Union’s Newest Electronic Guard Dog

Programming “Smart Card” Readers for Security Purposes

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Why Did I Choose This Project?

History

• In 1994, this wall-mounted “Smart Card” reader was installed
• Immediate problems arose
  • interference with meal plan system
  • shortage in power supply
• Only functional for a few months and has not worked since that day
• As a technician this “eyesore” became a pet peeve
• This year, 1999, implemented new ID system
• Last/Best chance to see the reader working
Doomed for the Dreaded H-76!!

The Elephant Graveyard for Computer Equipment

There is NO Return!!
Killing Two Birds With One Stone/Reader

Technician Room ->

<- NT/Linux Lab
Step-by-Step Approach

• What equipment (reader)?
  • Programmable or Development kit used?

• What type of Database?
  • Remotely accessible?

• Which language? - Process Handling Program
  • Handshaking issues to consider: “Database” & COM port (RS-232)

• Dedicated Machine

• Programming the Controller and Terminal
Equipment That Was Available: VeriFone Products

TRANZiT 1200C Controller

TRANZ 340 Terminal
TCL - Terminal Control Language

• Developed by VeriFone

• Not to be confused with “tickle” tcl/tk

• Very low-level, comparable to Assembly Language

  • combination of single characters (special/normal) and/or numbers

    ; This routine is called after a response message is received from host and we want to extract the
    ; approval number which follows the second separator for 6 digits.
    160$

    B.2 ; Select receive buffer which contains host response
    U190 ; Save the entire host response
    B2.1 ; Select the receive buffer as the source buffer and 1 as the destination buffer
    H ; Find the first field separator in the host response
    O ; Move the extraction pointer by 1
    H ; Find the second field separator in the host response
    X6 ; Copy the 6-digit approval number
    U50 ; Save the approval number
Database of User Accounts

• Can your continually running program efficiently access information from your User Account database?

• Will your database be remotely accessible over a Local Area Network and/or the Internet?

• Creating a GUI front-end for your database.
Language of Background Program

- Chose the programming language ‘C’.
  - Serial I/O Libraries (RS-232 protocol)
  - ability to manipulate strings
    - data sent by readers are appended as one long string
Dedicated Machine - nothing fancy

- Original Technician Room security setup was done in 1994 running on a 386.
Programming the TRANZiT 1200C and TRANZ 340

- Two separate TCL programs - downloaded with TCLoad
  - Controller
    - Given permission by software developer to use existing code
  - Terminal
    - Quite challenging, due to limited number of operations
      - Must rely on Process Handler
Basic Components of TRANZiT 1200C LAN Environment

- **Process Handler** (Continually running program)
- **'C' Code**
- **User Account Database** (ID Number, Name, Room Access, Access Times)
- **486**
- **Serial Connection**
- **TRANZiT 1200C Controller**

Up to 16 terminals can be connected to the LAN at one time.
How Does the Terminal Open a Door?

- Completes an Electrical Circuit.
- 6/8-DIN Ports
  - 8-DIN for Technician Lab
  - 6-DIN for NT/Linux Lab
Are You “Reinventing the Wheel”? 

- No!
- Clarion
- Separate “Database” - no conflicts
- Two Doors - controlling two ports
- Windows Based Applications
Recommended Reading

- TCL Terminal Control Language - Programmer’s Manual
- TRANZiT 1200C Controller - Programmer’s Manual
- TRANZ 340 - Installation Guide
- TRANZiT 1200C Controller - Installation Guide

All previous documentation can be downloaded at [www.verifone.com](http://www.verifone.com)