M1 SDK Document

CONTENT

Updates Logs

Version	Updates	Date
V1.0.0	Original	2017/9/1
V1.1.0	1. Added: aidl self-aligned text print interface description 2. Modified: The size of the aidl bitmap print size range is 1-8 Changed to 1-16, the unit is changed from 48 pixels to 24 pixels. Bright 3. Modified: the width and height range of aidl barcode printing changed from 1-8 to 1-16, the unit is changed from 48 pixels to 24 pixels. 4. Modified: the size of the aidl QR code is 1-8 Changed to 1-16, the unit is changed from 48 pixels to 24 pixels. Ming, and increase the error correction level parameter description 5. Added: Implement the function of the aidl ESC/POS instruction parsing interface Description 6. Modify: aidl Perform print interface to add paper after printing Parameters (printer no longer automatically feeds after printing) 7. Add: Add Bluetooth print function description 8. Increase: Status broadcast description after the current print job is completed	2017/12/21

Introduction

The Pos machine has a built-in thermal printer that supports 58mm paper with 384 pixels per line.Without a cutter, you can use the app to print small tickets directly.

The app can call the built-in printer in the following ways:

1. Connect the printer via AIDL
2. Connect the printer via Bluetooth

1 AIDL Printing

Connect to the printer service using AIDL, AIDL is Android Interface Definition Abbreviation for language, which is a description language for Android internal process communication interface, through which We can define the communication interface between processes. AIDL provides packaged common print instructions for developers quick access to printer services.

1.1 Using AIDL in printing service

1.Add an AIDL file to the developer's engineering project:

1)folder name： com.iposprinter.iposprinterservice

2)file name： in the folder named aidl.rar of release, there includes two files:IPosPrinterService.aidl and IPosPrinterCallback.aidl

2.Implemented ServiceConnection in the code class that developers control printing.

```
private ServiceConnection connectService = new
    ServiceConnection() {
@Override
public void onServiceConnected(ComponentName name, IBinder
  service) {
    mIPosPrinterService =
  IPosPrinterService.Stub.asInterface(service);
    setButtonEnable(true);
}

@Override
public void onServiceDisconnected(ComponentName name)
    { mIPosPrinterService = null;
}
};
```

3. Call ApplicationContext.bindService() and pass it in the ServiceConnection implementation.

Note: bindservice is a non-blocking call, meaning that the binding is not immediately successful after the call is completed, and must be based on serviceConnected.

```
/ / Bind service
    Intent intent=new Intent();
```

```
intent.setPackage("com.iposprinter.iposprinterservice ");
intent.setAction("com.iposprinter.iposprinterservice.IPosPrintS
ervice");
bindService(intent, connectService, Context.BIND_AUTO_CREATE);
```
4. After binding the service, you can now call the various interfaces of IPosPrintService to print.

1.2 AIDL Interface Description

1.Printer initialization

Function prototype	printerInit
Function Description	Power on the printer and initialize the default settings
Parameter Description	None
return value	void
Supplementary explanation	Please judge the current status of the printer first when using it. When face PRINTER_IS_BUSY status, please wait

2.Printer status query

Function prototype	getPrinterStatus
Function Description	Query the current status of the printer
Parameter Description	NONE
return value	Printer status: 0: PRINTER_NORMAL The printer is idle and the status is normal. You can start a new print. 1: PRINTER_PAPERLESS stops printing at this time. If the current printing is not completed, you need to re-play after adding paper. 2: PRINTER_THP_HIGH_TEMPERATURE Pause printing at this time, if the current printing is not completed, it will continue to print after cooling, no need to reprint 3: PRINTER_MOTOR_HIGH_TEMPERATURE No printing is performed at this time. After cooling, the printer needs to be initialized and the printing task is re-initiated. 4:PRINTER_IS_BUSYThe printer is printing at this time 5:PRINTE_ERROR_UNKNOWN Printer exception
Supplementary explanation	Check the printer status before initiating printing

3.Printer density setting

Function prototype	setPrinterPrintDepth
Function Description	Set the printer's print density, which has an effect on subsequent printing, unless initialized
Parameter Description	depth： Density level, range 1-10, if out of range, This function is not executed. The Default level is 6
return value	void
Supplementary explanation	None

4.Printer font settings

Function prototype	setPrinterPrintFontType
Function Description	Set the print font type will have an effect on the print afterwards, unless initialized.
Parameter Description	typeface： Font name ST (宋体)
Return value	void
Supplementary explanation	None

5.Printer font size setting

Function prototype	setPrinterPrintFontSize
Function Description	Set the font size, which has an effect on printing afterwards, unless initialized
Parameter Description	Fontsize: font size, currently supported size is 16, 24, 32, 48, input illegal size Execute default value 24, unit pixel
Return value	void
Supplementary explanation	None

6.Printer alignment settings

Function prototype	setPrinterPrintAlignment
Function Description	Set the font size, which has an effect on printing afterwards, unless initialized.
Parameter Description	Alignment: alignment 0--left, 1--centered, 2--Right, default centered
Return value	void

Supplementary explanation	None

7.Printer feed paper

Function prototype	printerFeedLines
Function Description	Printer paper feed (forced line feed, paper line after the end of the print content, the motor idling paper, no data is sent to the printer)
Parameter Description	lines：The number of lines in the printer (one pixel per line)
Return value	void
Supplementary explanation	None

8.Print a blank line

Function prototype	printBlankLines
Function Description	Print blank lines (forced line feed, prints blank lines after the end of the print, and the data sent to the printer is 0x00)
Parameter Description	lines：Print blank lines limit up to 100 lines height：The height of the blank line (unit: pixel)
Return value	void
Supplementary explanation	This method is recommended for interline blanks and is not recommended. printerFeedLines

9.Print text

Function prototype	printText
Function Description	Text width is one line, automatic line layout
Parameter Description	text：The text string to be printed
Return value	void
Supplementary explanation	Font type and size are the same as the previous print

10. Print text of the specified font type and size

Function prototype	printSpecifiedTypeText
Function Description	automatic line layout when Text width is up to full one line
Parameter Description	text：The text string to be printed typeface：Font name ST (currently only supports one kind of Song) fontsize：Fontsize: font size, currently supported size is 16, 24, 32, 48, input illegal size Execute default value 24
Return value	void

Supplementary explanation	None

11.Print text of the specified font type and size

Function prototype	printSpecFormatText
Function Description	Text width is one line, automatic line layout
Parameter Description	text：The text string to be printed typeface：Font name ST (currently only supports one kind of Song) fontsize：Fontsize: font size, currently supported size is 16, 24,32, 48, enter illegal size Execute default value 24 alignment: Alignment (0 left, 1 centered, 2 right)
Return value	void
Supplementary explanation	None

12.打印表格一行

Function prototype	printColumnsText
Function Description	Print a row of the table to specify column width, column alignment
Parameter Description	colsTextArr：Array of text strings for each column colsWidthArr：Array width of each column The total width cannot be greater than ((384 / fontsize) << 1) - (number of columns + 1) (calculated in English characters, each Chinese character The character occupies two English characters, each width is greater than 0). colsAlign：Alignment of columns (0 left, 1 centered, 2 right) isContinuousPrint：Continue to print the form 1：Continue printing 0：Do not continue printing
Return value	void
Supplementary explanation	The array length of the three parameters should be the same, if The content width of colsTextArr[i] is greater than colsWidthArr[i]

13.打印图片

Function prototype	printBitmap
Function Description	Print bmp image data
Parameter Description	alignment：Alignment: alignment 0--left, 1--centered, 2--right,Default centered bitmapSize: bitmap size, incoming size range 1~16, out of range default selection 10 units: 24 pixels mBitmap: image bitmap object (maximum width 384 pixels)
Return value	void

Supplementary explanation	None

14.Print barcode

Function prototype	printBarCode
Function Description	Print one-dimensional barcode

Parameter Description	data：barcode data
	
	symbology：Barcode type
	        0 -- UPC-A
	        1 -- UPC-E（not support)
	        2 -- JAN13(EAN13)
	        3 -- JAN8(EAN8)
	        4 -- CODE39
	        5 -- ITF
	        6 -- CODABAR
	        7 -- CODE93（Not support）
	        8 -- CODE128
	Height: bar code height, values 1 to 16, out of range defaults to 6, each unit represents a height of 24 pixels
	
	Width: bar code width, value 1 to 16, out of range defaults to 12, each unit represents 24 pixel length
	
	textposition：Text position 0--Do not print text, 1--Text is above the barcode, 2--Text is below the barcode, 3--Barcode is printed above and below

Return value	void
Supplementary explanation	None

15.Print QR code

Function prototype	printQRCode
Function Description	Print QR code
Parameter Description	data：QR code data Moduleize: two-dimensional code block size (unit: point, value 1 to 16), out of the setting range default value 12 units: 24 pixels mErrorCorrectionLevel: 0 -- Error correction level L(7%), 1 --Error correction level M(15%), 2 -- Error correction level Q (25%),

	3 --Error correction level H (30%)
Return value	void
Supplementary explanation	None

16. Print byte data

Function prototype	printRawData
Function Description	Print raw byte data
Parameter Description	rawPrintData：Byte data block
Return value	void
Supplementary explanation	None

17. ESC/POS printing

Function prototype	sendCMDRawData
Function Description	Print using ESC/POS instructions
Parameter Description	data：Instruction Byte data block
Return value	void
Supplementary explanation	None

18. Perform printing

Function prototype	printerPerformPrint
Function Description	Perform a print job
Parameter Description	Feedlines: the number of paper lines after printing (need to be set by the user, no longer automatically after the printer prints)
Return value	void
Supplementary explanation	After performing the various printing function methods, you need to perform this method before the printer can perform printing. Before this method is executed, you need to judge the printer status. When the printer is in PRINTER_NORMAL, this method is valid, otherwise it will not be executed.

Another: all callback parameters are result callbacks

2.Bluetooth mode printing service

2.1 Analog Bluetooth

When the POS Bluetooth is turned on, you can see a Bluetooth device "IposPrinter" that has been paired successfully. The device will always exist. This device is a Bluetooth printer device with a virtual system. It simulates the internal printer of the POS as a Bluetooth printer. Actually, there is no real Bluetooth printer. The analog Bluetooth printer supports ESC/POS instructions. For details on the command support, see the IPOS ESC-POS Instruction Description.

2.2   Simulate the use of Bluetooth printers

1. Establish a connection with the device

2. Splicing instructions and print content into byte data blocks

3. Send to IposPrinter printer via Bluetooth

4. The printer completes the print task

Another: Bluetooth printer Demo provides a Bluetooth tool class. When using this Demo test, please click "Bluetooth printer driver loading" first.

BluetoothUtil, Standard bluetooth connection

```
public class BluetoothUtil{
      private static final String TAG = "BluetoothUtil";
      private static final UUID IPOSPRINTER_UUID =
UUID.fromString("00001101-0000-1000-8000-00805F9B34FB");
      private static final String IPosPrinter_Address = "00:AA:11:BB:22:CC";

      public static BluetoothAdapter
          getBluetoothAdapter(){ return
          BluetoothAdapter.getDefaultAdapter();
      }
```

```java
    public static BluetoothDevice getIposPrinterDevice(BluetoothAdapter mBluetoothAdapter){
            BluetoothDevice IPosPrinter_device = null;
            Set<BluetoothDevice> devices = mBluetoothAdapter.getBondedDevices();
            for (BluetoothDevice device : devices){
                if(device.getAddress().equals(IPosPrinter_Address))
                {
                        IPosPrinter_device =device;
                        break;
                }
            }
            return IPosPrinter_device;
    }

    public static BluetoothSocket getSocket(BluetoothDevice mDevice) throws IOException
    {
            BluetoothSocket socket = mDevice.createRfcommSocketToServiceRecord(IPOSPRINTER_UUID);
            socket.connect();
            return socket;
    }
}
```

Get the Bluetooth printer and connect to the printer

```java
// 1: Get BluetoothAdapter
mBluetoothAdapter = BluetoothUtil.getBluetoothAdapter();
if(mBluetoothAdapter == null)
{
    return;
}
//2: Get bluetoothPrinter Devices
mBluetoothPrinterDevice = BluetoothUtil.getIposPrinterDevice(mBluetoothAdapter);
if(mBluetoothPrinterDevice == null)
{
    return;
}
```

```
//3：Get conect Socket
try {
    socket = BluetoothUtil.getSocket(mBluetoothPrinterDevice);
```

```
}
catch (IOException e)
{
    e.printStackTrace();
    return;
}
```

Note: You need to add a Bluetooth permission claim in your app to use a Bluetooth device.

    <manifest>

    <uses-permission

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

    <uses-permission

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

    </manifest>

3.State feedback

3.1 Printer status feedback

The user needs to listen to the current state of the printer by accepting the broadcast.The user needs to set up a broadcast receiver to listen to the following broadcasts:

```
//The printer is normal and idle
private final String PRINTER_NORMAL_ACTION =
"com.iposprinter.iposprinterservice.NORMAL_ACTION";

//The printer is out of paper
private final String      PRINTER_PAPERLESS_ACTION =
" com.iposprinter.iposprinterservice.PAPERLESS_ACTION";

//The printer has paper
private final String PRINTER_PAPEREXISTS_ACTION =
"com.iposprinter.iposprinterservice.PAPEREXISTS_ACTION";

//Printer thermal head temperature is too high
private final String      PRINTER_THP_HIGHTEMP_ACTION =
```

"com.iposprinter.iposprinterservice.THP_HIGHTEMP_ACTION";

//Printer thermal head temperature is normal

private final String PRINTER_THP_NORMALTEMP_ACTION = "com.iposprinter.iposprinterservice.THP_NORMALTEMP_ACTION";

//Printer motor temperature is too high

private final String PRINTER_MOTOR_HIGHTEMP_ACTION = "com.iposprinter.iposprinterservice.MOTOR_HIGHTEMP_ACTION";

//The printer is busy and printing

private final String PRINTER_BUSY_ACTION = "com.iposprinter.iposprinterservice.BUSY_ACTION";

//The current print job is printed.

private final String PRINTER_CURRENT_TASK_PRINT_COMPLETE_ACTION = "com.iposprinter.iposprinterservice.CURRENT_TASK_PRINT_COMPLETE_ACTION ";

Another: User active query status, please use getPrinterStatus, refer to 1.2 AIDL interface description

3.2 Instruction callback feedback

The interface method callback provides 2 feedback results:

Feedback function	Return	
onRunResult	Instruction execution result: boolean isSuccess	true execution succeed, False Execution faild
onReturnString	Instruction execution result final String result result: Result	result: result

4.Print service parameter description

4.1 Paper description

Paper width   printing Width   Pinting Density

The printer supports 58mm wide paper with an effective print width of 48mm. The effective print width is 384 pixels.

4.2 Printer resolution

The printer resolution is 205DPI, the calculation formula is as follows
DPI=384dots/48mm=8dots/1mm=205dots/in= 205

4.3 printing Font description

The default font is 24, Chinese is a matrix of 24*24, and English is a matrix of 12*24.

4.4 Printing QR code description

The printer prints a two-dimensional code, each of which is 48 pixels (less than 48 scan codes can not be resolved).

4.5 Printing image description

The maximum supported printer width is 384 pixels. Images that exceed the width of 384 pixels are processed by the customer.