

## DEVICE DRIVERS DEVELOPMENT

### TECHNICAL LOG 1

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#### INSTALLATION OF LIRC:

1. Firstly, I collected general information needed for setting up lirc driver on my pi.
2. Faced issues in setting up the internet connection in pi, successfully resolved it.
3. After getting internet connection in pi, started installing lirc driver using command

**\$ sudo apt-get install lirc.**

We followed all the steps in order to install lirc as given in the link

<https://www.raspberrypi.org/forums/viewtopic.php?f=45&t=7798&start=100>.

First /etc/modules file has to be modified by adding

`lirc_dev`

`lirc_rpi gpio_in_pin=23 gpio_in_out = 22.`

So that these can be loaded at boot time.

Then add arguments necessary for launching lircd in /etc/lirc/hardware.conf

/etc/init.d contains script files for start, stop and restart

/etc/init contains config. Files which tells how and when to start or stop.

The Raspberry Pi uses a configuration file instead of the BIOS you would expect to find on a conventional PC. The system configuration parameters, which would traditionally be edited and stored using a BIOS, are stored instead in an optional text file named config.txt. This is read by the GPU before the ARM CPU and Linux are initialised. It must therefore be located on the first (boot) partition of your SD card, alongside bootcode.bin and start.elf

Edit the /boot/config.txt file: add dtoverlay=lirc-rpi,gpio\_in\_pin=23,gpio\_out\_pin=22.

4. We looked at documentation of lirc driver from **sourceforge.net**.
5. Setting up lirc configurations.

#### **References:**

1. <http://www.lirc.org/>
2. <https://sourceforge.net/projects/lirc/files/LIRC/0.10.0/>
3. <https://www.raspberrypi.org/forums/viewtopic.php?f=45&t=7798&start=100>

#### **Setting up IR receiver and sender :**

1. Setting up of the circuit for building ir led receiver and sender module.
2. Wired ir led at gpio pin 22 and ir receiver at gpio pin 23.
3. Created a new configuration file for remote.

```

# Remote name (as of config file): CASIO
# Brand of remote device, the thing you hold in your hand:
# Remote device model nr:
# Remote device info url:
# Does remote device has a bundled capture device e. g., a
#   usb dongle? :
# For bundled USB devices: usb vendor id, product id
#   and device string (use dmesg or lsusb):
# Type of device controlled
#   (TV, VCR, Audio, DVD, Satellite, Cable, HTPC, ...) :
# Device(s) controlled by this remote:

begin remote

    name    CASIO
    bits    32
    flags   SPACE_ENC|CONST_LENGTH
    eps     30
    aeps    100

    header  8881 4515
    one     582 1669
    zero    582 579
    ptrail  583
    gap     108061
    toggle_bit_mask 0x0
    frequency 38000

    begin codes
        KEY_POWER    0x212FD02F
        KEY_UP        0x212F52AD
        KEY_DOWN      0x212FD22D
    end codes

end remote

```

4. Used TSOP because of weak signal received.
5. IR Recording: This program will record the signals from our remote control and create a config file for lircd. If file is not specified it defaults to "irrecord.lircd.conf". If file already exists and contains a valid config irrecord will use the protocol description found there and will only try to record the buttons.
6. When outputting raw data from IR receiver using **mode2**, I was getting continuous output even without pressing the buttons of projector remote. Figured out that it happened because we did not made the ground common for two circuits the ir receiver and raspberry pi.

```
pi@raspberrypi:~ $ mode2 -d /dev/lirc0
Using driver default on device /dev/lirc0
Trying device: /dev/lirc0
Using device: /dev/lirc0
space 16777215
pulse 8909
space 4477
pulse 551
space 585
pulse 562
space 584
pulse 582
space 1668
pulse 551
```

7. Tried to find something about tv service, looks like it's not very well documented. So, couldn't find any proper documentation.
8. Tested the lirc driver for casio projector remote using irsend and irw successfully.