Wireless Ordering System

by

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A SENIOR THESIS PROPOSAL

Presented to the Faculty of

The Computer and Electronics Engineering Department
In Partial Fulfillment of Requirements
For CEEN 4980 Senior Thesis Proposal

Major: Computer/Electronics Engineering

The University of Nebraska-Lincoln, Omaha Campus

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The accompanying Senior Thesis proposal, "Wireless Ordering System", is submitted in accordance with the requirements of CEEN 4980, Senior Thesis Proposal. As stated in the proposal, the project will be done for and funded by the students participating in the senior thesis proposal.

Respectfully yours,

Khoa Do

Rob Stoner
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I. BACKGROUND

With recent advancements in the wireless communication field, applications in smaller commercial projects are more feasible. Although when one thinks of the wireless field, higher end communication applications come to mind, technology has made it more readily scalable to smaller markets. These markets include the use of this technology to the restaurant businesses. Employers in this field are looking for a way to add speed and accuracy to service in this industry. A wireless ordering system should speed up this process immensely. This system would also ensure that customer's orders are met with more speed and accuracy on deliverable goods.
II. THESIS OVERVIEW

The Wireless Ordering System will allow a customer the ability to order without the presence of a wait staff. After a customer is seated, he or she can select from the menu displayed on the screen of the device. After the customer decides what to order, he or she will enter the order from the keypad, have this current order displayed visually, and then can send the order to the kitchen.

After the order is placed and sent by the customer, the kitchen staff can receive and process the order.
III. GENERAL DESCRIPTION

The Wireless Ordering System will accomplish the goal of placing an order to the kitchen wirelessly by utilizing the 802.11b wireless Ethernet protocol. The keypad unit will be connected serially to a PC, then serial transmissions will be sent via the local serving PC to the kitchen using the aforementioned protocol. A client PC in the kitchen will then display the incoming order.

The portable keypad unit will have the following general specifications:

- The ability to take orders from the menu.
- The ability to store the data from the order.
- The ability to transmit the data to the kitchen for processing.

The kitchen terminal will display the following general specifications:

- Receive and display all food orders

Figure 1: Block Diagram for the Wireless Ordering System
## IV. COMPONENTS LIST

The major components of the "Wireless Ordering System" would consist of the following:

<table>
<thead>
<tr>
<th>Component</th>
<th>Estimated Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Keypad</td>
<td>$25.00</td>
</tr>
<tr>
<td>Keypad controller</td>
<td>$10.00</td>
</tr>
<tr>
<td>Microprocessor or 8086</td>
<td>$10.00</td>
</tr>
<tr>
<td>LCD</td>
<td>$30.00</td>
</tr>
<tr>
<td>Wireless Ethernet 802.11b protocol</td>
<td>$100.00</td>
</tr>
<tr>
<td>Software development</td>
<td>$150.00</td>
</tr>
<tr>
<td>DC converter</td>
<td>$10.00</td>
</tr>
<tr>
<td>Max233</td>
<td>$10.00</td>
</tr>
<tr>
<td>DB-25 to DB-9 serial cable</td>
<td>$10.00</td>
</tr>
<tr>
<td>Crystal oscillator</td>
<td>$5.00</td>
</tr>
<tr>
<td>2 PCs and 2 Monitors</td>
<td>Free</td>
</tr>
<tr>
<td>Ethernet adapters/RS232 Cables</td>
<td>$60.00</td>
</tr>
<tr>
<td>Miscellaneous (Wires, ICs, Ids, and etc…)</td>
<td>$50.00</td>
</tr>
</tbody>
</table>

Total Estimated Cost: $500.00
## V. TIME SCHEDULE

<table>
<thead>
<tr>
<th>Tasks</th>
<th>January</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Research</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>II. Parts Ordering</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>III. Hardware Design</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>IV. Software Design</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>V. Hardware Testing</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>VI. Construction</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>VII. Software Testing</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>VIII. Final Testing</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
<tr>
<td>IX. Documentation</td>
<td>1st</td>
<td>2nd</td>
<td>3rd</td>
<td>4th</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Timeline for Wireless Ordering Unit Completion (Gant Chart)
VI. ACCEPTANCE TESTING

1. Acceptance Test I:
   Demonstrate data from the keypad can be displayed to the LCD.

2. Acceptance Test II:
   Demonstrate the micro-controller can interface with a PC using RS232 cable.

3. Acceptance Test III:
   Demonstrate the wireless Ethernet 802.11b protocol between PCs.

4. Acceptance Test IV:
   Demonstrate receivable kitchen software.

5. Acceptance Test V:
   Demonstrate working system in with full functionality.
VII. TEAM MEMBERS

Khoa Do (Electronic Engineering)

Rob Stoner (Computer Engineering)
VIII. ASSIGNMENT OF EACH MEMBER

Preliminary assignments of each team member will be as follows (but not limited to):

**Khoa Do:**

Primary Responsibility:

- Wireless Ethernet 802.11b protocol
- Proto-board Assembly
- Keypad unit

Secondary Responsibility:

- Kitchen software
- Documentation of Hardware and Software

**Rob Stoner:**

Primary Responsibility:

- Interface data from micro-controller to PC
- Kitchen Software

Secondary Responsibility

- Wireless Ethernet 802.11b protocol
- Documentation of Hardware and Software
IX. SUMMARY

This Wireless Ordering System will allow the customers to order for themselves without the presence of the wait staff by using the portable keypad unit. The data will be displayed on the LCD for verification of the order, and then the data will be transferred wirelessly to the computer in the kitchen using a wireless ethernet protocol to another computer. Then the computer in the kitchen will receive the data, and display it for the cook.