Foenix/MCP a Simple, Portable Operating System for the Foenix Line of Computers

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19 September, 2021

Chapter 1

Overview

1.1 Copyrights

Chapter 2

Command Line Utility

2.1 Paths

2.2 External Commands

2.3 Internal Commands

2.3.1 Numbers

Several internal commands use numbers as arguments. These numbers can be specified in one of three ways: decimal, binary, or hexadecimal. A decimal number is written just the usual numerals between 0 and 9. A binary number must be prefixed with either % or 0b. A hexadecimal number must be prefixed with either $ or 0x.

2.3.2 File System Commands

2.3.3 Memory Commands

2.3.4 Graphics Commands

Chapter 3

Devices

There are two main ways of supporting devices in FOENIX/MCP: channel devices, and block devices. Bytes may be written to or read from a channel, but the bytes are always in order. Every channel has a "cursor", which marks where the next byte to read or write is. Some channels may support the ability to move the cursor, but some will not have that ability. Examples of channels include the text screens, the keyboard, the serial port, and files open for reading or writing.

Block devices, on the other hand support reading or writing an entire block of bytes at a time. Every block has an "address" on the device, and blocks may be read or written in any order and location by specifying the address desired. Examples of block devices include a hard drive, SD card, or floppy drive.

3.1   Channels and Channel Devices

FOENIX/MCP supports several channel devices, including: main console screen, secondary console screen (Channel B or the EVID card), the COM ports on the computer, MIDI ports (if available), and parallel printer port (if available):

Number	Device	Name
0	Console (Channel A)	`@CONA:`
1	Channel B or EVID	`@CONB:`
2	Serial Port #1	`@COM1:`
3	Serial Port #2	`@COM2:`
4	Parallel Port	`@LPT1:`
5	MIDI Port	`@MIDI:`

Table 3.1: Built in channel devices

Number	Device	Name
0	SD Card	@S:
1	Floppy Drive	@F:
2	Hard Drive	@H:

Table 3.2: Built in block devices

Channel devices support several operations. User programs will not generally access channel devices directly, but will instead access them through an open channel. Each channel will be referenced by its number. By default, the operating system will have already created a channel for each channel device present on the system, and the channel number will match that of its device. Another source of channels is to open a file (see below).

- Read—Read a number of bytes from the channel.

- Read Byte—Read a single byte from the channel.

- Read Line—Read a line of text from the channel (delimited by a newline character).

- Write—Write a number of bytes to the channel device.

- Write Byte—Write a single byte to the channel.

- Flush—Ensure that any pending writes are completed on the device.

- Seek—Move the channel cursor to a different position in the channel. This may not be supported by all types of channels.

- Status—Return the status of the block device.

- IOCTRL—Set options for the block device. Some options will be common, but others will be device-dependent.

3.2   Block Devices

Foenix/MCP supports three block devices: SD cards, hard drives on the IDE (PATA) interface, and floppy drives.

Block devices support several operations:

- Read—Read a block of data from the block device.

- Write—Write a block of data to the block device.

- Flush—Ensure that any pending writes are completed on the device.

- Status—Return the status of the block device.

- IOCTRL—Set options for the block device. Some options will be common, but others will be device-dependent.

3.3   Files

Foenix/MCP provides for file access on block devices. The operations supported for files include:

- Open—Create a channel (with a unique channel number) which can be used to read, write, or append a file.

- Close—Shut down access to a previously open file, given its channel number. Files open for writing or appending will commit any pending write operations.

- Delete—Remove a file from its block device.

- Rename—Change the name of a file.

- Copy—Make a copy of a file.

In addition to files, Foenix/MCP supports directory access:

- OpenDir—Open a directory to list out the files present.

- CloseDir—Close a previously open directory.

- ReadDir—Read an entry out of an open directory.

- FindFirst—Find the first entry in a directory that matches a search pattern.

- FindNext—Find the next entry in a directory that matches a search pattern.

Chapter 4

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Chapter 5

Keyboard Operations

5.1   Scancodes

5.2   Translation Tables

Chapter 6

Implementing Device Drivers

6.1 Channel Device Drivers

6.2 Block Device Drivers