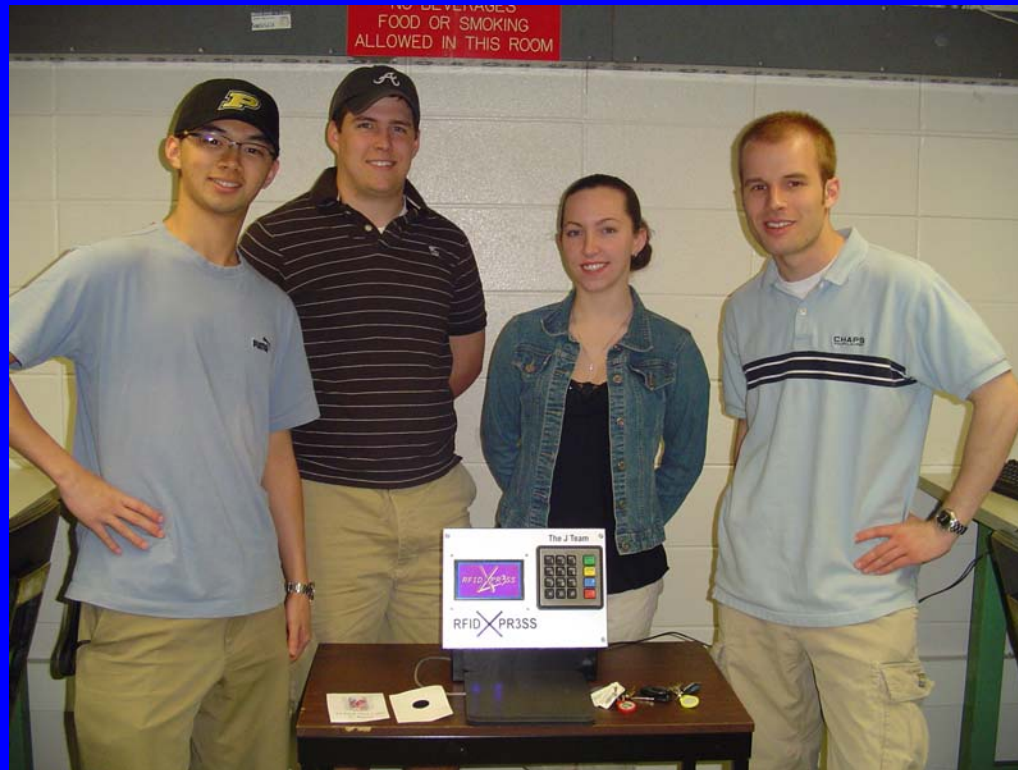# ECE 477 Senior Design
# Group 10 – Spring 2006

Jonathan • Jared • Jennifer • Josh

Outline

- **Project overview**
- **Design challenges faced**
- **ECE 270 knowledge used**
- **Project demo**

Project Overview

- **RFID Xpr3ss**
  - **state-of-the-art self-checkout system**
  - **improve supermarket/retail efficiency**
  - **products affixed with RFID label, customers carry key fob**
- **Implementation**
  - **Customer performs following steps:**
    - **1. swipes key fob**
    - **2. enters PIN via keypad**
    - **3. scans products, viewing product info on LCD**
    - **4. when finished, selects to print and/or email receipt**

Block Diagram
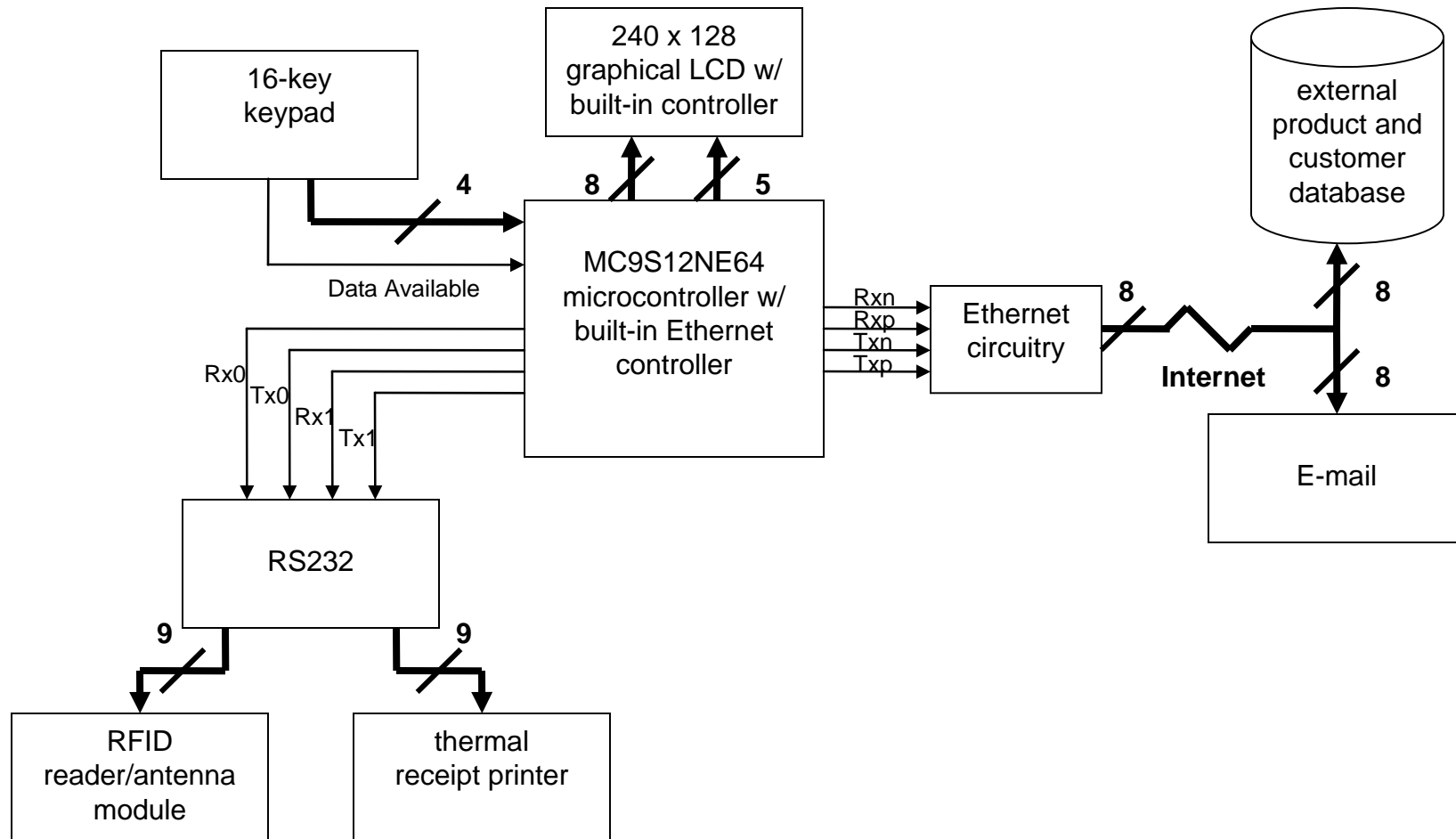
Design Challenges Faced

- **PCB Layout**
- **Power Supply Design**
- **Polling/Interrupt/State Machine**
- **LCD Communication**
- **Serial Communication**
- **Ethernet Connectivity**
- **Ideal Packaging**

ECE 270 Knowledge Used

- **Debugging Techniques**
  - **Oscilloscope**
  - **7-Segment LEDs**
- **State Machine Design**
- **Current Considerations**
- **Datasheet Comprehension**
- **Basic Digital Circuit Design**

Project Demo

Project Specific Success Criteria

1. An ability to identify an item (and look up data on that item) based on its RFID tag.

2. An ability to identify a customer based on a key ring transponder and PIN code (entered on a keypad).

3. An ability to display status information (e.g., item being scanned/price) on an LCD.

4. An ability to print and/or E-mail receipt, based on customer selection (via keypad).

5. An ability to gather product and customer data by querying an external database (using Ethernet).

Questions / Discussion