Overview

This Host fatfs example can suport ufi and scsi U-disk device.
The application will print the attached device information when U-disk device is attached. The application will execute some fatfs APIS to test attached deivce.

System Requirement

Hardware requirements

- J-Link ARM
- P&E Micro Multi-link universal
- Mini/micro USB cable
- USB A to micro AB cable
- Hardware (tower/base board, ...) for specific device
- Personal Computer(PC)

Software requirements

- The project path is: <SDK_Install>/boards/<board>/usb/usb_host_msd_fatfs/<RTOS>/<toolchain>.

Note
The RTOS is BM or FreeRTOS.

Getting Started

Hardware Settings

- The Jumper settings:
  JP12 connected .

Prepare the example

1. Download the program to the target board.
2. Power off the target board. And then power on again.
3. Connect devices to the board.

Note
For detailed instructions, see the appropriate board User's Guide.

Run the example

1. Connect board uart to PC and open the COM port in a terminal tool.
2. Plug in hub or U-disk device to the board, the attach information print out in the terminal.
3. The test information print in the terminal, "success" print when one fatfs api succeed, "fail" or other information print when one fatfs API fail. The test will finish when there is fatfs API fail or all the tests are done.
   The follow picture is an example for attaching one U-disk device.

```
host init done
mass storage device attached:pid=0x5567vid=0x781 address=1
.........................fatfs test.....................
fatfs mount as logiacal driver 0......success
test f_getfree:
    FAT type = FAT32
    bytes per cluster = 4096; number of clusters=1950080
    The free size: 7321584KB, the total size:7800320KB
directory operation:
list root directory:
    dir - ___ - DIR_1 - 0Bytes - 2015-10-1 12:30:0
    dir - ___ - DIR_2 - 0Bytes - 2013-1-1 0:0:0
create directory "dir_1"......directory exist
create directory "dir_2"......directory exist
create sub directory "dir_2/sub_1"......success
list root directory:
    dir - ___ - DIR_1 - 0Bytes - 2015-10-1 12:30:0
    dir - ___ - DIR_2 - 0Bytes - 2013-1-1 0:0:0
list directory "dir_1"::
    dir - ___ - . - 0Bytes - 2013-1-1 0:0:0
    dir - ___ - .. - 0Bytes - 2013-1-1 0:0:0
    dir - ___ - SUB_1 - 0Bytes - 2013-1-1 0:0:0
rename directory "dir_1/sub_1" to "dir_1/sub_2"......success
delete directory "dir_1/sub_2"......success
get current directory......0:/
change current directory to "dir_1"......success
list current directory:
    dir - ___ - . - 0Bytes - 2013-1-1 0:0:0
    dir - ___ - .. - 0Bytes - 2013-1-1 0:0:0
get current directory......0:/DIR_1
get directory "dir_1" information:
    dir - ___ - DIR_1 - 0Bytes - 2015-10-1 12:30:0
change "dir_1" timestamp to 2015.10.1, 12:30:0......success
get directory "dir_1" information:
    dir - ___ - DIR_1 - 0Bytes - 2015-10-1 12:30:0
file operation:
create file "f_1.dat"......success
test f_write......success
test f_printf......success
test f_puts......success
test f_putc......success
test f_seek......success
test f_gets......ABCDEFGHI
test f_read......JKLMNOPQRS
test f_forward......TUVWXYZ[\]
test f_truncate......success
test f_close......success
get file "f_1.dat" information:
    fil - ___ - F_1.DAT - 29Bytes - 2013-1-1 0:0:0
change "f_1.dat" timestamp to 2015.10.1, 12:30:0......success
change "f_1.dat" to readonly......success
get file "f_1.dat" information:
    fil - R__ - F_1.DAT - 29Bytes - 2015-10-1 12:30:0
remove "f_1.dat" readonly attribute......success
get file "f_1.dat" information:
    fil - ___ - F_1.DAT - 29Bytes - 2015-10-1 12:30:0
rename "f_1.dat" to "f_2.dat"......success
delete "f_2.dat"......success
.........................test done.....................
```

4. If you want to test throughput, you should set MSD_FATFS_THROUGHPUT_TEST_ENABLE as (1) in file host_msd_fatfs.h. Then an additional 64K ram is required to test the throughput, the macro is only unsupported by TWR_K65F180M.
   The throughput test process is as follow:
   - Enable MSD_FATFS_THROUGHPUT_TEST_ENABLE.
   - Format the U-disk in PC, The "Allocation unit size" select 32k.
   - Inset the U-disk, the throughput test will start.
     The follow picture is an example.

```
host init done
mass storage device attached:pid=0x5567vid=0x781 address=1
.........................fatfs test.....................
throughput test:
    write 51200KB data the speed is 3657 KB/s
    read 51200KB data the speed is 25600 KB/s
    write 51200KB data the speed is 2438 KB/s
    read 51200KB data the speed is 25600 KB/s
.........................test done.....................
```

Note

Throughput test only support TWR_K65F180M.