08-2 Unconfiguring Pins

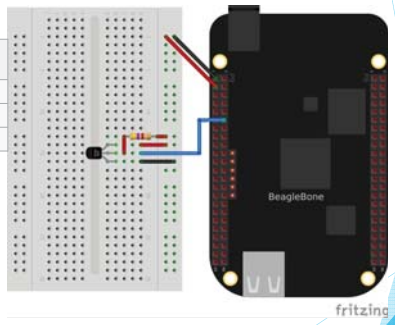
Making way for a Dallas 1-wire DS18B20 temp sensor

Adding a DS18B20

- Wire sensor
- Unconfigure P9_12
- Creating a patch file
- Configure P9_12 for Dallas 1-wire
- Reading the DS18B20

Wire Sensor

DS18B20 Lead	Attach to
Red	3.3V
Black	ground
White	P9_12



Unconfigure

- Problem: config-pin has control of P9_12

```
bone$ config-pin -q P9_12
P9_12 Mode: default Direction: in Value: 1
```

- It's configured. Find which manager you are running

```
bone$ export SLOTS=/sys/devices/platform/bone_capemgr/slots
bone$ cat $SLOTS
 0: PF----  -1
 1: PF----  -1
 2: PF----  -1
 3: PF----  -1
 4: P-O-L-   0 Override Board Name,00A0,Override Manuf,univ-emmc
```

- I'm running ***univ-emmc***

Put in .bashrc

Edit overlay

```
bone$ cd /opt/source/bb.org-overlays
bone$ ls src/arm/*univ-emmc*
src/arm/cape-univ-emmc-00A0.dts    src/arm/univ-emmc-00A0.dts
```

- Edit src/arm/univ-emmc-00A0.dts and remove references to P9.12(1) and P9_12 (16)

```
bone$ git checkout –b removeP9_12
bone$ vi src/arm/univ-emmc-00A0.dts
```

Edit overlay

- Edit src/arm/univ-emmc-00A0.dts and remove references to P9.12 and P9_12

```
bone$ cd /opt/source/bb.org-overlays
bone$ make
bone$ make install
bone$ reboot
bone$ config-pin -q P9_12
P9_12 pinmux file not found!
cape-universala overlay not found
run "config-pin overlay cape-universala" to load the cape
```

- Success!

Patches

- You can preserve the changes you made by creating a patch file
- This file contains instructions on how to convert the original file to the new file.

```
bone$ cd /opt/source/bb.org-overlays
bone$ git add src/arm/univ-emmc-00A0.dts
bone$ git commit –m "Removed P9_12"
bone$ git format-patch master --stdout > removeP9_12.patch
```

- Later, if you upgrade your image you can apply the patch using

```
bone$ cd /opt/source/bb.org-overlays
bone$ git apply removeP9_12.patch
```

- **Git will know which files to edit and what changes to make**

https://ariejan.net/2009/10/26/how-to-create-and-apply-a-patch-with-git/

Configure for 1-wire

```
bone$ export SLOTS=/sys/devices/platform/bone_capemgr/slots
bone$ echo BB-W1-P9.12 > $SLOTS
bone$ dmesg -H | tail
[Oct26 10:04] bone_capemgr bone_capemgr: part_number 'BB-W1-P9.12', version 'N/A'
[  +0.000046] bone_capemgr bone_capemgr: slot #5: override
[  +0.000024] bone_capemgr bone_capemgr: Using override eeprom data at slot 5
[  +0.000024] bone_capemgr bone_capemgr: slot #5: 'Override Board Name,00A0,Override Manuf,BB-W1-P9.12'
[  +0.020178] bone_capemgr bone_capemgr: slot #5: dtbo 'BB-W1-P9.12-00A0.dtbo' loaded; overlay id #1
[  +0.039562] Driver for 1-wire Dallas network protocol.
```

Reading the DS18B20

```
bone$ cd /sys/bus/w1/devices
bone$ ls
28-00000829ed85  w1_bus_master1
```

- The first directory is the serial number of the device
- If you have multiple devices on the bus, multiple directories will appear

```
bone$ cd 28-00000829ed85
bone$ ls
driver  id  name  power  subsystem  uevent  w1_slave
bone$ cat w1_slave
87 01 4b 46 7f ff 09 10 48 : crc=48 YES
87 01 4b 46 7f ff 09 10 48 t=24437
```

Temp in C *1000

Conclusions

- Wire sensor
- Unconfigure P9_12
- Creating a patch file
- Configure P9_12 for Dallas 1-wire
- Reading the DS18B20
- See http://elinux.org/EBC_Exercise_31_Dallas_1-Wire#Using_a_Different_GPIO_Pin