

AUDIBLE COMPUTING, Part 4

--- Masa Kasahara

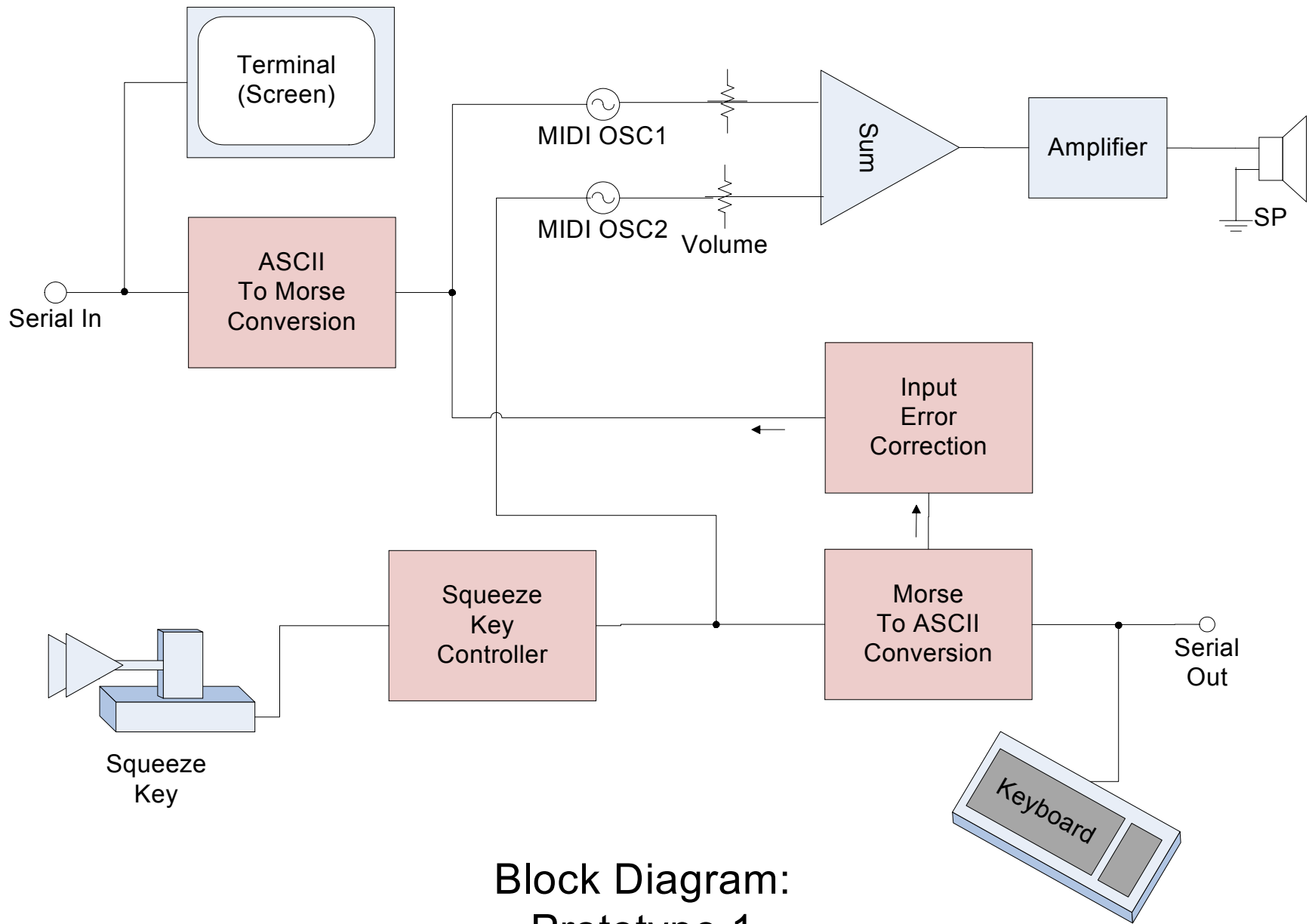
In Part 4, Masa will talk about his quest for the perfect machine to implement his ideas. It should be small enough to be portable and not too expensive, either. What do you think he came up with?

Prototype 1 (Recap):

- Prototype 1 is focused on the feasibility of the concept .
- A terminal program under Windows with Morse Code Interface. This terminal program can be connected to another FORTH system.
- I found a sample TTY program for Windows at Microsoft web site:

[http://msdn2.microsoft.com/en-us/library/ms810467\(d=printer\).aspx](http://msdn2.microsoft.com/en-us/library/ms810467(d=printer).aspx)

It is a fairly complete program with source code and detailed explanation of the code.



Block Diagram:
Prototype 1

Prototype 2 (Recap): Porting Prototype 1 to Forth System running under Windows:

- Prototype 2 is focused on porting Prototype 1 to Forth System running under Windows.
- This is a great opportunity to learn how Windows API is implemented in different Forth Systems.
- I am also looking for Forth System, which can be easily ported to Windows CE environment. The above study will be directly used here.

Prototype 3 (Recap): Integrate Prototype 2 to Forth System.

- All the Forth routines except hardware related routines will be completed in Prototype 2, which makes the integration easier.
- Prototype 3 is conditional upon the result of the Prototype 1. If Prototype 1 is promising, Prototype 3 is continued. Prototype 2 is actually a learning opportunity for Forth System running under Windows. It will be continued regardless of the result of the Prototype 1.

What are the requirements for the ideal platform?

- Small enough to carry around – It should contain all the audio circuitries within.
- Very low power consumption – TI's new CPUs are suitable for this. It runs forever with a tiny button cell if we utilize sleep function. It wakes up in 2ms, which is enough for Morse Code Interface.
- Inexpensive – I can not rely on custom design hardware.
- Easy to implement Forth System.
- Easy to interface to Squeeze Key.

Candidate 1: Cell phone with Windows Mobile

- I purchased Treo 700wx for other applications, but this is also a prime candidate for the project. It is not inexpensive. I paid \$200, but I already have it.
- The unit is not small, but it does have sound capabilities and everything else.
- Windows environment – Not perfect, but usable. There is a Forth port in Windows CE (The base for Windows Mobile).
- Interfacing Morse Keys is a bit tricky – USB or Serial are two methods available, but not easy to do it with Morse Keys. There are no binary inputs such as DTR for Serial. You need to use a USB interface chip.
- Power Consumption is not small, but usable.

Candidate 2: TI's demo units

- I attended TI Seminar to receive a free wireless kit.
- The unit consumes very little.
- Interfacing Morse Keys is really easy since there are binary inputs.
- The unit does have D/A converters – No circuitry to drive headphones, but this can be dealt with.
- Memory size is too small. Other flavors are available, but still small.

Candidate 3: SanDisk Sansa c240

- It costs \$25.
- The unit does have Sound capabilities.
- Interfacing Morse Keys is a bit tricky – USB or Serial are two methods available, but not easy to do it with Morse Keys. There are no binary inputs such as DTR for Serial. You need to use a USB interface chip. Or, you can hardwire two front panel switch to Port Connector, which is not impossible.

Candidate 3: SanDisk Sansa c240 (continued)

- Mp3 players these days are actually very powerful computers, more powerful than PCs ten years ago.
- Enough Disk Storage, 1GB internal. More with MicroSD card.
- RockBox, an open source C base Operating System, is available for c240 with the first revision.

Candidate 3: SanDisk Sansa c240 (continued)

- How about implementing Forth System? Sansa c240 uses dual ARM7TDMI. Ting implemented eForth on the same architecture in FORTHstamp Board.
- How about porting FICL? FICL is C based Forth. It's perfect on C based OS.

Prototype 2 (New): A running Audible Computer (under Windows):

- I still want to have an Audible Computer running on regular PCs since everyone has a PC. It can be a system on MS-DOS bootable from a floppy. Maybe FICL based?
- Or, c240 simulator running on Windows?

Prototype 3 (New): A running Audible Computer on Sansa c240:

- I guess Prototype 2 and 3 should be happening simultaneously.
- For those who want to try the real device, they have an option to acquire c240. But, Prototype 2 is available for everyone.

RockBox Demo

- C240 simulator running on Windows.
- RockBox running on actual c240 device
- In the future presentation: RockBox Development Environment in cigwin

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