	
Java Build Path	SdkBetaLibTest/src	Цр
Java Code Style Java Compiler		Down
Java Editor Javadoc Location	Grin casjo vx framework sam.jar - C:¥app¥android-SDK¥add-ons¥VX-T500¥libs	Тор
Project References Refactoring History	☑ Jr ip_casio_vx_framework_system.jar - C:¥app¥android-SDK¥add-ons¥VX-T500¥libs	Bottom
Run/Debug Settings Task Repository		Select <u>A</u> ll
Task Tags		Deselect All
Validation WikiText		
۰ III ا		
?	c	K Cancel

Figure 5.10

5.4 Setting Up the Debugging Environment

Set the debugging environment of the application. Note: For the procedure to create the application, refer to Chapter 7Eclipse.

Use the actual terminal of V-T500/V-N500 or the emulator for debugging.

5.4.1 Setting the Debug Configuration with Terminal



Select Debug Configurations... from the Run menu of Eclipse.

Figure 5.11

Select the Android tab, and enter the debugging project name in Project.

Debug Configurations		
Create, manage, and run configuration	15	1
Android Application		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
	Name: CASIO VY-T500	
type filter text	Android Target Common	
Android Application		
C Android4.0.3XGA	SdkBetaLibTest	Browse
Tr Android JUnit Test	- Launch Action:	
Java Applet	Launch Default Activity	
🗊 Java Application	© Launch:	~
Ju JUnit	Do Nothing	
Remote Java Application		
Ju Task Context Test		

Figure 5.12

Switch to the Target tab, select Always prompt to pick device, and close the dialog with the Close button.

	Android [Target Common						
	-Deployment Target Selecti	en Mede					- 🔺
	Always prompt to pick	device					
	C Launch on all compatib	e devices/AVD's					
	Active devices and	AVD's 💌					
C Automatically pick compatible device: Always uses preferred AVD if set below, launches on compatible device/AVD otherwise.							
	Select a preferred Android Virtual Device for deployment:						
	AVD Name	Target Name	Platform	API Level	CPU/ABI	Details	
	AVD Name	Target Name	Platform	API Level	CPU/ABI	Details	

Figure 5.13

Set the USB drier as described in the Chapter 4Connecting V-T500/V-N500 to PC before connecting the actual terminal of **V-T500/V-N500** and the PC.

5.4.2 Setting the Debug Configuration with the Emulator

Select **Debug Configurations** from the **Run** menu of Eclipse in the same way as the actual terminal of **V-T500/V-N500**.

Enter the details of **Android** tab, the debugging project name, in the same way as the actual terminal of **V-T500/V-N500**.

Debug Configurations		
Create, manage, and run configuratio Android Application	ns	Ŕ
Image: Second Secon	Name: CASIO VX-T500 Android Target Common roject: SdkBetaLibTest Launch Action: Launch Default Activity Launch: Do Nothing	Browse
Figure 5.14		

Next, select the Target tab.

Select Automatically pick compatible device:~, and check CASIO_V_T500 in the check box below.

Debug Configurations						— ×
Create, manage, and run configuration	ns					The
Android Application						~~
Image: Second system Image: Second system <th>Name: CASIO VX-T500</th> <th>mmon Mode evices/AVD's</th> <th></th> <th></th> <th></th> <th></th>	Name: CASIO VX-T500	mmon Mode evices/AVD's				
Java Application Junit	Automatically pick compating Select a professed Andre	ible device: Always uses preferre	d AVD if set belo	ow, launches on co	ompatible device/AVD of	therwise.
n2 Maven Build P Remote Java Application Ju Task Context Test	AvD Name Android4.0.3W Android4.0.3W	Target Name Android 4.0.3 Android 4.0.3	Plationm 4.0.3 4.0.3	API Level 15 15	CPO/AB1 ARM (armeabi-v7a) ARM (armeabi-v7a)	Start
	Android4.0.3X	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	
	Emulator launch parameters: If no compatible and active de Network Speed: Full Network Latency: None - Wipe User Data Disable Boot Animation Additional Emulator Comman	evices or AVD's are found, then a	n AVD might be	launched. Provide	e options for the AVD lau	Refresh Manager
Filter matched 10 of 10 items				Apply	Re	<u>v</u> ert
?			C	Debug		Close



Press Close button, and close the dialog.

5.4.3 Debugging Applications

Basic operation of debugging

The debugging method is the same as the normal debugging operation of **Eclipse**. Select **Debug** from the **Run** menu of **Eclipse**, or press F11 to start debugging.

Run	Source Refactor Navigate	Search	Project	Wine
Q	Run		Ctrl+F1	.1
亵	Debug		F1	1
	Run History Run As Run Configurations Debug History Debug As Debug Configurations			• •
⊖ <mark>°</mark> + <u>%</u>	Toggle Breakpoint Toggle Line Breakpoint Toggle Method Breakpoint Toggle Watchpoint Skip All Breakpoints Remove All Breakpoints Add Java Exception Breakpoint	Ct	rl+Shift+	В
Figur	re 5.16			

Debugging by the actual terminal (V-T500/V-N500)

Before debugging, connect the actual terminal to the PC with a USB cable.

Set the USB drier as described in the Chapter 4Connecting V-T500/V-N500 to PC before connecting the actual terminal and the PC.

🚝 Android Device Chooser × Select a device compatible with target Android 4.0.3. Choose a running Android device Debug State Serial Number AVD Name Target asio_computer_co___ltd_-v... N/A 4.0.3 Online Yes C Launch a new Android Virtual Device CPU/ABI AVD Name Target Name Platform API Level Details., No AVD available Start... Refresh Manager... Use same device for future launches ОK Cancel

When **Debug** is selected from the **Run** menu, the screen for selecting the device as shown below is displayed.

Figure 5.17

Select the target device, and press the **OK** button to start debugging.

It is possible to execute debugging by stepping, etc. on the actual terminal by setting breakpoints in the source code.

Precautions for debugging

It is not possible to execute debugging when the debugging application is installed on the actual terminal of V-T500/V-N500. In such a case, uninstall the debugging application on the actual terminal of V-T500/V-N500 before executing debugging.

Debugging with the emulator

When **Debug** is selected, debugging starts on the emulator if an existing emulator is operating, and by starting the emulator newly if no emulator is operating.

It is possible to execute debugging by stepping, etc. on the **V-T500/V-N500** emulator by setting breakpoints in the source code.

6. Emulator

The emulator provides an "environment where basic operation check of the application and source level debugging are possible without the actual terminal of V-N500" to the application developer.

6.1 Software Required

It is possible to use the emulator if you have built the development environment explained above.

6.2 Starting Up the Emulator

6.2.1 How to Start Up the Emulator

Refactor	Win	idow Help		
2 - 😫		New Window New Editor		3 - 🖉
		Open Perspective Show View	+ +	
		Customize Perspective Save Perspective As Reset Perspective Close Perspective Close All Perspectives		
		Navigation	+	
ſ		Android SDK Manager		1
		Rup Android Lint		ų.
		Preferences	ĺ	

Start AVD Manager from the Windows menu of Eclipse.

Figure 6.1

Select CASIO_V_T500 and press the Start button.

VD Name	Target Name	Platform	API Level	CPU/ABI	New
Android4.0WVGA	Android 4.0	4.0	14	ARM (armeabi-v7a)	Edit
Android4.0XGA	Android 4.0	4.0	14	ARM (armeabi-v7a)	Cuit
Android4.0.3WVGA	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	Delet
Android4.0.3WXGA	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	Pona
Android4.0.3XGA	Android 4.0.3	4.0.3	15	ARM (armeabi-v7a)	Гера
CASIO_V_T500	CASIO V-T500/V-N500 (CASIO	4.0.3	15	ARM (armeabi-v7a)	Detai
					Star
					Refre

Figure 6.2

The dialog below is displayed. Press Launch as is.

😂 Laur	ich Options	X
Skin:	WVGA800 (1	280x800)
Dens	ity: Medium (160)
Sc.	ale display to real	size
	Screen Size (in): Monitor dpi:	3 96 ?
	Scale:	default
🗖 W	i pe user data unch from snapsh	ot
Sā	ive to snapshot	
	Launch	Cancel

Figure 6.3

The dialog below is displayed, and the process of start up is displayed.



Figure 6.4

The emulator starts.



Figure 6.5

6.3 Using the Emulator

6.3.1 V- T500/V-N500 Emulator

Key input function

The key input function equivalent of the actual terminal (**V-T500/V-N500**) is incorporated. It is possible to use key input by clicking the keys on the screen with a mouse.

Function to save the state

The **V-T500/V-N500** emulator does not have a function to save the state when it finishes. The clock and the file system of the emulator are initialized when it starts up.

7. Eclipse

The application development procedure using **Eclipse** as the development environment is explained in this chapter.

The example is an application that beeps a large-sound buzzer once for a second using the system library. Create this application in a Java programming language.

For the list of libraries provided with the **V-T500/V-N500** basic development kit, refer to the Chapter 1.2 Library Configuration. For the details of the system library, refer to **System Library Manual**.

The example program of this chapter does not operate because the emulator does not have a large sound buzzer. Check the operation on the actual terminal of **V-T500/V-N500**.

7.1 Developing with System Library

In this section, the GUI application that gets the model name of terminal in Java is explained.



The confirmation dialog is displayed when it operates normally.

Figure 7.1

1. Create a new Android application on Eclipse.

+N
rl

Figure 7.2

The application name is the name of the application created. This name is displayed on the menu of Android. It is named **SDKSample1** in this example.

The project name is the name of the project created in the workspace of **Eclipse**. Two or more projects of the same name cannot exist in the workspace. The project name is **SDKSample1** in this example.

The package name is the name to avoid collision of the class names of Java during execution. Since it is desirable to have a unique name in the world, the domain name of the developer is normally used.

Note that the hierarchy of the package becomes lower in the order of left \rightarrow right with Java, which is opposite the domain description by URL.

It is named **jp.casio.vx.framwork.sdksample1** in this example.

All the other settings are default in this example.

New Android App				
New Android Application				
Creates a new Android	Application U			
Application Namou	CDV/Complet			
Application Name.				
Project Name:				
Package Name:	jp.casio.vx.framework.sdksample1			
Build SDK:	Android 4.0.3 (API 15)			
Minimum Required SDK:	API 8: Android 2.2 (Froyo)			
Create custom launche	er icon			
Mark this project as a	library			
Create Project in work	ispace			
Location:	C:¥app¥eclipse¥workspace¥SDKSample1 Browse			
The package name r It is typically not sho application are consi This is typically the r	nust be a unique identifier for your application. wyn to users, but it *must* stay the same for the lifetime of your application; it is how multiple versions of the same dered the "same app". reverse domain name of your organization plus one or more application identifiers, and it must be a valid Java package			
•	< <u>B</u> ack <u>Next ></u> <u>Finish</u> Cancel			
Figure 73				

Figure 7.3

Next, set the launcher icon. Select the typical Android icon in this example.

New Android App	- • •
Configure Launcher Icon Configure the attributes of the icon set	0
Foreground: Image Clipart Text Choose Text V Trim Surrounding Blank Space Additional Padding: Foreground Scaling: Crop Center Shape None Square Circle Background Color: Foreground Color:	Preview: Idpi: mdpi: hdpi: 0% xhdpi: vhdpi: 0%
Image: Second	Cancel

Figure 7.4

Next, set the activity.

Activity is one of the Java classes in specific. It works as units of the user interface of the Android application,

and display, response to events, etc. are included.

The title is changed to **V-T500 System Lib sample** in this example. The title is displayed as the screen title when executing an application or the menu title.

and the second second label the second secon				
New Blank Activity				
Creates a new blank ac	tivity, with optional inner na	ivigation.		
Activity Name® Mai	nActivity			(_]
Layout Name® acti	ivity_main			
Navigation Type	10		•	
Hierarchical Parent				
Title® V-T	500 System Lib sample			
	,			
• • • • • • • • • • • • • • • • • • •	to use for the activity			
8 The type of havigation	to use for the activity			
3	< <u>B</u> ack	<u>N</u> ext >	<u>F</u> inish	Cancel

Figure 7.5

2. Set the Android project.

When a new project is created, follow the procedure described in Chapter 5.3Product Overview first. If this process is omitted, an error occurs in a subsequent process.

		New Go Into	•
SDKSample1		Open Type Hierarchy Show In	F4 Alt+Shift+W ▸
 gen [Generated Java Files] Android 4.0.3 Android Dependencies 		Copy Copy Qualified Name Paste Delete	Ctrl+C Ctrl+V Delete
b assets b libs b res c drawable-hdpi	<u>\$</u> _	Remove from Context Build Path Source Refactor	Ctrl+Alt+Shift+Down Alt+Shift+S Alt+Shift+T
 drawable-ldpi drawable-mdpi drawable-xhdpi layout menu 	21 23 89	Import Export Build Project Refresh	F5
 values dimens.xml strings.xml 		Close Project Close Unrelated Projects Assign Working Sets Run As	•
 ☑ styles.xml ➢ values-large ➢ values-v11 ➢ values-v14 		Debug As Validate Team Compare With	*
AndroidManifest.xml ic_launcher-web.png proguard-project.txt		Restore from Local History Android Tools Configure	*
project.properties		Properties	Alt+Enter

For the operations after this, refer to the Chapter 5.3Setting Android Project

Figure 7.6

3. Create a screen.

When a project is created, the edit display as shown below is displayed at first. It becomes the screen of the application.

First, delete the text "Hello world!" displayed at the center.

Next, drag & drop the grey icon which indicates **Button** from **Form Widgets** in **Palette** on the left into the screen.



Figure 7.7

Paste the button on the screen, and adjust the size and the position.



Figure 7.8

Next, create a resource of the character strings.

Open the project of **SDKSample1** from **Package Explorer** on the left side of the **Eclipse** screen. When you point res \rightarrow values, the file "**strings.xml**" appears as shown in the figure below, then double-click on it.



Figure 7.9

in the

The resource editing dialog as shown in the figure below is displayed. First, select unnecessary **hello_world**, and press the **Remove** button.

🚔 Android Resources (default)		
Resources Elements ⑤ ⑥ ⑨ ⑤	1 S I Az	
 S app_name (String) S hello_world (String) menu_settings (String) 	Add Remove	
S title_activity_main (String) Select and remove.	Up Down	

Figure 7.10

Next, press the **Add** button.

The dialog below is displayed. Select String.

9		
Create a new element at the top	evel, in Resources	5.
Color		
(D) Dimension		
(D) Drawable		
Integer Array		
Item		
(S) String		
S String Array		
Style/Theme		
	ОК	Cancel

Figure 7.11

Set the name and the value in the new string resource. The name "**button_title**" and the value "**Get model name!**" are set in this example.

Android Resources (default)	
sources Elements (COULDER)	S I S I Az Attributes for button_title (String) Add @Strings@, with optional simple formattile Add retrieved as resources. You can add formusing three standard HTML tags: b, i, an apostrophe or a quote in your string, you enclose the whole string in the other kind Up Name button_title Down Value* Get model name!
(S) app_name (String) (S) menu_settings (String) (S) title_activity_main (String) (S) button_title (String)	Add retrieved as resources. You can a using three standard HTML tags: t apostrophe or a quote in your strienclose the whole string in the oth Up Name button_title Down Get model name!

Figure 7.12

When editing is finished, select **Save** from the **File** menu, and save the change.

Change the details of the text displayed on the button in the **Text** in **Properties** at the lower right while selecting the button.

Enter "@string/button_title" in this example. When it is entered, the display on the button changes to "Get model name!".

It indicates the text resource "button_title" that you have just created.



Figure 7.13

Next, enter "onClick" in On Click in Properties in the same way.

It is the name of the method in the activity that is executed when the button is pressed. (It is created later.)



Figure 7.14

4. Create a program.

Next, open the source of the activity.

Open in the order of SDKSample1 \rightarrow src \rightarrow jp.casio.vx.framework.sdksample1 from Package Explorer, and

double-click MainActivity.java.

	⊿ 😂 SDKSample1
	🔺 🚰 src
	a 🔠 jp.casio.vx.framework.sdksample1
	🖻 🔬 MainActivity.java
1	Ben [Generated Java Files]
	Android 4.0.3
	Android Dependencies
	📴 assets
	> 📴 bin
	Þ 📴 libs
	> 🚰 res
	AndroidManifest.xml
	💽 ic_launcher-web.png
	📄 proguard-project.txt
	project.properties

Figure 7.15

Correct **MainActivity.java** as shown below. (For the specifications of the **System library** currently used, refer to the manual of the library.)

package jp.casio.vx.framework.sdksample1;
import android.os.Bundle;
import android.app.Activity;
import android.app.AlertDialog;
import android.view.Menu;
import android.content.Context;
import android.view.View;
import jp.casio.vx.framework.system.Api;
public class MainActivity extends Activity implements View.OnClickListener {
@Override
<pre>public void onCreate(Bundle savedInstanceState) {</pre>
super.onCreate(savedInstanceState);
setContentView(R.layout.activity_main);
}
@Override
public boolean onCreateOptionsMenu(Menu menu) {
getMenuInflater().inflate(R.menu.activity_main, menu);

```
return true;
}
public void onClick(View view)
{
      jp.casio.vx.framework.system.Api sysapi
                                                 = new jp.casio.vx.framework.system.Api(this);
                 //Get model name of terminal
                 String modelName = sysapi.getModelNameString();
                 if(modelName.length() > 0) {
                            showDialog(this,"SDK Sample",
                                                 "The model name of this terminal is "+ modelName);
                 }else {
                            showDialog(this,"SDK Sample","Can't get model name.");
                 }
}
private static void showDialog(Context context, String title, String text)
{
      AlertDialog.Builder ad=new AlertDialog.Builder(context);
      ad.setTitle(title);
      ad.setMessage(text);
      ad.setPositiveButton("OK", null);
      ad.show();
}
```

Save the source by Save All of the File menu after entering the source.

File	Edit Run	Source	Navigate	Search	Project	Refactor V
	New				Alt	+Shift+N ►
	Open File					
	Close					Ctrl+W
	Close All				Ctrl	+Shift+W
	Save					Ctrl+S
	Save As					
R	Save All				Ctr	l+Shift+S
	Revert					
	Move					
	Rename					

Figure 7.16

After saving the source, execute build. When any error occurs, correct as necessary.



Figure 7.17

After the build, debug as necessary. For the details of debugging, refer to Chapter 5.4Product Overview. And since the beep of the buzzer is the main function in this sample, it is recommended to debug on the actual terminal of **V-T500/V-N500**.

5. Incorporate the application into the terminal.

Fight-click SDKSample1 on the Package Explorer, and select Android Tools \rightarrow Export Signed Application Package.

	New Go Into	Þ		
	Open in New Window Open Type Hierarchy Show In	F4 Alt+Shift+W ▸		
	Copy Copy Qualified Name	Ctrl+C		
×	Delete	Delete		
2	Remove from Context Build Path Source	Ctrl+Alt+Shift+Down ► Alt+Shift+S		
	Refactor	Alt+Shift+T ►		
2	Import Export			
Ŷ	Build Project Refresh Close Project	F5	Ju d	New Test Project New Resource File
	Assian Working Sets			Export Signed Application Package
	Run As Debug As Validate Team) } }	÷	Export Unsigned Application Package Display dex bytecode Rename Application Package Add Support Library Fix Project Properties
	Restore from Local History			Run Lint: Check for Common Errors
	Android Tools	•		Clear Lint Markers
	Configure	•		
	Properties	Alt+Enter		

Figure 7.18

The dialog below is displayed. Press **Next >**, and proceed to the next step.

Export Android Application	- • •
Project Checks Performs a set of checks to make sure the application can be exported.	0
Select the project to export:	
Project: SDKSample1	Browse
No errors found. Click Next.	
Image: Next > Einish	ancel

Figure 7.19

The dialog below is displayed.

This is setting of the certificate file to add a signature to Android applications.

The certificate file can be created here or select an existing one.

When you create a new one, set a password of at least 6 letters.

😂 Export A	ndroid Application	- • •
Keystore s	election	0
🔘 Use exis	sting keystore	
Oreate r	new keystore	
Location:	C:¥app¥eclipse¥workspace¥memop0	Browse
Password:	•••••	
Confirm:	•••••	
?	< Back Next > Einish Can	cel

Figure 7.20

When you create a new key, the screen below is displayed. Input all items.

Export Android Appl	ication
Key Creation	
Alias:	casio
Password:	•••••
Confirm:	•••••
Validity (years):	25
First and Last Name:	Casio Android
Organizational Unit:	casio
Organization:	casio
City or Locality:	Tokyo
?	< <u>Back</u> <u>Next</u> > <u>Finish</u> Cancel

Figure 7.21

Table 7.1

Item	Description	
Alias	Alias of the signature.	
Password	Password.	
Confirm	Enter the password for confirmation.	
Validity(years)	Specify the expiration in years. Specify 25 or more.	
First and Last Name	The name of the creator.	
Organization Unit	The name of the organization unit.	
Organization	The name of the organization.	
City of Locality	The name of the city.	

Then, the dialog below is displayed.

Check the details of the **Destination APK file**, and finish with **<u>F</u>inish** button.

Export Android Application	
Destination and key/certificate checks	0
Destination APK file: C:¥app¥eclipse¥workspace¥SDKSample1.apk	Browse
Certificate expires in 25 years.	
WARNING: destination file already exists	
Back Next > Einish C	ancel

Figure 7.22

The package file (apk file) of the application is created.

	, ,	فارد فا فارد الراف	
HelloAndroid.apk	2012/06/28 1:57	APK ファイル	67 KB
📄 memop	2012/06/26 18:14	ファイル	2 KB
MemoPaint.apk	2012/06/26 18:14	APK ファイル	60 KB
SamLibrary.apk	2012/08/14 5:17	APK ファイル	23 KB
SdkBetaLibTest.apk	2012/08/17 17:52	APK ファイル	139 KB
SDKSample1.apk	2012/08/17 19:06	APK ファイル	137 KB
🗉 testlib.jar	2012/06/28 1:56	Executable Jar	35 KB

Figure 7.23

There are two methods of installing this file on the actual terminal of V-T500/V-N500.

(1) Copy in the SD card, and install on the actual terminal of V-T500/V-N500.

Copy the created apk file from the PC to the SC card.

Set the SD card in the SD card slot of the actual terminal of V-T500/V-N500, and close the SD card cover tightly.

Next, start up the File Manager on the actual terminal of V-T500/V-N500.



Figure 7.24

Memory card is displayed as shown below, and tap on it.

If Memory card does not appear, mount the SD card from Storage of the Setting tool.

File Manager	
	Directory: /mnt/sdcard
Internal storage	Alarms
SD card	
	Cownload



The copied apk file is in the memory card. Tap on it, too.



Figure 7.26

The dialog below is displayed. Select Install button.



Figure 7.27

Installation of the application is finished.



Figure 7.28

After this, the application can be executed on the actual terminal of **V-T500/V-N500**. Execute the application from the menu, and check the operation.

(2) Install from the PC side using the **ADB** command.

First, connect the terminal and the PC using a USB cable. (The mini B USB connector comes to the terminal side.)

For details of connection, refer to Chapter 4Product Overview.

Open the command prompt, and move the current folder to the location where the apk file exist. The installation command is as shown below.

adb install -r SDKSample1.apk

The result of execution becomes as follows:

C:¥adps¥APK>adb install -r SDKSample1.apk
2191 KB/s (140264 bytes in 0.062s)
pkg: /data/local/tmp/SDKSample1.apk
Success
C:¥adps¥APK>

Figure 7.29

After this, the application can be executed on the terminal. Execute the application from the menu, and check the operation.

8. Kitting

Installation of the application on the terminal, initial settings and update of the OS are described in this section.

8.1 New Configuration of System

The methods of making new settings and installing the application on the terminal are described.

8.1.1 Flow of New Configuration



Figure 8.1

8.1.2 Design the system

Depending on the usage of the terminal, design the system to be required and application software to install. It's recommended to design system with following points of view.

- Design for all terminals
- Design for each terminal

8.1.3 Set Environment

Make environment setting of the terminal.

There settings for the environment setting of the terminal are as follows:

- 1) Environment setting by the **Settings** tool
- 2) Setting the security for the administrator
- 3) Setting the security for general users
- 4) Setting the Job Menu

The settings above are all arbitrary settings. Make setting as necessary.

1) Environment setting by the **Settings** tool

Basically, they can be used with the preset values. For the setting of some items such as wireless setting, set according to the usage. The preset values of the terminal are described in Appendix.

2) Setting the security for the administrator

Set the password for the administrator.

The password for the administrator is used for authentication for using a secure function. It is also possible to set whether the user data should be deleted when authentication fails. This setting is made using the **Security Settings** tool.

3) Setting the security for general users

Set the authentication information (user/password) for general users.

Multiple authentication information can be registered.

The authentication information is used for log-in authentication when using a terminal and administration of **Job Menu**.

It is also possible to set whether the user data should be deleted when authentication fails. This setting is made using the **Account Edit** tool.

4) Setting the Job Menu

This is the menu displayed instead of the Android standard home application. It is possible to configure the menu configuration per user by associating with the general user mentioned above.

Create the definition of the menu using the tool (menu editor) that operates on the PC (Windows).

8.1.4 Install Application Software

This section explains about the method to install the application on the terminal and configure the file used on the application.

1) Registration method

The method of registering the application and the configuration file to the terminal is described below.

Registration using the flash memory

2) Registration using the flash memory

Facilities required

External storage medium: SD card or USB memory

Procedure

(1) Save the application (apk file) and the configuration file in the external storage medium.

(2) Set the external storage medium on the terminal.

(3) Start up the **File Manager**.

If the external storage medium set on the terminal does not appear on the **File Manager**, open the **Storage** menu of the **Settings** tool, and mount the external storage medium.

(4) Install the application (apk file).

Tap the application (apk file) on the file manager, and install according to the displayed messages.

(5) Install the configuration file.

Press and hold the configuration file on the **File Manager**. When it is held long, the **Edit** menu is displayed. Select **Copy** from the **Edit** menu. Move to the folder to install by the file manager. When it is moved to the folder to install, select the **Paste** menu.

8.1.5 Replicate Environment to Other Terminals

The method of replicating the configured environment on another terminal (slave unit) after configuring a master unit is described in this section.

Note that it is necessary to acquire a license for each copy of software when replicating the software.

1) Replication method

When replicating a configured environment of a terminal to another terminal can be conducted in the following method.

It is possible to register in any method.

- Replication of the environment using the **Backup/Restore** tool
- Replication of the environment using the Copy Devices tool between master units

2) Details of replication

The details that can be replicated by the methods above are as listed below.

Details that can be replicated

- (1) Environment setting set by the **Setting** tool
- (2) Security setting for the administrator
- (3) Security setting for general users
- (4) **Job menu** setting
- (5) The installed applications and configuration files (under the /data folder) Note: It's possible to replicate only by using **Copy Devices** tool.

3) Replication of the environment using Backup/Restore

Facilities required

External storage medium: SD card or micro SD card

Procedure

Set an external storage medium on the master unit (replication source).
 Open the **Storage** menu of the **Settings** tool, and confirm that the external storage medium is mounted.

If the external storage medium is not mounted, mount it.

(2) Start up the **Backup/Restore** tool of the master unit (replication source) The operation of the **Backup/Restore** tool on the master unit (replication source) is described below. (3) Select the external storage medium to save the backup data in **Option setting**.

(4) Check All items in Backup.

(5) Tap Backup the selected items in Backup.

The backup data is stored in the "**/Backup**" folder in the external storage medium. It is not necessary to create "**/Backup**" in the external storage medium in advance. If there is already a "**/Backup**" folder in the external storage medium, confirm that there is no file under the folder before executing this operation.

(6) When backup is completed, finish the **Backup/Restore** tool.

The description above is the operation of the **Backup/Restore** tool on the master unit (replication source).

(7) Remove the external storage medium from the master unit (replication source).
Open the **Storage** menu of the **Settings** tool, and implement unmount of the external storage medium.
If the external storage medium is removed from the terminal without performing unmount, the external storage medium may be damaged. Make sure to implement unmount.
Remove the external storage medium from the master unit (replication source).

(8) Initialize the slave unit (replication destination). Delete the applications and setting files installed on the slave unit (replication destination), and return the storage to the initial state.

Open the Backup & reset menu of the Settings tool, and execute Factory data reset..

(9) Set an external storage medium on the slave unit (replication destination). Open the Storage menu of the Settings tool, and confirm that the external storage medium is mounted.

If the external storage medium is not mounted, mount it.

(10) Start up the **Backup/Restore** tool of the slave unit (replication destination).

The operation of the Backup/Restore tool on the slave unit (replication destination) is described below.

- (11) In **Option setting** menu of **Backup/Restore** tool, select the external storage medium where the backup data is stored.
- (12) Check **Check All** in **Restore** menu.
- (13) Tap Restore selected items button in Restore menu.
- (14) When restore is completed, finish the **Backup/Restore** tool.

The description above is the operation of the **Backup/Restore** tool on the slave unit (replication destination).

(15) Remove the storage medium from the slave unit (replication destination) Open the **Storage** menu of the **Settings** tool, and implement unmount of the external storage medium. If the external storage medium is removed from the terminal without performing unmount, the external storage medium may be damaged. Make sure to implement unmount. Remove the external storage medium from the slave unit (replication destination).

(16) Restart the slave unit (replication destination).

Press and hold the power supply button long, and shut down the slave unit (replication destination). Press and hold the power supply button, and start up the slave unit (replication destination).

The replication of the environment on another terminal is completed.

4) Replication of the environment using the Copy Devices tool between master units

Facilities required

External storage medium: SD card or micro SD card

The external storage medium above is used for saving the backup data of the master unit (replication source).

If the backup data is stored in the built-in memory internal storage) of the master unit (replication source), the external storage medium is not necessary.

The built-in memory and the external storage medium are called "**storage**" in the following explanation. If each of the built-in memory and the external storage medium should be mentioned clearly, it is described as is.

The destination to transfer the backup data of the slave unit (replication destination) is the same storage as the master unit (replication source).

If an SD card or a micro SD card is used as storage for the backup data, it is necessary to set (mounted) on the terminal in advance on both the master unit (replication source) and the slave unit (replication destination).

Procedure

(1) Start up the **Backup/Restore** tool of the master unit (replication source).

The operation of the **Backup/Restore** tool on the master unit (replication source) is described below.

(2) Select the storage to save the backup data in **Option setting**.

(3) Check All items in Backup.

(4) Tap Backup selected items in Backup menu.

The backup data is stored in the "**/Backup**" folder in the storage. It is not necessary to create "**/Backup**" in the storage in advance. If there is already a "**/Backup**" folder in the storage, the backup data is deleted.

(5) When backup is completed, finish the **Backup/Restore** tool.

The description above is the operation of the Backup/Restore tool on the master unit (replication source).

(6) Start up the **Settings** tool on the master unit (replication source), and enable WiFi-Direct in the **More...** menu.

- (7) Start up the **Copy Devices** tool on the master units (replication source).
- (8) Select 2. Sender mode of the Copy Devices tool on the master units (replication source).
- (9) Start up the **Settings** tool on the slave unit (replication destination), and enable WiFi-Direct in the **More...** menu.
- (10) Start up the **Copy Devices** tool on the slave unit (replication destination).
- (11) Select 1. Receiver mode of the Copy Devices tool on the slave unit (replication destination).

Repeat Steps (9), (10) and (11) for all slave units (replication destinations).

- (12) Select Start of the Copy Devices tool on the slave unit (replication destination).
 In the first attempt, make sure to select Start of the Copy Devices tool on the slave unit (replication destination) before selecting Start of the Copy Devices tool on the master unit (replication source).
 When Start is selected and replication starts, the background color of the Copy Devices tool on slave units (replication destination) becomes green.
- (13) Select Start of the Copy Devices tool on the master unit (replication source). When Start is selected and replication starts, the background color of the Copy Devices tool on the master units (replication source) becomes blue.

Repeat Step (12) for all slave units (replication destinations). It's possible to add slave unit (replication destination) during replication.

(14) Execute restore of the backup data on the slave unit (replication destination), and restart it. When it's completed to transfer the backup data to the slave unit (replication destination), the background color of the **Copy Devices** tool on the slave unit (replication destination) becomes orange.

Then, the dialog to inform the completion of receipt and ask to execute restore and reset is appeared. Select **Yes** in this dialog.

(15) Finish the Copy Devices tool on the master units of the master unit (replication source). When replication of the environment on the prepared slave units (replication destinations) is completed, select Finish in the Copy Devices tool on the master unit, and finish the Copy Devices tool on the master unit.

The replication of the environment to other terminals is completed.

Precautions

If there is any other device that is the group owner of WiFi-Direct nearby, the slave unit (replication destination) recognizes it as the master unit (replication source), and does not operate correctly. When using the **Copy Devices** tool, confirm there is no such device nearby before use.

8.1.6 Set Specific Environment of Each Terminal

When configuration of the terminal common environment is finished, perform each terminal-specific environment.

The environments that may be set separately on each terminal are as follows:

There are some environments that have to be set additionally according to the operation and the usage other than the following:

- Mail setting
- WAN setting
- WLAN (in case of fixed IP)
- Security setting for the administrator
- Security setting for general users

9. Appendix Default Values of the Setting

The initial values of the setting are described below.

WIRELESS & NETWORKS

The connection to the network and the devices using Wi-Fi, Bluetooth, mobile, network and USB connection is set and managed.

It is also possible to set the connection between the tablet and a virtual private network (VPN), connect to the Internet with another device via the data communication of the tablet, and turn off all wireless communication by switching to in airplane mode.

Table 9.1

Item		Default Value
Wi-Fi		OFF
Bluetooth		OFF
Data usage		ON
More	Airplane mode	OFF
	VPN	-
	Tethering & portable hotspot	-
	NFC	ON
	Android beam	OFF
	Wi-Fi Direct	OFF
	Wi-Fi Direct	-
	(Set up peer-to-peer connectivity)	
	Mobile networks	-

■ DEVICE

It is possible to set the sound and the display, and check the state of the storage, the battery and the applications.

The grayed-out items are used for confirmation of the state, and they are not the setting items.

Table 9.2

	Item	Default Values
Sound	Volumes	Prescribed value
	Default notification	Pixie Dust
	Vibrate and ring	OFF
	Touch sounds	ON
	Screen lock sound	ON
	Vibrate on touch	ON
Display	Brightness	Prescribed value
	Wallpaper	Prescribed value
	Auto-rotate screen	ON
	Sleep	After 1 minutes of inactivity
	Font size	Normal
Storage		
Battery		
Apps		

■ PERSONAL

The settings related to usage of users and how to use such as various security settings are performed. The grayed-out items are used for confirmation of the state, and they are not the setting items.

Item Accounts & sync		Default Value ON	
	GPS satelites	ON	
Security	Screen lock	Slide	
	Owner info	-	
	Encrypt tablet	-	
	Set up SIM card lock	Lock SIM card	
	Make passwords visible	ON	
	Device administrators		
	Unknown sources	OFF	
	Trusted credentials		
	Install from SD card		
	Clear credentials		
Language and input	Language	Japanese (Japanese model)	
		English (Non Japanese model)	
	Spelling correctioin	ON	
	Personal dictionary	-	
	Android keyboard	Japanese IME (Japanese model)	
		Android keyboard (Non	
		Japanese model)	
	Text-to-speech output	Pico TTS (ON)	
	Pointer speed	Prescribed value	
Backup and reset	Initialization of the data		

Table 9.3

■ SYSTEM

The settings of date and time and the settings for developers are performed. The grayed-out items are used for confirmation of the state, and they are not the setting items.

Item		Default Value
Date & time	Automatic date & time	ON
	Automatic time zone	ON
	Set date	Impossible to change
	Set time	Impossible to change
	Select time zone	Impossible to change
	Use 24-hour format	ON
	Select date format	Regional
Accessibility	Large text	OFF
	Auto-rotate screen	ON
	Speak password	OFF
	Touch & hold delay	Short
	Install web scripts	Not allowed
Developer	USB debugging	ON
options	Development device ID	
	Stay awake	OFF
	Allow mock locations	OFF
	HDCP checking	-
	Desktop backup password	OFF
	Strict mode enabled	OFF
	Pointer location	OFF
	Show touches	OFF
	Show screen updates	OFF
	Show CPU usage	OFF
	Force GPU rendering	OFF
	Window animation scale	Animation scale 1x
	Transition animation	Animation scale 1x
	Don't keep activities	OFF
	Background process limit	Standard limit
	Show all ANRs	OFF