Freescale Semiconductor
Users Guide

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Point-of-Sale (POS) Users Guide

by: Lech José Olmedo Guerrero
Jaime Herrerro Gallardo
RTAC Americas

1 Introduction

This quick users guide accompanies the Point-of-Sale (POS) design reference manual (order# DRM089). To learn more about the POS design, please go to www.freescale.com.

2 Quick Start

This section sets up the system and starts explaining the POS reference design and how to use it. The reference design consists of the POS system and the database installed in a PC. The following pages describe the general steps and descriptions for this procedure.

To set up:

1. Install the database on the PC and set up the IP address for the host. Avoid any firewalls and proxies on the system.
2. Run the POS applications.

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3. Reset the board while connected through the serial to the PC running HyperTerminal or tera term at 115200 8 data bits.
4. Attach the USB devices.
5. Run the application.

The database name used in the project is POS. MySQL library over WindowsXP OS® is used as a database platform. A webpage developed in PHP software is used as the POS database interface in the server. For correct functionality, the server must have MySQL library, Apache, and PHP installed.

3 Server Setup

3.1 System Requirements

- PC with WindowsXP™
- Internet explorer 6.0 or higher
- Apache installed
- MySQL 4.0 or higher
- phpMyAdmin 2.3.2 or higher
- PHP version 4.2.3 or higher

3.2 Server Setup Summary

1. Look for the file phpdev423.exe in http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=DRM089SW. Download the package and look into the Point-of-Sale_SW_Package\PC_Software folder. This file installs into the c:\phpdev directory all the PHP, Apache, MySQL, and phpMyAdmin files needed for the server to work with the POS project.
2. Execute the file c:\phpdev\2K-NT-XP-phpdev_start.bat that enables the Apache and the MySQL servers.

   This file can be accessed through Start/Programs/phpdev/ phpdev_2K_XP_NT.
3. Start internet explorer.
4. Go to http://localhost and click it.
5. Look for the link http://localhost/phpmyadmin and click it
6. Create a new database named pos (lowercase) and click create.
7. Click on the tab SQL.
8. In the Point-of-Sale_SW_Package\PC_Software folder, downloaded in number 1, is the file ìPOS.sqlî. Open this file with notepad.
9. Copy the content to the text area in the SQL tab.
10. Click go.

    After these steps, all the tables are created and filled with sample data, and the server is ready to use.
11. Unzip the POS_Server.zip file located in the POS CD into the server directory c:/phpdev/www.

To access the server console in the Internet Explorer address bar, go to localhost/POS_Server.

3.2.1 Database Setup

The database setup is in steps three to seven of the server setup.

3.2.2 Interface Setup

The interface setup is in step eight of the server setup.

3.2.3 Detailed Server Setup

NOTE

Before running the application, the database must be running.

Set up the database on a PC — Go to http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=DRM089SW. Download the package. Look into the Point-of-Sale_SW_Package\PC_Software folder. Get the phpdev423.exe file and run it.

To configure the host:

1. Set the static IP address in the connection at 192.168.0.1. (This is the IP for the server. It is already like this in the Linux image. You must keep this address.) The address is 192.168.0.100 for the client (POS).

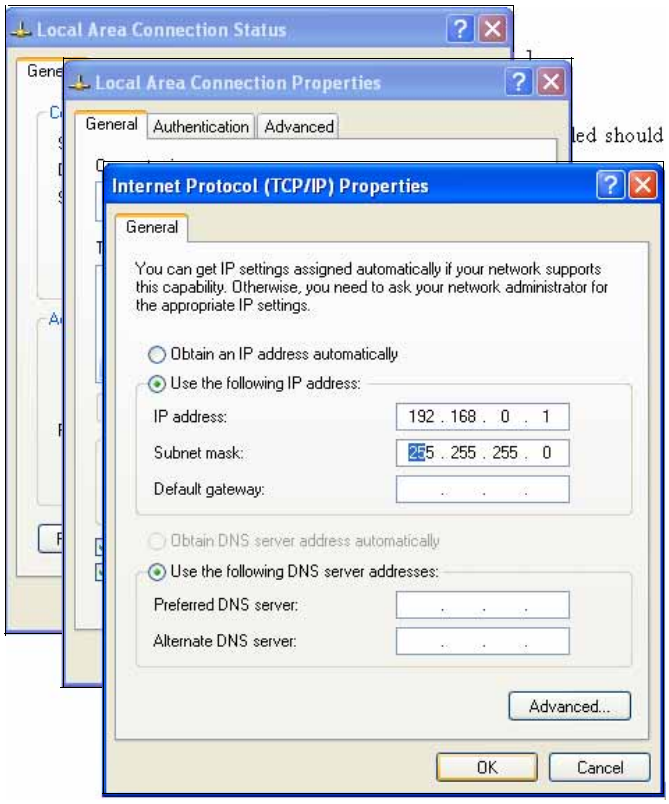

Figure 1. Setting IP Address in PC

2. After phpdev423.exe is running, several prompts appear and an Apache server starts. When finished, it opens a webpage like Figure 2. If it does not open, start Internet Explorer and go to http://localhost.

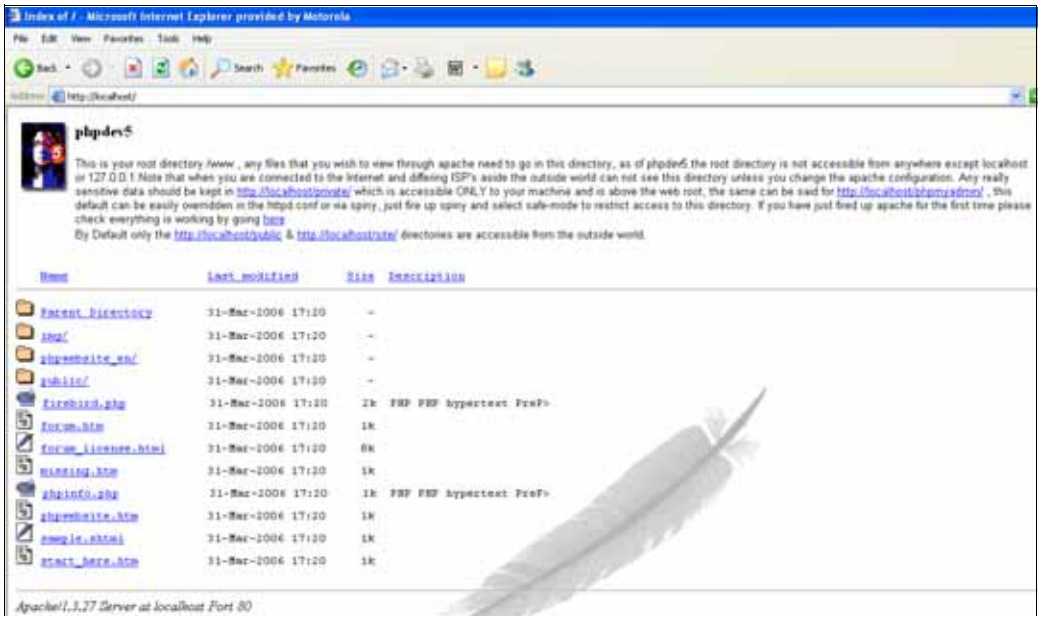

Figure 2. http://localhost

3. To disable proxies in the Internet Explorer, go to tools options. A window appears. Go to the connections tab, press the LAN settings button. In the displayed window, disable the check box under proxy server.

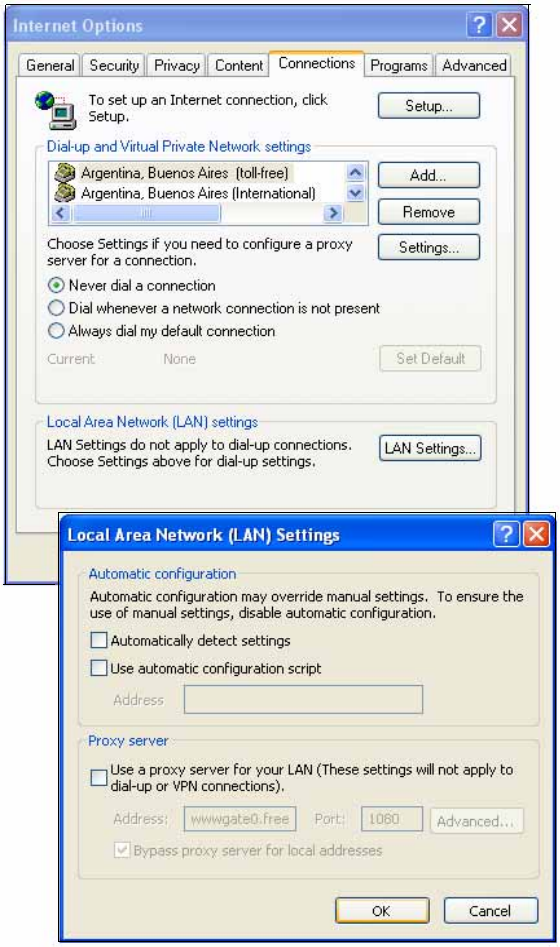

Figure 3. Disabling Proxy in PC

4. If the Internet Explorer window does not open automatically, do it manually. As an address, put http://localhost/.
5. Click on the link inside http://localhost/phpmyadmin/. A new page should appear (Figure 4).

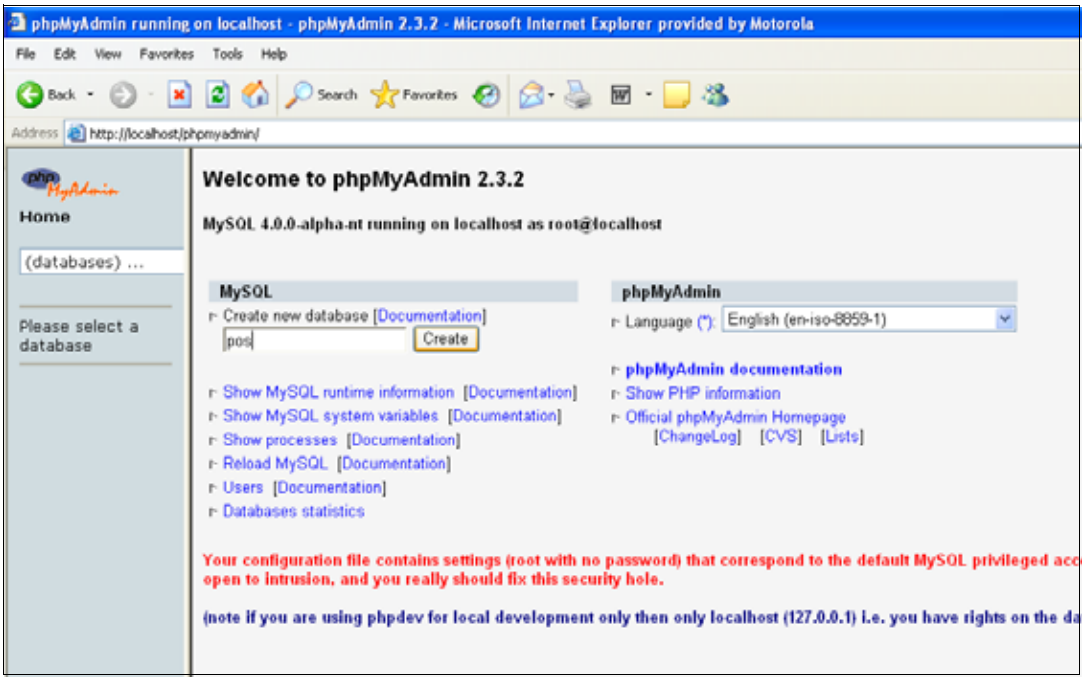

Figure 4. Databases Portal

6. Under MySQL, in the text field available, write pos and press the create button. The database is created.
7. Add the tables this database will have.; it is currently empty. (Figure 5).
8. On the left margin (of Figure 4 where the word databases is), select the POS database. On the other side of the page, options such as structure, sql, export, and search appear.
9. Select sql. A text area appears.
10. Go to the http://www.freescale.com/webapp/sps/site/prod_summary.jsp?code=DRM089SW. Download the package. Look for the POS_Server.zip in the Point-of-Sale_SW_Package\PC_Software folder.
11. Unzip and extract it in c:\phpdev\www. Look for a file named pos.sql. The file contains the information needed to fill the database and tables.
12. Open the file.
13. Copy the content.
14. Paste the information in the text area from the sql web page.
15. Press go.

    After pressing go, all the tables are created. The page looks like Figure 6.
16. Go to http://localhost/. Select from the lost POS_Server/. You are now in the user-friendly applications.

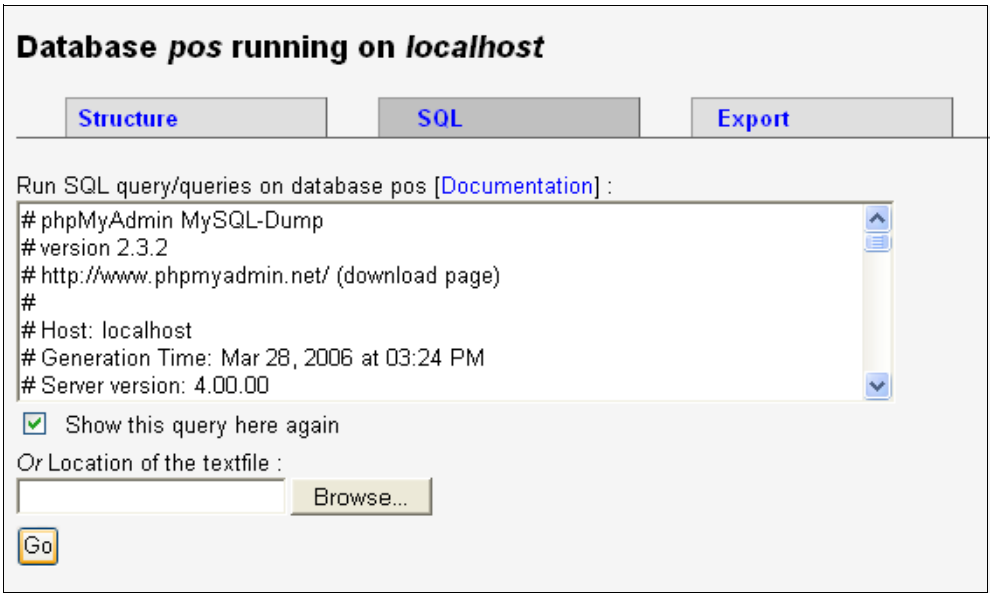

Figure 5. Adding Tables to POS Database

Figure 6. POS Tables

4 Point-of-Sale Setup

4.1 Summary

1. Connect the power sources, the crossover cable, and the serial cable to the PC.
2. After everything is connected, open the HyperTerminal and start the POS.
3. After the uClinux OS is running, attach the USB devices.
   - 3.1 Connect the magnetic card reader.
   - 3.2 Connect the barcode scanner (the magnetic card reader goes in the connector and the barcode on the other one).

4. Execute the POS by typing /bin/pos/pos & in the serial interface. It runs the application.

4.2 Setup

To run the POS application, you need a serial interface, crossover cable, and power source. For the serial interface, we used a HyperTerminal at 115200 8-N-1.

1. Connect the power sources, the crossover cable, and the serial cable to the PC.
2. After everything is connected, open the HyperTerminal and start the POS.

NOTE

The USB devices like the magnetic card reader and barcode scanner must not be connected yet.

The Linux image is saved in the NOR external flash. When the POS is on, it starts running the dBUG — the ROM monitor that is used in the evaluation boards for ColdFire devices, it can work as a very simple boot loader. In this case it is modified for this POS in the NOR flash device and some other settings.

After the POS is on, a message in the serial interface says copy from flash to RAM, or decrypt image and copy to RAM in the secure version. This means the image saved in flash is being copied to RAM, where it runs. After the process, the Linux OS runs(Figure 7).

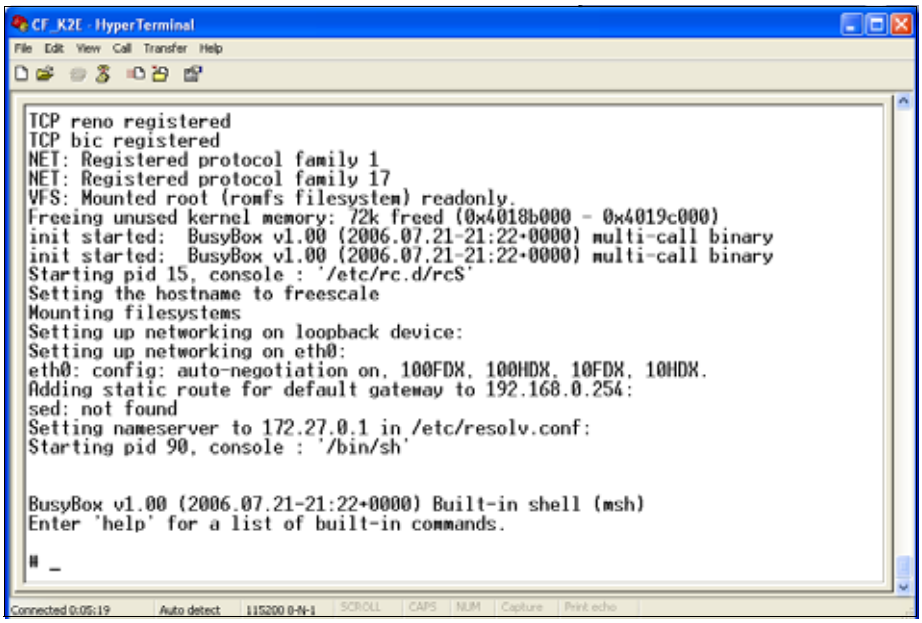

Figure 7. uClinux Operating System Init

3. Attach the USB devices and run the POS application stored on the uClinux OS image.
   - 3.1 Connect the magnetic card reader.
   - 3.2 Run the POS application.
   - 3.3 Connect the barcode scanner (the magnetic card reader goes in the inside connector and the barcode on the other one) (Figure 8).

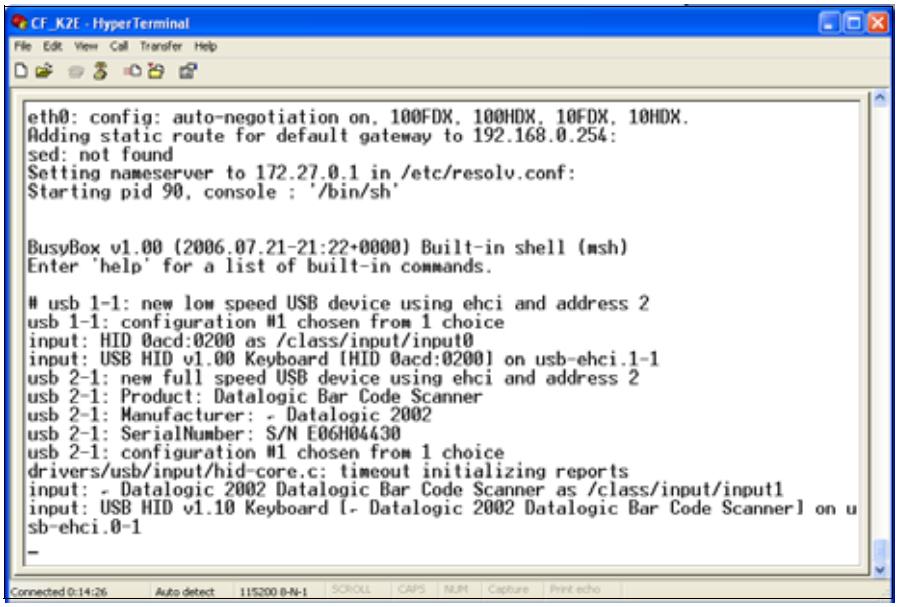

Figure 8. USB Devices Attached

4. Run the POS application.
   4.1 Press enter in the HyperTerminal until the # prompt appears.
   4.2 Write the line that executes the POS: # /bin/pos/pos &

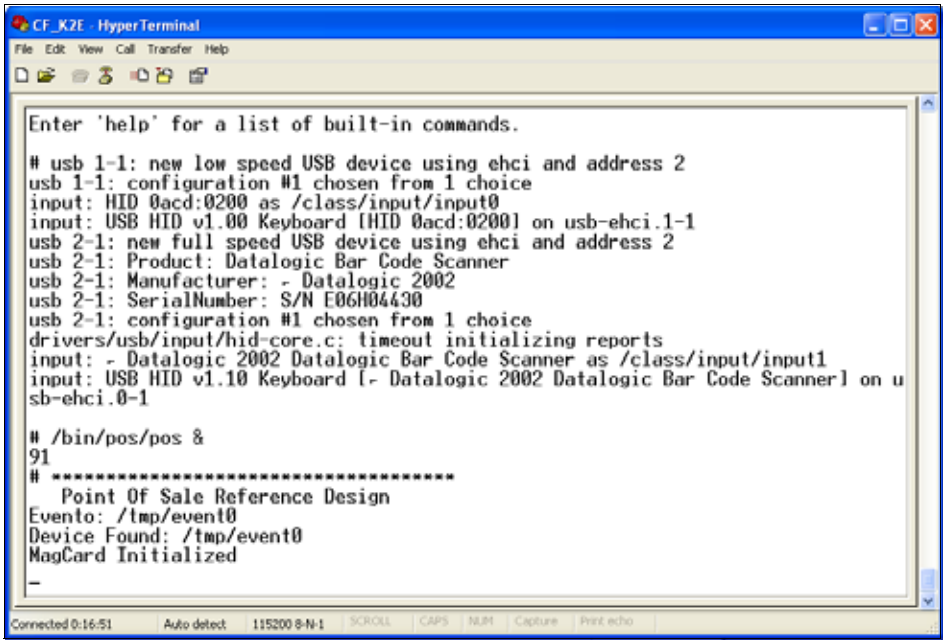

Figure 9. POS Application Executed

This command runs only the POS application. The application is located in the /bin/pos directory and saved with the name pos. The & means it should run in the background. Some images are loaded. The loading process ends when, on the LCD panel, you see: enter a new product. In the HyperTerminal, the screen looks similar to Figure 10.

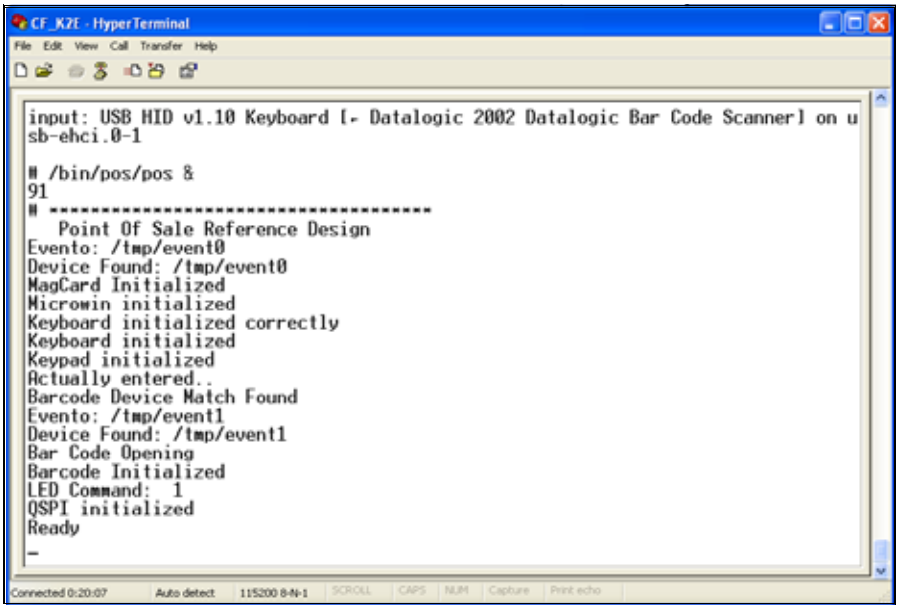

Figure 10. POS Application Waiting for Products

NOTE

After the first installation, you do not need to repeat the previous steps. For now, the database is installed in the PC and can be found in the program menu as phpdev. To start the Apache server and the database, go to phpdev and click on phpdev_2k_XP_NT. This runs the localhost webpage (among other windows in which the server is running and eventually disappears).

You must disable the proxy and firewalls on the PC side. While in the POS, the procedure is the same as that described in the previous pages.

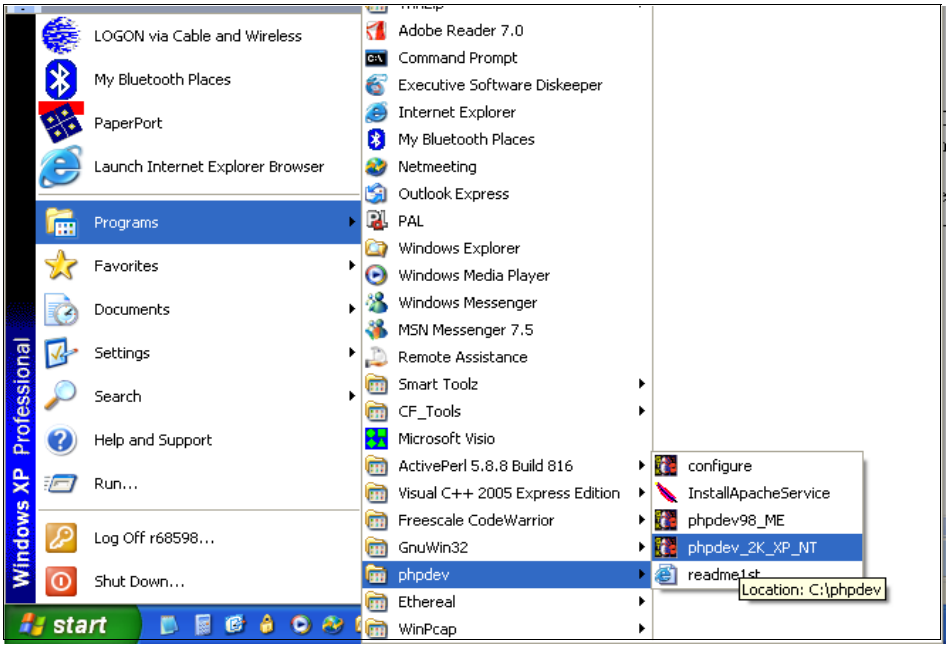

Figure 11. Starting the PHP Server

5 Using the Point-of-Sale

After you are in the entering-product screen, you can begin working.

5.1 Enter Products

Take the barcode scanner and read the barcodes from the sheets in the software package from ..\Point-of-Sale_SW_Package\Miscellaneous. Add as many products as you want. The screen changes as you enter the products. The LED should be on. The POS beeps, indicating the communication to the database was successful. On the HyperTerminal, the barcode appears from the products added in the list.

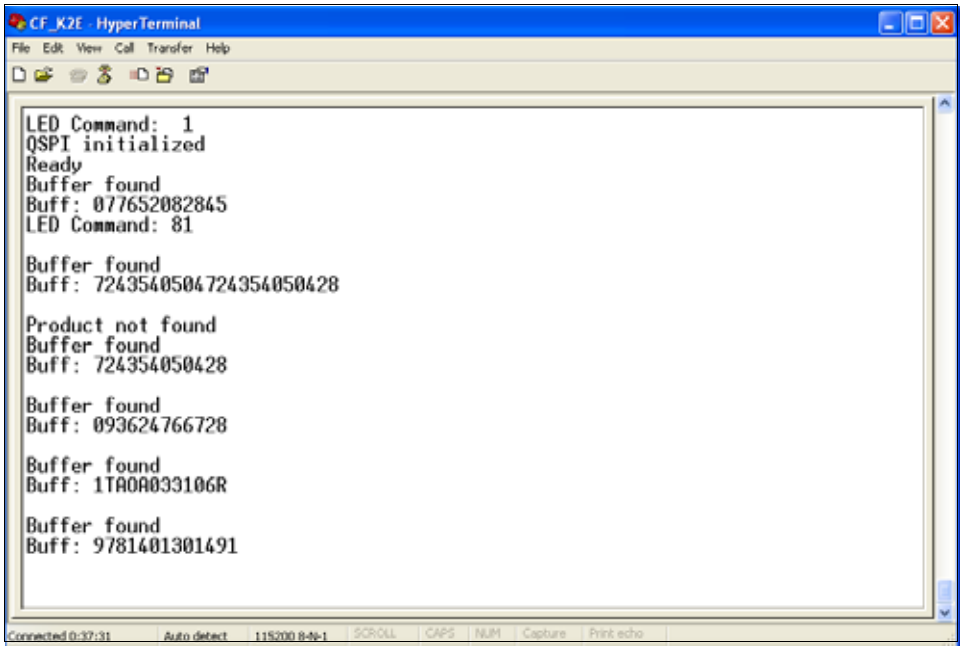

Figure 12. Reading Barcodes

All the products on the list should be in the database (on the PC side). By default, the products from the sheets in the software package exist in the database. The procedure that the system follows is: when a barcode is read and the POS receives the number of the product, it compares the barcode numbers on the database with the one read. If it is in there, it prints the information in the POS screen. If it is not in the database, it enters the add-via-barcode product stage (see Section 5.4, “Add Products to the Database Via Barcode Scanner”).

To see the products already in the database in the PC, go to the global table in //localhost/POS_Server/. It shows the items inside and some information regarding them (Figure 13 and Figure 14).

Figure 13. Server Home

ITEMS

		ITEM	BARCODE	SHORT DESC. 1	SHORT DESC. 2	PRICE	WAIT FOR VALIDATION
		1	7509951920731	Notebook	NORMA Note	3.05	Y
		2	075596220125	Pen	Pack (10)	1.95	
		3	074101753110	CD	Pack (100)	20.95	
		4	7501925415236	Cookies	Special PK	18.76	
		5	7502209651012	DVD Star	Wars SE	16.96	
		6	CN0N27654789054R1468	Tools	HW	99.99	
		7	SMK51TD	iPod nano	black	245.95	
		8	731454256124	MCF5329	EVB	699	
		9	743216352425	Mexico	flag	25	
		10	016131500	Papers	Bond 100	5.5	Y
		11	077652082845	Tea	Black	3	N
		12	7501001099244	Cookies	Oreo	0.5	N
		13	9780596002701	Book	Networking	40.5	N
		14	724354050428	CD	Coldplay	15	N
		15	1TAOA033106R	EVB	Demo5223x	90	N
		16	7501063504373	Candy Box	TutsiPop	7.5	N
		17	9780596005900	Book	Linux	39	Y
		18	9780201615982	Book	SSL	50	Y
		19	9781401301491	Book	Mars	25	Y
		20	020128102561	Code	Warrior	2500	Y
		21	093624766728	CD	Deftones	9	Y
		22	602498568279	CD	Keane	11	Y

Figure 14. Global Items Table

5.2 Payment Process

Press the pay button in the POS keyboard. Select a payment-method screen. There are databases with predefined customers. Choose one from the list by pressing one, two, three, or four.

The package contains a magnetic or Smartcard card, depending on the version used to pay. The number on the card should be in any of the four databases (American, MasterCard, Visa, Freescale), so it does not matter which database you select.

To see the databases for the customers, go to the home page in the PC and select one of the customer's options:

Figure 15. Server Home

There is a list of ten customers with different names, numbers, and credit or debit limits that can be modified (Figure 16).

AMERICAN EXPRESS

		CUSTOMER	NAME	CARD NUMBER	CARD TYPE	BALANCE / AVAILABLE CREDIT	CREDIT LIMIT
		0	USER	1129843827059814	Credit	2284.44	5000.00
		1	USER 2	1129843827037786	Debit	336.75	

Figure 16. Customer Table

To perform the payment process:

1. Select the database by clicking the numbers one to four. The screen asks to swipe your card.
2. Swipe your card. The magnetic-card-reader light is green after reading. (If the light is red, swipe the card again.) In the case of the smart card reader, you must insert the card and wait for the card to be read and displayed on the screen.

3. A new screen appears, displaying the charge and the card's last four numbers. To finish the transactions press OK. To cancel, press ESC.

   A thank-you screen for the transaction appears. The program returns to the beginning (enter-product screen).
4. To verify if the transaction was successful, change or reduce the credit or debit numbers in customer database on the PC side.

5.3 Other Functions

- To delete products while adding them, press DEL then confirm with OK.
- ESC cancels all actions and screens.
- To restart the process when adding products, press cancel, confirm it OK. It returns to the enter-product screen.
- The ABT button sends you to the special-thanks screen and an image from the development team. The song plays while the photo appears on the screen.
- When paying, if the amount is bigger that the customer's credit or debit, the system sends a screen showing that condition.

5.4 Add Products to the Database Via Barcode Scanner

When reading a barcode not on the database, the system enters the process to add a product. At that point, the system reaches a screen asking for an administrator password. In the HyperTerminal is a product-not-found message.

NOTE

The password screen can be reached even if the barcode being read is in the database. This happens when the barcode reads the wrong values or is losing the end of line of the barcode. This can happen if the barcode scanner is not properly registered in Linux. Not registering happens when the barcode scanner is attached from the beginning to the system. In this case, press ESC and you return to the previous product screen.

By default, two administrator users can be seen in the user's table (Figure 18). To reach them, go to the user's table in the main window (Figure 17) of the PC server application. The data on the user table can be modified or erased or even add new administrators. Each administrator (user) has a password. Passwords need requested if not every POS user can add products.

Figure 17. Server Home

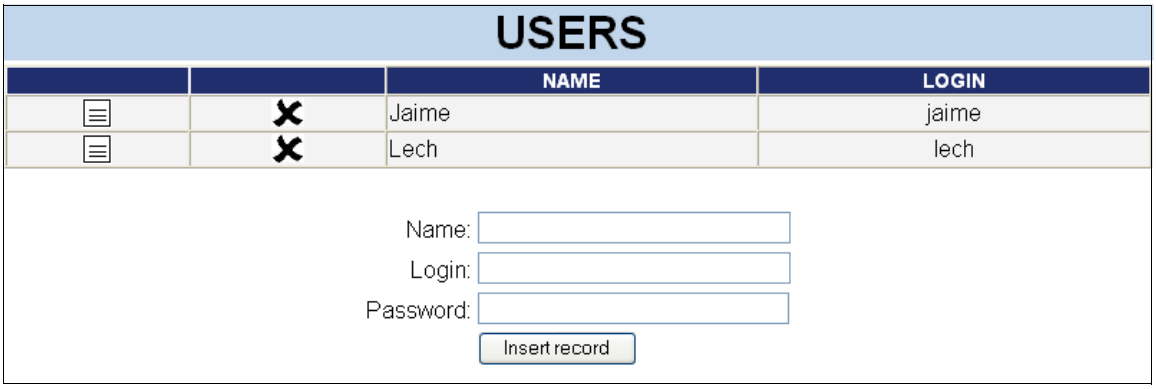

Figure 18. Administrator Table

The password for Jaime is 1234 and for Lech, 5678. In the password screen, the POS user must enter any available password to access the database.

Using a password number different from the ones added to your list takes the system to an error-message screen. The system asks for a new password or to cancel and return to the product list. In the HyperTerminal, you can track the keys being pressed.

When the password is entered correctly, the next screen asks for the new product price. Decimals are not supported, so the price must be an integer. The limit of price number is six digits. The system waits for the OK key to be pressed. When pressed, the price is saved in the database with the new barcode and a product description which is now, by default, the new product (Figure 19).

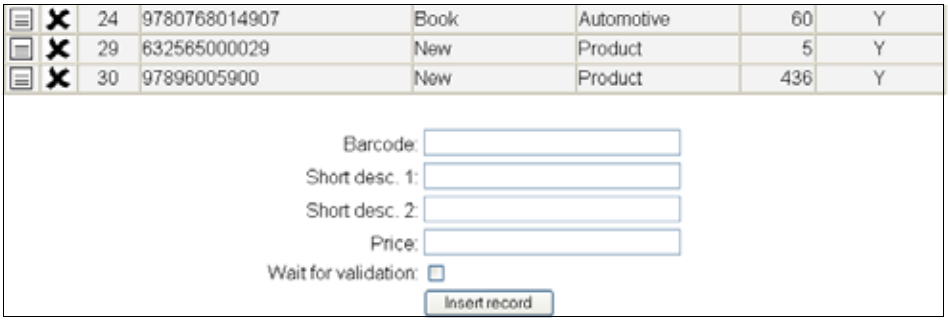

Figure 19. New Product Addition

The product description can be changed in the PC, and the next time the barcode is read, it appears in the product screen.

6 Conclusion

For more information regarding the point-of-sale reference design, go to www.freescale.com.

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Technical Information Center
Schatzbogen 7
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+46 8 52200080 (English)
+49 89 92103 559 (German)
+33 1 69 35 48 48 (French)
www.freescale.com/support

Japan:
Freescale Semiconductor Japan Ltd.
Headquarters
ARCO Tower 15F
1-8-1, Shimo-Meguro, Meguro-ku,
Tokyo 153-0064
Japan
0120 191014 or +81 3 5437 9125
support.japan@freescale.com

Asia/Pacific:
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Technical Information Center
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