Vanstone SmartPOS API Programming Manual

V2.00

Content

1. Revision History

Date	Version	By	Comments
2018.4.28	V1.00	Abel Zhang	Initial draft
2019.4.3	V1.01	Tina Liu	Add DUPKT
2019.5.10	V2.00	Abel Zhang	Reformatted.

2. Overview

This document demonstrates the API interfaces for Vanstone SmartPOS terminals. Software developers should use this document as a reference while developing their own applications using Vanstone Android SDK. Currently the following device types are supported:

- A90
- A70
- A70-SV

Unless otherwise specified, the topics covered in this document are compatible with all the supported device types. For functions dedicated to specific device type, there will be a hint to show such kind of restrictions.

For standard Android components, please refer to official Android documents for more detail. This document only describes functions specific to Vanstone SmartPOS terminals.

This document may be obsolete without official announcement, please contact our technical support for the most up-to-date revision.

3. Core Package – Interfaces (com.vanstone.trans.api)

3.1. Class PrinterApi

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<uses-permission android:name="android.permission.CLOUDPOS_PRINTER" />

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Name	Value	Note
ENCODING_UTF8	3	Printer encoding definitions.
ENCODING_BGK	4	
LANG_CH	0	Printer language definitions
LANG_PERSIAN	1	
LANG_ENGLISH	2	
LANG_FRENCH	3	
LANG_RUSSIAN	4	
LANG_SPANISH	5	
LANG_PORTUGUESE	6	

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3.1.3.1. printEnd_Api

Prototype	public static int printEnd_Api()
Function	Stop printer, and power off the printer module.
Input	None
Output	None
Returns	1-Success
	< 0-Failure
Note	none

3.1.3.2. printQueryStatus_Api

Prototype	public static int printQueryStatus_Api()

Function	Query printer status
Input	None
Output	None
Returns	1-successful <0-open failed
Note	None

3.1.3.3. printPaperFeed_Api

Prototype	public static int printPaperFeed_Api(int pixel)
Function	Take the paper and return the paper. The unit is to print pixel, corresponding to the actual minimum length accuracy is.
Input	Pixel - [in] paper or back paper length, range [0-8000], unit pixel.
Output	None
Returns	1-successful <0-open failed
Note	None

3.1.3.4. printSetTextSize_Api

Prototype	public static int printSetTextSize_Api(int textSize)
Function	Set text font size, range (0,128) pass negative number back to PRINTER_INVALID_PARAM
Input	textSize - [in] Font size range (0,128), value must be greater than 0
Output	None
Returns	1-successful <0-open failed
Note	None

3.1.3.5. printSetBlodText_Api

Prototype	public static void printSetBlodText_Api(boolean isBold)

Function	Set whether the text is bold
Input	isBold - [in] true, bold; false, not bold
Output	None
Returns	None
Note	None

3.1.3.6. printGetTextSize_Api

Prototype	public static int printGetTextSize_Api()
Function	Get the font size
Input	None
Output	None
Returns	Font size value
Note	None

3.1.3.7. printSetLineThrough_Api

Prototype	public static void printSetLineThrough_Api(boolean isLineThrough)
Function	Set whether the text is underlined
Input	isLineThrough - [in] true, underlined; false, no underline
Output	None
Returns	None
Note	None

3.1.3.8. printSetItalic_Api

Prototype	public static void printSetItalic_Api(float value)
Function	Set italic formatting. The degree of tilt is controlled by the parameter value. The general value of -0.3f is a good italic effect
Input	Value - [in] Tilt and direction control. Less than 0 is tilted to the left; greater than 0 is tilted to the right. The larger the value, the more obvious the tilt effect. The general value of -0.3f is a good italic effect
Output	None
Returns	None
Note	None

3.1.3.9. printSetAlign_Api

Prototype	public static void printSetAlign_Api(int value)
Function	Set the alignment of the printer
Input	Value - [in] Alignment, left-justified by default, uses the default left alignment when using a value other than a system-defined constant. 0-Left 1 - Center 2 - Right
Output	None
Returns	None
Note	None

3.1.3.10. printSetGray_Api

Prototype	public static void printSetGray_Api(int gray)
Function	Set the printer's print grayscale
Input	Gray - [in] Print grayscale, 0-10 levels, step by step. Out of range restores to the default value of 5.
Output	None
Returns	None
Note	None

3.1.3.11. printAddText_Api

Prototype	public static void printAddText_Api(int font, int align, java.lang.String text)
Function	Adds a line of printed text in the specified format. The maximum number of lines added at a time is 24 fonts and 85 lines. When text and graphic mixes are added, fewer lines can be added. Parts beyond buff do not print
Input	Font - [in] font, 0 small, 1 medium, 2 large Align - [in] Alignment, left-aligned by default, 0 left, 1 in, 2 right Text - [in] print text
Output	none
Returns	None
Note	Automatic wrap

3.1.3.12. printAddBarCode_Api

Prototype	public static void printAddBarCode_Api(int align, int width, int height, boolean isShowtext, java.lang.String barcode, String code)
Function	Add print bar code
Input	Align - [in] Alignment, left-aligned by default, 0 left, 1 in, 2 right Width - [in] Width Height - [in] height isShowtext - [in] Whether to display the word under the bar code Barcode - [in] barcode content Code- [in] `AZTEC,CODABAR,CODE_39,CODE_93,CODE_128 DATA_MATRIX,EAN_8,EAN_13,ITF,MAXICODE,PDF_417,QR_CODE,RSS_14, RSS_EXPANDED,UPC_A, UPC_E,UPC_EAN_EXTENSION`
Output	None

Returns	None
Note	None

3.1.3.13. printAddBarCode_Api

Prototype	public static void printAddBarCode_Api(int align, int width, int height, java.lang.String barcode)
Function	Add print bar code
Input	Align - [in] Alignment, left-aligned by default, 0 left, 1 in, 2 right Width - [in] Width Height - [in] height Barcode - [in] barcode content
Output	None
Returns	None
Note	None

3.1.3.14. printAddBarCode_Api

Prototype	public static void printAddBarCode_Api(int align, int width, int height, boolean isShowtext, java.lang.String barcode)
Function	Add print bar code
Input	Align - [in] Alignment, left-aligned by default, 0 left, 1 in, 2 right Width - [in] Width Height - [in] height isShowtext - [in] Whether to display the word under the bar code

	Barcode - [in] barcode content
Output	None
Returns	None
Note	None

3.1.3.15. printAddQrCode_Api

Prototype	public static void printAddQrCode_Api(int align,int height,java.lang.String qrCode)
Function	Add print QR code
Input	Align - [in] Alignment Height - [in] The desired height qrCode - [in] QR code content
Output	None
Returns	None
Note	None

3.1.3.16. printAddImage_Api

Prototype	public static void printAddImage_Api(int offset, int width, int height, byte[] imageData)
Function	Add a bitmap picture
Input	Offset - [in] print start position Width - [in] Width Height - [in] height imageData - [in] image data
Output	None
Returns	None
Note	None

3.1.3.17. printFeedLine_Api

Prototype	public static void printFeedLine_Api(int lines)
Function	Printer feeds paper
Input	Lines - [in] number of rows (-100 to 100)
Output	None
Returns	None
Note	None

3.1.3.18. printStartPrint_Api

Prototype	public static void printStartPrint_Api()
Function	Start the printing process
Input	None
Output	None
Returns	None
Note	None

3.1.3.19. PrnStep_Api

Prototype	public static int PrnStep_Api(int pixel)
Function	Take paper and leave paper. The unit is print pixels, corresponding to the actual minimum length accuracy of 0.0625mm
Input	Pixel - [in] The length of the paper feed or exit, range [0-8000], in pixels
Output	None
Returns	1-successful <0-open failed
Note	None

3.1.3.20. PrnStatus_Api

Prototype	public static int PrnStatus_Api(Context context)

Function	Get printer status
Input	Context - [in] context object
Output	None
Returns	0x88-success The 0xaa printer is busy, 0x02-out of paper , 0x03-Printer overheated Other-faults
Note	None

3.1.3.21.PrnStatus_Api

Prototype	public static int PrnStatus_Api()
Function	Get printer status
Input	0x88 success 0xaa printer is busy, 0x02 out of paper , 0x03 Printer overheats Others other errors
Output	None
Returns	None
Note	A white line will be printed when detected

3.1.3.22. PrnClrBuff_Api

Prototype	public static void PrnClrBuff_Api()
Function	Clear print buffer
Input	None
Output	None
Returns	None
Note	None

3.1.3.23. PrnLeftIndSet_Api

Prototype	public static void PrnLeftIndSet_Api(short usLeftIndent)
Function	Set the left border
Input	usLeftIndent - [in] Left border 0-384 points
Output	None
Returns	None
Note	None

3.1.3.24. PrnLineSpaceSet_Api

Prototype	public static void PrnLineSpaceSet_Api(short ucLineSpace, int ucCharSpace)
Function	Set line spacing and character spacing
Input	ucLineSpace - Line Spacing ucCharSpace - Character Spacing 0-127
Output	None
Returns	None
Note	None

3.1.3.25. PrnSpeedSet_Api

Prototype	public static void PrnSpeedSet_Api(int ucSpeed)
Function	Set the print speed
Input	ucSpeed - [in] Print speed value. The value range is 0~23. Press 23 when the input value is greater than 23. The default print speed value is 23.
Output	None
Returns	None
Note	None

3.1.3.26. PrnFontSet_Api

Prototype	public static void PrnFontSet_Api(int Ascii, int CFont, int Zoom)
Function	Set print font
Input	Ascii - [in] The ASCII character height can be 16 (6X16) or 24 (24X24). Other values are illegal. The default value is 24. CFont - [in] Chinese height. The value is 12 (12X12) or 16 (16X16) or 24 (24X24). Other values are illegal. The default value is 24. Zoom - [in] The font enlargement parameter. The default value is 0. among them: Bit0 control ASCII character X (horizontal) direction zoom (0 no zoom, 1 zoom) Bit1 control ASCII character Y (vertical) direction zoom in (0 not zoomed in, 1 zoomed in) Bit4 Control Chinese character X (horizontal) direction zoom (0 not zoomed in, 1 zoomed in) Bit5 control Chinese character Y (vertical) direction zoom (0 not zoomed in, 1 zoomed in)
Output	None
Returns	None
Note	Zooming in is not supported at present.

3.1.3.27. PrnFontSet_Api

Prototype	public static void PrnFontSet_Api(AssetManager assets,java.lang.String fontName)
Function	Set up the print font library
Input	assets- [in] asserts fontName-[in] The absolute path to the print font
Output	None
Returns	None
Note	None

3.1.3.28. PrnHTSet_Api

Prototype	public static void PrnHTSet_Api(int HT)
Function	Set bold body
Input	HT - [in] 0x01 RN_ASCII16X24B|PRN_CH24X24 0x02 PRN_ASCII32X24B|PRN_CH48X48
Output	None
Returns	None
Note	None

3.1.3.29. PrnStr_Api

Prototype	public static int PrnStr_Api(java.lang.String printStr)
Function	Print string
Input	printStr- [in] printed data.
Output	None
Returns	0-success Other-failed
Note	None

3.1.3.30. PrnCheckPrnData_Api

Prototype	public static int PrnCheckPrnData_Api()
Function	Check if the print buffer is empty
Input	None
Output	None
Returns	0-not empty 1-empty
Note	None

3.1.3.31. PrnStart_Api

Prototype	public static int PrnStart_Api()
Function	Start to print
Input	strIng - [in] pointer to print string
Output	None
Returns	0 Successful 1 The printer is busy 2 printer out of paper 3 Printer overheated 4 handle is not in the base 5 Printer malfunction 6 printer does not contain font 7 Print buffer overflow 8 Other errors 9 The print buffer is empty
Note	None

3.1.3.32. GetPrintState

Prototype	public static int GetPrintState()
Function	Get print status
Input	None
Output	None
Returns	Printer Status: Four-Byte Status Code Among them, the first byte is the paperless state, the second byte is the printer temperature, and the third byte is the error code. First byte: HAS_PAPER - with paper; NO_PAPER - no paper Second byte: temperature value, range [-20,70] Third byte: error code, PRINTER_ERROR_OK (0x80), executed correctly PRINTER_ERROR_OVERHEAT: Overheating PRINTER_ERROR_BUF: Data overflow PRINTER_ERROR_BUSY: The printer is busy

Note	public static final int NO_PAPER = 0; public static final int HAS_PAPER = 1; public static final int FORMAT_ALIGN_LEFT = 0; public static final int FORMAT_ALIGN_CENTER = 1; public static final int FORMAT_ALIGN_RIGHT = 2; public static final int PRINTER_PERMISSION_ERROR = -110; public static final int PRINTER_INVALID_PARAM = -503; public static final int PRINTER_HARDWARE_ERROR = -504; public static final int PRINTER_BUFFER_OVERFLOW = -508; public static final int PRINTER_NOT_OPEN = -512; public static final int PRINTER_ERROR_OK = 128; public static final int PRINTER_ERROR_BUSY = 3; public static final int PRINT_ERROR_OVERHEAT = 2; public static final int PRINTER_ERROR_BUF = 4; public static final int PRINTER_ERROR_PAPER = 1;

3.1.3.33. PrnLogo_Api

Prototype	public static int PrnLogo_Api(Bitmap bitmap)
Function	Print picture
Input	Bitmap - [in] bitmap object
Output	None
Returns	0-success Other - failed
Note	None

3.1.3.34. PrnLogo_Api

Prototype	public static int PrnLogo_Api(byte[] Logo, int ArorFnFlag)
Function	Print picture
Input	Logo - [in] 文件名或 LOGO 数组

	ArorFnFlag - [in] 0 打印 LOGO 数组 1 打印 LOGO 文件名的 LOGO 文件
Output	None
Returns	0 Successful 1 Failed to print LOGO file 0xfe print buffer overflow
Note	None

3.1.3.35. PrnSetGray_Api

Prototype	public static int PrnSetGray_Api(int Gray)
Function	Set the printer's print grayscale
Input	Gray - [in] Print grayscale, 0-10 levels, step by step. Out of range restored to silent
Output	None
Returns	0-success Other - failed
Note	None

3.1.3.36. SetLang_Api

Prototype	public static void SetLang_Api(int lang,int encodeType)
Function	set language
Input	Lang - [in] Language type, temporarily not used encodeType - [in] encoding type utf-8 gbk
Output	None
Returns	None
Note	None

3.1.3.37. GetLang_Api

Prototype	public static int GetLang_Api()

Function	Get the current language
Input	None
Output	None
Returns	Current Language
Note	None

3.1.3.38. PrnSetFont_Api

Prototype	public static int PrnSetFont_Api(int font,int style)
Function	Set the print font
Input	Font - [in] 0 - Bold 1 - Song 2 - Imitation Song 3 - Body 4 - Wenquan Yongzheng Style - [in] type 0-normal,1-bold,2-italic
Output	None
Returns	0-success Other - failed
Note	None

3.1.3.39. PrnOpen_Api

Prototype	public static int PrnOpen_Api(java.lang.String str,Context context)
Function	Open the printer
Input	Str - [in] reserved parameters Context - [in] context object
Output	None
Returns	0-success Other - failed
Note	None

3.1.3.40. PrnClose_Api

Prototype	public static void PrnClose_Api()

Function	Turn off the printer
Input	None
Output	None
Returns	None
Note	None

3.1.3.41. PrnCut_Api

Prototype	public static void PrnCut_Api()
Function	Printer cut paper
Input	None
Output	None
Returns	None
Note	None

3.1.3.42. PrnStr_Api

Prototype	public static int PrnStr_Api(byte[] buf)
Function	Print string
Input	Buf - [in] printed data.
Output	None
Returns	0-success Other - failed
Note	None

3.1.3.43. setFontName_Api

Prototype	public static int setFontName_Api(java.lang.String fontPath)
Function	Set print font
Input	fontPath- [in] The absolute path to the print font
Output	None
Returns	0-success

	1- failed
Note	None

3.1.3.44. PrnLessen_Api （deprecated）

Prototype	public static void PrnLessen_Api(boolean b)
Function	
Input	
Output	
Returns	
Note	

3.1.3.45. PrnZoom_Api (deprecated)

Prototype	public static void PrnZoom_Api(boolean b)
Function	
Input	
Output	
Returns	
Note	

3.1.3.46. PrnHTSet_Api (deprecated)

Prototype	public static void PrnHTSet_Api(boolean b)
Function	
Input	
Output	
Returns	
Note	

3.2. Class ApnApi

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3.2.1.1. getSIMInfo(Deprecated)

Prototype	public static String getSIMInfo()
Function	Get MCC and MNC information of SIM card
Input	None
Output	None
Returns	null
Note	None

3.2.1.2. ApnOpen

Prototype	public static int ApnOpen(Context act)
Function	Open apn
Input	act-[in]contaxt
Output	None
Returns	0-success
Note	none

3.2.1.3. ApnOpen

Prototype	public static int ApnOpen()
Function	Open apn
Input	none
Output	None
Returns	0-success
Note	none

3.2.1.4. AddApn_Api

Prototype	public static int AddApn_Api(ApnInfo apnInfo)
Function	Set up the APN

Input	apnInfo-[in]ApnInfo object
Output	None
Returns	0-Success 1-Failed
Note	The newly added apn is the defaule selected apn

3.2.1.5. getGprsAPNId

Prototype	public boolean getGprsAPNId(java.lang.String ApnName, java.lang.String iNumericSTR)
Function	Determines whether the specified name apn exists
Input	ApnName-[in]apn's name iNumericSTR-[in]numberic
Output	None
Returns	true-success false-failed
Note	None

3.2.1.6. updateGprsAPN

Prototype	public static int updateGprsAPN(java.lang.String ApnId, ApnInfo apnInfo)
Function	Update the APN
Input	ApnId-[in]the id of APN apnInfo-[in]ApnInfo object
Output	None
Returns	0-success 1-failed
Note	None

3.2.1.7. SelectedApn_Api

Prototype	public static int SelectedApn_Api(java.lang.String ApnName)

Function	Select an APN
Input	ApnName-[in]the name of APN
Output	None
Returns	0-success 1-failed
Note	None

3.2.1.8. DeleteApn

Prototype	public static int DeleteApn(java.lang.String apnname, java.lang.String numeric)
Function	delete all apns
Input	apnname-[in]the name of APN numeric-[in]numeric
Output	None
Returns	0-success 1-failed
Note	None

3.2.1.9. DeleteApn

Prototype	public static boolean DeleteApn(int apnId)
Function	Removes the APN with the specified ID
Input	apnId-[in]the id of the APN that to be removed
Output	None
Returns	true-success false-failed
Note	None

3.2.1.10.setDefaultApn

Prototype	public static int setDefaultApn(int id)

Function	Set the existing Apn to the default Apn
Input	apnId-[in]the id of the APN
Output	None
Returns	0-success 1-failed
Note	None

3.2.1.11.getPreferApn_Api

Prototype	public static ApnInfo getPreferApn_Api()
Function	Get the current default APN information
Input	None
Output	None
Returns	ApnInfo
Note	None

3.2.1.12.getAllApnList

Prototype	public static List<ApnInfo> getAllApnList()
Function	Get the APN list
Input	None
Output	None
Returns	List<ApnInfo>
Note	None

3.2.1.13.ApnClose(Deprecated)

Prototype	public static int ApnClose()
Function	Close APN
Input	None
Output	None

Returns	0
Note	None

3.3. Class AT24CApi

3.3.1. User Permissions

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Name	Value	Note
AT24C01	1	The type of card
AT24C02	2	
AT24C04	3	
AT24C08	4	
AT24C16	5	
AT24C64	6	

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3.3.3.1. open_Api

Prototype	public static int open_Api()
Function	Power the module
Input	None
Output	None
Returns	0-Success <0-failed
Note	None

3.3.3.2. close_Api

Prototype	public static int close_Api()
Function	Power off the module
Input	None
Output	None
Return	0-Success <0-failed
Note	None

3.3.3.3. read_Api

Prototype	public static int read_Api(int addr, byte[] buffer, int len)
Function	read the card
Input	addr-[in]AT24C02: between 0 and 255 AT24C08: between 0 and 1023 AT24C16: between 0 ~ 2047 buffer-[in]buffer len-[in]AT24C02: between 0 and 8 AT24C08: between 0 and 16 AT24C16:between 0 and 16
Output	none
Return	>0-Success <=0-failed
Note	none

3.3.3.4. write_Api

Prototype	public static int write_Api(int addr, byte[] data, int len)
Function	write the card
Input	addr-[in]AT24C02: between 0 and 255 AT24C08: between 0 and 1023 AT24C16: between 0 ~ 2047 buffer-[in]buffer len-[in]AT24C02: between 0 and 8 AT24C08: between 0 and 16 AT24C16:between 0 and 16
Output	none
Return	0-Success <0-failed
Note	none

3.3.3.5. checkType_Api

Prototype	public static int checkType_Api()
Function	check card type
Input	none
Output	none
Return	1-AT24C01 2-AT24C02 3-AT24C04 4-AT24C08 5-AT24C16 <=0-failed
Note	none

3.4. Class AT88scApi

Name	Value	Note
EPARAM	0xF1	error parameters

3.4.2.1. powerOn_Api

Prototype	public static void PPPowerOn_Api()
Function	Password keyboard power up
Input	None
Output	None
Returns	0-success <0-failed
Note	None

3.4.2.2. IccDetect_Api

Prototype	public static int IccDetect_Api(int CardNo)
Function	Check if the specified card holder has a card.
Input	CardNo - [in] CardNo. : 0 big card holder.
Output	None
Returns	0 has a card inserted 1 No card insertion
Note	None

3.4.2.3. powerDown_Api

Prototype	public static int powerDown_Api()
Function	at88sc card series power off
Input	none
Output	none
Returns	0-success

	<0-failed
Note	None

3.4.2.4. icc102ReadMfrsShortCode_Api

Prototype	public static byte[] icc102ReadMfrsLoneCode_Api()
Function	Read vandor id
Input	none
Output	none
Returns	2-byte vendor code or null
Note	None

3.4.2.5. icc102ReadMfrsLoneCode_Api

Prototype	public static byte[] icc102ReadMfrsLoneCode_Api()
Function	Read vandor id
Input	none
Output	none
Returns	8-byte vendor code or null
Note	None

3.4.2.6. icc102ReadPwdErrorCount_Api

Prototype	public static int icc102ReadPwdErrorCount_Api()
Function	get the acount of password validation errors
Input	none
Output	none
Returns	>=0-the count of errors,between 0x00 and 0x04 <0-error code
Note	None

3.4.2.7. icc102ReadCodeProtectedBlock_Api

Prototype	public static int icc102ReadCodeProtectedBlock_Api(int offset, int len, byte[] buffer)
Function	get the code's protection area, you should make ensure that the result of offset plus len less than 8 or equels to 8
Input	offset-[in]Relative address offset ,between 0x00 and 0x07 len-[in]the length to read,between 0x01 and 0x08 buffer-[in]buffer
Output	none
Returns	0-success <0-errorcode
Note	None

3.4.2.8. icc102ReadTestBlock_Api

Prototype	public static byte[] icc102ReadTestBlock_Api()
Function	get the contents of the test area and return the contents of the two-byte test area
Input	none
Output	none
Returns	two bytes contents of the area or null
Note	None

3.4.2.9. getSCAC_CPZ_Data

Prototype	private static byte[] getSCAC_CPZ_Data(int offset, int len)
Function	Obtain any continuous combination data of SCAC and CPZ region
Input	offset-[in]the offset, between 12 and 21 len-[in]the length of the data to get,10 at most
Output	none
Returns	the datas that got
Note	none

3.4.2.10.get102FZ_IZ_Data

Prototype	private static byte[] get102FZ_IZ_Data(int offset, int len)
Function	Get any continuous combination data of FZ and IZ
Input	offset-[in]the offset len-[in]the length of data to get
Output	none
Returns	the data that got
Note	none

3.4.2.11.get102CardZeroAreaData

Prototype	private static byte[] get102CardZeroAreaData(int offset, int len)
Function	Obtain 0 to 175bit continuous data in 0 region (except SC)
Input	offset-[in]the offset len-[in]the length of data to get
Output	none
Returns	the data that got null means failed
Note	none

3.4.2.12.icc102ReadAppArea_Api

Prototype	public static int icc102ReadAppArea_Api(int appIndex, int offset, int len, byte[] buffer)
Function	Read the application area
Input	appIndex-[in]application area id, 0x00,0x01 and 0x02 are aviliable offset-[in]Relative address migration appIndex == 0:between 0 and 21 appIndex == 1:between 0x00 and 0x3F+6 appIndex == 3:between 0x00 and 0x3F+4 len-[in]the length to read appIndex == 0:between 1 and 22

	appIndex == 1:between 0x01 and 0x40+6 appIndex == 2:between 0x01 and 0x40+4 buffer-[in]buffer
Output	none
Returns	0-success <0-error code
Note	The prefix 0x40 is application area of the corresponding area id and the later is the EZ area of corresponding area id when offset is 1 or 2

3.4.2.13.icc102WriteCardMfrsData_Api

Prototype	public static int icc102WriteCardMfrsData_Api(byte[] data)
Function	Writes 8-byte card vandor id
Input	data-[in]the vandor id
Output	none
Returns	0-success <0:error code
Note	none

3.4.2.14.icc102WriteTestBlock_Api

Prototype	public static int icc102WriteTestBlock_Api(byte[] data)
Function	writes 2-byte test area code
Input	data-[in]the data to write
Output	none
Returns	0-success <0-error code
Note	none

3.4.2.15.icc102WriteCodeProtectedBlock_Api

Prototype	public static int icc102WriteCodeProtectedBlock_Api(int offset, int len, byte[]

	data)
Function	write code’s protected area
Input	offset-[in]Relative address migration,between 0x00 and 0x07 len-[in]the length of data to write,between 0x01 and 0x08 data-[in]the data to write
Output	none
Returns	0-succecss <0-failed
Note	

3.4.2.16.icc102WriteAppArea_Api

Prototype	public static int icc102WriteAppArea_Api(byte appArea, byte addrOffset, byte[] writeData)
Function	write datas to the application area by AT88SC102 chip card
Input	appArea-[in] application area,0x01 or 0x02 can be selected addrOffset-[in]Relative address migration appArea == 0x01:between 0x00 and 0x45 appArea == 0x02:between 0x00 and 0x43 writeData-[in]the data to write,it’s length should between 0x01 and 0x46 when appArea is 0x01 and between 0x00 and 0x44 when appArea is 0x02
Output	none
Returns	0-success <0-error code
Note	The prefix 0x40 is application area of the corresponding area code and and the later is the EZ area of the corresponding area id

3.4.2.17.write102CardZeroData

Prototype	public static int icc102WriteAppArea_Api(byte appArea, byte addrOffset, byte[] writeData)
Function	AT88SC102 chip card write data --- write to application area

Input	appArea-[in]the id of application area, 0x01 or 0x02 addrOffset-[in]Relative address migration, 0x00~0x45/0x00~0x43 writeData-[in]the data to write,length: 0x01~0x46/0x00~0x44
Output	none
Returns	0-success <0 error code
Note	The prefix 0x40 is the area code application area and the following is the area code EZ area

3.4.2.18.icc102VerifyPwd_Api

Prototype	public static int icc102VerifyPwd_Api(byte[] key)
Function	Verify the password by AT88SC102 chip card
Input	key-[in]key
Output	none
Returns	0-success <0-error code
Note	none

3.4.2.19.icc102UpdatePwd_Api

Prototype	public static int icc102UpdatePwd_Api(byte[] key)
Function	update the password by AT88SC102
Input	key-[in]key
Output	none
Returns	0-success <0-error code
Note	none

3.4.2.20.icc102CheckCardType_Api

Prototype	public static int icc102CheckCardType_Api(byte[] cardType)
Function	get the type by AT88SC102
Input	cardType-[in] the type of card,0x0102(two bytes)
Output	none
Returns	0-success <0-error code
Note	none

3.4.2.21.GetEzKey

Prototype	public static int GetEzKey(int zone, int len, byte[] bKey)
Function	Gets the erase key for ez zone
Input	zone-[in]the id of application area,0x01 or 0x02 len-[in]length of data zone == 0x01:between 0x01 and 0x06 zone == 0x02:between 0x01 and 0x04
Output	bKey-[out]the pritate key
Returns	ezkey-success -1-failed
Note	

3.4.2.22.Verify102EzKey_Api

Prototype	public static int Verify102EzKey_Api(int zone, int len, byte[] bKey)
Function	Verify the erase key for ez zone
Input	zone-[in]the id of application area,0x01 or 0x02 len-[in]the length of data zone == 0x01:between 0x01 and 0x06 zone == 0x02:between 0x01 and 0x04 bKey-[in]the key to be verified
Output	none

Returns	0-success else-failed
Note	none

3.4.2.23.EarseEzData_Api

Prototype	public static int EarseEzData_Api(int zone, int offset, int len)
Function	earse the data of application area
Input	zone-[in]the id of application area,0x01 or 0x02 offset-[in]The relative address offset,between 0x00 and 0x3F len-[in]the data's length,between 0x01 and 0x40
Output	none
Returns	0-success <0-error code
Note	none

3.4.2.24.icc102ReadErrorCountBlock_Api

Prototype	public static int icc102ReadErrorCountBlock_Api(byte[] errorCount)
Function	get the data in the password check error count area by AT88SC102 chip card
Input	errorCount-[in]the error conunt data(two bytes)
Output	none
Returns	0-success <0-error code
Note	

3.4.2.25.icc1608Read_Api

Prototype	public static int icc1608Read_Api(byte userArea, byte addr, byte[] readData)
Function	Continuous reading by AT88SC1608
Input	userArea-[in]the id of users area(one byte),between 0x00 and 0x07 addr-[in] address between 0x00 and 0xFF

	readData-[in] the datas to read,its length should be 0x100 at most in users area
Output	none
Returns	>0:the length of datas that read <0:error code
Note	none

3.4.2.26.icc1608Write_Api

Prototype	public static int icc1608Write_Api(byte userArea, byte addr, byte[] writeData)
Function	Continuous writing by AT88SC1608
Input	userArea-[in]the id of users area(one byte),between 0x00 and 0x07 addr-[in]address between 0x00 and 0xFF writeData-[in]the datas to write,its length should bu 0x100 at most in users area
Output	none
Returns	0-success <0:error code
Note	none

3.4.2.27.icc1608VerifyKey_Api

Prototype	public static int icc1608VerifyKey_Api(byte keyMode, byte[] key, byte areaCode)
Function	select the key used for verification
Input	keyMode-[in] the pattern of key, mode 0x00:both the write and read keys exist mode 0x01:just read key exist mode 0x02:just write key exist key-[in] the key,both write an read keys 3 are bytes areaCode-[in] application area id,between 0x00 and 0x07
Output	none
Returns	0-success <0-error code

Note	none

3.4.2.28.icc1608SelectUserArea_Api

Prototype	public static int icc1608SelectUserArea_Api(byte userArea)
Function	select the user area
Input	userArea-[in] user area id,between 0x00 and 0x07
Output	none
Returns	0-success <0-error code
Note	none

3.4.2.29.icc1608Certify_Api

Prototype	public static int icc1608Certify_Api()
Function	AT88SC1608 certify
Input	none
Output	none
Returns	0-success <0-error code
Note	none

3.4.2.30.icc1608CheckCardType_Api

Prototype	public static int icc1608CheckCardType_Api(byte[] cardType)
Function	AT88SC1608 check the type of card
Input	cardType-[in] the type of card,two bytes,0x0402
Output	none
Returns	0-success <0-error code
Note	none

3.4.2.31.Get1608ConfigZoneData

Prototype	public static int Get1608ConfigZoneData(int offset, int len, byte[] data_buffer)
Function	Read the data in the configuration area
Input	offset-[in]The relative address offset, between 0x00 and 0x7F len-[in]the length of configuration area,0x80 at most
Output	data_buffer-[out]datas that read
Returns	>0-the length that has been read <0-error code
Note	none

3.5. Class BmpOper

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3.5.1.1. BmpTurn240To80

Prototype	public static int BmpTurn240To80(byte[] Src, byte[] Dest)
Function	Convert the BMP monochrome image to 240*80
Input	Src-[in]Image data to be converted
Output	Dest-[int]Output converted picture data
Returns	0-success else-failed
Note	use jni to convert

3.5.1.2. ImageLower_Api

Prototype	public static int ImageLower_Api(byte[] Src, byte[] Dest)
Function	Compress the image into monochrome
Input	Src-[in]Image data to be converted
Output	Dest-[in]Output converted picture data
Returns	0-success else-failed
Note	none

3.6.Class ContactlessApi

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<uses-permission android:name="android.permission.CLOUDPOS_CONTACTLESS_CARD"/>

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3.6.3.1.cardAAnticollision_Api

Prototype	public static int cardAAnticollision_Api(byte[] uid, int[] sak)
Function	TYPE A card conflict prevention
Input	none
Output	uid -[out]the uid array sak -[out]adk array,the first value is sak value that outputs from sak 数组首位为 sak 输出的 sak 值
Returns	>0-the length of uid array <0-error code
Note	none

3.6.3.2.cardADeselect_Api

Prototype	public static int cardADeselect_Api()
Function	TYPE A card deselect
Input	none
Output	none
Returns	0-success <0-error code
Note	none

3.6.3.3.cardAPause_Api

Prototype	public static int cardAPause_Api()
Function	TYPE A card pause
Input	none

Output	none
Returns	0-success <0-error code
Note	none

3.6.3.4.cardARats_Api

Prototype	public static int cardARats_Api(int mode, byte[] ats)
Function	TYPE A card answers the request
Input	mode -[in] pattern: 0(has no pps), 1(has ps)
Output	ats -[out]get ats data array
Returns	>0-the length of ats data <0-error code
Note	none

3.6.3.5.cardAReq_Api

Prototype	public static int cardAReq_Api(byte[] ATQA)
Function	TYPE A card request
Input	none
Output	ATQA -[out]the returned data that request by card
Returns	>0-the length of data <0-error code
Note	none

3.6.3.6.cardAWakeUp_Api

Prototype	public static int cardAWakeUp_Api(byte[] ATQA)
Function	TYPE A card request
Input	none
Output	ATQA -[out]the returned data that request by card

Returns	>0-success <0-error code
Note	none

3.6.3.7.closeField_Api

Prototype	public static int closeField_Api()
Function	contactless card closes field strength
Input	none
Output	none
Returns	0-success <0-error code
Note	none

3.6.3.8.M1Decrement_Api

Prototype	public static int M1Decrement_Api(int blockNum, int value)
Function	M1 impairment in Taiwan (excluding transfer)
Input	blockNum -[in]block number value -[in]the value to impairment
Output	none
Returns	0-success <0-error code
Note	none

3.6.3.9.M1Increment_Api

Prototype	public static int M1Increment_Api(int blockNum,int value)
Function	M1 adds value (excluding transfer)
Input	blockNum-[in]the block number value-[in]the value to add
Output	none

Returns	0-success <0-error code
Note	none

3.6.3.10.M1Restore_Api

Prototype	public static int M1Restore_Api(int blockNum)
Function	M1 restore
Input	blockNum-[in]block number
Output	none
Returns	0-success <0-error code
Note	none

3.6.3.11.M1Transfer_Api

Prototype	public static int M1Transfer_Api(int blockNum)
Function	M1 transfer
Input	blockNum-[in]block number
Output	none
Returns	0-success <0-error code
Note	none

3.6.3.12.openField_Api

Prototype	public static int openField_Api()
Function	Contactless card opens field strength
Input	none
Output	none
Returns	0-success <0-error code

Note	none

3.6.3.13.readSecurityMem_Api

Prototype	public static int readSecurityMem_Api(int offset, byte[] dataOut, int dataLen)
Function	get datas from se,5k at most
Input	offset -[in]address offset, >=0 dataLen -[in]the length of data that read
Output	dataOut -[in]the data that output
Returns	>0-the length that read <0-error code
Note	none

3.6.3.14.writeSecurityMem_Api

Prototype	public static int writeSecurityMem_Api(int offset, byte[] data, int dataLen)
Function	write datas to se,5k at most
Input	offset -[in]address offset, >=0 data -[in]the datas to write dataLen -[in]the length of datas
Output	none
Returns	0-success <0-error code
Note	none

3.7.Class FileApi

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3.7.1.1.ChangePrivateProfileSectionName_Api

Prototype	public static int ChangePrivateProfileSectionName_Api(java.lang.String lpOldAppName, java.lang.String lpNewAppName, java.lang.String lpFileName)
Function	Change the ini type configuration file for the entire section information.
Input	lpOldAppName - [in] old section name lpNewAppName - [in] New section name lpFileName - [in]ini file name
Output	None
Returns	0-Failure; 1-Success
Note	none

3.7.1.2.CreateAppFolder

Prototype	public static void CreateAppFolder(java.lang.String FileName)
Function	Create Folde
Input	FileName - folder name containing the path.
Output	None
Returns	None
Note	None

3.7.1.3.DeleteDebug_Api

Prototype	public static int DeleteDebug_Api(java.lang.String fileName)
Function	Delete files or folders
Input	FileName - fileName or folder name, both of which must contain paths.
Output	None
Returns	0: successful

	1: Failed
Note	None

3.7.1.4.DelFile_Api

Prototype	public static int DelFile_Api(java.lang.String FileName)
Function	Delete a file
Input	FileName - folder name containing the path.
Output	None
Returns	0: successful 1: Failed
Note	None

3.7.1.5.FileCRC32

Prototype	public static int FileCRC32(java.lang.String FileName, int len,byte[] lCRC)
Function	Change the entire section information of the ini type configuration file
Input	lpOldAppName - [in] The original section name lpNewAppName - [in] The new section name lpFileName - [in] The ini file name
Output	None
Returns	0- failed 1- success
Note	none

3.7.1.6.getAppDataPath

Prototype	public static java.lang.String getAppDataPath()
Function	Gets the application store data path.
Input	FileName - folder name containing the path.
Output	None
Returns	Stored data path/MNT/sdcard/mtd0 / app/data

Note	None

3.7.1.7.getAppPath

Prototype	public static java.lang.String getAppPath()
Function	Gets the application storage path.
Input	None
Output	None
Returns	Full path such as/MNT /sdcard/mtd0/app.
Note	None

3.7.1.8.getFileNameEncoding

Prototype	public static java.lang.String getFileNameEncoding()
Function	Get the file encoding format GBK utf8, etc.
Input	None
Output	None
Returns	Specific encoding format.
Note	None

3.7.1.9.GetFileSize_Api

Prototype	public static int GetFileSize_Api(java.lang.String FileName)
Function	Get file length
Input	FileName - folder name containing the path.
Output	None
Returns	File length (in byte)
Note	None

3.7.1.10.GetPrivateProfileSection_Api

Prototype	public static int GetPrivateProfileSection_Api(

	java.lang.String lpAppName, byte[] lpReturnedString, java.lang.String lpFileName)
Function	Read the entire section of the ini type configuration file.
Input	lpAppName - [in] section name nSize - [in]lpReturnedString Length lpFileName - [in]ini file name lpReturnedString - [out] Full information for section []
Output	None
Returns	0-Failure; 1-Success
Note	GetPrivateProfileSection_Api("MANAGE" , AppNu , sizeof(AppNu) , MULTITASKINI);

3.7.1.11.GetPrivateProfileString_Api

Prototype	public static int GetPrivateProfileString_Api(java.lang.String lpAppName, java.lang.String lpKeyName, java.lang.String lpDefault, byte[] lpReturnedString, java.lang.String lpFileName)
Function	Read ini type configuration file section information
Input	lpAppName - [in] section name lpKeyName - Configuration information in the [in] section lpDefault - [in] Default value if the information in the section is empty nSize - [in]lpReturnedString Length lpFileName - [in]ini file name
Output	lpReturnedString - String inside the [out] section
Returns	0-Failure; 1-Success

Note	GetPrivateProfileString_Api("MANAGE" , "app" , "0", AppNu , sizeof(AppNu) , MULTITASKINI);

3.7.1.12.getPublicPath

Prototype	public static java.lang.String getPublicPath()
Function	Get application public path
Input	FileName - folder name containing the path.
Output	None
Returns	public path /mnt/sdcard/mtd0/public
Note	None

3.7.1.13.ReadAppShare_Api

Prototype	public static int ReadAppShare_Api(int Addr,byte[] OutData, int RLen)
Function	read public space, our company's products have 200K multi-application shared space
Input	Addr -[in]the address to read RLen - the length to read
Output	OutData - the data that read
Returns	0-sucess else-failed
Note	None

3.7.1.14.ReadFile_Api

Prototype	public static int ReadFile_Api(java.lang.String FileName, byte[] Buf, int Start, byte[] Length)
Function	Read data from anywhere in the file
Input	FileName - Pathname of the [in] file

	Start - [in] The position to start reading Length - [in,out] [in] Pointer to read length [out] Pointer to actually read length
Output	Buf - [out] target buffer, read out in buf
Returns	0-Successful 1-failed 2-files to the end 3-file does not exist 4-Long read data length
Note	None

3.7.1.15.ReadFileLine

Prototype	public static java.util.List ReadFileLine(java.lang.String fileName)
Function	read file by line and store in a list
Input	fileName-[in]file name or folder name,both of them must contain full paths
Output	none
Returns	A list containing the contents of the file
Note	none

3.7.1.16.ReNameFile_Api

Prototype	public static int ReNameFile_Api(java.lang.String OldfName, java.lang.String NewFileName)
Function	Rename the file.
Input	OldfName - [in] Old filename NewFileName - [in] New file name
Output	None
Returns	0: Renamed successfully Miscellaneous: Rename failed
Note	None

3.7.1.17.SaveWholeFile_Api

Prototype	public static int SaveWholeFile_Api(java.lang.String FileName, byte[] Buf, int Len)
Function	Write the entire file (delete the original file first, then write the entire file from scratch)
Input	FileName - Pathname of the [in] file Buf - [in] Data to write to file Len - [in] length to write
Output	None
Returns	0-Successful Other-failure
Note	None

3.7.1.18.setFileNameEncoding

Prototype	public static void setFileNameEncoding(java.lang.String fileNameEncoding)
Function	Set the encoding scheme
Input	fileNameEncoding - [in] encoding format gbk utf8 etc
Output	None
Returns	None
Note	None

3.7.1.19.WriteAppShare_Api

Prototype	public static int WriteAppShare_Api(int Addr, byte[] InData, int WLen)
Function	write the public space, our company's products have 200K multi-application shared space
Input	Addr -[in] the address to write InData -[in] the data to wirte WLen -[in] the length to wirte
Output	none
Returns	0-success

	else-failed
Note	none

3.7.1.20.WriteFile_Api

Prototype	public static int WriteFile_Api(java.lang.String FileName, byte[] Buf, int Start, int Length)
Function	Write data to any place in the file.
Input	FileName - Pathname of the [in] file Buf - [in] Initial position to modify Start - [in] Data to write to file Length - [in] Length to write
Output	None
Returns	0-Successful 1-failed 2-passed start wrong
Note	None

3.7.1.21.WritePrivateProfileString_Api

Prototype	public static int WritePrivateProfileString_Api(java.lang.String lpAppName, java.lang.String lpKeyName, java.lang.String lpString, java.lang.String lpFileName)
Function	Write the ini type configuration file section information.
Input	lpAppName - [in] section name lpKeyName - Configuration information in the [in] section lpString - [in] string to write section information lpFileName - [in]ini file name
Output	None
Returns	0-Failure;

	1-Success
Note	None

3.8.Class FingerApi

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These APIs are only for device that has finger hardware module.

3.8.1.1.FingerCheckIDTemplate_Api

Prototype	public static int FingerCheckIDTemplate_Api(int fingerID)
Function	Check whether the specified fingerprint database index exists.
Input	fingerID
Output	None
Returns	0 - exist Other – not exist
Note	None

3.8.1.2.FingerClose_Api

Prototype	public static int FingerClose_Api()
Function	Close fingerprint module.
Input	None
Output	None
Returns	0 - success Other - abnormal error
Note	None

3.8.1.3.FingerDelete_Api

Prototype	public static int FingerDelete_Api (int fingerIndex)
Function	Delete fingerprint information stored under specified index.
Input	fingerIndex
Output	None
Returns	0 - success Other - abnormal error
Note	None

3.8.1.4.FingerDeleteAll_Api

Prototype	public static int FingerDeleteAll_Api()
Function	Delete all fingerprint information.
Input	None
Output	None
Returns	0 - success Other - abnormal error
Note	None

3.8.1.5.FingerEnterFp_Api

Prototype	Publicstatic int FingerEnterFp_Api(int fingerID, int entryCount, int timeOutMs, FingerApi.IFingerEntryProcess listener)
Function	Input fingerprint (time-consuming operation, remember to open sub-threads).
Input	fingerID entryCount timeOutMs listener
Output	None
Returns	0 - success Other – error or no match
Note	Threads need to be opened to avoid blocking UI threads

3.8.1.6.FingerExportChar_Api

Prototype	public static int FingerExportChar_Api(int slotId, byte[] buf)
Function	export the characteristic template stored in the fingerprint module to the host computer
Input	slotld-[in]The index id that stores the template data buf-[in]buffer,not less than 2048 bytes
Output	none

Returns	0-success <0:error code
Note	none

3.8.1.7.FingerGetCount_Api

Prototype	public static int FingerGetCount_Api()
Function	Number of fingerprint information stored.
Input	None
Output	None
Returns	>=0 - success <0 - error
Note	None

3.8.1.8.FingerGetDevInfo_Api

Prototype	public static int FingerGetDevInfo_Api(byte[] devInfo)
Function	Get fingerprint device information.
Input	None
Output	devInfo
Returns	None
Note	devInfo is 64 bytes

3.8.1.9.FingerGetDevSN_Api

Prototype	public static int FingerGetDevSN_Api(byte[] sn)
Function	Get fingerprint device sn.
Input	None
Output	sn
Returns	None
Note	sn is 32 bytes

3.8.1.10.FingerGetNextEmptyID_Api

Prototype	public static int FingerGetNextEmptyID_Api()
Function	Get the next fingerprint database index ID that can be entered into the fingerprint.
Input	None
Output	None
Returns	>=0 - next fingerprint database index ID <0 - error
Note	None

3.8.1.11.FingerGrabImg_Api

Prototype	public static int FingerGrabImg_Api(int timeOutMs, FingerApi.IFingerGrapImgProcess listener)
Function	Used for single image acquisition, and put the acquired image information into the buffer.
Input	timeOutMs - time out listener – backcall func
Output	None
Returns	0 - success Other – error or no match
Note	Call FingerUpImage_Api to get image information after successful acquisition

3.8.1.12.FingerOpen_Api

Prototype	public static int FingerOpen_Api()
Function	Open fingerprint module.
Input	None
Output	None
Returns	0 - success Other - abnormal error
Note	None

3.8.1.13.FingerUpImage_Api

Prototype	public static int FingerUpImage_Api(byte[] imageData)
Function	Get the image out of the buffer.
Input	None
Output	imageData
Returns	None
Note	imageData buffer size is 208*288

3.8.1.14.FingerVerify_Api

Prototype	public static int FingerVerify_Api(int fingerID, FingerApi.IFingerGrapImgProcess listener)
Function	Verify that the input fingerprint matches the fingerprint of the specified fingerprint database ID.
Input	fingerID listener - Callback function for checking input fingerprints
Output	None
Returns	0 - success Other – error or no match
Note	Threads need to be opened to avoid blocking UI threads

3.8.1.15.FingerVerifyAll_Api

Prototype	public static int FingerVerifyAll_Api(FingerApi.IFingerGrapImgProcess listener)
Function	Verify that the input fingerprints are already in the fingerprint database.
Input	listener - Callback function for checking input fingerprints
Output	None
Returns	>=0 – success, return id Other – fail
Note	Threads need to be opened to avoid blocking UI threads

3.9.Class IcApi

Name	Value	Note
AT24C02	1	
AT24C08	2	
AT24C16	3	
AT88SC102	4	
AT88SC1604	5	
AT88C1608	6	
CPUCARD	7	
SLE44X2	8	
SLE44X8	9	

These APIs are for A90/A70, not for A70SV because A70SV not have hardware module for dealing with ICC card.

3.9.2.1.IccDetect_Api

Prototype	public static int IccDetect_Api(int CardNo)
Function	Check if the specified card holder has a card.
Input	CardNo - [in] CardNo. : 0 big card holder.
Output	None
Returns	0 has a card inserted 1 No card inserted
Note	None

3.9.2.2.IccDetectOut_Api

Prototype	public static int IccDetectOut_Api(int CardNo)
Function	Check whether the specified card holder has been pulled.
Input	CardNo - [in] CardNo. : 1 PSAM card seat 1 2 PSAM card seat 2.
Output	None
Returns	0-Dialed card

	1-card is still in the card slot
Note	None

3.9.2.3.IccGetCardType_Api

Prototype	public static int IccGetCardType_Api()
Function	Get the type of IC card
Input	None
Output	None
Returns	None
Note	None

3.9.2.4.IccInit_Api

Prototype	public static int IccInit_Api(int CardNo,int VccMode, byte[] RstBuf, byte[] Rlen)
Function	Reset the card holder.
Input	CardNo - [in] deck number Bit0-bit3 Specific deck number 0 : Big deck 1 : PSAM deck 1 : PSAM deck 2 Bit6-bit4: Speed 001 Low speed card 010 Medium speed card 100 High speed card 000 Default rate bit7 : Whether EMV standard is used : 0 Use 1 Not used VccMode - [in] Voltage 0x01 1.5v 0x02 3v 0x03 5v
Output	RstBuf - [out] Reset Return Data Rlen - [out] reset return data length
Returns	0-Successful 1-failed
Note	None

3.9.2.5.IccIsoCommand_Api

Prototype	public static void IccIsoCommand_Api(int CardNo,

	ApduSend apduSend, ApduResp apduResp)
Function	Send the command to the IC card and get the data from the card at the same time.
Input	CardNo - [in] Deck number 0 Large deck 1 PSAM deck 1 2 PSAM deck 2 apduSend - The object sent by [in]Apdu
Output	apduResp - The object that [out]Apdu accepts
Returns	None
Note	None

3.9.2.6.IccPowerOff_Api

Prototype	public static void IccPowerOff_Api(int CardNo)
Function	Lower power to the specified card holder.
Input	CardNo - [in] seat number 0 big card 1 PSAM card 1 2 PSAM card 2.
Output	None
Returns	None
Note	None

3.9.2.7.Mem4442IccGetPwdCount_Api

Prototype	public static int Mem4442IccGetPwdCount_Api(MemCardOut pMemDataOut)
Function	Memory4442 card read card error counter and card password
Input	none
Output	pMemDataOut-[out]the infomation that cards return
Returns	0-success -1-failed
Note	none

3.9.2.8.MemIccCheck_Api

Prototype	public static int MemIccCheck_Api(MemCardInfo CardInf,

	int InitFlag, MemCardOut pMemDataOut)
Function	Check if you have a memory card and support all memory CARDS
Input	CardInf - the infomation of station accessory InitFlag - whether to reset, 1-reset, else-not reset pMemDataOut - If reset is selected, it is the information after reset; if not, it is the information returned by card search.
Output	none
Returns	0-has cards or reset success 1-has no card 2-reset failed
Note	none

3.9.2.9.MemIccPowerOff_Api

Prototype	public static int MemIccPowerOff_Api(MemCardInfo CardInf)
Function	power down the specified station accessory,it support all memory cards
Input	CardInf - the infomation of station accessory
Output	none
Returns	none
Note	none

3.9.2.10.MemIccPowerOn_Api

Prototype	public static int MemIccPowerOn_Api(MemCardInfo CardInf)
Function	power up the specified station accessory,it support all memory cards
Input	CardInf - the infomation of station accessory
Output	none
Returns	none
Note	none

3.9.2.11.MemIccPwdProc_Api

Prototype	public static int MemIccPwdProc_Api(MemCardInfo CardInf, MemCardPwd MemPwd, MemCardOut pMemDataOut)
Function	Verify or change the password of the memory card, it is used for 4442 card
Input	CardInf - [in]the infomation of station accessory MemPwd - [in]the infomation of password
Output	pMemDataOut - [out]the infomation retruned by card
Returns	0-success 1-failed
Note	none

3.9.2.12.MemIccReadData_Api

Prototype	public static int MemIccReadData_Api(MemCardInfo CardInf, int StartAddr, int ReadLen, MemCardOut pMemDataOut)
Function	read datas of memory card,it support all memory cards
Input	CardInf - [in]the infomation of station accessory StartAddr - [in]start address ReadLen - [in]the length of data to read
Output	pMemDataOut - [out]the data that read
Returns	0-success 1-failed
Note	none

3.9.2.13.MemIccWriteData_Api

Prototype	public static int MemIccWriteData_Api(MemCardInfo CardInf, byte[] WriteBuf, int StartAddr,

	int WriteLen, MemCardOut pMemDataOut)
Function	write datas to memory card,it support all memory cards
Input	CardInf - [in]the infomation of station accessory WriteBuf - [in]the buff of data to write StartAddr - [in]start address WriteLen - [in]the length of data to write
Output	pMemDataOut - [out]the infomation that chad returns
Returns	1-success 2-failed
Note	none

3.10.Class KeyApi

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3.10.1.1.GetKey_Api

Prototype	public static int GetKey_Api()
Function	read the value of the first key in buffer of keyboard
Input	none
Output	none
Return	0x00:the buffer is empty F1 0x14 F2 0x15 F3 0x10 F4 0x20 '1': DIGITAL 1 0x31 '2': DIGITAL 2 0x32 '3': DIGITAL 3 0x33 '4': DIGITAL 4 0x34 '5': DIGITAL 5 0x35 '6': DIGITAL 6 0x36 '7': DIGITAL 7 0x37 '8': DIGITAL 8 0x38 '9': DIGITAL 9 0x39 '0': DIGITAL 0 0x30 key backspace: CLEAR 0x1A key cancel: ESC 0x1B key enter: ENTER 0x0D key on/off: POWEROFF 0x1F '▲' : PGUP 0x0A '▼' : PGDWON 0x0B
Note	none

3.10.1.2.KBFlush_Api

Prototype	public static void KBFlush_Api()
Function	clear all the unread keys in the buffer of keyboard
Input	none
Output	none
Return	none
Note	none

3.10.1.3.SetKey_Api

Prototype	public static void SetKey_Api(int key)
Function	set a value of key into buffer for GetKey_Api to use it
Input	key-[in]the value of key
Output	none
Return	F1 0x14 F2 0x15 F3 0x10 F4 0x20 '1': DIGITAL 1 0x31 '2': DIGITAL 2 0x32 '3': DIGITAL 3 0x33 '4': DIGITAL 4 0x34 '5': DIGITAL 5 0x35 '6': DIGITAL 6 0x36 '7': DIGITAL 7 0x37 '8': DIGITAL 8 0x38 '9': DIGITAL 9 0x39 '0': DIGITAL 0 0x30 key backspace: CLEAR 0x1A

	key cancel: ESC 0x1B key enter: ENTER 0x0D key on/off: POWEROFF 0x1F '▲' : PGUP 0x0A '▼' : PGDWON 0x0B
Note	none

3.10.1.4.TipAndWaitEx_Api

Prototype	public static void TipAndWaitEx_Api(java.lang.String fmt)
Function	show messages on screen and wait for pressing keys
Input	fmt-[in]messages that shown on the screen
Output	none
Return	none
Note	none

3.10.1.5.WaitAnyKey_Api

Prototype	public static int WaitAnyKey_Api(int iTimeOut)
Function	wait for any key to be pressed
Input	iTimeOut-[in]time-out period (s)
Output	none
Return	the value of key that returns
Note	F1 0x14 F2 0x15 F3 0x10 F4 0x20 '1': DIGITAL 1 0x31 '2': DIGITAL 2 0x32

	'3': DIGITAL 3 0x33 '4': DIGITAL 4 0x34 '5': DIGITAL 5 0x35 '6': DIGITAL 6 0x36 '7': DIGITAL 7 0x37 '8': DIGITAL 8 0x38 '9': DIGITAL 9 0x39 '0': DIGITAL 0 0x30 key backspace: CLEAR 0x1A key cancel: ESC 0x1B key enter: ENTER 0x0D key on/off: POWEROFF 0x1F '▲' : PGUP 0x0A '▼' : PGDWON 0x0B

3.10.1.6.WaitEnterAndEscKey_Api

Prototype	public static int WaitEnterAndEscKey_Api(int TimeOut)
Function	wait for pressing enter or cancel
Input	TimeOut - [in]time-out period
Output	none
Return	the key of enter or cancel TIMEOUT(-2):time out
Note	none

3.10.1.7.WaitKey_Api

Prototype	public static int WaitKey_Api(int TimeOut)
Function	wait for keys to be pressed
Input	TimeOut-[in]time-out period

Output	none
Return	F1 0x14 F2 0x15 F3 0x10 F4 0x20 '1': DIGITAL 1 0x31 '2': DIGITAL 2 0x32 '3': DIGITAL 3 0x33 '4': DIGITAL 4 0x34 '5': DIGITAL 5 0x35 '6': DIGITAL 6 0x36 '7': DIGITAL 7 0x37 '8': DIGITAL 8 0x38 '9': DIGITAL 9 0x39 '0': DIGITAL 0 0x30 key backspace: CLEAR 0x1A key cancel: ESC 0x1B key enter: ENTER 0x0D key on/off: POWEROFF 0x1F '▲' : PGUP 0x0A '▼' : PGDWON 0x0B
Note	none

3.10.1.8.WaitKey_Api

Prototype	public static int WaitKey_Api()
Function	wait for keys to be pressed,block
Input	none
Output	none
Return	F1 0x14

	F2 0x15 F3 0x10 F4 0x20 '1': DIGITAL 1 0x31 '2': DIGITAL 2 0x32 '3': DIGITAL 3 0x33 '4': DIGITAL 4 0x34 '5': DIGITAL 5 0x35 '6': DIGITAL 6 0x36 '7': DIGITAL 7 0x37 '8': DIGITAL 8 0x38 '9': DIGITAL 9 0x39 '0': DIGITAL 0 0x30 key backspace: CLEAR 0x1A key cancel: ESC 0x1B key enter: ENTER 0x0D key on/off: POWEROFF 0x1F '▲' : PGUP 0x0A '▼' : PGDWON 0x0B
Note	none

3.11.Class LcdApi

Name	Value	Note
LED_RED	1	the colors of led lights
LED_BLUE	2	
LED_GREEN	3	
LED_YELLOW	4	
LED_DEV_NOT_OPEN	-114	the states of led lights
LED_DEV_IS_OCCUPIED	-111	
LED_ALREADY_OPENED	-112	
LED_DEV_ERROR	-113	

3.11.2.1.delRepeatRow

Prototype	public static void delRepeatRow(int row, int style)
Function	Delete data with duplicate rows
Input	row-[in]line style-[in]style
Output	none
Return	none
Note	none

3.11.2.2.DispTitleLib(deprecated)

Prototype	public static void DispTitleLib(java.lang.String Title)
Function	show title at the first line
Input	Title-[in]title
Output	none
Return	none
Note	none

3.11.2.3.DrawButton_Api

Prototype	public static void DrawButton_Api(int row, int col, java.lang.String str, int keyCode, int atr)
Function	show a button
Input	row -[in]row col -[in]column str -[in]the content to display keyCode - [in]the code of a key atr -[in]attribute(FDISP|CDISP)
Output	none
Return	none
Note	none

3.11.2.4.DrawLineRam(deprecated)

Prototype	public static void DrawLineRam(int row, int col, byte[] str, int atr)
Function	Draw a line according to str
Input	row -[in]row col -[in]column str -[in]the content to display atr -[in]attribute(FDISP|CDISP)
Output	none
Return	none
Note	none

3.11.2.5.DrawProgressBar_Api

Prototype	public static void DrawProgressBar_Api(int row, int col, int atr, int barStyle)
Function	show a progress bar
Input	row -[in]row col -[in]column

	atr -[in]attribute(FDISP|CDISP) barStyle-[in]style of progress bar
Output	none
Return	none
Note	none

3.11.2.6.DrawRadioButton_Api

Prototype	public static void DrawRadioButton_Api(int row, int col, int width, int height, java.lang.String[] text,int[] value, int atr,int isCheck,int orientation)
Function	show a radio button
Input	row -[in]row col -[in]column width -[in]width height -[in]height text -[in]the text of radio button value -[in]the value of radio button atr -[in]attribute(FDISP|CDISP) isCheck -[in]The value of the button selected by default orientation - 0:horizontal，1:vertical
Output	none
Return	none
Note	none

3.11.2.7.DrawRect_Api

Prototype	public static void DrawRect_Api(int row, int col, int width, int height, int maxlen, int minlen, int textStyle, int atr, boolean linesFlag)

Function	show an editText
Input	row -[in]row col -[in]column width -[in]width height -[in]height maxlen -[in] the maximum length of the string that entered minlen - [in]the minimum length of the string that entered textStyle -[in] the style of editText atr - [in]attribute(FDISP|CDISP) linesFlag - true:multiple lines are avilable，false:just single line is avilable
Output	none
Return	none
Note	none

3.11.2.8.DrawRect_Api

Prototype	public static void DrawRect_Api(int row, int col, int width, int height, int maxlen, int minlen, int textStyle, int atr, java.lang.String defaultValue, boolean linesFlag)
Function	show an editText
Input	row -[in]row col -[in]column width -[in]width height -[in]height maxlen -[in] the maximum length of the string that entered minlen - [in]the minimum length of the string that entered textStyle -[in] the style of editText atr - [in]attribute(FDISP|CDISP) defaultValue-[in]default value

	linesFlag - true:multiple lines are avilable，false:just single line is avilable
Output	none
Return	none
Note	none

3.11.2.9.DrawSpinner_Api

Prototype	public static void DrawSpinner_Api(int row, int col, int width, int height, java.lang.String[] text,int[] value, int atr, int isCheck, int orientation)
Function	show a spinner
Input	row -[in]row col -[in]column width -[in]width height -[in]height text - [in]the text of button value - the value of button atr -[in]attribute(FDISP|CDISP) isCheck-[in]The value of the button selected by default orientation - 0:horizontal，1:vertical
Output	none
Return	none
Note	none

3.11.2.10.GetCurFontWidth(deprecated)

Prototype	public static void DrawLineRam(int row, int col, byte[] str, int atr)
Function	draw a line accrding to str
Input	row -[in]row col -[in]column

	str -[in]the content to display atr -[in]attribute(FDISP|CDISP)
Output	none
Return	none
Note	none

3.11.2.11.GetLineEx(deprecated)

Prototype	public static int GetLineEx(byte[] lnBuf, int maxLen, byte[] pData, int dataLen)
Function	get a line
Input	maxLen - [in]the maxmum length of datas in a line pData -[in]the datas dataLen - the length of datas
Output	lnBuf - a line of data that returns
Return	The length of the data being parsed from pData
Note	none

3.11.2.12.GetMaxCharShowInLine(deprecated)

Prototype	public static int GetMaxCharShowInLine()
Function	show a line of string,just update a line of data in memory,you should call LcdBrushScr() if you want to show the data
Input	none
Output	none
Return	none
Note	none

3.11.2.13.GetRowHeight(deprecated)

Prototype	public static int GetRowHeight()
Function	get the pixel height of the current font

Input	none
Output	none
Return	pixel height
Note	none

3.11.2.16.LedLightOff_Api

Prototype	public static int LedLightOff_Api(int index)
Function	power off a led light
Input	index-[in]the index of led light to power off
Output	none
Return	0-ok -1-error parameters
Note	none

3.11.2.17.LedLightOn_Api

Prototype	public static int LedLightOn_Api(int index)
Function	power on a led light
Input	index-[in]the index to power on
Output	none
Return	0-ok -1-error parameters
Note	none

3.11.2.18.LedOper_Api

Prototype	public static int LedOper_Api(int index, int oper)
Function	Turn the led light handle on or off
Input	index - [in]the index to control oper - [in]operation, 1-open 0-close

Output	none
Return	0-ok -1-error parameters
Note	none

3.11.2.19.ScrBackLight_Api(deprecated)

Prototype	public static void ScrBackLight_Api(int Time)
Function	Device screen backlight(light up automatically when pressing the keyboard, swiping or insert a card)
Input	Time -[in]Backlight retention time ,0--close backlight, 0xFFFF:always light on
Output	none
Return	none
Note	none

3.11.2.20.ScrBrush_Api(deprecated)

Prototype	public static void ScrBrush_Api()
Function	displays the data from the temporary cache to the screen
Input	none
Output	none
Return	none
Note	none

3.11.2.21.ScrClrLine_Api

Prototype	public static void ScrClrLine_Api(int ucStartLine, int ucEndLine)
Function	Clear spicifid lines,it won’t work if the are unreasonable
Input	ucStartLine -[in]the line to start (0~4) ucEndLine -[in]the line to end (0~4)
Output	none

Return	none
Note	none

3.11.2.22.ScrClrLineRam_Api(deprecated)

Prototype	public static void ScrClrLineRam_Api(int ucStartLine, int ucEndLine)
Function	none
Input	none
Output	none
Return	none
Note	none

3.11.2.23.ScrCls_Api

Prototype	public static void ScrCls_Api()
Function	clear the screen
Input	none
Output	none
Return	none
Note	none

3.11.2.24.ScrClsRam_Api

Prototype	public static void ScrClsRam_Api()
Function	clear the buffer of display
Input	none
Output	none
Return	none
Note	none

3.11.2.25.ScrDisp_Api

Prototype	public static void ScrDisp_Api(int row , int col ,java.lang.String , int atr)
Function	show a line of string
Input	row-[in]row col-[in]colume str-[in]the content to show atr-[in]attribute(FDISP|CDISP)
Output	none
Return	none
Note	none

3.11.2.26.ScrDisp_Api

Prototype	public static void ScrDisp_Api(int row , int col ,byte[]buf, int atr)
Function	show a line of string
Input	row-[in]row col-[in]colume buf-[in]buffer atr-[in]attribute(FDISP|CDISP)
Output	none
Return	none
Note	none

3.11.2.29.ScrDrawLine_Api(deprecated)

Prototype	public static void ScrDrawLine_Api(short x1, short y1, short x2, short y2, short color)
Function	draw a straight line to screen
Input	x1 - [in]The x-coordinate of the starting point of the line y1 - [in]The y-coordinate of the starting point of the line x2 - [in]The x-coordinate of the end of the line

	y2 -[in]The y-coordinate of the end of the line color -[in] color，0--user the color of background，1--user the color of fonts
Output	none
Return	none
Note	none

3.11.2.30.ScrDrawLineRam_Api(deprecated)

Prototype	public static void ScrDrawLineRam_Api(int x1, int y1, int x2,int y2,int color)
Function	Draw a straight line to video memory
Input	x1 - [in]The x-coordinate of the starting point of the line y1 - [in]The y-coordinate of the starting point of the line x2 - [in]The x-coordinate of the end of the line y2 -[in]The y-coordinate of the end of the line color -[in] color，0--user the color of background，1--user the color of fonts
Output	none
Return	none
Note	none

3.11.2.31.ScrDrLogoxy_Api(deprecated)

Prototype	public static void ScrDrLogoxy_Api(int LogoWighX, int LogoHightY, int StartX, int StartY, byte[] Logo)
Function	display a logo array on screen at the spicified location
Input	LogoWighX - width of image LogoHightY - height of image StartX -[in]Displays the abscissa of the starting position,starts from 0,it should between 0 and 127 StartY -[in]Displays the ordinate of the starting position, starts from 1,it should between 0 and 16

	Logo -[in]datas of logo
Output	none
Return	none
Note	none

3.11.2.32.ScrDrLogoxyRam_Api(deprecated)

Prototype	public static void ScrDrLogoxyRam_Api(int LogoWighX, int LogoHightY, int StartX, int StartY, byte[] Logo)
Function	display the buffer of logo array on screen at the spicified location
Input	LogoWighX -[in]width of image LogoHightY -[in]height of image StartX -[in]Displays the abscissae of the starting position,starts from 0,it should between 0 and 127 StartY -[in]Displays the ordinate of the starting position, starts from 1,it should between 0 and 16 Logo -[in]datas of logo
Output	none
Return	none
Note	none

3.11.2.33.ScrFontSet_Api(deprecated)

Prototype	public static void ScrFontSet_Api(int FontSize)
Function	set the font to be displayed
Input	FontSize -[in]size of font 0--- ASCII: displayed by 6x12，Chinese characters displayed by 12x12 1--- ASCI: displayed by 8x16，Chinese characters displayed by 16x16 2--- ASCII: displayed by 12x24，Chinese characters displayed by 24x24

	3--- ASCII: displayed by 16x32，Chinese characters displayed by 32x32 4--- ASCII: displayed by 24x48，Chinese characters displayed by 48x48
Output	none
Return	none
Note	none

3.11.2.34.ScrGray_Api(deprecated)

Prototype	public static void ScrGray_Api(int Mode)
Function	Set the contrast of the display screen
Input	Mode-[in]the level of contrast,the minum level is 0 means the darkest and the maxmum level is 7 means the brightest, the default level is 3
Output	none
Return	none
Note	none

3.11.2.35.ScrPlot_Api(deprecated)

Prototype	public static void ScrPlot_Api(int X, int Y, int Color)
Function	display a point on screen at the spicefied location,call it if you want to display it on screen
Input	X -[in]the spicefied abscissae，dot array(0~127) Y - [in]the spicefied ordinate ，dot array(0~63) Color -[in]Specify the action, 1:draw a point，0:clear a point
Output	none
Return	none
Note	none

3.11.2.36.ScrPlotRam_Api(deprecated)

Prototype	public static void ScrPlotRam_Api(int X, int Y, int Color)
Function	draw a point on screen at the specified location,operate the display storage,ScrBrush_Api() should be called if you want to dispaly the point on screen
Input	X -[in]the spicefied abscissae，dot array(0~127) Y - [in]the spicefied ordinate ，dot array(0~63) Color -[in]Specify the action, 1:draw a point，0:clear a point
Output	none
Return	none
Note	none

3.11.2.37.ShowPassWd

Prototype	public static void ShowPassWd(int row, int col, KeyListener keyListener, java.lang.String amt)
Function	show a string
Input	row -[in]line col - [in]column keyListener -[in] keyListener amt - [in]amt
Output	none
Return	none
Note	none

3.11.2.38.ShowQrCode_Api

Prototype	public static void ShowQrCode_Api(int row, int col, byte[] buf, int atr)

Function	Display a QRQode
Input	row-[in]row col-[in]colume buf-[in]buffer atr-[in]attribute
Output	none
Return	none
Note	none

3.11.2.39.TextBoxSameRandom_Api

Prototype	public static void DrawSpinner_Api(int row, int col, int width, int height, java.lang.String[] text, int[] value, int atr, int isCheck, int orientation)
Function	show a spinner
Input	row -[in]line col -[in]column width -[in]width height -[in]height text -[in]the text of button value -[in]the value of button atr -[in]attribute(FDISP|CDISP) isCheck - [in]the value of button that being selected by default orientation - 0:horizontal，1:vertical
Output	none
Return	none
Note	none

3.11.Class PedApi

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Name	Value	Note
PEDPLACE_PUBLIC	"PUBLIC"	
PEDPLACE_PRIVATE	“PRIVATE”	
PEDKEYTYPE_MASTKEY	1	
PEDKEYTYPE_WORKKET	2	
MKEYMAXINDEX	999	
WKEYMAXINDEX	2999	
MKEYMAXINDEX_USE	MKEYMAXINDEX-10	
WKEYMAXINDEX_USE	WKEYMAXINDEX	
MKEY_21_3DES	MKEYMAXINDEX_USE+1	
MKEY_21_SM4	MKEYMAXINDEX_USE+2	
PED_TLK	0x01	
PED_TMK	0x02	
PED_TPK	0x03	
PED_TAK	0x04	
PED_TDK	0x05	
PED_TEK	0x06	
PED_TTK	0x09	

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These APIs are for internal PINPAD

3.11.2.1.calcRSA_Api(deprecated)

Prototype	public static int calcRSA_Api(byte RSAKeyIndex, byte[] pucDataIn, byte[] pucDataOut, byte[] pucKeyInfoOut)
Function	RSA data arithmetic with RSA keys stored in PED
Input	RSAKeyIndex - index of private key [1~10] pucDataIn -[in] 1K, Data that has been encrypted or decrypted, it has the same

	length with module
Output	pucDataOut - [out]1K, Data that has been encrypted or decrypted pucKeyInfoOut -[out]100B, the infomation of private key,it will not output anything if the key is null
Returns	0-success else-failed
Note	none

3.11.2.2.calcRSAEx_Api

Prototype	public static int calcRSAEx_Api(int RSAKeyIndex, int pucDataInLen, byte[] pucDataIn, byte[] pucDataOut, byte[] pucKeyInfoOut)
Function	encrypt or decrypt data
Input	RSAKeyIndex -[in] index of private key, 1~10 pucDataInLen -[in] the length of cryptograph or proclaimed in writing pucDataIn - [in]cryptograph or proclaimed in writing
Output	pucDataOut - [out]Data that has been encrypted or decrypted pucKeyInfoOut -[out]the infomation of private key
Returns	<0-error code else-the length of data that has been encrypted or decrypted
Note	none

3.11.2.3.EDPPSetDesSmHdSoft_Api

Prototype	public static int EDPPSetDesSmHdSoft_Api(int DesSMMode,int HdOrSoft)
Function	Set the encryption algorithm of the password keyboard to Des or the state secret algorithm
Input	DesSMMode - [in] 0:DES 1:the state secret algorithm HdOrSoft - [in] 0:hardware encryption 1:software encryption
Output	none
Returns	0-success

	1-Mode error
Note	none

3.11.2.4.getFyTransKey_Api

Prototype	public static int getFyTransKey_Api(byte[] out)
Function	Get the transmission key
Input	none
Output	out-[out] the transmission key
Returns	none
Note	none

3.11.2.5.getgHdOrSoft

Prototype	public static int getgHdOrSoft()
Function	Gets the current software and hardware encryption
Input	none
Output	none
Returns	1-software encryption else-hardware encryption
Note	none

3.11.2.6.getPinDukptEx_Api

Prototype	public static int getPinDukptEx_Api(byte GroupIdx, byte mode, java.lang.String pin, java.lang.String data, byte[] pinBlockOut, byte[] ksnOut)
Function	Enter the plaintext Pin and calculate the pinblock of dukpt
Input	GroupIdx - [in] DUKPT private key,（TIK）the index of group [1~10]

	mode-[in]Select the format of the PIN BLOCK 00 ISO9564 format 0,KSN automatically adds 1 01 ISO9564 format 1,KSN automatically adds 1 02 ISO9564 format 3,KSN automatically adds 1 03 retain 20 ISO9564 format 0, KSN doesn't automatically add 1 21 ISO9564 format 1, KSN doesn't automatically add 1 22 ISO9564 format 3, KSN doesn't automatically add 1 pin - [in]pin proclaimed in writing，it’s a string data - [in]25byte at most When Mode=0x00,DataIn points to the 16-bit master account generated by the card number shift. When Mode=0x01, the input parameter is the format of the PinBlock,8 bytes of data (according to the ISO9564 specification, this data can be a random number, transaction stream number or time stamp, etc.). hen Mode = 0 x02 DataIn point card number generated after displacement, 16 master account DataIn + 16 points to participate in PinBlock formatted 8 bytes of data (according to the specification of ISO9564, the data can be a random number, serial number or timestamp, etc., but four each byte of four high and low, must be between 0 xa ~ 0 xf, so when the Mode is 0 x02, applications need to do this check the 8 bytes of data, if you do not meet the requirements will return an error). When Mode=0x03, is the transaction stream number ISN't [6 Bytes,ASCII code]
Output	pinBlockOut - [out]Ciphertext encrypted with the DUKPT key PINBLOCK, 8 bytes ksnOut - [out]10byte, The KSN corresponding to the DUKPT key used
Returns	-1-error parameters 0-success

	1-else-failed
Note	none

3.11.2.7.isKeyExist

Prototype	public static boolean isKeyExist(int keyType, int keyIndex)
Function	Determines whether the secret key exists
Input	keyType - [in] 1-master key 2-working key keyIndex - [in] index of private key
Output	none
Returns	true-exists false-do not exist
Note	none

3.11.2.8.PedCalcDESDukpt_Api

Function	int PedCalcDESDukpt_Api(byte GroupIdx, byte KeyVarType, byte[] KpucIV, byte[] DataIn, byte Mode, byte[] DataOut, byte[] KsnOut)	
Description	Use DUKPT key to encrypted data	
Parameters[in]	GroupIdx	[1~10], DUKPT key group index
	KeyVarType	which type of key will be used 0x00: DUKPT MAC KEY 0x01: DUKPT DES KEY 0X02: DUKPT PIN KEY ECB encryption(if KeyVarType is 0x02, then mode can only be 0x01[ECB encryption])
	pucIV	Initial vector(8 bytes). Necessary for CBC If is null,the default value(0x0000000000000000) will be used
	DataIn	The data to be encrypted/decrypted (should <1024 bytess,

		sholud be mutiple of 8 bytes)
	Mode	0x00:EBC decryption 0x01:EBC encrytion 0x02:CBC decryption 0x03:CBC encryption
Parameters[out]	DataOut	Data out
	KsnOut	The current KSN (10 bytes)
Return value	0	Success
	1	DUKPT Index Over Range
	2	Cancel
	3	Timeout
	4	Data Length Error
	5	Other Error :
	6	Reference Error
Remark		

3.11.2.9.PEDDes_Api

Prototype	public static int PEDDes_Api(int KeyIndex, int Mode, int MorWFlag, byte[] DataIn, int DataInLen, byte[] DataOut)
Function	DataIn is encrypted/decrypted in mode mode using the DES key specified by DESKeyID. The result is stored in DataOut.
Input	KeyIndex - [in] Index of the working key (0 - 99) Mode - [in] 0x01 DES Encryption 0x02 SM4 encryption 0x03 3DES encryption 0x81 DES decryption 0x82 SM4 decryption 0x83 3DES decryption MorWFlag - [in] Whether to encrypt or decrypt the master key or the work key, 0x01: Use the master key 0x02: Use the work key DataIn - [in] Data to encrypt

	[Input data] DataInLen - Data length of DataIn DataOut - [out] encryption result [output data]
Output	None
Returns	0 Successful 1 Illegal key index 2 Illegal encryption/decryption mode 3 MorWFlag is illegal 0xFF communication failed
Note	None

3.11.2.10.PEDDesCBC_Api

Prototype	public static int PEDDesCBC_Api(int KeyIndex, int Mode, int MorWFlag, byte[] ivIn, int ivLen, byte[] DataIn, int DataInLen, byte[] DataOut)
Function	CBC operation
Input	KeyIndex - [in] index of private key Mode - [in] 0x01 DES Encryption 0x02 SM4 Encryption 0x03 3DES Encryption 0x81 DES Decryption 0x82 SM4 Decryption 0x83 3DES Decryption MorWFlag - [in]Encryption and decryption with the master or working key, 0x01:master key 0x02:working key ivIn - [in] The initial vector ivLen - [in] The length of initial vector DataIn - [in] Encryption or decryption data DataInLen - [in] the length of datas that to be encryped or decrupted
Output	DataOut - [out] datas that has been encryped or decrupted

Returns	0 -success 1 - illegal private key index 2 -illegal mode 3 -illegal MorWFlag 0xFF -Communicate failed
Note	none

3.11.2.11.PEDDisp_Api

Prototype	public static void PEDDisp_Api(int nLineIndex, byte[] strText, int nLength, int nFlagSound)
Function	show the text of password borader
Input	nLineIndex - [in]the count of lines strText - [in] text to be shown nLength - [in] the length of content nFlagSound - [in] Play sound or not
Output	none
Returns	none
Note	none

3.11.2.12.PEDDisp_Api

Prototype	public static void PEDDisp_Api(java.lang.String strText)
Function	show the text of password borader
Input	strText - [in] text to be shown
Output	none
Returns	none
Note	none

3.11.2.13.PedDukptCalcSym_Api

Prototype	public static int PedDukptCalcSym_Api(byte GroupIdx, byte KeyVarType, int Inc, byte Mode, int len, byte[] KpucIV, byte[] DataOut, byte[] KsnOut)
Function	Use the current key region keyId corresponding to the DUKPT key, the data pucInOut DES/TDES, SM4, AES encryption and decryption operation, the results saved in pucInOut
Input	KeyId - [in]1~100, DUKPTKey group index number KeyVarType - [in] 0x01 ， 3DES/SM4/AES encryption operation was performed with the PIN key of DUKPT.Used to encrypt 8-byte clear text PINBLOCK 0x02， 3DES/SM4/AES encryption and decryption operation is carried out with the data (Request Or Both Ways) key of DUKPT 0x03, 3DES/SM4/AES encryption and decryption were performed with the data (Response) key of DUKPT Inc - [in]0x00， After reading the DUKPT key, the corresponding KSN does not add 1.0x01, after reading the DUKPT key, the corresponding KSN plus 1.Other values are invalid. Mode - [in]0x00:DES/3DES ECB decryption 0x01:DES/3DES ECB encryption 0x10:DES/3DES CBC decryption 0x11:DES/3DES CBC encryption 0x20:Use the key of the KeyId to decrypt the AES ECB pucIn data

	16 0x21:Do AES ECB encryption 0x30:Perform AES CBC decryption 0x31:AES CBC encryption 0x40:SM4 for ECB decryption 0x41:Do SM4 ECB encryption 0x50:SM4 CBC decryption 0x51:SM4 CBC encryption len - [in]8/16 ,The length of TIK, now DUKPT algorithm support 8/16 byte length of the key KpucIV - 8/16, The length of TIK, now DUKPT algorithm support 8/16 byte length of the key
Output	DataOut - [out]Less than 1024byte, data DES/3DES need to be processed for encryption and decryption, DataOut data length is 8 AES encryption and decryption, DataOut data length is 16 SM4 encryption and decryption, DataOut data length is 16 KsnOut - [out]10 bytes The current KSN
Returns	0-success 1-DUKPT index out of range 2-The type is invalid 3-the inc is invalid 4-the mode is invalid 5-Input data length error 6-other errors
Note	none

3.11.2.14.PedDukptIncreaseKsn_Api

Function	int PedDukptIncreaseKsn_Api(byte GroupIdx)	
Description	Increase KSN by 1	
Parameters[in]	GroupIdx	[1~10], DUKPT key group index

Parameters[out]	None	
Return value	0	Success
	1	DUKPT Index Overrange
	2	Key Index Number Error
	3	Other Errors
Remark	The DUKPT key generated by a KSN can be used for 256 times. PED_RET_ERR_DUKPT_NEED_INC_KSN will be returned if used more than 256 times, then this API can be used for increasing KSN by 1.	

3.11.2.15.PedDukptWriteTIK_Api

Function	int PedDukptWriteTIK_Api(byte GroupIdx, byte SrcKeyIdx, byte KeyLen, byte[] KeyValueIn, byte[] KsnIn, byte iCheckMode, byte[] aucCheckBuf)	
Description		
Parameters[in]	GroupIdx	[1~10], DUKPT key group index
	SrcKeyIdx	[0~1], the index of the key for dispersing keys SrcKeyIdx = 0: KeyValueIn is the plain text of TIK/IPEK. TIK's plain text can be loaded into terminal only when PED_TLK doesn't exist in the termianl. SrcKeyIdx = 1: KeyValueIn is the encrypted text of TIK/IPEK, terminal will use TLK to decrypt KeyValueIn, and load the plain text of TIK/IPEK
	KeyLen	the length of TIK/IPEK, support the key of 8/16 bytes now.
	KeyValueIn	Key value of TIK/IPEK
	KsnIn	KSN (10 bytes), DUKPT Initialization vector

	iCheckMode	0x00: no check value 0x01: use plain key to DES/TDES encrypt (0x0000000000000000) 0x02: check the plain key with odd verification, use plain key to DES/TDES encrypt (\x12\x34\x56\x78\ x90\x12\x34\x56) 0x03: transfer some data, such as KcvData, use plain key to encrypt [aucDstKeyValue(encrypted text) + KcvData] in some specific mode, MAC(8 bytes) will be as KCV
	aucCheckBuf	0x00: Value is unusefull. Do not check it 0x01: aucCheckBuf[0] : KCV length (KcvLen) aucCheckBuf[1]~aucCheckBuf[KcvLen] : KVC value 0x02: aucCheckBuf[0] : KCV length (KcvLen) aucCheckBuf[1]~aucCheckBuf[KcvLen] : KVC value 0x03: aucCheckBuf[0] : KcvData length (KcvDataLen) aucCheckBuf[1]~aucCheckBuf[KcvDataLen] : KcvData used for checking KCV aucCheckBuf[KcvDataLen+1] : MAC mode (refer to PEDGetMac_Api) aucCheckBuf+KcvDataLen+3 : KCV
Parameters[out]	None	
Return value	0	Success
	1	DUKPT Index Out of Range
	2	SrcKeyIdx Out of Range
	3	Key Length error
	4	Illegal Ciphertext Data

	5	KsnIn Parametric Error
	6	Illegal iCheckMode Verification Mode
	7	AucCheckBuf Empty
	8	Other Errors Not Supported by DUKPT Algorithms
Remark	GroupIdx in PedGetPinDukpt_Api/PedGetMacDukpt_Api should be the same as the one in PEDWriteTIK_Api there are two initial keys of dukpt, DK and IK. If it is DK, mode is 1. First, it is converted to IK and then used. If IK mode is 0, it can be used directly. DK is the root key and IK is the newly generated key after the initialization of the root key	

3.11.2.16.PedErase

Prototype	public static boolean PedErase()
Function	clear all private keys
Input	none
Output	none
Returns	true-success false-failed
Note	none

3.11.2.17.PedErase

Prototype	public static boolean PedErase(int KeyType,int index)
Function	clear a private key
Input	KeyType - [in] 1-master key 2-working key index - [in] 密钥类型
Output	none
Returns	true-success false-failed

Note	none

3.11.2.18.PedGetDukptKSN_Api

Function	int PedGetDukptKSN_Api(byte GroupIdx, byte[] KsnOut)	
Description	Get the current KSN	
Parameters[in]	GroupIdx	[1~10], DUKPT key group index
Parameters[out]	KsnOut	The current KSN (10 bytes)
Return value	0	Success
	1	DUKPT Index Over Range
	2	Reading Encryption Key MMK Error
	3	Reading DUKPT Key Error
	4	Key Index Number Error
	5	Key HASH Value Check Error
	6	Other Error
	7	Reference Error Author
Remark		

3.11.2.19.PEDGetDukptPin_Api

Function	int PEDGetDukptPin_Api(String disMsg, byte[] dataIn, int keyIndex, byte[] pinLimit, int mode, int timeOut, final IGetDukptPinListener listenner)	
Description	During the specified time, input the password and get the pinblock	
Parameters[in]	disMsg	Tips
	dataIn	**Maximum length 25 bytes** **Mode=0x00** : DataIn (16 bytes): remove the last byte of card number, if still >=16 byte,then use the last 16 bytes, if <16 bytes, then fill 0x30 in the front of that

		Mode=0x01 : DataIn (8 bytes) .it can be a random number, trace number(ISN) , or timestamp **Mode=0x02** : DataIn~ DataIn+15 (16 bytes): remove the last byte of card number, if still >=16 byte,then use the last 16 bytes, if <16 bytes, then fill 0x30 in the front of that DataIn+16~DataIn+23 (8 bytes): according to ISO9564 standard, it can be a random number, trace number(ISN) , or timestamp; high 4 bit or low 4 bit of every bytes should be in 0x0a~0x0f **Mode=0x03** Trace number(ISN) [6 Bytes,ASCII]
	keyIndex	[1~10], DUKPT key group index
	pinLimit	Enumeration of password's length (0~12) you need. For example: "0,4,6" : the length of password can be 0/4/6 "\0" : the length of password can only be 0 "4" : the length of password can only be 4 If the length of password is 0, then we can press enter key to continue without input any password
	Mode	0 : ISO9564 format 0, KSN will be increased by 1 1 : ISO9564 format 1, KSN will be increased by 1 2 : ISO9564 format 3, KSN will be increased by 1 20: ISO9564 format 0, KSN will not be increased 21: ISO9564 format 1, KSN will not be increased 22: ISO9564 format 3, KSN will not be increased
	TimeoutMs	Timeout for typing password, millisecond If over than the maximum timeout (120000ms), the return

		value will be -321 0: it'll wait until password is input
	IGetDukpt PinListener	Callback interface in which to get PINBLOCK
Return value	0	Success
	others	Failed
Remark		

3.11.2.20.PEDGetEMVOfflinePin_Api

Prototype	public static int PEDGetEMVOfflinePin_Api(java.lang.String disMsg, int min, int max, int timeOut)
Function	Get the EMV offline plaintext pin
Input	disMsg - [in] Prompt information min - [in] Length limit max - [in] Length limit timeOut - [in] time-out period
Output	none
Returns	0:success 1:min and max are illegal 2:Service exceptions 3:time out 4:Password keyboard exception 5:User cancelled 10: no PIN
Note	None

3.11.2.21.PEDGetEMVOfflinePin_Api

Prototype	public static int PEDGetEMVOfflinePin_Api(java.lang.String disMsg, byte[] pinLimit, int timeOut)

Function	Get the EMV offline plaintext pin
Input	disMsg - [in]Prompt information min - [in]the minmum length max - [in]the maxmum length timeOut - [in]time-out period
Output	none
Returns	0: Success 2: service exception 3:time out 4:Password keyboard exception 5:User cancelled 10: no PIN
Note	none

3.11.2.22.PEDGetExpress_Api

Prototype	public static int PEDGetExpress_Api(java.lang.String disMsg, byte[] pinLimit, int timeOut, com.vanstone.transex.ped.IGetPinResultListenner listenner)
Function	Get the offline plaintext pin
Input	disMsg - [in] Prompt information pinLimit - [in] length limit timeOut - [in] time-out peroid listenner - [in] callback
Output	none
Returns	0:success else:failed
Note	none

3.11.2.23.PEDGetLastError_Api

Prototype	public static java.lang.String PEDGetLastError_Api()

Function	Gets the last failure message for the password keyboard
Input	none
Output	none
Returns	Failed description information
Note	none

3.11.2.24.PedGetMacDukpt_Api

Function	int PedGetMacDukpt_Api(byte GroupIdx, byte Increase, byte[] DataIn, int DataInLen, byte[] MacOut, byte[] KsnOut, byte Mode)	
Description	Get DUKPT MAC	
Parameters[in]	GroupIdx	[1~10], DUKPT key group index
	Increase	0: KSN not changed after this API 1: KSN increased by 1 after this API
	DataIn	The data used to calculate MAC
	DataInLen	The length of DataIn (should be <=1024). It must be multiple of 8 bytes
	Mode	**KSN will be increased by 1** (the key below means MAC key) **00 :** R1 = TDES(key, BLOCK1); R11 = XOR(R1 , BLOCK2); R2 = TDES(key, R11); R21 = XOR(R2 , BLOCK3); ..... R[n-1]=TDES(key,R[n-2]1);R[n-1]1=XOR(R[n-1], BLOCKn); Rn = TDES(key, R(n-1)1); Rn is the final result; **01 :** R1 = XOR(BLOCK1, BLOCK2); R2 = XOR(R1, BLOCK3); .....

		R[n-1] = XOR(R[n-2], BLOCKn); Rn = TDES(key, R[n-1]); Rn is the final result; **02:** Only the last time use TDES, others use DES (select the front 8 bytes of MAC key) , like this: R1 = DES(key, BLOCK1); R11 = XOR(R1 , BLOCK2); R2 = DES(key, R11); R21 = XOR(R2 , BLOCK3); ..... R[n-2]=DES(key,R[n-3]1);R[n-2]1=XOR(R[n-2], BLOCK[n-1]); R[n-1]=DES(key,R[n-2]1);R[n-1]1=XOR(R[n-1], BLOCK[n]); Rn = TDES(key, R[n-1]1); Rn is the final result; **03** : CMAC arithmetic **KSN will be not increased** **20**: arithmetic is the same as 00 , KSN will not be increased **21**: arithmetic is the same as 01 , KSN will not be increased **22**: arithmetic is the same as 02 , KSN will not be increased **23**:
Parameters[out]	MacOut	Mac value (8 bytes)
	KsnOut	Current KSN (10 bytes)
Return value	0	Success
	others	Failed, please refer to [Error code of PED DUKPT] in Appendix part
Remark	0: Success 3: Data Length Error 4: Key Index Error 5: Reading DUKPT Key from FLASH Error 6: Key Length Error	

	7: Reference Error 8: Other Errors

3.11.2.25,PEDGetPwd_Api

Prototype	public static void PEDGetPwd_Api(String disMsg, byte[] panBlock, byte[]pinLimit, int keyIndex, int timeOut, int mode, IGetPinResultListenner listener)
Function	Get the password for the 9.8 algorithm.
Input	disMsg – message display panBlock - [in] card number, if the length is 0 does not participate in the card number operation pinLimit - Length limit for [in] pin input "\x00\x04\x06" Only length 0,4,6 password can be input keyIndex - index of [in] pin key timeout-- timeout Mode - [in] 0x01 Key is a single DES key (8 bytes) 0x02 Key is SM4 key (16 bytes) 0x03 Key is 3DES key (16 bytes) listener - [in] password will be output with it
Output	None
Returns	None
Note	None

3.11.2.26.PEDGetPwd_Api

Prototype	public static void PEDGetPwd_Api(int wkindex,byte[] pinLimit, java.lang.String CardNo, int mode, IKeyBoard board, PedApi.OnPedKeyListener pedKeyListener)
Function	Get the password of 9.8 algorithm

Input	wkindex - [in]The index of the pin key pinLimit - [in] The length limit "\x00\x04\x06" for pin input can only be the length of 0,4,6 password CardNo - [in] Card number, if the length is 0, it does not participate in card number operation mode - [in] 0x01, Key is single DES Key (8 bytes) 0x02 Key,Is the SM4 key (16 bytes) 0x03 Key,Is the 3DES key (16 bytes) board - [in] Password keyboard pedKeyListener - [in] Listen back to the interface
Output	none
Returns	none
Note	none

3.11.2.27.PEDGetPwd_Api

Prototype	public static int PEDGetPwd_Api(int wkindex, int min, int max, byte[] cardNo, byte[] pin, int line, int mode)
Function	Get the password of 9.8 algorithm
Input	wkindex - [in] The index of the pin key min - [in]The minimum number of passwords to enter max - [in] The maximum number of passwords to enter cardNo - [in]Card number, if the length is 0, it does not participate in card number operation line - [in] which line to show on mode - [in] 0x01,Key is single DES Key (8 bytes) 0x02,Key is the SM4 Key (16 bytes) 0x03 ,Key is 3DES key (16 bytes)
Output	pin - [out]Encrypted pinblock
Returns	0-success else-failed

Note	none

3.11.2.28.PEDGetPwd_Api

Prototype	public static int PEDGetPwd_Api(int wkindex, int min, int max, byte[] cardNo, byte[] pin, int line, int mode, PedListener pedListener)
Function	Get the password of 9.8 algorithm
Input	wkindex - [in] The index of the pin key min - [in]The minimum number of passwords to enter max - [in] The maximum number of passwords to enter cardNo - [in]Card number, if the length is 0, it does not participate in card number operation line - [in] which line to show on mode - [in] 0x01,Key is single DES Key (8 bytes) 0x02,Key is the SM4 Key (16 bytes) 0x03 ,Key is 3DES key (16 bytes) pedListener - [in] callback
Output	none
Returns	0-success else-failed
Note	none

3.11.2.30.PEDGetPwdzh_Api

Prototype	public static int PEDGetPwd_Api(java.lang.String disMsg, byte[] panBlock, byte[] pinLimit, int keyIndex, int timeOut, int mode,com.vanstone.transex.ped.IGetPinResultListenner listenner)
Function	Get the password of 9.8 algorithm

Input	wkindex - [in] The index of the pin key min - [in]The minimum number of passwords to enter max - [in] The maximum number of passwords to enter cardNo - [in]Card number, if the length is 0, it does not participate in card number operation line - [in] which line to show on mode - [in] 0x01,Key is single DES Key (8 bytes) 0x02,Key is the SM4 Key (16 bytes) 0x03 ,Key is 3DES key (16 bytes)
Output	pin - [out]Encrypted pinblock
Returns	0-success else-failed
Note	none

3.11.2.31.PEDHaveCallBack_Api(decrated / Empty)

Prototype	public static void PEDHaveCallBack_Api()
Function	
Input	
Output	
Returns	
Note	

3.11.2.32.PEDMac_Api

Function	int PEDMac_Api(int wkindex, int mode, byte []buf, short Len, byte []Out ,int flag)
Description	The wkindex operation is performed by MAC, and the result is stored in macout.
Parameters[in]	wkindex Index of storage key mode:

	MACAlgorithm for operation 0x01: DES Encryption 0x03: 3DES Encryption Len MAC [Len packet length <500] Data Data packets required for MAC operations flag 0x00: ANSI X9.19(ICBC head office algorithm, when it is the working line algorithm, mode does not work) 0x01: Union CBC algorithm 0x02: Traffic bank algorithm
Parameters[out]	N/A
Return Value	0 Success 1 Timeout 2 Flag wrong 3 mode wrong 4 Illegal index 5 Illegal length 6 Password Key disk lock 7 The key does not exist 8 Other mistakes
Remark	N/A

3.11.2.33.PEDReadPinPadSn_Api

Prototype	public static int PEDReadPinPadSn_Api(byte[] Sn)
Function	Read the password keyboard serial number.
Input	None
Output	Sn - the length of 2 bytes + the machine serial number If the machine serial

	number is 12345678, then sn = \x30\x38\x31\x32\x33\x34\x35\x36\x37\x38
Returns	0: write success Other: Failed
Note	None

3.11.2.34.PEDSavePinPadSn_Api

Prototype	public static int PEDSavePinPadSn_Api(byte[] Sn)
Function	Write the machine serial number to the password keyboard
Input	Sn - [in] serial number(40bytes)
Output	none
Returns	0-success else-failed
Note	none

3.11.2.35.PedSelectPlace_Api

Prototype	public static int PedSelectPlace_Api(java.lang.String Place)
Function	Select the master key store area
Input	Place - [in] Key areas PEDPLACE_PUBLIC :public area PEDPLACE_PRIVATE:private area
Output	none
Returns	0-success else-failed
Note	none

3.11.2.36.PEDSetContent_Api

Prototype	public static void PEDSetContent_Api(Context act)
Function	Setting context parameters
Input	act - [in]context

Output	none
Returns	none
Note	none

3.11.2.37.PEDSetDispAmt_Api

Prototype	public static void PEDSetDispAmt_Api(java.lang.String disAmt)
Function	Set display amount
Input	disAmt - [in] amount
Output	none
Returns	none
Note	none

3.11.2.38.PEDSetHdSoft_Api

Prototype	public static int PEDSetHdSoft_Api(int HdOrSoft)public static int PEDSetHdSoft_Api(int HdOrSoft)
Function	Set the hard and soft algorithms
Input	HdOrSoft - [in] 1: soft algorithms else:hard algorithms
Output	none
Returns	0-succecss
Note	none

3.11.2.39.PEDSetKeyType_Api

Prototype	public static void PEDSetKeyType_Api(int keyType)
Function	set the type of private key
Input	keyType - [in] the type of private key, Master key plaintext, ciphertext, transmission key,dukpt
Output	none
Returns	none
Note	none

3.11.2.40.PEDSetPinBoardStyle_Api

Prototype	public static void PEDSetPinBoardStyle_Api(int PinBoardType)
Function	Set the style of the interface for the input pin
Input	PinBoardType - [in] 1-half screen 2-full screen (English) 3-full screen(Chinese)
Output	none
Returns	none
Note	none

3.11.2.41.PEDSnMacOnly_Api

Prototype	public static int PEDSnMacOnly_Api(byte[] data, int dataLen, byte[] out, int mode)
Function	POS terminal hardware serial number encryption (unionpay algorithm)
Input	data - [in] Computed data dataLen - [in] the length of computed data mode - [in] 0x02-sm4, 0x03-3des
Output	out - [out] Output 8 bytes of ASCii MAB
Returns	0-success else-failed
Note	none

3.11.2.42.PedSubmit

Prototype	public static void PedSubmit(IKeyBoard board)
Function	To submit the password entry interface, press enter
Input	board - [in] keyboard
Output	none
Returns	none
Note	none

3.11.2.43.PEDWrite21Key_Api

Prototype	public static int PEDWrite21Key_Api(int mode, byte[] data)
Function	Write 21 text key plaintext interface
Input	mode - [in] mode: 0x02-sm4 0x03-3des data - [in] Key plaintext (16 bytes)
Output	none
Returns	0-success else-failed
Note	none

3.11.2.45.PEDWriteIcBcKey_Api

Prototype	public static int PEDWriteIcBcKey_Api(byte[] inbuf, int AKeyIndes, int MasteKeyIndes, int MacKeyIndes, int PinKeyIndes, int Flag28, byte[] BitMap)
Function	caculate the data from package Icbc 8583 domain 62
Input	inbuf - [in] Icbc's key ciphertext AKeyIndes - [in] the index of Akey MasteKeyIndes - [in] the index of master key MacKeyIndes - [in] the index of MacKey PinKeyIndes - [in] the index of PinKey Flag28 - [in] datas from server BitMap - [in] BitMap from server
Output	none
Returns	0:success 1:error master key 2:verify master key error

	3:update master key error 4:MAC key error 5:verify Mackey error 6:update Mackey error 7:error MAC key 8:verify Mackey error 9:update Mackey error
Note	none

3.11.2.46.PEDWriteKey_Api

Prototype	public static int PEDWriteKey_Api(int SKeyIndex, int DKeyIndex, byte[] DKey, int DKeyType, int mode, byte[] KVRData)
Function	Write the master key or work key.
Input	SKeyIndex - [in] Source Key Index 0-99DKeyIndex - [in] Destination Key Index 0-99DKey - [in] Destination Key bufDKeyType - [in] Destination Key Type 1 - Master Key 2 - Work Key mode - [in] 0x10 Destination key is directly written in the form of DES plaintext (only when DKeyType=1) 0x30 destination key is directly written in the form of 3DES plaintext (only when DKeyType=1) 0x81 source key writes DES decryption to the destination key 0x83 source key is decrypted after 3DES decryption of the destination key 0x13 source key performs 3DES decryption on the destination key, and stores the result of encryption and decryption in the single DES area (mainly used for analyzing the key of the UnionPay) KVRData - [in] Key Verification Mode Grouping check data in order of 8 bytes [0]: Verification method

	0 (0x80) - ICBC algorithm Use the first 8 bytes of the source key (use 0x80 for the destination key) to des encrypt the data followed by the second set of data for XOR, and then encrypt the XORs until the last set of source keys (when 0x80 is used Secret key) data Get 8 byte results for DES/3DES encryption 1 (0x81) - UnionPay algorithm The data is XORed in groups to obtain the result of the exclusive OR of the last 8 bytes. The source key (when 0x81 is used as the destination key), the data is DES/3DES encrypted to get 8 bytes of result. 2 (0x82) - Coding algorithm The DES/3DES encryption is performed on the 8 bytes using the source key (using the destination key when 0x82), and the result of the XOR is XORed with the latter set of data, and successively performed until the last 8 bytes. DES/3DES Encryption of 8 Bytes with Source Key (Use 0x82 with Destination Key) 255 - not verified [1]: Check data length is a multiple of 8 len1 [2]-[2+len1]: Data content to be checked [2+len1]: The length of the result data len2 [2+len1+len2]: The result data content is compared with the calculated result.
Output	None
Returns	0: successful 1: The source key index is illegal 2: The destination key index is illegal 3: illegal mode 4: Password keyboard is locked 5: illegal key 6: The key does not exist 7: Illegal DKeyType 8: Check failed

	9: Other issues
Note	Mode: 0x00 The destination key is directly written in the form of a clear text (only if DKeyType=1), and KVRData is not checked

3.11.2.47.PEDWriteMKey_Api

Function	`int PEDWriteMKey_Api(int mkindex, int mode , byte []mkey)`
Description	Load/write a master key into the terminal

Parameters[in]	`mkindex`
	Index of storage master key
	`mode`
	0x01 Key for the DES key (8 bytes)
	0x03 Key for the 3DES key (16 bytes)
	`mkey`
	Key value

Parameters[out]	`N/A`
Return value	0 Success 1 Timeout 2 Key index illegal 3 mode wrong 4 Password Key disk lock 5 Illegal key 6 Other errors
Remark	N/A

3.11.2.48.PEDWriteWKey_Api

Function	`int PEDWriteWKey_Api(int MkeyIndex, int WkeyIndex, int mode, byte []wkey)`
Description	After the mode method is used to decrypt `wkey`(encrypted) by

	MkeyIndex, the result is stored in the working key area specified by WkeyIndex.

Parameters[in]	`MkeyIndex`
	Index of storage master key
	`WkeyIndex`
	Index of storage key
	`mode`
	0x01 DES Encryption
	0x03 3DES Encryption
	0x81 DES Decrypt
	0x83 3DES Decrypt
	0x13 3DES Decryption, and the encryption and decryption results are stored in a single DES area (mainly for the key of the Union's key)
	`wkey`
	Key value

Parameters[out]	`N/A`
Return value	0 Success 1 Timeout 2 Illegal index 3 mode Illegal 4 Password Key disk lock 5 Illegal key 6 The key does not exist 7 Other errors
Remark	`N/A`

3.11.2.49.setAmountColor

Prototype	public static void setAmountColor(java.lang.String amountColor)
Function	Set password keypad amount font color

Input	textColor -[in] resource of color
Output	none
Returns	none
Note	none

3.11.2.50.setAmountFont

Prototype	public static void setAmountFont(java.lang.String amountFont)
Function	Set password keyboard amount font style
Input	textColor -[in] resource of style
Output	none
Returns	none
Note	none

3.11.2.51.setAmountSize

Prototype	public static void setAmountSize(float amountSize)
Function	Set the amount font size on the password keyboard
Input	textSize -[in]font size
Output	none
Returns	none
Note	none

3.11.2.53.setBottomFont

Prototype	public static void setBottomFont(java.lang.String bottomFont)
Function	Set the font style at the bottom of the password keyboard function key
Input	bottomFont -[in] font style
Output	none
Returns	none
Note	none

3.11.2.54.setBottomTextColor

Prototype	public static void setBottomTextColor(java.lang.String bottomTextColor)
Function	Set the font color at the bottom of the password keyboard function key
Input	bottomTextColor -[in]resource of color
Output	none
Returns	none
Note	none

3.11.2.55.setBottomTextSize

Prototype	public static void setBottomTextSize(float bottomTextSize)
Function	Set the font size at the bottom of the password keyboard function key
Input	bottomTextSize -[in]font size
Output	none
Returns	none
Note	none

3.11.2.56.setCardNo

Prototype	public static void setCardNo(java.lang.String cardNo)
Function	Card number input (display) when setting offline pin
Input	cardNo -[in]a string of card number
Output	none
Returns	none
Note	none

3.11.2.57.SetMkeyIndex_Api(deprecated)

Prototype	public static void SetMkeyIndex_Api(int MkeyIndex)
Function	set the index of master key
Input	MkeyIndex - [in]the index of master key
Output	none

Returns	none
Note	none

3.11.2.58.setNumColor

Prototype	public static void setNumColor(java.lang.String numColor)
Function	Set the font color of password keyboard numeric keys
Input	numColor -[in]resource of color
Output	none
Returns	none
Note	none

3.11.2.59.setNumFont

Prototype	public static void setNumFont(java.lang.String numFont)
Function	Sets the font style for the numeric keys on the password keyboard
Input	numSize -[in]resource of style
Output	none
Returns	none
Note	none

3.11.2.60.setNumSize

Prototype	public static void setNumSize(float numSize)
Function	Sets the font size of the numeric keys on the password keyboard
Input	numSize -[in]font size
Output	none
Returns	none
Note	none

3.11.2.61.setPinBoardFixed

Prototype	public static void setPinBoardFixed(boolean fixed)
Function	Set the order of the numbers on pinpad to fixed order or random order
Input	fixed: true - fixed oder false – random order
Output	
Returns	
Note	

3.11.2.62.setTextColor

Prototype	public static void setTextColor(java.lang.String textColor)
Function	Sets the font color of the password keyboard text
Input	textColor -[in]resource of color
Output	none
Returns	none
Note	none

3.11.2.63.setTextFont

Prototype	public static void setTextFont(java.lang.String textFont)
Function	Set the password keyboard text font style
Input	textColor -[in]resource of style
Output	none
Returns	none
Note	none

3.11.2.64.setTextSize

Prototype	public static void setTextSize(float textSize)
Function	Sets the font size of the password keyboard text
Input	textSize -[in]font size
Output	none

Returns	none
Note	none

3.11.2.65.setTitleBackGroundColor

Prototype	public static void setTitleBackGroundColor(java.lang.String titleBackGroundColor)
Function	Set the title color of the password keyboard
Input	titleBackGroundColor - the resource of color of title
Output	none
Returns	none
Note	none

3.11.2.66.WirteMkeyFY_Api

Prototype	public static int WirteMkeyFY_Api(byte[] Modul, int ModulLen, byte[] Exp, int ExpLen, byte[] mkey, int mkeylen, int mkindex)
Function	save the master key
Input	Modul - [in] public key modul ModulLen - [in] length Exp - [in] exponent ExpLen - [in]the length of exponent mkey - [in] master key ciphertext mkeylen - [in]the length of master key ciphertext mkindex - [in] the index of master key，it must be consistent with the transport key index
Output	none
Returns	0-success else-failed

Note	none

3.11.2.67.writeRSAKey_Api(deprecated)

Prototype	public static int writeRSAKey_Api(byte RSAKeyIndex,byte[] pstRsakeyIn)
Function	Inject RSA keys into PED
Input	RSAKeyIndex - the index of private key [1~10] pstRsakeyIn - 256byte RSA key
Output	none
Returns	0-success else-failed
Note	none

3.11.2.68.writeRSAKeyEx_Api

Prototype	public static int writeRSAKeyEx_Api(int RSAKeyIndex, int iModulusLen, byte[] aucModulus, int iExponentLen, byte[] aucExponent, byte[] aucKeyInfo)
Function	Write public key or private key of rsa, private key = private key index + mode,public key = public key index + module;
Input	RSAKeyIndex - the index of private key 1~10 iModulusLen - The length of the mould aucModulus - mould iExponentLen - Public key (private key) exponential length aucExponent - Public key (private key) exponent aucKeyInfo - the infomation of private key
Output	none
Returns	0-success <0-error code

Note	none

3.12.Class PiccApi

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<uses-permission android:name="android.permission.CLOUDPOS_CONTACTLESS_CARD"/>

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3.12.2.1.CommCardCommand_Api

Prototype	public static int CommCardCommand_Api(byte[] cmdIn,int cmdLen,byte[] cmdResp)
Function	send datas directly to the card, and the desfire card sends data in a non-apdu format
Input	cmdIn - [in]the data to send cmdLen - [in] the length of data to send
Output	cmdResp - [out] the datas that card returns
Returns	If the data returned by the card is greater than zero, it indicates success; other data indicates failure
Note	none

3.12.2.2.M1Authority_Api

Prototype	public static int M1Authority_Api(int Type,int blkNo, byte[] Pwd)
Function	Verify the M1 card KEY
Input	Type - [in]Used to specify the password type to submit, the type is A if parameter Type is set to ‘A’, ‘a’ or 0x0a and it is B if it is set to ‘B’, ‘b’ or 0x0b blkNo - [in] the block number，For 1K capacity M1 card, the effective range is 0 to 15 Pwd - [in]Points to the submitted password buffer
Output	none
Returns	-1:error card type

	-2:verify timeout -3:illegal parameters -4:other errors
Note	none

3.12.2.3.M1DecreaseValue_Api

Prototype	public static int M1DecreaseValue_Api(int blockNo,int value,int bkBlockNo)
Function	Block number reduction
Input	blockNo - [in] specifies the block number to access. For a 1K M1 card, the valid range is 0~3. Value - [in] reduced value bkBlockNo - [in] backed up block
Output	None
Returns	0 success; 1 M1 read block timeout; 2 parameter error; 3 Other errors
Note	None

3.12.2.4.M1IncreaseValue_Api

Prototype	public static int M1IncreaseValue_Api(int blockNo,int value,int bkBlockNo)
Function	Increased block number
Input	blockNo - [in] specifies the block number to access. For a 1K M1 card, the valid range is 0~3. Value - [in] added value bkBlockNo - [in] backed up block
Output	None
Returns	0 success; 1 M1 read block timeout; 2 parameter error;

	3 Other errors
Note	None

3.12.2.5.M1ReadBlock_Api

Prototype	public static int M1ReadBlock_Api(int BlkNo, byte[] BlkValue)
Function	Read the contents of the M1 card (16 bytes in total)
Input	BlkNo - [in] Specifies the number of the accessed block. For a 1K M1 card, the valid range is 0~3.
Output	BlkValue - [out] The buffer's first address that points to the contents of the block to be accessed; the buffer should allocate at least 16 bytes
Returns	0 success; 1M1 read block timeout; 2 parameter error; 3 other mistakes
Note	The wallet in the M1 card is also formed in a block in a specific format, and the reading balance is achieved by reading the block in which the wallet is located. The wallet format is as follows: BALANCE[4] + ^balance[4] + BALANCE[4] +BLK_NO+ ^blk_no+BLK_NO+ ^blk_no where BALANCE[4] - 4-byte balance (low byte first) in block The Chinese Communist Party deposits ^balance[4] twice -- the result of reversing the code of the remaining bytes in sequence. BLK_NO - the block number of the wallet; for a 1K capacity M1 card, the valid range is 0 ~ 63; two are stored in the block. Sub ^blk_no - the inverse of the block number where the wallet resides; stored twice in the block

3.12.2.6.M1WriteBlock_Api

Prototype	public static int M1WriteBlock_Api(int BlkNo, byte[] BlkValue)
Function	Writes the specified block to the M1 card (16 bytes in total)
Input	BlkNo - [in] Specifies the number of the accessed block. For a 1K M1 card, the valid range is 0~3.

	BlkValue - [in] Pointer to the first buffer of the block to write
Output	None
Returns	0 success; 1 M1 read block timeout; 2 parameter error; 3 Other errors
Note	If the write condition is satisfied (the corresponding password has been authenticated to pass), then calling this function can write the M1 card holder information (such as the card number) in the specified block, or write the wallet initial value, or other stream information. When the card is personalized, this function is also used to update the control block; At this point, it is necessary to ensure that the meaning of the 4-byte block control word and its check digit meet the requirements.

3.12.2.7.PiccCheck_Api

Prototype	public static int PiccCheck_Api(int Mode,byte[] CardType, byte[] SerialNo)
Function	Search for a PICC card in the specified mode; after the card is found, select it and activate it
Input	Mode - [in] 0: Search for any type of card in the magnetic field: 1, 'a', 'A', 0x0a: - Search for type A cards in the magnetic field 2, 'b', 'B', 0x0b: - Search for B-type cards in a magnetic field 3, 'm', 'M': Search for M1 card in magnetic field 'i','I': Search ID
Output	CardType - [out] Card type byte buffer; currently return a two-byte type value: CardType[0] : 'A' - search for type A card 'B' - search for type B card CardType[1] :

	'C' - search for CPU card 'M' - Search for M1 card SerialNo - [out] The buffer's first address of the card serial number information. This information in turn contains the contents of the serial number length and serial number content. The serial number of B type card and M1 card is 4 bytes; Type A card serial number is generally 4 bytes, there are 7 bytes or 10 bytes. Use byte SerialNo[0] to indicate the length of the serial number, SerialNo[1~10] holds the serial number (left-aligned). If you need to read the serial number and type A card, you need to use and determine the length byte.
Returns	0x00-success 0x01 - Parameter error (Invalid Mode value) 0x02 - Module is not turned on 0x03 - Conflict Other - Exception Error
Note	None

3.12.2.8.PiccClose_Api

Prototype	public static int PiccClose_Api()
Function	Close the contactless card module and turn it off
Input	None
Output	None
Returns	0x00-success Other - abnormal error
Note	None

3.12.2.9.PiccGetCardInfo_Api

Prototype	public static int PiccGetCardInfo_Api(byte[] lenArray,byte[] atqa,byte[] ats,

	byte[] uid)
Function	Get the card information
Input	lenArray - 4 byte data lenArray[0]:the length of atqa lenArray[1]:the length of ats lenArray[2]:the length of uid lenArray[3]:the data of sak (1 byte) atqa - the data of atqa ats - the data of ats uid - the data fo uid
Output	none
Returns	1-susccess <0-error code
Note	none

3.12.2.10.PiccHalt_Api

Prototype	public static int PiccHalt_Api()
Function	Card hang
Input	None
Output	None
Returns	0-success Other - failed
Note	None

3.12.2.11.PiccIsoCommand_Api

Prototype	public static void PiccIsoCommand_Api(ApduSend apduSend, ApduResp apduResp)
Function	Sends APDU formatted data to card and receives response on specified channel
Input	apduSend - [in] Application Data Read and Write Operation Parameter Frames for Contact IC Cards are Basically the Same

Output	apduResp - [out] and contact IC card application data read and write operation parameter framework is basically the same
Returns	None
Note	None

3.12.2.13.PiccOpen_Api

Prototype	public static int PiccOpen_Api()
Function	Power on and reset the contactless card module, check whether the initial state of the module after reset is normal
Input	None
Output	None
Returns	0x00-success Other - abnormal error
Note	None

3.12.2.14.PiccRemove_Api

Prototype	public static int PiccRemove_Api()
Function	Determine whether the card has been removed from the sensing area.
Input	None
Output	None
Returns	0x00 - Success, the card has moved away from the sensing area 0x01 - module is not turned on 0x02 - The card has not moved the sensing area
Note	None

3.12.2.15.PiccRest_Api

Prototype	public static int PiccRest_Api(int mode, byte[] responseBuffer)
Function	Card to reset
Input	Mode - [in] 0: cold reset 1: hot reset

Output	responseBuffer - [out] reset return information
Returns	0-success Other - failed
Note	None

3.12.2.16.SidCardCommand_Api

Prototype	public static int SidCardCommand_Api(byte[] apduSend, int sendLen, byte[] apduRecv)
Function	Id card interactive apdu
Input	apduSend - [in] the apdu data that sent sendLen - [in] the length of apdu
Output	apduRecv - [out] the datas that apdu returned
Returns	the effective length of the apduRecv that returns
Note	none

3.13.Class ScanApi

Name	Value	Note
BDL_SCAN_TOOLS	“scan_tools”	auto,zbar,... default is auto
BDL_SCAN_TIMEOUTS	“scan_timeouts”	time-out period
BDL_SCAN_FlASH	“scan_flash”	Whether to turn on the flash
BDL_SCAN_BUZZER	“scan_buzzer”	Whether to turn on the buzzer
BDL_SCAN_VIBRATE	“scan_vibrate”	Whether to open vibration
BDL_SCAN_CAMERA_FORE	“scan_camera_fore”	Whether to set the front camera
BDL_SCAN_LAYOUT_TYPES	“scan_layout_type”	default,icbc,ccb...
BDL_SCAN_LAYOUT_TITLE	“scan_layout_title”	title
BDL_SCAN_LAYOUT_ESCBTN_TEXT	“scan_layout_escbtn_text”	the text of cancel button
BDL_SCAN_LAYOUT_ESCBTN_POSIT	“scan_layout_escbtn_posit”	the text of cancel button
BDL_SCAN_WIDTH	“scan_width”	The width of the scan box ,the default is 632
BDL_SCAN_HEIGHT	“scan_height”	The height of the scan box ,the default is 632
BDL_SCAN_LAYOUT_SUBTEXT	“scan_subtext”	
BDL_SCAN_TOGGLE_ON	“scan_toggle_no”	
BDL_SCAN_MODE	“scan_mode”	
BDL_SCAN_ONESHOT	“scan_oneshot”	
BDL_SCAN_CANINPUT	"can_input_barcode"	Whether manually entering a one-dimensional code is aviliable
BDL_SCAN_DIALOGTITLE	"title_text"	the title of dailog when manually entering a one-dimensional code
BDL_SCAN_MULTTIME	"scan_multime"	
BDL_SCAN_TIME_INTERVAL	"scan_time_interval"	
BDL_SCAN_CUSTOM_TITLEBAR_COLOR	"scan_custom_title_bgcolor"	used for the customized pages of Russian version
BDL_SCAN_CUSTOM_TITLE_SIZE	"scan_custom_title_size"	
BDL_SCAN_CUSTOM_TITLE_COLOR	"scan_custom_title_color"	
BDL_SCAN_CUSTOM_TITLE_FONT	"scan_custom_title_font"	
BDL_SCAN_CUSTOM_SUM	"scan_custom_sum"	

BDL_SCAN_CUSTOM_SUM_SIZE	"scan_custom_sum_color"	
BDL_SCAN_CUSTOM_SUM_COLOR	"scan_custom_sum_color"	
BDL_SCAN_CUSTOM_SUM_FONT	"scan_custom_sum_font"	
BDL_SCAN_CUSTOM_WARM_SIZE	"scan_custom_warm_size"	
BDL_SCAN_CUSTOM_WARM_COLOR	"scan_custom_warm_color"	
BDL_SCAN_CUSTOM_WARM_FONT	"scan_custom_warm_font"	
BDL_SCAN_CUSTOM_BTNTEXT	"scan_custom_btntext"	
BDL_SCAN_CUSTOM_BTNTEXT_SIZE	"scan_custom_btntext_color"	
BDL_SCAN_CUSTOM_BTNTEXT_COLOR	"scan_custom_btntext_color"	
BDL_SCAN_CUSTOM_BTNTEXT_FONT	"scan_custom_btntext_font"	
BDL_SCAN_CUSTOM_BUTTON_SHOW	“scan_custom_button_show”	
BDL_SCAN_CUSTOM_TARGET_ACTIVITY	“scan_custom_target_activity”	

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3.13.1.1.ScanClose_Api

Prototype	public static int ScanOpen_Api(Bundle bundle, com.vanstone.appsdk.api.interfaces.IScanResult scanCallback)
Function	Open the scanner and starting scanning
Input	bundle - [in]parameters that being passed to acticity scanCallback - [in]the callback of sacnning result
Output	none
Returns	0-ok
Note	none

3.13.1.2.ScanGetData_Api

Prototype	public static int ScanGetData_Api(byte[] barCodeOut)
Function	get the scanning result
Input	none
Output	barCodeOut-[out]the scanning result

Returns	0-ok
Note	none

3.13.1.3.ScanOpen_Api

Prototype	public static int ScanClose_Api()
Function	finish the scanning page
Input	none
Output	none
Returns	0-ok
Note	none

3.14.Class SignApi

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3.13.1.1.getSignatureCompressData_Api

Prototype	public static byte[] getSignatureCompressData_Api()
Function	get signature compressed data
Input	none
Output	signData-[out]
Returns	the comoressed data
Note	none

3.13.1.2.getSignatureLength_Api

Prototype	public static int getSignatureLength_Api()
Function	Gets the length of the signature image compressed data
Input	none
Output	none
Returns	length
Note	none

3.13.1.3.getSignBmp_Api

Prototype	public static Bitmap getSignBmp_Api()
Function	get signed bitmap
Input	none
Output	none
Returns	signed bitmap
Note	none

3.13.1.4.isToastConfirm

Prototype	public static void isToastConfirm(boolean isToast)
Function	whether to show a confirm dialog when setting signature

Input	isToast - true:show confirm dialog，false:do not show confirm dialog
Output	none
Returns	none
Note	none

3.13.1.5.setResignCount

Prototype	public static void setResignCount(int count)
Function	Sets the times you can resign
Input	count - the times，-1 means there is no limit of times
Output	none
Returns	none
Note	none

3.13.1.6.setSignBoardStyle

Prototype	public static void setSignBoardStyle(int signBoardStyle)
Function	set the style of sign page
Input	signBoardStyle - [in] oritation:1-landscape 2-portrait screen
Output	none
Returns	none
Note	none

3.13.1.8.startSign_Api

Prototype	public static int startSign_Api(int time,java.lang.String signcode, com.vanstone.sign.IStartSignListenner iStartSignListenner)
Function	Open the electronic signature board
Input	time -[in]time-out period (s)，-1：no limit signcode - [in]feture code

	iStartSignListenner - [in]callback
Output	none
Returns	0-success else-failed
Note	none

3.13.1.9.stopSign_Api

Prototype	public static void stopSign_Api()
Function	Close the electronic signature board
Input	none
Output	none
Returns	none
Note	none

3.15.Class SystemApi

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Name	Value	Note
APICORE_VERSION	“V0000C219032600”	the version of api, it should be update on each modification
MODULE_PRINTER	1	
MODULE_MSCR	2	
MODULE_PINPAD	3	
MODULE_RFCARD	4	
MODULE_ICCARD	5	
MODULE_BUZZER	6	
MODULE_PSAM	7	
MODULE_BACKSRC	8	
MODULE_SCREEN	9	
MODULE_MIC	10	
MODULE_SDCARD	11	
MODULE_USB	12	
MODULE_3G	13	
MODULE_WIFI	14	
MODULE_ETHERNET	15	
MODULE_COM	16	
MODULE_HDMI	17	
MODULE_CAMERA	18	
MODULE_OS	19	
MODULE_STORAGE	20	
MODULE_POWERON	21	
MODULE_POWEROFF	22	
MODULE_HIBERNATE	23	
MODULE_WAKEUP	24	
MODULE_STATUS_NORMAL	0	
MODULE_STATUS_ERROR	1	

MODULE_NOT_SUPPORT	-1	
SYS_SN	"sn"	
SYS_TERMTYPE	"termType"	The terminal model of unionpay
SYS_MANUFACTURER	"manufacturer"	Manufacturer's model of unionpay
SYS_OTAVERSION	"otaVersion"	the versiono of OTA
SYS_IMEI	"IMEI"	
SYS_IMSI	"IMSI"	
SYS_ICCID	"ICCID"	
SYS_MANUFACTURENAME	"ManufactureName"	
SYS_MODEL	“model”	
SYS_BANKNAME	“bankName”	
SYS_ANDROID_OSVERSION	“androidOsVersion”	
SYS_ANDROID_KERNELVERSION	“androidKernelVersion”	
SYS_FIRMWARE	“firmware”	
SYS_HARDWARE	“hardware”	
HARD_PRINTER	"printer"	
HARD_MODEM	"modem"	
HARD_LAN	"lan";	
HARD_GPRS	"gprs"	
HARD_CDMA	"cdma"	
HARD_WIFI	"wifi"	
HARD_PICC	"picc"	
HARD_IC	"ic"	
HARD_MAG	"mag"	
HARD_WCDMA	"wcdma"	
HARD_BTH	"bth"	
HARD_GM	"gm"	
HARD_BEEP	"beep"	
HARD_LED	"led"	

HARD_LED	"location"	

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3.15.2.1.Beef_Api

Prototype	public static void Beef_Api(int ucMode, int DlyTime)
Function	Buzzer sounds at the specified frequency and duration
Input	ucMode - [in] Frequency setting, can be 0~6 value: 0 lowest frequency 6 most high frequency DlyTime - [in] Duration (in ms) (0~65535)
Output	None
Returns	None
Note	When the mode value is greater than 6, the function will use mode%7 as the sound frequency.

3.15.2.2.Beep_Api

Prototype	public static void Beep_Api(int flag)
Function	Send correct or wrong sound
Input	Flag - [in] 0 normal sound 1 wrong sound
Output	None
Returns	None
Note	None

3.15.2.3.Delay_Api

Prototype	public static void Delay_Api(int ms)
Function	Delay ms milliseconds
Input	Ms - delay time, unit: milliseconds.
Output	None
Returns	None
Note	None

3.15.2.4.deleteDir

Prototype	public static boolean deleteDir(java.io.File file)
Function	delete a system file
Input	file-[in]file
Output	none
Returns	true-success false-failed
Note	none

3.15.2.5.deleteFileInSe_Api

Prototype	public static int deleteFileInSe_Api(java.lang.String fileName)
Function	delete a file from se
Input	fileName-[in]the file to delete
Output	none
Returns	1-success <0-error code
Note	none

3.15.2.6.deleteFlashData_Api

Prototype	public static int deleteFlashData_Api(int addr, int deleteLen)
Function	delete the flash data from se
Input	addr - the start address deleteLen - the length of data
Output	none
Returns	1-success <0-error code
Note	none

3.15.2.7.DownLoadSn_Api

Prototype	public static int DownLoadSn_Api(int port)
Function	Download the machine serial number through the download tool
Input	port - [in]Serial Port
Output	none
Returns	0-success 1-save machine serial number failed -1-send failed -2-time out -3-illegal serial port 27-cancel
Note	none

3.15.2.8.FormatFileSystem_Api

Prototype	public static int FormatFileSystem_Api(int Flag)
Function	Formatting system files
Input	Flag - 0: delete multiple application files, depending on the download application 1: delete the current application file.
Output	None
Returns	0: success -1: failure 1: marking error.
Note	None

3.15.2.9.GetAllVersion_Api

Prototype	public static Bundle GetAllVersion_Api()
Function	Get all version Numbers of the machine.
Input	None
Output	None
Returns	Bundle object

Note	None

3.15.2.10.GetEnv_Api

Prototype	public static int GetEnv_Api(java.lang.String szName, byte[] szValue, int flag, int bufsize, int Min, int Max)
Function	This algorithm first matches szName in the buffer and then searches the value in it. The file read must end with carriage return and line feed, and the contents read out are strings
Input	szName - [in]the parameter's name in parameter file flag - [in]bit0-bit7, bit3 desids if the paramenter is indispensable, bit7Indicates whether the argument specified in the parameter file is greater than the expected string length, BufSize bufsize - the size of szValue Min - the minmum length Max - the maxmum length
Output	szValue - [out]result according to szName
Returns	1-has 0-dosen't have
Note	none

3.15.2.11.getFileListInSe_Api

Prototype	public static int getFileListInSe_Api(java.util.ArrayList<java.lang.String> fileList)
Function	get the count of files according to file names
Input	fileList -[in] an array that stores file names
Output	none
Returns	>=0-the count of files <0-error code
Note	none

3.15.2.12.getSmartPosID

Prototype	public static int getSmartPosID(byte[] buffer)
Function	get customed datas of 128 bytes
Input	none
Output	buffer - [out]the buffer of datas to read，can not greater than 128 bytes
Returns	0-success -1-get empty data -2-failed -3-error parameter
Note	none

3.15.2.13.GetSysTime_Api

Prototype	public static void GetSysTime_Api(byte[] Buf)
Function	Get system time
Input	Buf - [out]BCD time If the time is October 23, 2011 13:23:40, the time string of the week 1 is "\x20\x11\x10\x20\x13\x23\x40\x01"
Output	None
Returns	None
Note	Buf[7] is the day of the week, 0 to 6 1: Monday 2: Tuesday 3: Wednesday 4: Thursday 5: Friday 5: Saturday 0 means Sunday

3.15.2.14.GetTime_Api

Prototype	public static int GetTime_Api(DateUser Dt, TimeUser Tm)
Function	Get system time
Input	Dt - Date DateUser object

	Tm - Time TimeUser object
Output	None
Returns	0 Successful 1 failed
Note	None

3.15.2.15.GetVersion_Api

Prototype	public static int GetVersion_Api(byte[] lpOut, byte[] VersionNum)
Function	get all version name of machine
Input	none
Output	lpOut - [out]20(mark)+1(length)+(content)+20(mark)+1(length)+... VersionNum - [out]count of versions that being got
Returns	0-success else-failed
Note	none

3.15.2.16.IsEnvParam_Api

Prototype	public static boolean IsEnvParam_Api()
Function	Whether hava parameters
Input	none
Output	none
Returns	1-have 0-do not have
Note	none

3.15.2.17.IsHandleOnBase_Api

Prototype	public static int IsHandleOnBase_Api()
Function	Check whether the phone is on the base.
Input	None

Output	None
Returns	0: The phone is on the base 1: The phone is not on the base
Note	None

3.15.2.18.PlaySound_Api

Prototype	public static void PlaySound_Api(int SoundNum, int SoundVolume)
Function	Play sound files
Input	SoundNum - Sound file number SoundVolume - The volume of the sound played, a total of 1-6 levels, 1 is the smallest, 6 is the maximum
Output	None
Returns	None
Note	None

3.15.2.19.PutEnv_Api

Prototype	public static int PutEnv_Api(java.lang.String szEvnName, java.lang.String szEvnValue, int EnvVaulueLen)
Function	write Env parameters
Input	szEvnName - [in]parameter name, 20bytes at most，When this parameter value is "RECOVERENV", the parameter file's detection flag will be written on the first line of the parameter file, For names in excess of 20bytes, only the first 20bytes are taken szEvnValue - [in]the value of parameter, 120bytes at most， For names in excess of 20bytes, only the first 20bytes are taken EnvVaulueLen -[in]the length of value
Output	none

Returns	0-success 1- szEvnName is illegal 2-szEvnValue is illegal 3-the file to be recoveried is not exists 4-stroage is no enough 5-other errors
Note	none

3.15.2.20.ReadAppInfo_Api(deprecated)

Prototype	public static int ReadAppInfo_Api(int AppNo, byte[] ai)
Function	Read infomations of multiple applications, each time read is the APP MSG structure
Input	AppNo -[in]the number of multiple applications, starts from 0 ai -
Output	none
Returns	0-success else-failed
Note	none

3.15.2.21.readFileFromSE_Api

Prototype	public static int readFileFromSE_Api(java.lang.String fileName, byte[] dataOut, int offset, int dataLen)
Function	read datas from se
Input	fileName - [in]the file name of file that to be read offset - [in]address offset, it should be 0 or greater than 0 dataLen - [in]the length that read
Output	dataOut -[out]the datas that read
Returns	>=0-the length of datas

	<0-error code
Note	none

3.15.2.22.readFlashData_Api

Prototype	public static int readFlashData_Api(int addr, byte[] buffer)
Function	get datas from se flash
Input	addr -[in] starting address buffer - [in]buffer
Output	none
Returns	>=0- the length of datas <0 -error code
Note	none

3.15.2.23.readNvRamFile_Api

Prototype	public static int readNvRamFile_Api(int offset, byte[] buf, int len)
Function	read nvram file
Input	offset - [in]offset buf -[in]buffer len - the length of datas,128bytes at most
Output	none
Returns	>0-the length of datas that been read actually <0-error code
Note	none

3.15.2.24.ReadPosSn

Prototype	public static java.lang.String ReadPosSn()
Function	Get the SN of the terminal
Input	
Output	

Returns	The SN of the terminal
Note	

3.15.2.25.RunApp_Api(deprecated)

Prototype	public static int RunApp_Api(int AppNo)
Function	run multiple applications
Input	AppNo-[in]the number of multiple applications,starts from 0
Output	none
Returns	0-success else-failed
Note	none

3.15.2.26.SetBackParamFile_Api

Prototype	public static int SetBackParamFile_Api(java.lang.String fileName)
Function	Set the backup file path
Input	fileName-[in]Full file path
Output	none
Returns	none
Note	none

3.15.2.27.SetBaseBroadcast_Api

Prototype	public static void SetBaseBroadcast_Api(boolean open)
Function	Set whether to send a broadcast when the base state changes
Input	open -[in] true - send false -do not send
Output	none
Returns	none
Note	none

3.15.2.28.setSmartPosID

Prototype	public static int setSmartPosID(byte[] data)
Function	write 128 bytes customed datas
Input	data - [in]data to be written，128 bytes at most
Output	none
Returns	0-success -2-failed -3-error parameters
Note	none

3.15.2.29etSystemFunction

Prototype	public static boolean setSystemFunction(Bundle bundle)
Function	Set system function
Input	Bundle bundle Key: STATUSBARKEY Value: true – enable status bar false – disable status bar Key: HOMEKEY Value: true – enable home key false – disable home key Key: FUNCTIONKEY Value: true – enable function key false – disable function key
Output	
Returns	
Note	

3.15.2.30.SetTime_Api

Prototype	public static int SetTime_Api(DateUser Dt, TimeUser Tm)
Function	Set system time
Input	Dt - Date DateUser object Tm - Time TimeUser object

Output	None
Returns	0 Successful 1 failed
Note	None

3.15.2.31.silentInstallApk_Api

Prototype	public static void silentInstallApk_Api(java.lang.String filePath, java.lang.String pkgName, SystemApi.IAppInstallResult result)
Function	install apk scliently
Input	filePath -[in]file path pkgName -[in]package name result -callback
Output	none
Returns	none
Note	none

3.15.2.32.silentUnInstallApk_Api

Prototype	public static void silentUnInstallApk_Api(java.lang.String pkgName, SystemApi.IAppUninstallResult result)
Function	uninstall apk scliently
Input	padName-[in]package name result-callback
Output	none
Returns	none
Note	none

3.15.2.33.silentUnInstallApk_Api

Prototype	public static void silentUnInstallApk_Api(java.lang.String pkgName)

Function	uninstall apk scliently
Input	padName-[in]package name
Output	none
Returns	none
Note	none

3.15.2.34.stopBeep_api

Prototype	public static void stopBeep_api()
Function	Stop the buzzer.
Input	None
Output	None
Returns	None
Note	None

3.15.2.35.SystemExit_Api

Prototype	public static void SystemExit_Api()
Function	Sdk resource release
Input	None
Output	None
Returns	None
Note	None

3.15.2.36.SystemInit_Api

Prototype	public static int SystemInit_Api(int argc, byte[] argr, Context context, ISdkStatue sdkStatue)
Function	Initialize SDK
Input	Argc - [in]number of argrs

	Argr - [in] path Context - [in] context cannot be null sdkStatue - [in] sdk initialization callback information
Output	None
Returns	None
Note	None

3.15.2.37.SystemInit_Api

Prototype	public static int SystemInit_Api(int argc, byte[] argr, Context context)
Function	Initialize SDK
Input	Argc - [in]number of argrs Argr - [in] path Context - [in] context cannot be null
Output	
Returns	
Note	

3.15.2.38.SystemPowerOff_Api

Prototype	public static void SystemPowerOff_Api()
Function	power off system
Input	none
Output	none
Returns	none
Note	none

3.15.2.39.SystemReboot_Api

Prototype	public static void SystemReboot_Api()
Function	reboot system
Input	none

Output	none
Returns	none
Note	none

3.15.2.40.TimerCheck_Api

Prototype	public static int TimerCheck_Api(int Timeid, int ms)
Function	Check if the specified timer has timed out.
Input	Timeid - the ID of the timer (the ID returned when calling TimerSet_Api) Ms - time in milliseconds
Output	None
Returns	0 did not timeout 1 timeout
Note	None

3.15.2.41.TimerSet_Api

Prototype	public static int TimerSet_Api()
Function	Start a user timer, the minimum timing unit is 1ms
Input	None
Output	None
Returns	Timer ID number
Note	None

3.15.2.42.writeFileToSE_Api

Prototype	public static int writeFileToSE_Api(java.lang.String fileName, byte[] data, int offset, int dataLen)
Function	write datas to se
Input	fileName-[in]the name of the file to be written in

	data - [in]the datas to be written offset - [in]address offset, it should be 0 or greater than 0 dataLen - [in]the length of datas
Output	none
Returns	1-success <0-error code
Note	none

3.15.2.43.writeFlashData_Api

Prototype	public static int writeFlashData_Api(int addr, byte[] data)
Function	write datas to se flash
Input	addr-[in]starting address data-[in]data
Output	none
Returns	1-success else-error code
Note	none

3.15.2.44.writeNvRamFile_Api

Prototype	public static int writeNvRamFile_Api(int offset, byte[] data, int len)
Function	write nvram in
Input	offset -[in]address offset data - datas to be written len - the length of datas,128 bytes at most
Output	none
Returns	>0-the length of datas that to be written actually <-0-error code
Note	none

3.16.Class MagCardApi

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<uses-permission android:name="android.permission.CLOUDPOS_MSR"/>

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Name	Value	Note
FIRST_TRACK	1	the first track
SECOND_TRACK	2	the second track
THIRD_TRACK	3	the third track

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These APIs are for A90/A70, not for A70SV because A70SV not have hardware module for dealing with magnetic strip card.

3.16.3.1.MagOpen_Api

Prototype	public static int MagOpen_Api()
Function	The magnetic stripe module is powered on
Input	None
Output	None
Returns	0-success Other - failed
Note	None

3.16.3.2.MagClose_Api

Prototype	public static int MagClose_Api()
Function	The magnetic stripe module is powered off
Input	None
Output	None
Returns	0-success Other - failed
Note	None

3.16.3.3.MagReset_Api

Prototype	public static void MagReset_Api()
Function	Clears the magnetic card buffer data.
Input	None
Output	None
Returns	None
Note	None

3.16.3.4.MagSwiped_Api

Prototype	public static int MagSwiped_Api()
Function	Check if the card has been brushed.
Input	None
Output	None
Returns	0x00 Credit card 0xff cardless
Note	None

3.16.3.5.MagRead_Api

Prototype	public static int MagRead_Api(byte[] RBuf, byte[] RLen)
Function	Read the data of 1, 2 and 3 tracks of the magnetic card buffer.
Input	None
Output	RBuf - [out] Holds 1, 2, 3 track data RLen - [out] Stores the length of 1, 2, 3 track data
Returns	0x31 - Correct credit card 0x00 - Not swiped 0x37-Reading card error
Note	None

3.16.3.6.MagGetTradCode_Api

Prototype	public static int MagGetTradCode_Api(int tradNo)
Function	Determine whether the track data is normal
Input	tradNo - [in] 1-track 1 2-track 2 3-track 3
Output	None
Returns	1-parameter error 0 - No data 1-track data is correct 2-track data error
Note	None

3.16.3.7.MagSetCheckLrc_Api

Prototype	public static int MagSetCheckLrc_Api(boolean enable)
Function	Set whether to check LRC.
Input	Enable - [in] true: check LRC false: no LRC.
Output	None
Returns	None
Note	None

3.16.3.8.getTrackData_Api

Prototype	public static byte[] getTrackData_Api(int track)
Function	get the datas of a track
Input	track-[in]the track to get data from（FIRST_TRACK，SECOND_TRACK，THIRD_TRACK）
Output	None
Returns	the datas
Note	there is no data or brush card error if it returns null or an empty str

3.17 Rs232Api

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3.17.1.1. PortOpen_Api

Prototype	public static int PortOpen_Api(int comport)
Function	Open the specific port
Input	comport-[int] the port NO. of the port that need to be open
Output	None
Returns	0-success -1-failed
Note	None

3.17.1.2. PortClose_Api

Prototype	public static int PortClose_Api(int comport)
Function	Close the specific port
Input	comport-[int] the port NO. of the port that need to be closed
Output	None
Returns	0-success -1-failed
Note	None

3.17.1.3. PortSetBaud_Api

Prototype	public static int PortSetBaud_Api(int comport, int baud, int databits, int parity, int stopbits)
Function	Set the baud rate of the port
Input	comport-[int] the port NO. of the port that need to set baud rate baud-[int] the baud rate that need to be changed to databits-[int] data bits parity-[int] varication type stopbits-[int] stop bits
Output	None

Returns	0-success -1-failed
Note	None

3.17.1.4. PortSends_Api

Prototype	public static int PortSends_Api(int comport, byte[] buf, int len)
Function	Send data through the specific port
Input	comport-[int] the port NO. of the port that is used to send data buf-[byte[]] the data that need to be sent len-[int] the length of the data that need to be sent
Output	None
Returns	0-success -1-failed
Note	None

3.17.1.5. PortRecv_Api

Prototype	public static int PortRecv_Api(int comport, byte[] buf, int len, int ms)
Function	Receive data through the specific port
Input	comport-[int] the port NO. of the port that is used to receive data len-[int] the length of the data that expect to receive
Output	buf-[byte[]] the data that is received
Returns	-1-failed else-the length of data that is received
Note	None

3.17.1.6. PortIsEmpty

Prototype	public static int PortIsEmpty(int comport)
Function	Check whether the buffer of the port is empty
Input	comport-[int] the port NO. of the port that need to be checked

Output	None
Returns	0-empty else-not empty
Note	None

4.Core Package – Structures (com.vanstone.trans.api.struct)

4.1.Class ApduResp

Field Name	Definition
byte readCardDataOk	Card data exchange result. 1: OK 0xAA: Failure
short lenOut	Length of data returned from card.
byte[] dataOut	Data returned from card.
byte sWA	First status word.
byte sWB	Second status word.

4.2.Class ApduSend

Field Name	Definition
byte[] Command	INS, CLA, P1, P2
short Lc	Lc
byte[] DataIn	Data to be sent
short Le	Le
byte EnableCancel	Whether pressing cancle button to return is allowed

5.Addon Package – Utilities (com.vanstone.utils)

5.1.Class DesUtils

Prototype	public static byte[] decrypt(byte[] source, byte[] key)
Function	decryption
Input	source -[in]the data need to be decrypted key -[in]privare key, 16bytes
Output	none
Returns	the data that has been decrypted
Note	none

Prototype	public static java.lang.String decrypt(java.lang.String source,java.lang.String key)
Function	decryption
Input	source -[in]the data need to be decrypted, a hexadecimal string key - private key, a hexadecimal string, 16bytes
Output	none
Returns	the data that has been decryped,a hexadecimal string
Note	none

Prototype	public static byte[] decryptDes(byte[] keyByte, java.lang.String srcData)
Function	single DES decryption
Input	keyByte -[in]private key, 8 bytes srcData - [in]the data need to be decrypted
Output	none
Returns	the data that has been decryped
Note	none

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Prototype	public static byte[] decryptTDes(byte[] keyByte,java.lang.String srcData)
Function	3 DES decryption
Input	keyByte -[in]private key, 16 bytes srcData -[in]the data need to be decrypted
Output	none
Returns	the data that has been decryped
Note	none

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Prototype	public static byte[] encrypt(byte[] source, byte[] key)
Function	encrypt
Input	source -[in]the data need to be encrypted key -[in]private key, 16 bytes
Output	none
Returns	the data that has been encrypted
Note	none

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Prototype	public static java.lang.String encrypt(java.lang.String source, java.lang.String key)
Function	encrypt
Input	source -[in]the data need to be encrypted key -[in]private key, a hexadecimal string,16 bytes
Output	none
Returns	the data that has been encrypted
Note	none

Prototype	public static byte[] encryptDes(byte[] keyByte, java.lang.String srcData)
Function	single DES encrypted
Input	keyByte -[in]private key,8 bytes srcData -[in]the data that need to be encrypted
Output	none
Returns	the data that has been encrypted
Note	none

Prototype	public static byte[] decryptDes(byte[] keyByte, java.lang.String srcData)
Function	3 DES encrypted
Input	keyByte -[in]private key,16 bytes srcData -[in]the data that need to be encrypted
Output	none
Returns	the data that has been encrypted
Note	none

Prototype	public static byte[] Xor(byte[] data1, byte[] data2)
Function	xor
Input	data1 -[in]Datas that participates in the xor operation data2 - [in]the lengthes of datas that participates in the xor operation
Output	none
Returns	the result
Note	none

Prototype	public static int XorCalc_Api(byte[] Inbuf, int Len)
Function	xor
Input	Inbuf -[in]Datas that participates in the xor operation

	Len -[in]the lengthes of datas that participates in the xor operation
Output	none
Returns	the result
Note	none

5.2.Class QrcodeUtils

Prototype	public static Bitmap createQRImage(java.lang.String url, int desiredWidth, int desiredHeight)
Function	Generate a qr code
Input	url-[in]the content of qr code desiredWidth-[in]width of qr code desiredHeight-[in]height of qr code
Output	none
Returns	a bitmap of qr code
Note	none

Prototype	public static Bitmap creatBarcode(Context context, java.lang.String contents, int desiredWidth, int desiredHeight, com.google.zxing.BarcodeFormat barcodeFormat, boolean displayCode)
Function	Generate one-dimensional code
Input	context-[in]context contents-[in]the content of one-dimensional code desiredWidth-[in]width desiredHeight-[in]height barcodeFormat-[in]the format of barcode displayCode-[in]whether to display the code
Output	none
Returns	a bitmap of one-dimensional code
Note	none

Prototype	public static java.lang.String decode(Bitmap bitmap)
Function	Parsing bitmap
Input	bitmap –[in] bitmap object
Output	none
Returns	Parsed data of bitmap
Note	none

5.3.Class ByteUtils

Prototype	public static int bytesToStructs(byte[] buff, StructInterface[] sts)
Function	change byte array to struct array
Input	buff -[in]byte array sts -[in]struct object
Output	none
Returns	0-success 1-failed
Note	none

Prototype	public static int getMax(byte[] arr)
Function	Get the largest number in a byte array
Input	arr –[in] array
Output	none
Returns	The largest number
Note	none

Prototype	public static int initStructs(StructInterface[] sts)
Function	Instantiates an array of structs
Input	sts -[in]struct array
Output	none
Returns	0-success 1-failed
Note	none

Prototype	public static boolean isByteEmpty(byte[] data)
Function	determin whether the byte array is empty

Input	data -[in]the byte array
Output	none
Returns	true-empty false-is not empty
Note	none

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Prototype	public static boolean isdigit(byte data)
Function	ditermin whether it is a digit
Input	none
Output	none
Returns	true-is a digit false-is not a digit
Note	none

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Prototype	public static int memcmp(byte[] data1, int pos1, byte[] data2, int pos2, int len)
Function	Determines whether two byte[] are equal
Input	data1 -[in] byte array pos1 -[in]position data2 -[in]byte array pos2 -[in]pisiton len -[in]length
Output	none
Returns	0-equal 1-data1>data2 -1-data1
Note	none

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Prototype	public static int memcmp(byte[] data1, byte[] data2, int len)

Function	Determines whether two byte[] are equal
Input	data1-[in]byte array data2-[in]byte array len-[in]length
Output	none
Returns	0-equal 1-data1>data2 -1-data1
Note	none

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Prototype	public static int memcmpHex(byte[] data1, java.lang.String dataHex, int len)
Function	Determines whether two byte[] are equal
Input	data1 -[in]byte array dataHex -[in]a string len -[in]length
Output	none
Returns	0-equal 1-data1>data2 -1-data1
Note	none

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Prototype	public static void memcpy(byte[] dest, byte[] src)
Function	copy a byte[]
Input	dest -[in]destination src - [in]source
Output	none
Returns	none
Note	none

Prototype	public static void memcpy(byte[] dest, java.lang.String src)
Function	copy a byte[]
Input	dest -[in]destination src - [in]source
Output	none
Returns	none
Note	none

Prototype	public static void memcpy(byte[] dest, java.lang.String src, int len)
Function	copy a byte[]
Input	dest -[in]destination src - [in]source len -[in]length
Output	none
Returns	none
Note	none

Prototype	public static void memcpy(byte[] dest, int destbegin, byte[] src, int srcbegin, int len)
Function	copy a byte[]
Input	dest -[in]destination destbegin -[in]the start index of target byte array src -[in]source srcbegin -[in]the start index of source byte array len -[in]length
Output	none
Returns	none
Note	none

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Prototype	public static void memcpy(byte[] dest, int destbegin, java.lang.String src, int srcbegin, int len)
Function	copy an array
Input	dest -[in]destination destbegin -[in]the start index of target byte array src -[in]source srcbegin -[in]the start index of source byte array len -[in]length
Output	none
Returns	none
Note	none

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Prototype	public static void memcpy(byte[] dest, byte[] src, int len)
Function	copy an array
Input	dest -[in]destination src -[in]source len -[in]length
Output	none
Returns	none
Note	none

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Prototype	public static void memcpyHex(byte[] buf, java.lang.String data, int len)
Function	copy hexadecima datas to byte []
Input	buf -[in]buffer data -[in]a hexadecimal string like “0503” len -[in]length
Output	none

Returns	none
Note	none

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Prototype	public static void memcpyHex(byte[] buf, java.lang.String data, java.lang.String target, java.lang.String replacement, int len)
Function	copy hexadecima datas to byte []
Input	data -[in] a hexadecimal data target -[in]charactor that need to be replaced replacement -[in]charactor that used to replace target len -[in]length
Output	buf - [out]buffer
Returns	none
Note	none

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Prototype	public static void memmove(byte[] data, int to, int from, int len)
Function	Move a byte array to another index
Input	data -[in] the byte array need to be moved to -[in] the destination index from –[in] the original index len -[in] the length of the byte array
Output	none
Returns	none
Note	none

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Prototype	public static void memset(byte[] data, int start, char ch, int len)

Function	insert a character from an index of a byte array
Input	data- [in] byte array start- [in] the start index ch- [in] the character that need to be inserted len- [in] length
Output	none
Returns	none
Note	none

Prototype	public static byte[] mergeByte(byte[] begin ,byte[] end)
Function	Merge byte array
Input	begin -[in]byte arrary to be merged end-[in]byte arrary to be merged
Output	none
Returns	the byte array after merged
Note	none

Prototype	public static void strcat(byte[] dest, byte[] src)
Function	copy a byte array
Input	dest -[in]target byte array src -[in]source byte array
Output	none
Returns	none
Note	none

Prototype	public static void strcat(byte[] dest, java.lang.String src)
Function	copy a byte array
Input	dest -[in]target byte array

	src -[in]source byte array
Output	none
Returns	none
Note	none

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Prototype	public static byte[] strchr(byte[] buf, char ch)
Function	return datas that start with ch from buffer,null will returned if none of the condition is met
Input	buf -[in] byte array ch -[in]character
Output	none
Returns	success-the datas that start with ch failed-null
Note	none

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Prototype	public static byte[] strchr(byte[] buf, char ch, byte[] lenBuf)
Function	return datas that start with ch from buffer,null will returned if none of the condition is met
Input	buf -[in] byte array ch -[in]character lenBuf -[in]byte array
Output	none
Returns	success-the datas that start with ch failed-null
Note	none

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Prototype	public static int strcmp(byte[] data1, byte[] data2)
Function	determine if two bytes are consistent when converted to a string

Input	data1-[in]byte array data2-[in]byte array
Output	none
Returns	true-consistent false-not consistent
Note	none

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Prototype	public static int strcmp(byte[] data1, java.lang.String data2)
Function	determine if the byte array is consistent with data2 when converted t a string
Input	data1-[in]byte array data2-[in]string
Output	none
Returns	true-consistent false-not consistent
Note	none

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Prototype	public static void strcpy(byte[] dest, byte[] src, int len)
Function	copy to a byte array
Input	dest -[in]target byte array src -[in]source byte array len -[in]length
Output	none
Returns	none
Note	none

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Prototype	public static void strcpy(byte[] dest, byte[] src)
Function	copy to a byte array
Input	dest -[in]target byte array

	src -[in]source byte array
Output	none
Returns	none
Note	none

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Prototype	public static void strcpy(byte[] dest, java.lang.String src, int len)
Function	copy to a byte array
Input	dest -[in]target byte array src -[in]source string len -[in]length
Output	none
Returns	none
Note	none

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Prototype	public static void strcpy(byte[] dest, java.lang.String src)
Function	copy to a byte array
Input	dest -[in]target byte array src -[in]source string
Output	none
Returns	none
Note	none

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Prototype	public static void strcpy(byte[] dest, int destbegin, byte[] src, int srcbegin, int len)
Function	copy to a byte array
Input	dest -[in]target byte array destbegin -[in]start index src -[in]source byte array

	srcbegin -[in]source byte array len -length
Output	none
Returns	none
Note	none

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Prototype	public static void strcpy(byte[] dest, int destbegin, java.lang.String src, int srcbegin,int len)
Function	copy to a byte array
Input	dest -[in]target byte array destbegin -[in]start index src -[in]source byte array srcbegin -[in]start index len -[in]length
Output	none
Returns	none
Note	none

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Prototype	public static int strlen(byte[] buf)
Function	get the actual length of byte[]
Input	buf-[in]byte array
Output	none
Returns	none
Note	none

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Prototype	public static int strlen(byte[] buf,int begin)
Function	get the actual length of byte[]
Input	buf -[in]byte array

	begin -[in]start index
Output	none
Returns	none
Note	none

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Prototype	public static byte[] strncpy(byte[] dest, byte[] src, int num)
Function	Copy the contents of SRC (characters, Numbers, Chinese characters...(to dest, the number of copies is determined by the value of num, and returns a pointer to dest.If a null character is encountered ('\0') and no num character has been reached yet, use (num - n).
Input	dest -[in]target byte array src -[in]source byte array num -[in]length
Output	none
Returns	none
Note	none

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Prototype	public static byte[] strtok(byte[] buf, java.lang.String delim)
Function	Break a string into a set of strings.Buf is the string to be decomposed, delim is the delimiter string.
Input	buf -[in]byte array delim -[in]string
Output	none
Returns	a byte array stores string datas
Note	none

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Prototype	public static byte[] structsToBytes(StructInterface[] sts)
Function	convert a struct array to a byte array

Input	sts -[in]struct array
Output	none
Returns	failed-null success-a byte array
Note	none

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Prototype	public static byte[] subBytes(byte[] src, int begin)
Function	Truncate a byte array
Input	src -[in]souce byte array begin-[in]start index
Output	none
Returns	a byte array that truncated
Note	none

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Prototype	public static byte[] subBytes(byte[] src, int begin, int len)
Function	Truncate a byte array
Input	src -[in] source byte[] begin -[in]start index len -[in]length
Output	none
Returns	a byte array that truncated
Note	none

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Prototype	public static java.lang.String subBytesToString(byte[] src,int begin,int len)
Function	truncate a byte and convert the result to string
Input	src -[in] source byte[] begin -[in]start index len -[in]length

Output	none
Returns	a string
Note	none

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Prototype	public static java.lang.String subBytesToString(byte[] src, int begin)
Function	truncate a byte and convert the result to string
Input	src -[in] source byte[] begin -[in]start index len -[in]length
Output	none
Returns	a string
Note	none

5.4.Class CommonConvert

Prototype	public static byte[] ascStringToBCD(java.lang.String ascString)
Function	Convert ASC string to BCD fomat
Input	ascString: ASC String
Output	
Returns	BCD byte array
Note	byte[] bcd = CommonConvert.ascStringToBCD("F87654321000000000000")

Prototype	public static byte[] ascStringToBCD(java.lang.String ascString, int len)
Function	Convert ASC string to BCD fomat
Input	ascString: ASC String len: expect length. len < length of ascString / 2, the final length will be the length of ascString / 2 len >= length of ascString / 2, the final length will be len, padding “0”s on the left
Output	
Returns	BCD byte array
Note	

Prototype	public static byte[] ascStringToBCD(java.lang.String s, java.lang.String alignment)
Function	Convert ASC string to BCD fomat
Input	ascString: ASC String alignment: “left”–padding “0”s on the right “right”–padding “0”s on the left
Output	
Returns	BCD byte array
Note	

Prototype	public static java.lang.String BCDFToAmtConvert(byte[] pSrc)
Function	format BCD amount, ####.00
Input	pSrc -[in]
Output	none
Returns	the formated amount
Note	none

Prototype	public static java.lang.String bcdToASCString(byte[] bytes)
Function	Convert BCD byte array to ASC string
Input	Byte[] bytes: BCD byte array
Output	
Returns	ASC string
Note	byte[] bcd = new byte[]{0x12, 0x23, 0x34, 0x45, 0x56, 0x67, 0x78}; String s = CommonConvert.bcdToASCString(bcd); s: 12233445566778

Prototype	public static int bcdToINT(byte[] data)
Function	Convert BCD byte array to int
Input	byte[] data: BCD byte array
Output	
Returns	int value that convernt from the BCD byte array
Note	int i = CommonConvert.bcdToINT(new byte[]{0x12, 0x34}); s: 1234

Prototype	public static byte[] binaryStringToBytes(java.lang.String binary)
Function	Convert binary to byte array
Input	Binary string

Output	
Returns	byte array
Note	Length of binary should be multiple of 8

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Prototype	public static java.lang.String byte2HexString(byte b)
Function	convert byte to a hexadecimal data
Input	b -[in]byte that to be converted
Output	none
Returns	a string data that convert from b
Note	none

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Prototype	public static java.lang.String bytesToHexString(byte[] bArray)
Function	Convert byte array to HEX string
Input	Byte array
Output	
Returns	HEX string
Note	

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Prototype	public static int bytesToInt(byte[] data)
Function	convert a 4 bytes data to a data with type of integer
Input	data-[in]data that to be converted
Output	none
Returns	a integer data
Note	none

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Prototype	public static int bytesToIntValue(byte[] array)
Function	Convert byte array to a int value

Input	byte array
Output	
Returns	a int value
Note	The length of the byte array should be 4 bytes int i = CommonConvert.bytesToInt(new byte[]{12,12,23,23}); i: 387386380

Prototype	public static long bytesToLong(byte[] data)
Function	convert a 4 bytes data to a data with type of long
Input	data-[in]data that to be converted
Output	none
Returns	a data with type of long
Note	none

Prototype	public static short bytesToShort(byte[] data)
Function	convert a 2 bytes data to a data with type of short
Input	data-[in]the data that to be converted
Output	none
Returns	a short data with type of short
Note	none

Prototype	public static java.lang.String BytesToString(byte[] buf)
Function	convert data’s type from byte to string
Input	buf-[in]data that to be converted
Output	none
Returns	none
Note	none

Prototype	public static java.lang.String bytesToString(byte[] buffer, int offset, int len)
Function	Convert byte array to string
Input	byte[] buffer: the byte array that need to be converted int offset: the index that start to convert int len: expect length
Output	
Returns	The string value that is converted from the byte array
Note	

Prototype	public static java.lang.String bytesToString(byte[] buffer, int offset, int len, java.lang.String charset)
Function	Convert byte array to string
Input	byte[] buffer: the byte array that need to be converted int offset: the index that start to convert int len: expect length String charset: charset
Output	
Returns	The string value that is converted from the byte array
Note	

Prototype	public static java.lang.String bytesToString(byte[] buffer, int offset, int len, java.lang.String charset, java.lang.String defaultValue)
Function	Convert byte array to string
Input	byte[] buffer: the byte array that need to be converted int offset: the index that start to convert int len: expect length String charset: charset

	String defaultValue: default value
Output	
Returns	The string value that is converted from the byte array
Note	

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Prototype	public static java.lang.String bytesToString(byte[] buffer, java.lang.String charset)
Function	Convert byte array to string
Input	byte[] buffer: the byte array that need to be converted String defaultValue: default value
Output	
Returns	The string value that is converted from the byte array
Note	

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Prototype	public static byte[] FillStr(java.lang.String desc, char ch, int len)
Function	fill a string
Input	desc -[in]The original data ch -[in]the charactor to be filled in desc len -[in]the length after being filled
Output	none
Returns	a byte array after being filled
Note	none

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Prototype	public static byte[] FillStr(int desc, char ch, int len)
Function	Fill in a charactor
Input	desc -[in]The original data ch -[in]the charactor to be filled in desc len -[in]the length after being filled

Output	
Returns	A byte array after being filled
Note	

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Prototype	public static byte[] hexStringToByte(java.lang.String src)
Function	Convert HEX string to byte array
Input	HEX string
Output	
Returns	The byte array that is converted from the HEX string
Note	

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Prototype	public static byte[] intToBCD(int iVal)
Function	convert data of type int to data of type BCD
Input	iVal-[in]data that to be converted
Output	none
Returns	a byte array
Note	none

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Prototype	public static byte[] intToBCD(int iVal, int len)
Function	convert data of type int to data of type BCD
Input	iVal-[in]data that to be converted len-[in]length
Output	none
Returns	a byte array
Note	none

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Prototype	public static byte[] intToBytes(int n)

Function	convert data of type integer to data of type byte[]
Input	n-[in]data that to be converted
Output	none
Returns	a byte array
Note	none

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Prototype	public static byte[] longToBytes(long n)
Function	convert dataa of type long to a 4 bytes data
Input	n-[in]data that to be converted
Output	none
Returns	a byte array
Note	none

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Prototype	public static byte[] shortToBytes(short data)
Function	convert data of type short to a 2 bytes data
Input	none
Output	none
Returns	a byte array
Note	none

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Prototype	public static java.lang.String StringFToAmtConvert(java.lang.String desc)
Function	fomat amount of type string,####.00
Input	desc-[in]
Output	none
Returns	data after formated
Note	none

Prototype	public static byte[] StringToBytes(java.lang.String str)
Function	convert a data of type string to a data of type of byte
Input	str-[in]the data that to be converted
Output	none
Returns	a byte array
Note	none

Prototype	public static byte[] StringToBytes(java.lang.String str, java.lang.String encoding)
Function	convert a data of type string to a data of type of byte
Input	str-[in]the data that to be converted encoding-[in]encoding
Output	none
Returns	a byte array
Note	none

5.5.Class DateUtils

Prototype	public static java.lang.String addCurDate(java.lang.String format,int days)
Function	get current date and days
Input	format - [in]date format days -[in]days
Output	none
Returns	the date
Note	none

Prototype	public static java.lang.String format(java.util.Date date, java.lang.String format)
Function	format a date according to the given pattern

Input	date-[in]date format-[in]pattern
Output	none
Returns	a string
Note	none

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Prototype	public static java.lang.String format(java.lang.String date, java.lang.String org_format, java.lang.String dest_format)
Function	change a date’s format
Input	date -[in]the date that to be parsed org_format -[in]the original format dest_format -[in]the target format
Output	none
Returns	the date after parsed
Note	none

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Prototype	public static java.lang.String getCurDate(java.lang.String format)
Function	get current date of the given pattern
Input	format-[in]pattern
Output	none
Returns	current date
Note	none

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Prototype	public static java.util.Date parse(java.lang.String data, java.lang.String format)
Function	get the date according to the given pattern based on the string

Input	data-[in]the string format-[in]pattern
Output	none
Returns	date
Note	none

5.6.Class FileUtils

Prototype	public static java.util.List ReadFileLine(java.lang.String fileName)
Function	Read the file line by line and store into a list
Input	fileName-[in]file name or directory name,both of the should contain the absolute path
Output	none
Returns	a list
Note	none

Prototype	public static int SaveFile(java.lang.Object obj, java.lang.String filePath)
Function	save a file
Input	obj -[in]object filePath -[in]file path
Output	none
Returns	0-success 1-failed
Note	none

Prototype	public static void WriteFileLine(java.lang.String fileName, java.lang.String content)
Function	Write file line by line
Input	file- [in] file name content- [in] the content to be written to files
Output	none
Returns	none
Note	none

5.7.Class ImageTools

Prototype	public static byte[] Bitmap2Bmp(Bitmap bitmap)
Function	Save bitmap as BMP image
Input	bitmap-[in]bitmap
Output	none
Returns	0-succecss <0-failed
Note	none

Prototype	public static Bitmap convertToBlackWhite(Bitmap bmp)
Function	Converts a color image to a black and white image
Input	bmp-[in]bmp
Output	none
Returns	a bitmap
Note	none

Prototype	public static Bitmap getBitMap(java.lang.String HexSign)
Function	Get bitmap
Input	HexSign- [in] data used to generate bitmap
Output	none
Returns	bitmap
Note	none

Prototype	public static Bitmap getBitMap(byte[] SignBuf)
Function	Get bitmap
Input	SignBuf- [in] data used to generate bitmap
Output	none

Returns	bitmap
Note	none

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Prototype	public static Bitmap readImage(java.lang.String filename)
Function	convert an image to a bitmap
Input	filename-[in]bitmap path
Output	none
Returns	bitmap
Note	none

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Prototype	public static int saveImage(java.lang.String filename, Bitmap bitmap)
Function	save bitmap as png image
Input	filename-[in]path bitmap-[in]image name
Output	none
Returns	0-success 1-failed
Note	none

5.19.Class ZipUtils

Prototype	public static java.util.Enumeration<?> getEntriesEnumeration(java.io.File zipFile) throws java.util.zip.ZipException,java.io.IOException
Function	get the zip file object within the zip file to get its properties
Input	zipFile -[in]zip file
Output	none
Returns	success-a list of zip files java.util.zip.ZipException - the compressed file format is incorrect java.io.IOException - IO-Wrong operation
Note	none

Prototype	public static java.util.ArrayList<java.lang.String> getEntriesNames(java.io.File zipFile) throws java.util.zip.ZipException, java.io.IOException
Function	get the file list in a zip file
Input	zipFile -[in]zip file
Output	none
Returns	a list of file names that get from zip file
Note	none

Prototype	public static java.lang.String getEntryComment(java.util.zip.ZipEntry entry) throws java.io.UnsupportedEncodingException
Function	Gets a comment of the compressed file object
Input	entry - [in]compressed file object
Output	none
Returns	the comment of the compressed file object
Note	none

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Prototype	public static java.lang.String getEntryName(java.util.zip.ZipEntry entry) throws java.io.UnsupportedEncodingException
Function	get the name of compressed file object
Input	entry -[in]the compressed file object
Output	none
Returns	the name
Note	none

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Prototype	public static void upZipFile(java.io.File zipFile, java.lang.String folderPath) throws java.util.zip.ZipException, java.io.IOException
Function	unzip a file
Input	zipFile -[in]zip file folderPath -[in]the target directory
Output	none
Returns	java.io.IOException - Thrown when the decompression process fails java.util.zip.ZipException
Note	none

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Prototype	public static java.util.ArrayList<java.io.File> upZipSelectedFile(java.io.File zipFile, java.lang.String folderPath, java.lang.String nameContains) throws java.util.zip.ZipException, java.io.IOException
Function	Unzip the file name containing the file with the incoming text
Input	zipFile -[in]zip file folderPath -[in]the target directory nameContains -[in]The file matching name is passed in
Output	none
Returns	java.util.zip.ZipException - Thrown if the compression format is incorrect java.io.IOException -IO error thrown

Note	none

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Prototype	public static void zipFiles(java.util.Collection<java.io.File> resFileList, java.io.File zipFile) throws java.io.IOException
Function	Batch compressed files or directories
Input	resFileList -[in] the list of files or directories
Output	zipFile-[out]the zip file after compressed
Returns	java.io.IOException - Thrown when the compression process fails
Note	none

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Prototype	public static void zipFiles(java.util.Collection<java.io.File> resFileList, java.io.File zipFile, java.lang.String comment) throws java.io.IOException
Function	Batch compressed files or directories
Input	resFileList -[in] the list of files or directories comment-[in]Compressed file comments
Output	zipFile-[out]the zip file after compressed
Returns	java.io.IOException - Thrown when the compression process fails
Note	none

6.Miscellaneous

6.1.System Initialization

When we build a new project, it is necessary to initialize the system first. After that the other functions can be called.

"SystemApi.SystemInit_Api" is the API for system initialization, we should call it in the start of the project. Such as we add it in MainActivity.java of our demo, refer to in Fig.1.

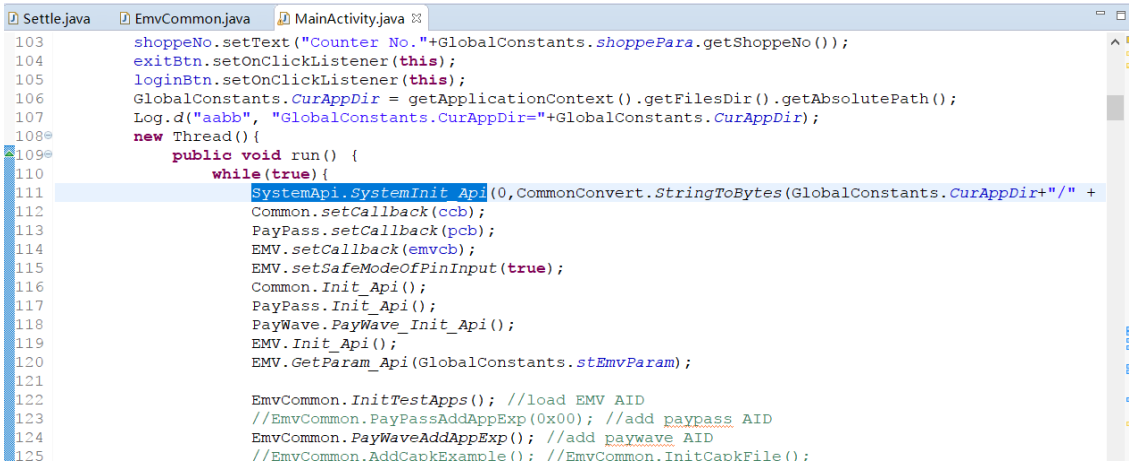

Fig1

6.2.Permissions

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If you want to control the led lights you need to add the following permission:

<uses-permission android:name="android.permission.CLOUDPOS_LED" />

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The following permission is used for smart card:

<uses-permission android:name="android.permission.CLOUDPOS_SMARTCARD"/>

6.3.Library Dependencies

libA90JavahCore.so & AppSdkAidl.jar, vanstoneSdkClient-noemv.jar: These are library and jar package for others, such as system function, swipe cards, printer, and so on.