“The Widget Register”

By

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A SENIOR THESIS PROPOSAL

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The Computer and Electronics Engineering Department

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The accompanying Senior Thesis Proposal, “The Widget register”, is submitted in accordance with the requirements of CEEN 4980, Senior Thesis Proposal.

Respectfully,

Zach Link

Jim Melonis
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I. BACKGROUND

Zach works at Vala’s Pumpkin Patch each year during the Halloween season. He had the initial idea to create a device that would make the food ordering process at Vala’s more efficient. After talking this idea over with his partner, Jim, and Professor Sharif, we decided that Vala’s is not the only type of business that could take advantage of the idea’s features. After a lot of thought and ideas were combined, the final idea was created – the Widget Register.

II. THESIS OVERVIEW

The Widget Register will not be application specific. The Widget Register will be adaptable to various types of applications, especially appropriate for restaurant applications. The owner of the device will be able to program the menu to fit their specific needs. The Widget Register will keep records of what types of items were ordered, and when. The user will be able to transmit the data to a PC where further calculations and reports can be generated.

Other advantages of the device include data storage of services ordered such as real time tracking and item inventory. This will be done automatically by the device. For example, the number of orders for hot dogs can be compared to the amount of polish dogs ordered. The device will have everything stored in it. Items can be broken down by day, week and month to help the business decide on the best possible supply and demand.
III. GENERAL DESCRIPTION

The design of the system will be the first step. Since it will involve digital design the schematics will be done on ORCAD. After the design the gathering of parts will be essential. Then using the skills of wire wrapping and soldering, the system will be built.

The software of the system will be the final step of the project. The programming language ‘C’ will be used. The programming will include the interfacing with hardware as well as interfacing with the user. The code for the hardware interfacing and initialization will be dependent on the chips and devices. The interfacing with the users will be more complex.

The device will have two modes of operation – one for a normal user and one for an administrator. The normal user, such as the cashier, will enter the orders. The manager or supervisor of the company owning the device will have access to the administrator mode, which will be restricted by a password. The user will enter a password to have the ability to adjust data on items. The administrator should have good knowledge of the system in order to be able to operate it properly.
IV. COMPONENTS LIST

This is an initial partial list of components.

Memory

64k RAM

64k ROM

Memory sizes may be increased to fit the need of the device.

Processor

Intel 8086

Intel 8284 - 5 MHz Clock Chip and circuit

I/O Devices

16550 – Serial Communications Port

TXM-900-HR-11 – Wireless transmitter chip

RXM-900-HR-11 – Wireless receiver chip

Misc. Devices

74LS373 – Latches for address bus

74C245 – Bidirectional buffers for control lines

22v10 – Programmable Logic chips using PALASM
V. TIME SCHEDULE

These steps can overlap:

Proposal – 4 weeks

Hardware Design – 2 weeks

Hardware Implementation – 4 weeks

Software Design – 4 weeks

Software Implementation – 4 weeks

Final Report – 2 weeks

Documentation – 13 weeks

VI. ACCEPTANCE TESTING

The project will contain the following items:

Hardware:

- There will be some type of input allowing the server to enter orders easily
- There will be an input for the administrator to view data and make any needed changes
- There will be an output for the user to view and record data
- There will be a wireless transmission of data from transceiver and receiver

Software:

- The display will be simple to read and understand
- There will be some kind of “database” that will hold all the information of the products ordered
and the administrator will be able to view the data in terms of day, week, and month
- There will be some kind of administrator mode allowing the administrator to change the
products (example: if Vala’s starts to sell french fries, the administrator could add them and the
addition would be reflected in the “database”)

VII. TEAM MEMBERS (IF ANY)
Zach Link
Jim Melonis

VIII. ASSIGNMENT OF EACH MEMBER (IN CASE OF A TEAM)
These tasks will be the main focus of the members:

Zach Link – Hardware Builder
Jim Melonis – Software Developer/Computer Programmer

XIV. SUMMARY
The Widget Register will be a fully functional system that will allow users to enter, record, and
store data. It will be flexible enough to fit with any menu. The system will be easy to use and
understand. The completion of this project will demonstrate the team members’ knowledge of
many subject areas: All engineering class from Computer and Electronics Engineering
Fundamentals to Digital Computer Design II will be used for the bulk of the project for such
things as designing and implementing. Our classes taken in English such as Technical Writing
will benefit us in the documentation and final report. The Mathematics and CSCI courses will help us with the software and logic portion of the project. With the completion of this project, we will demonstrate our knowledge and learning of our undergraduate career as computer engineers at UNO.