

RTC驱动调试

driver

代码

ds1307的I2C地址为: 0x68

首先在dts文件中添加相应的信息. 设备使用引脚3和5. 如下:

| Functions | Pin on S500 | Pin on Board | Pin on Board | Pin on S500 | Functions |
|-----------------------------|-------------|--------------|--------------|-------------|-------------------------|
| VCC(3.3V) | | 1 | 2 | | 5V |
| TWI2_SDA | GPIOE3 | 3 | 4 | | 5V |
| TWI2_SCK | GPIOE2 | 5 | 6 | | GND |
| LVDS_OAP/LCD0_D19 | GPIOB18 | 7 | 8 | GPIOC27 | UART0_TX |
| GND | | 9 | 10 | GPIOC26 | UART0_RX |
| DSI_DP3/SDIO0_CLKB/LCD0_D16 | GPIOC0 | 11 | 12 | GPIOB8 | PWM3 |
| DSI_DN3/SDIO1_D3/LCD0_D9 | GPIOC1 | 13 | 14 | | GND |
| DSI_CP/SDIO1_D1/LCD0_D1 | GPIOC4 | 15 | 16 | GPIOA25 | SIRQ1 |
| VCC(3.3V) | | 17 | 18 | GPIOC6 | MIPI_DSI_DP0 |
| SPI0_MOSI | GPIOC25 | 19 | 20 | | GND |
| SPI0_MISO | GPIOC24 | 21 | 22 | GPIOC5 | DSI_CN/SDIO_D0/LCD0_D0/ |
| SPI0_SCLK | GPIOC22 | 23 | 24 | GPIOC23 | SPI0_SS |
| GND | | 25 | 26 | GPIOB19 | LVDS_OAN/LCD0_D15 |
| LVDS_OBP/LCD0_D21 | GPIOB16 | 27 | 28 | GPIOB14 | LVDS_OBN/LCD0_D23 |
| LVDS_OCN/LCD0_D22 | GPIOB15 | 29 | 30 | | GND |
| LVDS_OEP/LCD0_DCLK0 | GPIOB10 | 31 | 32 | GPIOB13 | LVDS_ODN/LCD0_LDE0 |
| I2S_BCLK1/PCM0_OUT | GPIOB0 | 33 | 34 | | GND |
| I2S_LRCLK1/PCM0_CLK | GPIOB1 | 35 | 36 | GPIOA28 | I2S_BCLK0/PCM0_IN |
| I2S_MCLK1/PCM0_SYNC | GPIOB2 | 37 | 38 | GPIOA31 | I2S_D1 |
| GND | | 39 | 40 | GPIOA27 | I2S_D0 |

设备是接在I²C2上的, 所以下面的信息要加在节点2下:

- dts

```

1.         ds1307@68{
2.             compatible = "ds1307";
3.             reg = <0x68>;
4.         };

```

Linux内核中默认有ds1307的代码, 在内核配置选项中打开对ds1307的支持:

```

--- Real Time Clock
[*]   Set system time from RTC on startup and resume
[*]   Set the RTC time based on NTP synchronization
(rtc0) RTC used to set the system time
[ ]   RTC debug support
*** RTC interfaces ***
[*]   /sys/class/rtc/rtcN (sysfs)
[*]   /proc/driver/rtc (procfs for rtcN)
[*]   /dev/rtcN (character devices)
[ ]   RTC UIE emulation on dev interface
< >   Test driver/device
*** I2C RTC drivers ***
<M>   Dallas/Maxim DS1307/37/38/39/40, ST M41T00, EPSON RX-8025
< >   Dallas/Maxim DS1374
< >   Dallas/Maxim DS1672
< >   Dallas/Maxim DS3232
< >   Maxim MAX6900
< >   Ricoh R2025S/D, RS5C372A/B, RV5C386, RV5C387A
< >   Intersil ISL1208
< >   Intersil ISL12022
< >   Xicor/Intersil X1205
< >   NXP PCF8523

```

由于I²C和SPI外设驱动和设备树中设备节点的兼容性属性中有一种弱式匹配方法, 即'别名'匹配, 所以驱动源码无需修改:

```

1.   static const struct i2c_device_id ds1307_id[] = {
2.       { "ds1307", ds_1307 },
3.       { "ds1337", ds_1337 },
4.       { "ds1338", ds_1338 },
5.       { "ds1339", ds_1339 },
6.       { "ds1388", ds_1388 },
7.       { "ds1340", ds_1340 },
8.       { "ds3231", ds_3231 },
9.       { "m41t00", m41t00 },
10.      { "mcp7941x", mcp7941x },
11.      { "pt7c4338", ds_1307 },
12.      { "rx8025", rx_8025 },

```

```
13.     { }
14.     };
```

加载驱动错误

错误信息:

```
rtc-ds1307: probe of 2-0068 failed with error -5
```

解:

这个提示是由于设备没有匹配上引起的, 检查设备是否正确连接, 引脚连接是否出错.

使用

设备正确连接后, 加载驱动没有错误, 并发现设备 `/dev/rtc1`.

使用命令 `hwclock -f /dev/rtc1` 即可查看ds1307内的时间.使用 `-f` 参数用于指定rtc设备, 系统默认使用的是rtc0:

```
1. root@Lemuntu:~# ls -al /dev/rtc*
2. lrwxrwxrwx 1 root root      9 Jul  4 16:42 /dev/rtc -> /dev/rtc0
3. crw----- 1 root root 254, 0 Jan  1  2011 /dev/rtc0
4. crw----- 1 root root 254, 1 Jan  1  2011 /dev/rtc1
```

可以通过更改**dev/rtc**来使/dev/rtc1做为默认设备:

```
1. ln -sf /dev/rtc1 /dev/rtc
```

使用 `hwclock -h` 查看命令的详细用法, 以下示例用做参考:

- 查看rtc设备时间

```
1. hwclock [-f /dev/rtc1]
```

- 修改rtc设备时间

```
1. hwclock --set --date="07/04/16 16:52:25" [-f /dev/rtc1]
2. # 修改时间为 2016年07月04日 16:52:25
```

- 同步rtc设备时间到系统

```
1. hwclock -s [-f /dev/rtc1]
```

之后输入 `date` 查看系统时间是否修改.
