CG3002 – Final Report

Group 09

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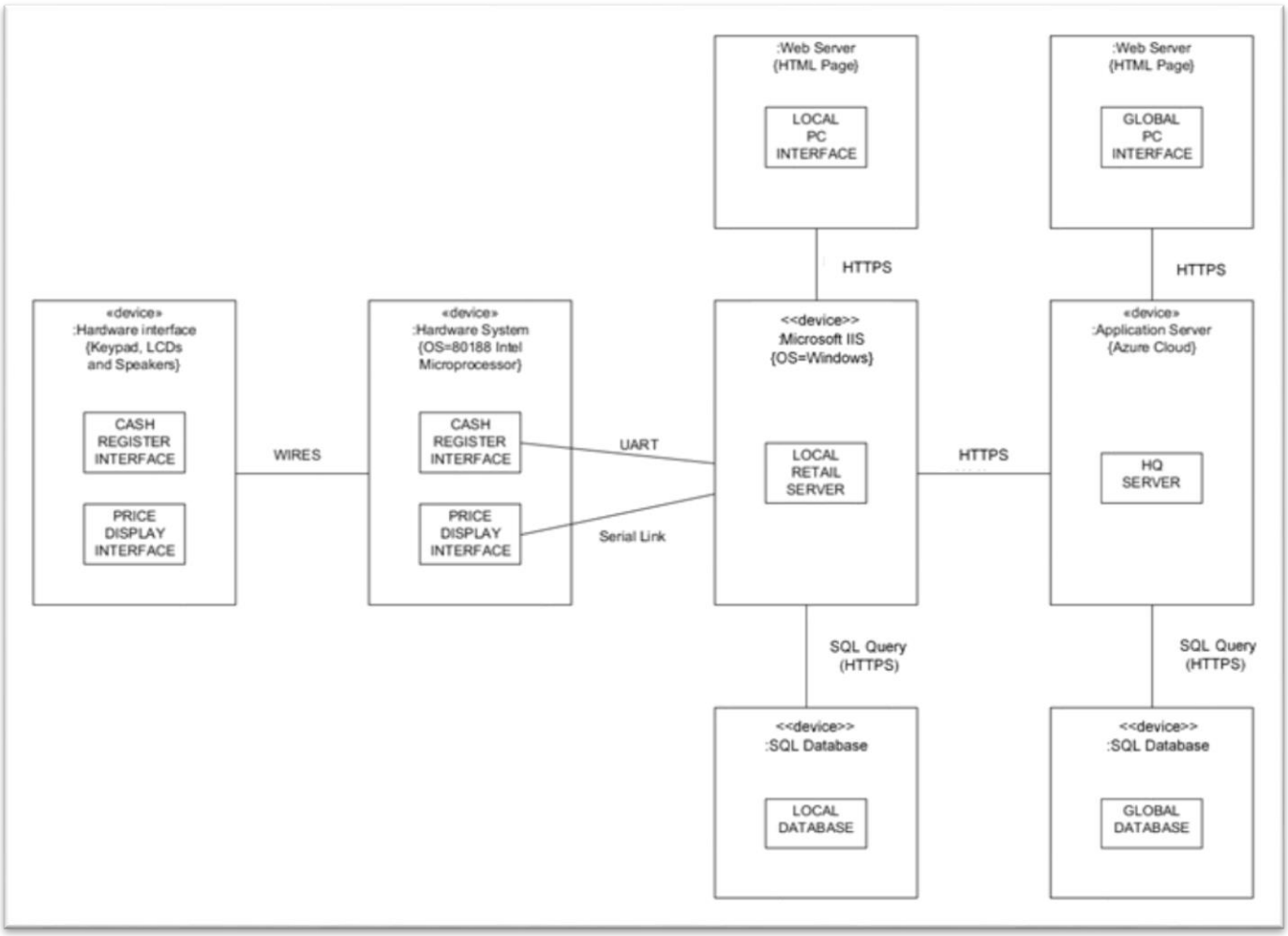
1. DEPLOYMENT DIAGRAM



2. BASIC SETUP

Software Setup

In order to setup the software system, we are using Microsoft Visual Studio 2012. We are running on MVC3 application using ASP.NET framework. Different packages that are used in this application are :-

- Action Mailer (email servers)
- JQuery libraries for user input validation
- Newtonsoft Json Package
- Windows Azure SQL Database

Local server interacts with the HQ server through HTTPS requests. The user interface makes use of HTML.

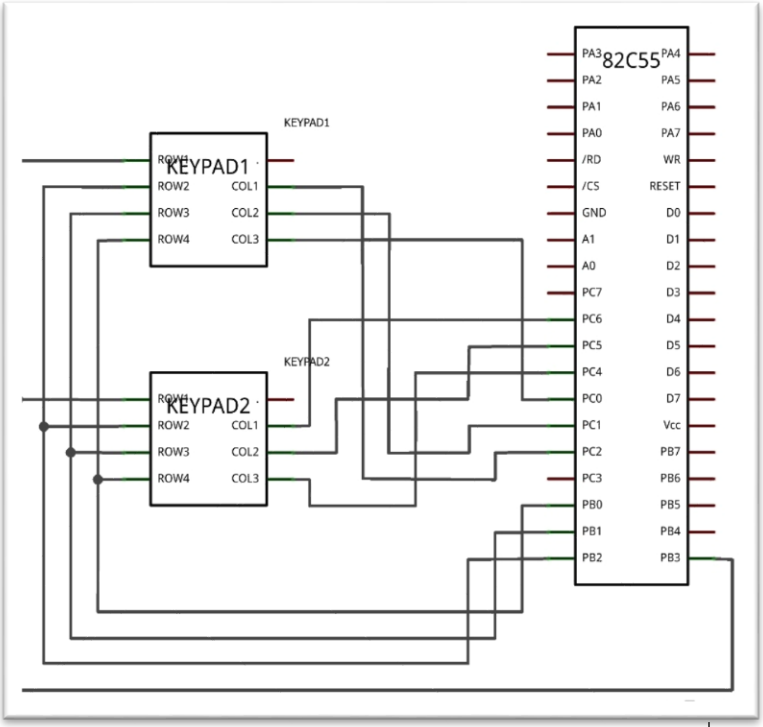
Hardware Setup

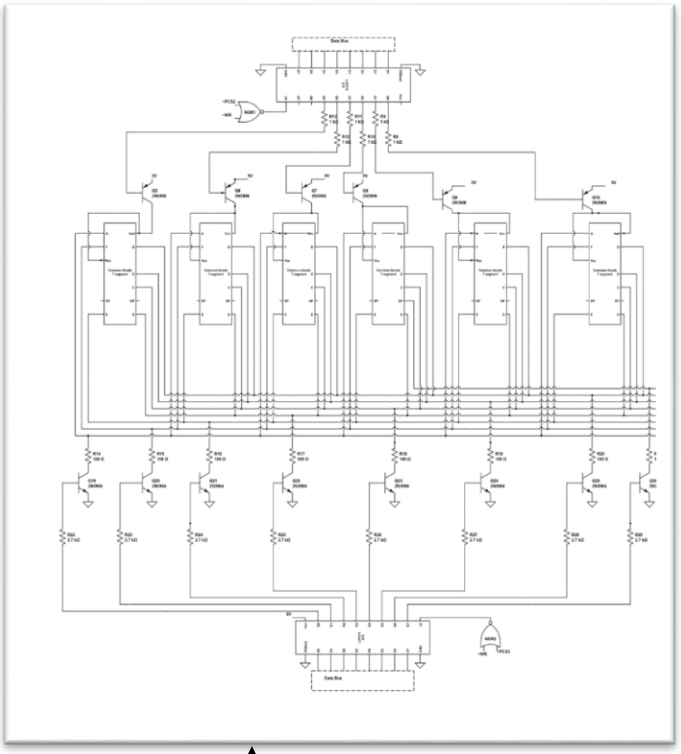
Initially, one end of the Y-cable is connected only to the cash register unit, and the Timer.hex file is loaded. Then this existing connection is removed and transferred to the Price display unit to load its corresponding Timer.hex file. After this is done, both the boards are connected simultaneously using the Y cable and then the serial communication with the PC can begin.

HQ Server

The HQ server runs on Windows Azure. Similar to the local server, it makes use of Microsoft SQL Server for the database. Similar to the local server, it runs on ASP.NET MVC3 with C#.

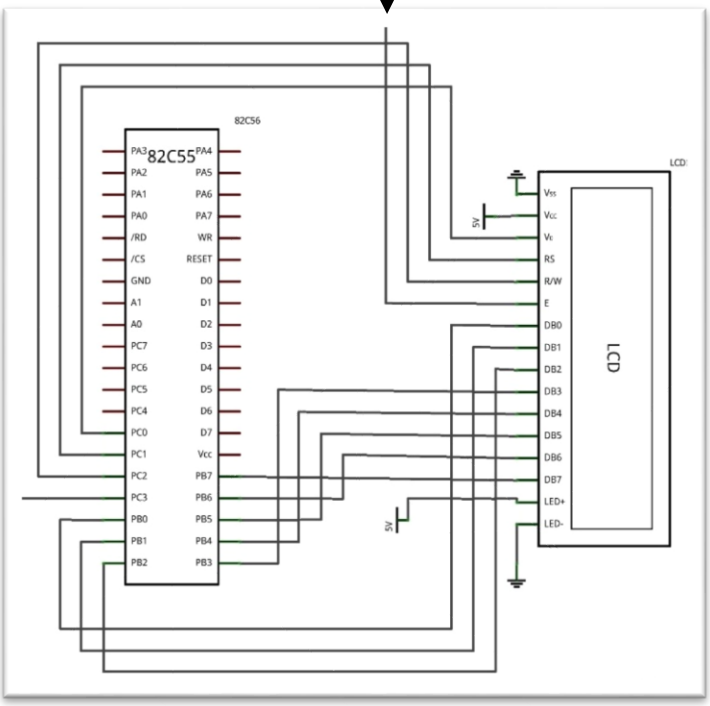
3. HARDWARE SCHEMATICS

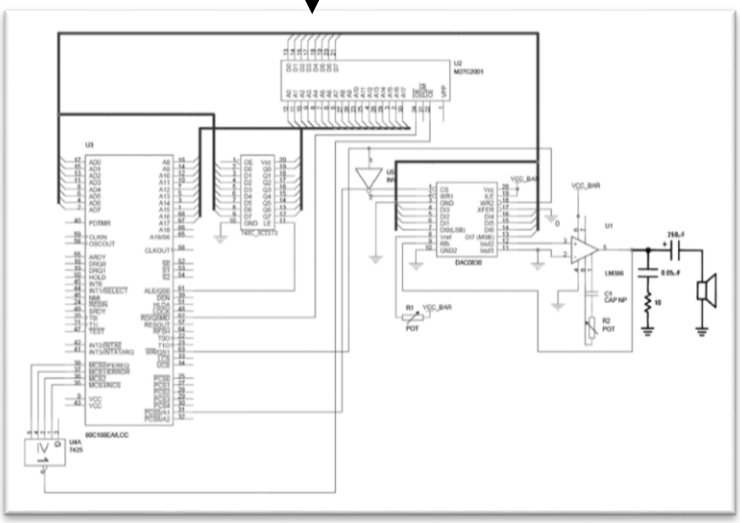




Price Display Unit (80C188)

Cash Register Unit (80C188)





4. EXTRA FEATURES

Cash Register Security & Tracking System

We have implemented security on various levels. On the hardware level, we have implemented a cashier login feature by which he/she has to enter his/her 6-digit cashier ID and 6 digit password on the keypad and only if these credentials are correct, the cashier would be able to login and use the cash register. Moreover, if the cashier leaves his/her cash register unattended for a certain period of time, the cash register would automatically timeout and logout the cashier (for demo purposes, we have set this timeout duration to be 1 minute).

On the serial communication side, we are ciphering the password before we send it over to the local server from the cash register. This is then deciphered on the server. Once this is done, the server compares the username and password with the corresponding database tables and authenticates accordingly.

On the software side, we are maintaining a table which consists of the different cash register sessions which basically gives us details about the cashier who has logged in, and the time at which the cashier logged in and logged out. We are also keeping track of the time at which transactions are performed and hence if any abnormal or fraudulent transactions take place, we would be able to track down the person who was using the cash register at that time.

Online Shopping with Geo-tagging

We have implemented an online shopping system which performs the operations of adding products to a cart and then checking out the cart. The user would be able to search for products through our interactive UI and then add his/her products to a cart. However, the user would be able to checkout his/her cart only after logging into his/her account. Users who do not have an account can register for an account on the online shopping website itself our registration page.

Moreover, we have implemented a geo-tagging feature whose algorithm will work in the following way. Let's say a user wants to check out a product, our geotagging algorithm will go through all the nearby stores which have the product quantity that is higher than the minimum stock. If none of the nearby stores have sufficient quantity of the product, we then supply the product from the warehouse which we direct through the shop nearest to the user.