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Automated Parking Lot System

Software

A. Parallel port interfacing

The pins of the parallel port are divided into 3, the data ports, the status ports, and the control ports. The 8 data ports are used as output and use the address 888 (378H). The 5 status ports are used as input and use the address 889 (379H). The 4 control ports are used as output and use the address 890 (37AH).

The software has to interface with the parallel port of the computer. Visual Basic in itself is not capable of controlling the parallel port, it only provides for interfacing with a printer connected to the parallel port. As such, an external file, win95io.dll, is used by the software to gain access to the parallel ports. This file contains functions that are necessary to make procedures in our software that are used to interface with the parallel port. These procedures are **OutPort** and **BitStatus**. OutPort allows the software to output a decimal value to the specific port. It has two parameters: the port address to be outputted to and the decimal value to be outputted. BitStatus is a function that returns the current value of a specific pin of the parallel port. It also has two parameters, the port address of the specific pin and the pin number of the pin whose status is to be checked.

Through the data lines, the software outputs a specific pattern that enables the shifting of the shift registers. Pins 2 & 3 of the parallel port outputs a pattern that shifts all the shift registers at the same time. Pins 4 & 5 of the parallel port is connected to the multiplexer and this allows the multiplexer to determine which shift register is chosen. The process of choosing a particular register and shifting the register to get all the inputs takes a total of 1.2 seconds.

Pin 13 of the parallel port is used to get input from the multiplexer. The BitStatus function is used for this particular purpose.

This whole process is repeated until a key_press or key_down event in Visual Basic is activated by an output from the Barcode reader connected to the keyboard PS2 port.

B. Cue Cat Barcode Reader

The software that decodes the output of the barcode reader we used for our project is readily available in many programming languages in the internet. The code we incorporated to our software utilizes the key_press and key_down events of Visual Basic that are activated when a barcode is read by the reader. In these events, the output of the barcode reader is decoded. Among the data included in the output of the reader are the type of barcode read, the serial number of the reader, and the data itself. The software outputs the data of the barcode read.